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FOOD AND NUTRITION SECURITY STATUS OF SYRIAN REFUGEES AND THEIR HOST COMMUNITIES IN LEBANON: THE CASE OF AKKAR

by
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AN ABSTRACT OF THE THESIS OF

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Background: Lebanon, being a small income country that is known to have wide economic disparities within its regions, is among the countries that face some obstacles in achieving food security. Akkar is one of the most vulnerable areas in this country that carries the burden of hosting high numbers of Syrian refugees following the recent Syrian crisis. Data regarding the food and nutrition security status, coping strategies, and nutritional status of Syrian refugee as well as Lebanese communities in this area are scarce.

Objectives: To assess and compare the food security status, coping mechanisms, and dietary diversity of Syrian refugee and Lebanese households from low and high Syrian refugee load villages, as well as to assess the dietary adequacy and nutritional status of mothers and children from recruited households.

Methods: This is a cross-sectional study of of a convenient sample of 324 Syrian refugee and Lebanese host community households from low and high Syrian refugee load villages in Akkar, North of Lebanon. Mother-child pair from each household (children between 4 to 10 years), whose consent and assent were secured and who were either both Syrian refugees or both Lebanese, were interviewed using a multi-component questionnaire collecting data about the households' socio-economic status, food security status, coping mechanisms, and dietary adequacy and diversity. In addition, anthropometric measurements were collected to assess the nutritional status of mothers and children.

Results: High levels of food insecurity were observed in Akkar with Syrian refugee households being the most food insecure (92.5%). In addition. Lebanese households from high Syrian refugee load villages were more food insecure than Lebanese households from low Syrian refugee load villages (55.2% vs 39.8%, respectively). The use of coping strategies to adjust for food insecurity was also high

among all communities (61% of Lebanese households vs 100% of Syrian refugee households). Severe and long-term coping strategies were adopted including: reducing the number and size of meals, spending whole day without eating, having children involved in income generation, withdrawing children from school, and having children marry under the age of 16. In addition, 14% of Lebanese households reported receiving assistance of any type compared with 85% of Syrian refugee households. The dietary diversity of Lebanese households and nutritional adequacy of mothers and children were significantly better compared with Syrian refugee households. However, it is still noteworthy that dietary inadequacy was common among both mothers and children from Lebanese and Syrian refugee households. No significant differences were observed in the nutritional status of mothers from Lebanese and Syrian refugee households. On the other hand, stunting and overweight levels were significantly higher among children from Lebanese households compared with children from Syrian refugee households, and were also significantly higher among Lebanese children from low Syrian refugee load villages compared with Lebanese children from high Syrian refugee load villages.

Conclusion: The food and nutrition security status of Lebanese households were better compared with those of Syrian refugee households. On the other hand, when comparing the situation of Lebanese households from low versus high Syrian refugee load villages, we observed that the presence of Syrian refugees did not necessarily worsen the situation of Lebanese households from high Syrian refugee load villages at all levels, but could have added services and revitalized the economy. Short-term coping strategies like borrowing money and food were more used among Lebanese households, while long-term strategies such as reducing the quantity and quality of meals were observed more commonly among Syrian refugee households. The use of severe coping mechanisms was also reported in this study among both Lebanese and Syrian refugee households. Thus, there is need for evidence-based policies and intervention strategies and programs in Akkar that aim to enhance the food security and nutritional status of Syrian refugee and Lebanese communities not only in villages with high Syrian refugee load but also supporting Lebanese households from low Syrian refugee load villages. There is also need for educational campaigns that instruct households on appropriate low-budget purchasing practices to help achieve dietary diversity and adequacy.

CONTENTS

ILLUSTRATIONS

Figure Page

TABLES

ABBREVIATIONS

%	Per Cent
/	Per
<	Less Than
=	Equal To
>	Greater Than
±	Plus or Minus
≤	Greater than or Equal To
≥	Less Than or Equal To
µg	Microgram
2D	Two-Dimensional
ARDP	Agriculture and Rural Development Programme
AUB	American University of Beirut
BMI	Body Mass Index
CHO	Carbohydrate
CITI	Collaborative Institutional Training Initiative
cm	centimeter
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
g/day	Grams per day
HH	Household
IQ	Intelligence Quotient
IRB	Institutional Review Board
kcal	Kilocalorie
kg	Kilograms
Lb	Lebanese
L.L.	Lebanese Pounds
mg	Milligrams
n	Frequency
NGOs	Non-Governmental Organizations
Sat fat	Saturated fat
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
SR	Syrian refugee
UNHCR	United Nations High Commissioner for Refugees
USA	United States of America
USDA	United Stated Department of Agriculture
WFP	World Food Program
WHO	World Health Organization

CHAPTER I

LITERATURE REVIEW

A. Food Security Definition

According to the World Food Summit in 1996, "Food security, at the individual, household, national, regional and global levels is achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 2009).

The Food and Agriculture Organization of the United Nations (FAO) considers food security to be based on four pillars: availability, access, utilization, and stability (FAO, 2009). The first pillar relates to the constant supply of food in sufficient amount and acceptable quality. Food availability is usually achieved by production, distribution, and exchange (Gregory, Ingram, & Brklacich, 2005; IICA, 2009; WHO, 2014). The second pillar of food security refers to the allocation of food and the degree to which it is affordable. This pillar is mainly affected by poverty that limits the resources to obtain appropriate food for a nutritious diet, and it is also influenced by the demographic, educational, and other socioeconomic characteristics that will determine how the food will be distributed within the household (Garrett & Ruel, 1999; Gregory et al., 2005; WHO, 2014). The third pillar deals with the utilization of food and its metabolism by individuals. Food utilization is largely influenced by many factors specially food safety, access to healthcare, nutritional value of the food choices, sanitation, and knowledge of basic nutrition and care. All these factors in principle will aid individuals in achieving a state of

nutritional well-being and thus meeting all physiological needs (FAO, 1997; Garrett & Ruel, 1999; Gregory et al., 2005; IICA, 2009; Tweeten, 1999; WHO, 2014). At a later stage, the fourth pillar of food security was added to the determinants of food security and it focused on the necessity of having sufficient food at all times, even under threats that can be transitory (loss of employment due to economic shock), seasonal (such as drought), or chronic (where there is constant food insufficiency). This concept of stability can be said to be related to the first two dimensions of food security as it ensures stable food availability and access (FAO, 2009; IICA, 2009; O. & C., 2012).

Food security can be achieved at two levels: macro and household-levels. The first, also called national aggregate food security, exists when enough food is available to feed the population, usually by a combination of food production, import, and aid. The second occurs when all people in the population have access to food. However, having macro-level food security does not necessarily mean that household food security is achieved. Rather, food access and distribution among the population can better determine household level food security (Harrigan, 2011). In addition, household food security does not directly reflect individual food security. The severity and nature of food insecurity experienced by household members differ to a certain degree, depending on access of members to any additional resources from outside the household and upon allocation of resources within the household (Tarasuk, 2001).

B. Food Security Status Worldwide

According to the United States Department of Agriculture (USDA), 795 million people worldwide, a number that represents 11 percent of the world's population, faces some sort of food insecurity particularly in terms of access to adequate supply of nutritious and safe food (USDA, 2015b). In addition, a report by FAO in 2015 estimated that around 795 million people globally suffer from undernourishment as defined by caloric intake less than the minimum dietary energy requirement. Although undernourishment and food insecurity are considered to be two distinct concepts, they are highly related and overlap at the geographical level (FAO, 2015b).

Furthermore, food insecurity is a global issue that is a challenge for developing countries in various regions, particularly Haiti, Lake Chad region, South Sudan, Yemen, Ethiopia, Malawi, Zimbabwe, Iraq, and Syria that were considered as hotspots for food insecurity in 2015 mainly due to droughts, diseases outbreaks, and political conflicts (WFP, 2015). Furthermore, developed countries like the USA and Canada are also facing food insecurity. A report supported by the USDA in 2009 showed that 14.7% of all US households were facing food insecurity during some time in the year, with 5.7% of whom are experiencing "very low" food security. Moreover, data shows that in 2012, about four million Canadians (including 1.15 million children) were living in households that are experiencing some degree of food insecurity (Nord, Coleman-Jensen, & Andrews M, 2009; Tarasuk, Mitchell, & Dachner, 2011).

C. Food Security in the MENA region

The Middle East and North Africa (MENA) region is considered to be one of the most food insecure areas in the world (ESCWA, 2010). The vulnerability of this region is mainly due to the very high import dependence of countries within the MENA region and the constant conflicts that continue to hinder its progress. Other challenges and future threats that limit MENA countries from achieving their food security include natural resources depletion, change in climate, migration, conflict spillovers, modernization of economy, and desertification (Breisinger et al., 2010; IFPRI, 2010; Statistics, 2015).

These hitches in the progress of the region towards more food security can be divided into agricultural, political and economic challenges. The first challenge manifests itself through the limited ability of the MENA region countries to be on the export side of the market mainly due to the low economic productive diversity. The second challenge can be seen as the constant instability at the regional and domestic levels, insufficient political initiatives between nations, and limited economic integration. Furthermore, the economic challenge is reflected through high unemployment rates, elevated income inequalities, and high rates of poverty (ESCWA, 2010).

When taking into consideration both the macroeconomic and household-level dimensions of food security in the MENA region, we can classify Bahrain, Iran, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates as food-secure (FS) countries. While Algeria, Djibouti, Egypt, Iraq, Jordan, Lebanon, Libya, Morocco, Sudan, Syria, Tunisia, Yemen, and West Bank and Gaza are classified as countries with food security challenges (Breisinger et al., 2010). Six of these food insecure countries were largely affected by

various national and international civil and military conflicts and violence. These include: Iraq, Lebanon, Palestine, Sudan, Yemen, and in recent years Syria. Among the challenges obliterating the achievement of food security in these countries are social instability, movement restrictions, limited access to essential services and resources, insecurity, internal displacement, constrained access to food, poor infrastructure, ongoing conflict, low levels of basic infrastructures, adverse environmental conditions, poverty, refugees, and environmental degradation (ESCWA, 2010).

By 2050, the population of the MENA region is expected to double reaching more than 650 million. It is also expected to dive further into poverty despite the already high levels, with about 20% of these people living with expenditure less than two dollars daily (IFPRI, 2010). Thus, the need to establish regional food security is considered an urgent issue not only for the people facing hunger, but also to maintain economic growth of developing countries (USDA, 2015b). This important issue emanates from the convergence of many factors including the increased demand for higher amounts and varied diets with the increasing population, while less land is available to grow more food and the access to water being limited, all the time combatting increased prices of fuel for storage and transport and of fertilizers (BBSRC, 2015).

D. Food Security in Lebanon

Lebanon is a small middle-income country that stretches over 10452 km^2 and hosts a population of over 5.9 million (UN, 2014b). It has been continuously affected by the

MENA region's economic, political, and social turmoil, thus constantly hindering any progress in Lebanon's economic and agricultural sectors. In addition, as a country that is heavily dependent on food imports, it remains highly vulnerable to food-price shocks (Nasreddine et al., 2012; UNHCR, 2013, 2014b; Zaki, Chaaban, Nasreddine, & Chalak, 2014). Many aspects of the country are believed to be quite developed, particularly healthcare (as evident by the health outcomes and care quality) and education (with adult literacy rates above 90% and enrolment ratios in primary and secondary school of over 93% and 71% respectively in 2011). On the other hand, within country disparities are largely existing, showing vast gaps in the status of the poor and the wealthy where the former group lives in poverty and is under-served by the government, particularly at the level of infrastructure and public services (UNHCR, 2013). Lebanon was listed in 2013 as the 3rd highest country in the degree of wealth inequality out of 141 countries, lagging after Russia and Ukraine (Buchheit, 2013). For example, North Lebanon houses 38% of the poor and 46% of the extremely poor; whereas Beirut the capital, hosts only 2.1% and 1% of the poor and extremely poor respectively (UNDP, 2008).

Food insecurity of vulnerable and marginalized groups in Lebanon such as Iraqis and Bedouins, has been previously assessed and reported. A household survey by Ghattas et al. in 2014 on Iraqi refugees in Lebanon revealed alarming levels of food insecurity reaching 80%. Another study conducted by Sahyoun et al. in 2014 showed that 62% of Palestinian refugees in Lebanon were food insecure with 20% severely food insecure. (Sahyoun et al., 2014). Another study of food insecurity among Palestinian refugees in Lebanon showed similar results of household food insecurity: 63% were food insecure of

which 13% were severely food insecure (Ghattas, Seyfert, & Sahyoun, 2012). Even though poverty levels of Iraqi refugees are lower than Palestinian refugees, however, the formers show universally higher rates of food insecurity. This is mainly due to two factors, the first is that the Iraqi refugees are more recent as refugees than their Palestinian counterparts, and thus has not yet developed appropriate coping mechanisms. The second factor relates to the possible subjective measure of food insecurity used in the study, addressing food dissatisfaction rather than food unavailability and insufficiency (Ghattas, Sassine, Seyfert, Nord, & Sahyoun, 2014). This is mainly because when people report hardships they may incorporate objective elements of well-being, but may also reflect subjective perceptions about what they consider as appropriate food standards (Gundersen & Ribar, 2005). Food security is also an issue among the Bedouin community of the Bekaa in 2013, with a food insecurity rate of 49%. These high rates are believed to be caused mainly by the vulnerability of this population to the increased food prices, particularly in light of their decreased food production practices and increased reliance on foods from the market (Ghattas, Barbour, Nord, Zurayk, & Sahyoun, 2013).

Furthermore, a vulnerability assessment study of Syrian refugees conducted by the World Food Program in Lebanon in 2015 showed that food insecurity levels among hosted refugees increased from 70% in 2014 to 89% in 2015. These vulnerable households are prone to more food insecurity if assistance is not provided, and they may resort eventually to certain harmful coping strategies to secure their basic needs (UN, 2014a; UNHCR, WFP, & UNICEF, 2015).

On the other hand, the food security status of Lebanese is still not well defined, owing to the insufficient data available on the subject. Although severe hunger was not experienced since the famine of World War I, certain vulnerable populations are believed to be predisposed to food insecurity (Zaki et al., 2014). A study conducted by Sahyoun et al. in 2014 showed that 85% of southern Lebanese households were food secure and 10% were severely food insecure. Within the same study, 38% of Palestinian refugee households were food secure and 20% were severely food insecure (Sahyoun et al., 2014). Another study of food insecurity among Palestinian refugees in Lebanon showed similar results of household food insecurity: 63% were food insecure of which 13% were severely food insecure (Ghattas et al., 2012). A study on household food security conducted in the Beqaa Valley area of Lebanon revealed that only 48.3% of households were food secure, while 21.1% were severely food insecure (Naja, Hwalla, Fossian, Zebian, & Nasreddine, 2014).

E. Food Security Relationship with Conflict

Theoretically, the relationship of food security with conflicts can be said to be bi-directional, since conflict can be both a source and a result of food insecurity. Conflict can contribute to food insecurity through direct and indirect effects. Direct effects are related to the decreased availability and productivity of food in the country. This occurs through damage to land, agriculture, market, livestock, and machinery. Indirect effects on the other hand, refer to the political and economic ramifications of the conflict within the country itself, which can weaken trade affecting the import and export capacity of the country. These ramifications are observed in refugee migration, hindering of investment climates

with regional countries, and devaluating commercial development or exploitation of land and other natural resources for other priorities. In practice however, food insecurity usually plays the role of "threat multiplier", adding to the people's problems of poverty, marginalization, and oppression (ESCWA, 2010).

In addition, it is not only the level of food insecurity that really matters, but how this insecurity is distributed. In other words, grievances that prompt violent behaviors are generated by relative deprivation rather than absolute deprivation, thus studies do not look only at the average level of food insecurity but also at whether this food insecurity is widely experienced or concentrated in certain groups (Brinkman & Hendrix, 2011).

1. Effects of the Syrian Conflict on Lebanon

A new dynamic affecting food security in the MENA region was observed following the Arab spring in 2011, as violence and political uncertainty started to spiral in many countries mainly Tunisia, Egypt, Libya, and Syria (EIU, 2014). Unfortunately, the Syrian crisis lingered the most and is considered as one of the biggest humanitarian crises the world is currently witnessing (FAO, 2015a).

As an adjacent country that has a high social resemblance to Lebanon, and abiding by the declaration of human rights that necessitate that borders are opened to refugees, it was no wonder that Lebanese received Syrian refugees (UNHCR, 2013). About 37% of the Syrian refugees were hosted in Lebanon as of November 2013, reaching numbers that are the highest in the region both in regard to total numbers of refugees and relative to the

Lebanese population (FAO, 2014). Currently, Lebanon hosts more than 1.5 million refugees from Syria, a number that is believed to represent 34% of the Lebanese population prior to the Syrian crisis. These refugees include not only Syrian refugees, but also Palestinian refugees from Syria, as well as Lebanese returnees (UN, 2014a; WFP, 2014).

Since the beginning of the Syrian crisis in 2011, Lebanon has been one of the most affected countries in the region (WFP, 2014). Already in its fifth year, the Syrian crisis has had extensive repercussions on Lebanon due to not only the arrival of huge numbers of refugees but also because of the resulting economic slowdown. The economic slowdown was manifested by the sharp drop of annual growth rates compared to prior crisis rates, and it was mainly due to the escalating insecurity, rattled trade routes, weakened tourism, and decreased confidence of consumers and investors. Damaged confidence was reflected by the fact that Gulf investors in the real estate sector currently find Lebanon to be less attractive. Furthermore, the Lebanese economy depends largely on the Syrian's economy due to its proximity and their trade alliances. Since Syria is considered as the main route for transit trade, it was necessary to find new trade routes. This, combined with the rising regional instability, have led to more elevated shipping costs which exhausted the Lebanese exports' competitiveness and expanded the already hefty imbalance in trade in Lebanon since the beginning of the crisis. Indeed, trade and tourism decreased considerably, with almost 60% drop each by the end of 2013 compared with pre-crisis levels (WFP, 2014). Furthermore, the interaction of violent conflicts, economic deterioration, and demographic pressure largely affected Lebanese households relying mainly on farming and employment in small- and medium-sized enterprises as their primary sources of livelihood (UNHCR,

2014b). In addition, the refugee inflow has impacted the labor and housing markets. The increased labor supply has led to more competition between refugees and Lebanese from host communities affecting the wages of low-skilled laborers in the service, agricultural, and construction sectors (labor supply increased by more than 50 percent). Housing has also been a critical issue before the Syrian crisis, and the situation only got worse as rent prices went higher (44% increase during 2012-2013) and the poorest Lebanese were no longer able to pay their rent (UNHCR, 2013).

The availability and quality of public services was also largely influenced by the presence of large numbers of Syrian refugees. The number of students in public schools increased by 30 to 35 percent, and this placed a large burden on public schools that used to accommodate 30% of Lebanese school-aged children before the Syrian conflict. Furthermore, even though poor Lebanese households used to face barriers in health care and medication access prior to the Syrian crisis due to limitations in public service provision, the influx of refugees have further exacerbated their condition. According to the Lebanese Ministry of Health, visits made by Syrian refugees to primary health care centers across Lebanon represented about 40% of total visits (WFP, 2014). These repercussions of the Syrian crisis on Lebanese market, economy, and public services are compromising the household food security in Lebanon.

An assessment in 2014 by the WFP, UNHCR and UNICEF indicated that 1,500,000 Syrian refugees and 1,500,000 vulnerable Lebanese are considered as populations in need of support. However, international programs are targeting only 1,125,000 of the former group, and 446,894 of the latter. While many justify this inequality

in addressing food insecurity among the two populations to the more severe and vulnerable state of refugees compared with host communities, possible tension and congestion that are starting to arise may also be an issue (UN, 2014a).

2. Tension between Refugees and Host Communities

Whereas Lebanese were largely sympathetic and supportive to Syrian refugees at the beginning of the Syrian crisis, four years later this positive attitude is slowly eroding and tensions are escalating clearly at the community level between the host communities and Syrian refugees (UNHCR, 2014b; UNHCR et al., 2015). Tens of incidences were documented where there was use of force against refugees according to international and Lebanese organizations. In addition, flyers were distributed in different areas in Lebanon that were threatening refugees with violence or even death, and calling on them to leave. Some cases of assault and harassment were also noted with the aim of restricting refugees' movement or expelling them from particular regions (Khatib, 2014).

As previously elaborated, the Syrian refugees' influx resulted in an increased pressure on natural resources, employment opportunities, and basic services (such as health, electricity, waste water management, and solid waste management). Poverty was also predicted to increase by 3.9% by the end of 2014 because of the Syrian conflict (WFP, 2014). Some statistics predicted that 170,000 Lebanese may fall into poverty, while more than 340,000 Lebanese, most of which are young and have little skills, may lose their jobs by the end of 2014 (UN, 2014a). This deteriorating situation, particularly in areas that have already been largely marginalized before the Arab Spring and the large refugee influx, only

seemed to fuel tensions as host communities insist that their needs be met similarly to those of refugees.

Poverty and social tensions were increasing dramatically over the past 4 years in certain areas of Lebanon, primarily North Bekaa and Akkar that have a poverty incidence exceeding 20% and 13% respectively (WFP, 2014). Akkar and North Bekaa host the largest number of refugees registered with UNHCR and have a history of inappropriate service delivery for the local community. Such impoverished communities are getting more frustrated as their growing needs are neglected, whereas large-scale assistance attempts are targeting the existing Syrian refugee community. The rising tensions are of particular concern as they may lead to polarization and possible violence especially among young men (UNHCR, 2014b).

The WFP and other UN agencies as well as local governments and NGOs, play a major role in getting food to those in need, particularly children who are largely affected in their early years by the lack of nutrition. However, despite the critical work, current food assistance programs cannot be considered as sustainable long-term solution to combat food insecurity. Rather, caution should be taken to avoid having food assistance in the interim becoming what is considered as another source of conflict that can impair investment in local food production and the improvement of local capacity (Notaras, 2011).

3. Coping Strategies of Syrian Refugees and their Lebanese Host Communities

The concept of food insecurity include the vulnerability resulting from the lack of steady access to food, thus placing individuals at risk of using coping strategies that are either not sustainable or risky. If there's uncertain or limited ability to provide adequate foods in "socially acceptable ways", various coping mechanisms can be used (Ivers & Cullen, 2011). Among the most common strategies applied is the reduction of food intake (amount and number of meals) within the household. This is also followed usually by a change in the dietary habits and food consumption patterns, and an increased reliance on cheaper, and often less nutritious, food items. The intake of such food items that are more calorie-dense and less nutrient-dense often masks the true status of inadequate food intake, especially in populations with low nutrition and health knowledge, increasing their risk of malnutrition (UNHCR et al., 2015). Another widely seen coping mechanism in vulnerable populations in Lebanon is borrowing food and money from relatives or neighbors, and thus falling into a vicious cycle of debt and poverty that is hard to break. In addition, health and medical care appear to be largely affected, individuals often preferring to save money for what is considered in their opinion as more pressing matters (like food). Children also appear to be affected, and parents often rely on them to help in adding to the household income, keeping them out of school and handing them jobs often not appropriate for their age. Other coping strategies include selling assets (often jewelry and phones), as well as accepting gifts and aids from certain organizations -NGOs or national and community-related (WFP, 2013).

In Lebanon, the most commonly used coping strategies by Syrian refugees and their host communities are "restricting consumption of adults so children can eat" and "sending children to eat elsewhere". Other coping mechanisms are being applied that can have permanent and detrimental effects on the psychological and physical health of children such as removing children from school to work for food or sending household members, including children, to beg. In addition, females are another vulnerable group that usually resort to extreme coping strategies in order to overcome food insecurity and the lack of food particularly if they are of low educational status and have few economic opportunities. These risky coping mechanisms include theft and exchange of sex for food or money (Ivers & Cullen, 2011; Maxwell & Caldwell, 2008). The use of extreme coping mechanisms have irreversible and long-term consequences particularly among children who will be deprived of their basic rights of development, education, and freedom and whose mental and physical health can be permanently compromised.

F. Effect of Food Security on Nutrition and Health

Food insecurity is often linked to poverty and low income, and is believed to have relevant ramifications on the nutrition, health, and behavior of individuals (Ivers & Cullen, 2011). Food security's association with health is believed to be through malnutrition since food availability and distribution at the household level affect the nutritional status of all members whether their nutrition needs are fulfilled or not (WHO, 2014). Food needs to be not only available, but also shared within the household in keeping with individual needs and to be of adequate quality, safety and variety. In addition, in order for people to benefit

from available food they need to be in a favorable health status. Individuals that are well-nourished and healthy are both the result of successful economic and social development, and a primary input toward the development process (FAO, 2010). This shows the enormity of costs due to food insecurity at the economic and humanitarian levels, particularly since it has been estimated that almost 10% of a person's lifetime earnings are considered as economic costs of under-nutrition in some countries (DGICD, 2013).

According to the Organization for Economic Co-operation and Development (OECD), up until 2012, just under one billion people worldwide were facing some form of food and nutrition insecurity thereby suffering from permanent hunger. One person among eight, most of whom were in South Asia and Sub-Saharan Africa suffered from hunger. Adults that suffer from hunger will experience diminished physical capabilities and lethargy, and this significantly affect their ability to participate in economic activities. In addition, not only does malnutrition cause around 2.6 million children to die every year, children below two years old experience stunting due to hunger. This leads to a lifelong damage in their physical and mental capabilities, which in turn can influence their general well-being and future employment chances (OECD, 2012).

The effects of food insecurity and hunger on an individual’s physical, cognitive, and psychological health and wellbeing are numerous and can affect all age groups starting from infancy. Problems are observed in social and emotional development of food insecure infants that make them exposed to increased risk of shaky attachment to their parents. In addition, children may experience an unsatisfactory performance on tests of language comprehension, a failure to follow directions during the first five years of age, setbacks in

motor and cognitive and socio-emotional development, a higher level of poor memory and hyperactivity/inattention, more prevalence of chronic illnesses, and an increased hazard of obesity during childhood. Youth can also be affected by food insecurity and may experience suicidal speculation and depression as well as mood and substance abuse disorders. The effect of food insecurity and hunger on families is also observed as the increased risk of depressive disorders among mothers, increased possibility of unresponsive caregiving practices, as well as an increased likelihood of mothers of school-children who are severely hungry to have a lifetime diagnosis of substance abuse or post-traumatic stress disorder (Ke & Ford-Jones, 2015).

Furthermore, the relationship between food insecurity and nutritional status is not yet clear. Nearly all studies in low income countries have found a positive association between the increase in the severity of food insecurity and the risk of underweight among children under five years while studies in middle-income countries didn't find such significant associations (Ghattas, 2014). On the other hand, more homogeneous results were observed regarding the relationship of food insecurity and stunting in low and middle-income countries among children under 5 years of age whereby household food insecurity increased the risk of stunting. However, such association was not shown in middle and high-income countries in children above the age of 5 (Ghattas, 2014). Moreover, the food insecurity-obesity paradox has been the center of research in order to explore the link between these two seemingly contradictory states. Over the last decade, a large body of literature was developed to scrutinize this relationship. A strong link between food insecurity and obesity among women was observed in studies conducted in developed

countries like the USA and some developing countries like Colombia and Brazil (Franklin et al., 2012). There is also a rising evidence of the effect of food insecurity on overweight and obesity among adolescents and this is mainly observed in developing countries (Lopes, Sichieri, Salles-Costa, Veiga, & Pereira, 2013). On the other hand, results among men showed that no significant association was found between food insecurity and overweight and obesity (Gooding, Walls, & Richmond, 2012). In addition, the examination of the effect of food insecurity on children's overweight and obesity risk showed mixed evidence as studies conducted in developed countries found no association while studies conducted in small and middle income countries revealed weaker associations and some even demonstrated inverse links between food insecurity and the risk of overweight (FRAC, 2015; Franklin et al., 2012; Ghattas, 2014).

No studies to date address the relationship between food insecurity and nutritional status in Lebanon. Lebanon is considered by the World Health Organization (WHO) as a country that is undergoing nutrition transition and carries the double burden of overweight and obesity as well as multiple micronutrients deficiencies among selective subpopulation groups. Data obtained from a report by the Food and Agriculture Organization, prior to the summer 2006 conflict in Lebanon, showed that the Lebanese population's nutritional status was characterized by nutritional transition that is persistent with chronic malnutrition among young children (stunting) and micronutrients deficiencies, particularly in rural areas. In addition, elevated prevalence of overweight among all age groups in both urban and rural areas was indicated. These data from Lebanon also showed that the prevalence of stunting and wasting in children under 5 years was estimated at 12% and 3% respectively,

while the percentage of women with a BMI above 25 kg/m2 (overweight or obese) was found to be 49%. (Al Khatib et al., 2006; FAO, 2007; Hwalla, Sibai, & Adra, 2005). Malnutrition and food insecurity were not considered a problem for the Lebanese society until the Syrian crisis began. Currently, these two issues require in depth monitoring due to the continuous pressure of the crisis on the Lebanese economy (WFP, 2014).

G. Marginalized Communities in Akkar

Very few studies addressed the nutritional and food security status in the governorate of Akkar, one of the largest and most marginalized districts in Lebanon. Data from the UNHCR in 2015 revealed that 38% of Lebanese in Akkar were considered as deprived and living below the poverty line of 2.4 US dollars per day (UNHCR, 2014b, 2015a). In addition, according to recent UN assessments, the average monthly income of the household was 641 US dollar while a small percentage of households still lives on a monthly income below 40 US dollar. Primary source of income among locals in Akkar was unskilled non-agricultural employment in informal commerce, while the public sector plays an important role in the sustenance of income levels in Akkar households (in particular military and education employments) (UKaid & Rescue, 2015). A report by Save the Children in 2014 revealed high rates of unemployment across all areas in Akkar, ranging from 44% to 58% (ACTED, 2014). On account of the rural nature of Akkar, agriculture is considered as an important source of income for the population, with 28% of the locals engaged in this sector. However, agricultural production in Akkar ranks second in Lebanon after Bekaa as it is less competitive and less developed (UKaid & Rescue, 2015). The

Lebanese population in Akkar was estimated at 252,623 in 2015 (UNHCR, 2015a). Registered Syrian refugees numbers in 2014 exceeded 106,935 in Akkar, thus making up one third of the population without taking into consideration the number of unregistered refugees (REACH, 2014). This increase in population following the Syrian crisis has added pressure on the already under-served basic services and fragile infrastructure in Akkar. Around 32 localities in Akkar were considered vulnerable in 2015, five of which were most vulnerable (UNHCR, 2015a).

H. Rationale of the study

Food security is a global challenge that, if not achieved, can have serious consequences on the physical and psychological health of all age groups particularly mothers and children. The Arab Spring and constant regional conflicts pose threats to the food security status of the MENA region, with countries like Lebanon being the most affected due to economic fallout and large refugee influx following the Syrian crisis.

In light of the numerous economic and social repercussions of the Syrian crisis on the Lebanese community, and the absence of sufficient clear data to compare the situation between Syrian refugees and Lebanese host communities, there is a clear need to assess the food security and nutrition status of these two vulnerable population.

Food security in Akkar, a governorate in North Lebanon that is currently hosting a large proportion of the Syrian refugees and is known to be one of the poorest areas in Lebanon with high poverty levels, low health coverage, and poor infrastructures has not

been well-explored. In addition, not only is data on the social and food security status in Akkar prior to the Syrian crisis lacking, also no studies to date addressed how these issues were affected after the refugee influx to the area.

To address these gaps, this study aims to compare the food and nutrition security status of Syrian refugee households and their Lebanese host communities and to explore differences in their coping strategies. Household dietary diversity and the dietary adequacy of mothers and children from these households will also be assessed and compared. Results will serve to devise evidence-based policy-level recommendations that tackle the needs of both Lebanese and Syrian refugee communities.

CHAPTER II

METHODOLOGY AND MATERIALS

A. Study Design

This is a cross-sectional study that was conducted in a rural region in Lebanon (the governorate of Akkar), between August and November 2015. The study aimed to assess and compare the food and nutrition security status of Syrian refugees and their Lebanese host communities.

B. Sampling framework

Sampling was based on the primary outcome of the study, namely the difference in prevalence of food insecurity between Syrian refugees and their Lebanese host community. The equation below was used to calculate sample size (Statistics, 2015) based on previous study findings whereby prevalence of food insecurity (moderate and severe) among Lebanese households was reported to be 34% (Naja et al., 2014) and that among Syrian refugees in Akkar was 22% (WFP, 2014). A confidence interval of 95% (Z=1.96), a power of 80%, and a margin of error (d) of 5% were considered. The initial sample size for this study was 216 households divided equally between the two group populations (108 Lebanese households and 108 Syrian refugee households) that were recruited from villages with very high Syrian refugee population. However, given differences that may exist between households from high and low Syrian refugee load the total sample size that was

included in this study was 324 households whereby an additional 108 Lebanese households were recruited from villages in Akkar with very low Syrian refugees population to serve as a third comparison group.

$$n = (Z_{\alpha/2}+Z_{\beta})^2 \times (p_1(1-p_1)+p_2(1-p_2)) / (p_1-p_2)^2$$

A convenient sampling approach based on consecutive household sampling was followed for the recruitment of participants (mother-child pairs). At each of the visited villages, several streets/neighborhoods were randomly selected and a random sample of households were contacted per street.

C. Study population and Inclusion Criteria

Akkar Governorate is one of the eight governorates of Lebanon, constituted of only one district (Akkar District), and is one of the largest districts in the country that stretches over an area of up to 776 square kilometers (Localiban, 2015). This governorate is located in the far North of Lebanon, surrounded by Syria borders from the north, Nahr El-Bared and the district of Minnieh-Dinnieh to the south, the Mediterranean coast on its western border, and the Baalbek-Hermel Governorate on the east. Akkar is known for its high mountains to the east and the presence of the second largest agricultural plain in Lebanon after the Bekaa valley. In addition, Akkar is the most rural Lebanese district with a rural population exceeding 80% (Mouchref, 2008). This district is constituted of 293 villages and towns, 217 of which are currently hosting Syrian refugees post the conflict in Syria (OCHA, 2014).

The study sample was derived from eight villages hosting Syrian refugees: four with very high Syrian refugee load and another four with very low Syrian refugee load. These villages were chosen using UNHCR data about the number of the registered Syrian refugees among villages in Akkar (UNHCR, 2015b). Obtaining detailed data on the demographic and community characteristics of villages in Akkar was a challenge in the absence of an updated official source of data. In order to choose from which villages to recruit the households, community characteristics and background information of the villages were taken into consideration, and these data were retrieved from the Resource Centre on local development in Lebanon (Localiban, 2015). Collected information was later validated by contacting the municipalities within villages identified to have relatively similar community characteristics. Municipalities also provided estimated numbers of Lebanese and Syrian refugees present in each village, as well as the number of private and public schools, hospitals and/or primary health care centers. The high Syrian refugee load villages were identified based on the highest number of refugees residing in Akkar villages reported by UNHCR and municipalities (ensuring that refugees and host communities are of the same religious groups to avoid any potential reporting bias due to cultural differences), the chosen villages were *Bebnine, Mhammara*, *Berqayel*, and *Khreibet El-jendi*. Villages with the lowest Syrian refugee load from where Lebanese households were recruited included *Dinbou, Beit Younes, Ain Tinta,* and *Qornet Akkar.* These villages were chosen after taking into consideration the following criteria in order to minimize within group differences:

- Minimal discrepancies between the number of Syrian refugees present in the villages obtained from the UNHCR and the numbers obtained when contacting the respective municipality of each village
- The ratio of Syrian refugees to Lebanese households is less than 20% (to be considered as low Syrian refugee villages)
- The number of Lebanese from high Syrian refugee villages matches those the number of Lebanese in low Syrian refugee villages.

In addition, households were recruited per village, if they met the following inclusion criteria:

1) Mothers and children within each of the households were of Lebanese nationality (holder of a Lebanese identification card) OR of Syrian nationality (holder of a Syrian identification card)
2) Syrian refugees have moved to Lebanon after the onset of the Syrian crisis in 2011 and have been in Lebanon for ≥ 6 months
3) Mothers of the participating children were living in the household.
4) Children were between the ages of 4 and 10 years
5) Mothers and children were generally healthy: absence of chronic illness (diabetes, hypertension, cancer etc), inborn errors of metabolism, physical malformations that may interfere with eating patterns and body composition, and that may impair children's growth.

D. Protocol for recruitment of study participants

The Institutional Review Board (IRB) of the Social and Behavioral Sciences at the American University of Beirut (AUB) reviewed and approved the protocol of this study (Appendix I). Key stakeholders and municipality officials from each of the identified villages were contacted and their approvals were obtained prior to any field visit. A letter to the municipalities, which explained the purpose of the study, has been prepared and shared orally or via fax (Appendix X).

Trained field surveyors approached mothers and children within their household setting and explained the purpose and procedure of the study using the oral script (Appendix II and III). The interviewers emphasized that participation is completely voluntary with neither risks nor penalties. Participants were informed that they can withdraw at any time without any penalties. Duration of the interviews were about 30 minutes, with a free nutritional consultation for both mother and her child upon completing the interview. The interviews involved a questionnaire and taking anthropometric measurements of both mother and child.

When there was more than one child between the ages of 4 and 10 years in the household, one of the children was chosen at random for the study using the Kish Grid (List, 2005). The Kish Selection Method is essentially designed to ensure that the person most likely to answer a less invasive survey is not different in a specific way from the rest of the population. This method ensures that there is no selection bias when choosing the child participant, since normal weight children are more likely to be allowed to volunteer to

participate in nutrition-related studies than underweight or overweight children. This method included the following steps:

i. First, everyone that fits the eligibility criteria, such as being between 4 and 10 years in our case, were gathered together. If there was only one person, that person was considered as the primary survey respondent immediately.

ii. Then the interviewer collected the age and gender of children who were eligible for the survey.

iii. Eligible children were placed in a selection grid with pre-assigned numbers.

The researchers then chose a respondent based on their number, using a random selection process so that the person selected to take the survey didn't have some commonalities that caused them to introduce bias into the data.

E. Data Collection

Data collection started in mid-August 2015 and ended in November 2015. Interviews lasted 25 minutes on average. The questionnaire was completed by the field surveyors and anthropometric measures were taken at the end of the interview. Field surveyors utilized calibrated scales and standardized techniques in order to minimize any intra-interviewer and inter-interviewer bias. The questionnaire, oral script, consent and assent forms were all presented in Arabic (See appendices IX, III, V, and VII respectively).

Questionnaire

The multi-component questionnaire used was comprised of six sections: socio-demographic characteristics, household food security access scale, coping strategies index, household food consumption score, 24 hour dietary recall, and anthropometric measurement. The questionnaire was prepared in English and translated to and used in Arabic (See appendices VIII and IX).

Pilot testing

The questionnaire was pilot tested on a small sample population (27 Syrian refugee and 7 Lebanese households from high Syrian refugee load villages) in August 2015. Results proved helpful feedback to make necessary revisions to the questionnaire. These amendments included modifying the categories of the kind of work of the mother and her husband to be clearer and mutually exclusive, adding an answer option for monthly income below the lowest option previously adapted since the majority of responders considered the lowest range of income to be high, adding a notes section for the question about receiving any form of assistance in the last three months, and adding the Household Food Consumption Score section. Afterwards, the rest of the interviews were conducted from September 2015 to November 2015 collecting in total 333 subjects, including the initial sample population gathered during the pilot testing.

1. Socio-demographic

The first section regarding the socio-demographic characteristics gathered information mainly about the mother's and father's educational level and employment status, composition of the household, income, expenditure, assets, and other variables (See appendix VIII). Crowding index was calculated as the number of individuals per number of rooms in the household (Melki et al., 2004). Crowding index values above 2 were considered an indicator of overcrowding. This cut-off was used because Akkar is known to be a rural area with high birth rate and to have a low socio-economic status overall thus houses on average are smaller with lower number of rooms.

2. Household Food Insecurity Access Scale

The Household Food Insecurity Access Scale was originally developed by the United States Agency for International Development and was validated in different settings and was applied successfully in a wide range of countries (Coates, Swndale, & Bilinsky, 2007). This measurement tool was later on translated in Arabic and validated in Lebanon prior to being used in this study (Naja et al., 2014). It was used to assess the food security status and consists of nine questions about the experience with household food insecurity over the past four weeks and its frequency. It covers three themes: 1) changing the quality of the diet; 2) decreasing the amount of food eaten; and 3) feeling uncertain and anxious about household food supply (UNICEF, WFP, WHO, & ACF, 2012). Answers were scored and categorized into 4 levels of food security: food secure, mildly food insecure, moderately food insecure, and severely food insecure (See table 4).

Table 1. Categories of food insecurity for individual questions depending on the answer to the HFIAS questions. The overall HFIA category is the most severe category of the individual questions.

Question	Answer*			
	No	Rarely	Sometimes	Often
1				
2				
3				
4				
5				
6				
7				
8				
9				

Legend
- Food secure
- Mildly food insecure
- Moderately food insecure
- Severely food insecure

(Coates et al., 2007)

* No: 0 times in the past 4 weeks, Rarely: 1-2 times in the past 4 weeks, Sometimes: 3-10 times in the past 4 weeks, Often: >10 times in the past 4 weeks.

In addition, another score "Household Hunger Scale" was derived from the last three questions of the HFIAS. These questions were intended to measure household's experiences of severe food insecurity that can lead to hunger. HHS is considered to be an adequate measure of household hunger found to be consistent across various cultures and gives a good account of what households experience during difficult situations. Table 5 describes how this score is classified (Ballard, Coates, Swindale, & Deitchler, 2011).

Table 2. Household Hunger Scale Categorical Indicator

Household Hunger Score	Household Hunger Categories
0 – 1	Little to no hunger in the household
2 – 3	Moderate hunger in the household
4 – 6	Severe hunger in the household

(Ballard et al., 2011)

3. Coping Strategies Index (CSI)

The coping mechanisms undertaken by the study population were assessed using the Arabic version of the Coping Strategies Index Questionnaire that was used by the UNICEF and the World Food Program (WFP) Lebanon, in collaboration with World Health Organization (WHO) and with support of Action Contre la Faim (ACF) Lebanon to assess the food security of Syrian refugees in Lebanon (UNICEF et al., 2012; UNRWA & WFP, 2014). This tool is composed of eight questions to households who reported experiencing some form of food shortage in the past month. The CSI was used to assess the severity of food insecurity and to explore what coping mechanisms are being adopted by households due to food shortage. For example, mothers were asked if they ever had to send their child elsewhere to eat, or whether someone in the household had to go a whole day without eating.

The use of strategies were be reported as frequency (“all the time”, “pretty often”, “hardly at all”, “never” or “NA” -not applicable). However, a number of coping strategies were not reported as frequencies because they were one-time coping mechanisms such as

having a child get married under the age of 16 etc. Thus, a total of nine coping strategies were reported as Yes and No (See table 8).

4. Household Food Consumption

Household dietary diversity was assessed using the Household Food Consumption Score derived from the Vulnerability Assessment of Syrian Refugees in Lebanon report in 2015 (UNHCR et al., 2015). This score is comprised of 17 groups that can be scored from 0 to 7, depending on the number of days each food group has been consumed in the last seven days. Each group was expressed as means (±SD). This wide range of food groups allows to catch the intake of various nutrients (vitamin A from vitamin A fruits and vegetables, iron from flesh meat and organ meats, and calcium from dairy products etc.) at the household level.

Another score called the Food Consumption Score (FCS), was derived from these 17 groups after further grouping the food items into 9 groups (Table 7). This is a composite indicator that reflects the diversity of the diet, nutrient value and frequency of consumption of the consumed food groups. Each group was assigned a weight reflecting its nutrient density, and the frequency of all food items surveyed in each food groups were summed. The FCS was then calculated by multiplying each food group frequency by its weight and summing these scores into one composite score. Households were then classified into three categories based on the score: poor, borderline, and acceptable food consumption score. Cut-offs for classification of the household's food consumption are described in table8 (UNHCR et al., 2015; WFP, 2009).

Table 3. FCS food groups categorization and their corresponding weight

HFCS food groups	FCS food groups	Weight of the FCS food group
Cereals, Grains and Cereal Products Bread and Pasta Roots and Tubers	Cereals and Tubers	2
Nuts and Pulses	Pulses	3
Green leafy vegetables Vitamin A rich vegetables Other vegetables	Vegetables	1
Vitamin A rich fruits Other fruits	Fruits	1
Liver and organ meats Flesh meat Eggs Fish	Meat and fish	4
Sugar/Sugar Products/Honey	Sugar	0.5
Milk/Milk Products	Milk	4
Fats and oils	Oil	0.5
Spices/Condiments	Condiments	0

(UNHCR et al., 2015)

Adjusted thresholds have been suggested by the World Food Program for populations where the diet is highly based on oil and sugar and there is frequent consumption of staple food (seven days) even when the consumption of food groups is rare, as is the case with refugees and impoverished communities. In such cases, the score will already reach the minimum of 21 but cannot really be classified as borderline diet. Therefore, additional 7 points were added to each threshold to account for the oil and sugar daily consumption, and thresholds were raised from 21 to 28 and from 35 to 42 (Table 9) (WFP, 2008).

Table 4. Household Food Consumption Score cut offs

Food Consumption level	Cut-offs	Adjusted cut-offs
Poor Food Consumption	0 - 21	0 - 28
Borderline Food Consumption	21.5 – 35	28.5 – 42
Acceptable Food Consumption	> 35	> 42

(WFP, 2008, 2009)

5. Dietary Intake Assessment

Face-to-face interview were conducted to collect one 24-hour dietary recalls from each mother and child using the USDA Multiple-Pass method. In this method, the interviewee quickly listed foods without interruption, he was then probed for forgotten foods list (such as beverages, sweets, savory snacks, fruit, vegetables among others), and the time and occasion of eating were collected. In addition, a comprehensive description of foods and amounts eaten was gathered in a third step called the detail cycle, and the last step was the final probe review (Conway, Ingwersen, & Moshfegh, 2004; Johnson, 2002). Description of food amounts consumed were collected with the aid of the validated Nutrition Consulting Enterprises (NCE) two-dimensional (2D) food portion visual for adults. In addition, pictures of food items were presented where possible to facilitate the dietary recall of children (Appendix XI) (Millen & Morgan, 1996).

The Nutritionist Pro™ software by Axxya Systems that uses the United States Department of Agriculture (USDA) database and standardized recipes was the program of choice to proceed with the dietary intake analysis of both mothers and children. Analyses of traditional Lebanese foods and recipes as well as nutrient information of composite

dishes were also added to the Nutritionist Pro food database (Pellet & Shadarevian, 2013). Data entry was completed by a trained field surveyor to minimize errors. Both descriptive and comparative analyses were undertaken for the dietary intake analysis.

In the descriptive analysis, macronutrients including carbohydrates (CHO), protein, fat, saturated fat (sat fat) as well as sugar were expressed as a percentage of the total caloric intake, while energy intake and other micronutrients were expressed as means with SD.

In comparative analysis, the average of the percentage of macronutrient intake from total caloric intake was compared with acceptable macronutrient distribution ranges (AMDR) in order to calculate nutritional adequacy, based on references from the American Heart Association (AHA), the Institute of Medicine (IOM), and the United States Department of Agriculture (USDA) (See table 5).

Table 5. Acceptable Macronutrient Distribution Range

Macronutrient	Acceptable values for mothers	Acceptable values for children (4-10 y)
Carbohydrates, % kcal	45%-65%	45%-65%
Carbohydrates, g/day	130	130
Added sugars, % kcal	< 10%	< 10%
Protein, % kcal	10%-35%	10%-30%
Protein, g/day	46	19
Total fat, % kcal	20%-35%	25%-35%
Saturated fat, % kcal	< 10%	< 10%

(AHA, 2016; IOM, 2002; USDA, 2015a) (Manore, 2005)

6. Anthropometrics Measurements

Standardized techniques and calibrated equipment were used to measure the weight, height, waist circumference, and mid-upper arm circumference of mothers and children. Subjects were weighed to the nearest 0.1 kg in light indoor clothing with bare feet or stockings on an electronic balance. Height was measured to the nearest 0.1 cm without shoes with a stadiometer. Waist circumference and MUAC were measured to the nearest 0.1 cm using non-stretchable measuring tapes.

Children

Using children's age, gender, and anthropometric measurements (weight, height, waist circumference, and MUAC-for children less than 5 years), nutritional status was assessed. Children's growth indicators' interpretation are in table 6.

Table 6. CDC and WHO growth indicators' cut offs for children 4-10 years.

Z-score	Growth indicators			
	Length/height-for-age	**Weight-for-age**	**Weight-for-length/height**	**BMI-for-age**
Above 3			Obese	Obese
Above 2			Overweight	Overweight
Above 1			Possible risk of overweight	Possible risk of overweight
0 (median)				
Below -1				
Below -2	Stunted	Underweight	Wasted	Wasted
Below -3	Severely stunted	Severely underweight	Severely wasted	Severely wasted

((WHO), 2008)

The ratio of waist circumference to height (WHtR) is another measure of nutritional status that was used for children, with a ratio >0.5 considered as "elevated", and ≤0.5 as "normal" (Maffeis, Banzato, & Talamini, 2008; McCarthy & Ashwell, 2006; Nasreddine et al., 2014). WHtR was found to be correlated with abdominal obesity, and a higher value of this ratio suggest greater risk of obesity-related cardiovascular diseases (Lee, Huxley, Wildman, & Woodward, 2008).

Mid-upper arm circumference (MUAC) has been extensively used as a tool to assess the nutritional status of children less than 5 years of age. This age group is at an increased risk of malnutrition and at a stage in life where malnourishment may have severe impacts on growth (Goossens et al., 2012). MUAC has also recently emerged as a possible

indicator of the nutritional status of women of reproductive age (Craig, Bland, Ndirangu, & Reilly, 2014). This measurement allows us to identify if individuals are acutely malnourished and the level of severity (mild, moderate, or severe acute malnutrition). For these reasons, MUAC was only collected in children aged 4 to 5 years old and mothers. Measurements were taken using UNICEF developed measuring tapes for MUAC measurement (UNICEF).

MUAC values for mothers and children were assessed based on table 7 (WFP, 2009).

Table 7. MUAC measurements' cut-off values

Nutritional status	**Women**	**Children**
Little or no acute malnutrition	> 22.5 cm	> 12.5 cm
Moderate Acute malnutrition	21-22.5 cm	11-12.5 cm
Severe Acute Malnutrition	< 21 cm	< 11.0 cm

(IFRC, 2006; WFP, 2009)

Mothers

Mother's anthropometric measurements were also collected (weight, height, waist circumference, MUAC). BMI was used to assess the prevalence rates of severely underweight, underweight, overweight, and obese. The body mass index (BMI) was calculated as weight (kg) divided by the height squared (m^2).

$$BMI\ (Kg/m2) = \frac{Wt(Kg)}{Ht(m)}$$

BMI of mothers was classified into 3 different categories, underweight (BMI < 18.5 kg/m^2), normal range (BMI: 18.5-24.9 kg/m^2), and overweight (BMI ≥ 25 kg/m^2) according to the WHO classification (WHO, 2016).

Waist circumference, an indicator of abdominal obesity, was assessed. Values above 88 cm in mothers were considered elevated (Grundy et al., 2004).

F. Ethical approval

The Institutional Review Board (IRB) of the Social and Behavioral Sciences at the American University of Beirut (AUB) reviewed and approved the protocol of this study (Appendix I).

Interviewers who were involved in this study received ethical training prior to the start of the data collection and successfully completed the Collaborative Institutional Training Initiative (CITI) course as per the requirement of the IRB. Trained interviewers explained the purpose of the study to study participants briefly using an oral script to obtain preliminary approval for participation. Participants were also assured that their participation in this study was completely voluntary and that they are free to leave the study at any time without any penalty. In addition, they were informed and assured that their decision to not participate in this study will not influence their relationship with AUB

in any possible way. A written consent from the mothers and the assent of children aged more than 6 years were ensured prior to starting the interview process.

In addition, the contact information of the primary investigator and the Social & Behavioral Sciences Institutional Review Board at AUB were provided to participants in case any clarification is needed.

Interviewers assured mothers that all answers are confidential and that all information obtained will not be shared with anyone other than the investigators' research unit and that the completed questionnaires and data will be kept safely in locked cabinets at a secure location at AUB.

G. Statistical Analysis

Socio-demographic, anthropometric, household food security, dietary, and household food consumption data were entered into and analyzed using the Statistical Package for the Social Sciences (SPSS) program (version 21.0). Descriptive statistics were expressed as means and standard deviations (SD) for continuous variables and as proportions and frequencies for categorical variables. Independent t-tests for continuous variables and chi-squared tests for categorical variables were used to detect differences between groups. Statistical significance was detected at a p-value less than 0.05.

Associations between Lebanese from host communities and Syrian refugees as well as between Lebanese from low and high Syrian refugee load villages and the following variables were explored using Chi-square tests:

i. Categorical socio-economic characteristics
ii. Household food security status (food secure, mildly/moderately food insecure, and severely food insecure)
iii. Household hunger status (little to no hunger, moderate hunger, and severe hunger in the household)
iv. Use of coping strategies (yes or no)
v. Nutritional status (anthropometric characteristics) of mothers and children (categorical)
vi. Dietary characteristics of mothers' and children's diet (proportions and frequencies)
vii. Household food consumption status (poor/borderline and acceptable food consumption)

In addition, independent t-tests were used to assess the associations of the previous groups with the following variables (means ± SD and *p*-value):

i. Continuous socio-economic characteristics
ii. Household food consumption groups' frequency of intake
iii. Dietary characteristics of mothers and children

H. List of variables

A summary of the variables analyzed in this study is presented in table 10. These variables are derived from the questionnaire and the 24-hour dietary recall (Appendix VIII).

Table 8. List of variables and their description

Section or # of the question	Variable	Type of the variable	Original question	Analyzed and interpreted
Demographic Characteristics Section				
Q3	Marital status	Categorical	1.Married 2.Divorced 3.Widowed 4.Other	1. Married 2. Divorced/Widowed/Other
Q6 and Q7	Highest educational level	Categorical	1.No schooling 2.Primary school 3.Intermediate school 4.High school 5.Technical diploma 6.University degree	1. No schooling 2. Primary school 3. Intermediate school 4. High school and higher
Q8 and Q9	Kind of work	Categorical	1. Not working/Homemaker 2. Employee, full time 3. Employee, part time 4. Daily manual laborer 5. Self employed 6. Other	1. Unemployed 2. Employed

Q16	Monthly income	Categorical	1. Less than 300,000 2. 300,001 – 600,000 3. 600,001 – 999,000 4. 1,000,000 – 1,499,000 5. 1,500,000 – 1,999,000 6. 2,000,000 – 2,499,000 7. 2,500,000 – 3,000,000 8. Greater than 3,000,000	1. Less than 300,000 2. 300,001-1,000,000 3. 1,000,000-1,500,000 4. > 1,500,000
Household Food Security Measurement				
Q31-32-33-34-35-36-37-38-39	Food security status	Categorical	1. Food secure 2. Mildly food insecure 3. Moderately food insecure 4. Severely food insecure	1. Food secure 2. Food insecure AND 1. Food secure 2. Mildly/moderately food insecure 3. Severely food insecure
Q37-38-39	Household Hunger Scale	Categorical	Mean (±SD)	1. Little to no hunger in the household 2. Moderate hunger in the household 3. Severe hunger in the household
Coping Strategies Index Questionnaire				
Q41	Relied on less preferred and less expensive foods?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never	• Yes o All the time o Pretty often o Once in a while o Hardly at all • No o Never
Q41	Borrowed money to buy food?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never	• Yes o All the time o Pretty often o Once in a while o Hardly at all • No

				○ Never
Q41	Relied on help from a friend or relative to secure food?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never	• Yes ○ All the time ○ Pretty often ○ Once in a while ○ Hardly at all • No ○ Never
Q41	Limited portion size at meal times?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never	• Yes ○ All the time ○ Pretty often ○ Once in a while ○ Hardly at all • No ○ Never
Q41	Restricted consumption by adults in order for small children to eat?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never	• Yes ○ All the time ○ Pretty often ○ Once in a while ○ Hardly at all • No ○ Never
Q41	Reduced number of meals eaten in a day?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never	• Yes ○ All the time ○ Pretty often ○ Once in a while ○ Hardly at all • No ○ Never
Q41	Sent family members eat elsewhere?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never	• Yes ○ All the time ○ Pretty often ○ Once in a while ○ Hardly at all • No ○ Never
Q41	Spend whole day without eating?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never	• Yes ○ All the time ○ Pretty often ○ Once in a while ○ Hardly at all

				• No ○ Never
Q41	Spent savings?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never 6. NA	1. Yes 2. No
Q41	Sold jewelry or household goods (furniture, television, radio…)?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never 6. NA	1. Yes 2. No
Q41	Sold transportation means?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never 6. NA	1. Yes 2. No
Q41	Sold house or land?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never 6. NA	1. Yes 2. No
Q41	Reduce essential non-food expenditures such as education, health?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never 6. NA	1. Yes 2. No
Q41	Withdrew children from school?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never 6. NA	1. Yes 2. No
Q41	Have school children (6	Categorical	1. All the time 2. Pretty often 3. Once in a while	1. Yes 2. No

	-15 years old) involved in income generation?		4. Hardly at all 5. Never 6. NA	
Q41	Have a child married under the age of 16?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never 6. NA	1. Yes 2. No
Q41	Sent an adult household member to seek work outside of Lebanon?	Categorical	1. All the time 2. Pretty often 3. Once in a while 4. Hardly at all 5. Never 6. NA	1. Yes 2. No
Household Food Consumption				
Section VI	Food consumption score	Categorical	1. Poor FC 2. Borderline FC 3. Acceptable FC	1. Poor FC/Borderline FC 2. Acceptable FC
Anthropometric Assessment Section				
Q26 and Q30	MUAC	Categorical	1. Normal 2. Moderate acute malnutrition 3. Severe Acute Malnutrition	1. Normal 2. Moderate acute malnutrition/ Severe Acute Malnutrition
Q23-24	BMI (for mothers)	Categorical	1. Underweight 2. Normal 3. Overweight 4. Obese	1. Underweight/Normal 2. Overweight 3. Obese
Q28-29	WHtR	Categorical	Mean (±SD)	1. Normal 2. Elevated
Q30	MUAC z score categories	Categorical	1. Normal 2. Moderate wasting MAM 3. Severe wasting SAM	1. Normal 2. Moderate wasting MAM/ Severe wasting SAM
Q27-28	BMI for age z score categories	Categorical	1. Severely wasted 2. Wasted 3. Normal 4. At risk of overweight	1. Severely wasted/Wasted/Normal 2. At risk of overweight/Overweight/ obese

			5. Overweight 6. Obese	
Q28	Height for age z score	Categorical	1. Normal 2. Stunted 3. Severely stunted	1. Normal 2. Stunted/severely stunted
Q27	Weight for age z score	Categorical	1. Normal 2. Underweight 3. Severely underweight	1. Normal 2. Underweight/severely underweight
Q27-28	Weight for height z score	Categorical	1. Severely wasted 2. Wasted 3. Normal 4. At risk of overweight 5. Overweight 6. Obese	1. Severely wasted/Wasted/Normal 2. At risk of overweight/Overweight/obese

CHAPTER III

RESULTS

Out of a total of 493 households that were approached, 466 accepted to take part in the study (response rate 94.5%). The main reasons for households to refuse to participate in the study were the lack of interest or time commitment at the time of household (HH) visits. However, only 333 met the eligibility criteria: presence of children between the age of 4 and 10 years, mother being at home, children being at home, mother and child not suffering from any medical condition that may affect their eating pattern and body composition, mother not taking medication that may interfere with her eating pattern and body composition, and the mother-child pair being of the same nationality (either both Lebanese (Lb) or both Syrian refugees (SR)). Almost all Syrian refugee families (95.3%) were living in the same locality since more than 6 months.

A. Distribution of participating households' across villages in Akkar

A total of 333 households were recruited from the district of Akkar for the study: 116 Lebanese households and 108 Syrian refugee households from villages with high Syrian refugee load, as well as 109 Lebanese host households from villages with low Syrian refugee load (Table 9).

Table 9. Distribution of Lebanese and Syrian refugee sample across the villages.

Akkar villages	Lebanese households n(%)	Syrian Refugee households n(%)
Villages with high Syrian refugee load		
Bebnine	33 (14.7)	43 (39.8)
Berqayel	33 (14.7)	22 (20.4)
Khreibet El-jendi	22 (9.8)	14 (13)
Mhammara	28 (12.4)	29 (26.9)
Villages with low Syrian refugee load*		
Ain Tinta	29 (12.9)	-
Beit Younes	25 (11.1)	-
Dinbou	25 (11.1)	-
Qornet Akkar	30 (13.3)	-

* Households recruited from these villages included only Lebanese households

B. Socio-demographic Characteristics of the Study Population

The demographic and socio-economic characteristics of the overall study population (Lebanese and Syrian refugee households) are presented in table 10-a. The mean number of individuals in Syrian refugee and Lebanese households was 7.3 ± 3.0 and 6.2 ± 2.2, respectively (p=0.001). The average number of children in both Lebanese and Syrian refugee households was 4.0 ± 1.9 children, with an average age of child participant of 6.7 ± 2.1 years. Participating children were equally distributed across gender (52% female vs 48% male). Overall, the majority of mothers from this study sample (Lebanese and Syrian) were married (96%). Illiteracy rate among mothers from Lebanese households was 6% whereas among mother from Syrian refugee households was 18% (p = 0.004), with <1% of mothers from both communities having majored in a health-related field. The majority of mothers were unemployed (88% of mothers from Lebanese households and

97% from Syrian refugee households). Average illiteracy rate among spouses from both communities was 12%, and 20.5% of spouses had a high educational level (went to high school or higher). Unemployment rates of spouses reached 32.7% and 10.2% in Syrian refugee and Lebanese households respectively ($p < 0.001$). More than half of Syrian refugee households and almost 7% of Lebanese households had a monthly income of less than 300,000 Lebanese Pounds ($p < 0.001$), with the majority of Syrian refugee households (97%) and one third of Lebanese households being overcrowded ($p < 0.001$; crowding index above 2). Less than 2% of Syrian refugee households reported owning their home compared with 97% of Lebanese households ($p<0.001$). The average expenditure of Lebanese households was 935,741 ± 822,029 L.L. while that of Syrian refugee households was 533,938 ± 248,118 L.L. ($p < 0.001$) with more than 50% of the monthly expenditure spent on food (63.9 ± 32.3%). Significantly more Syrian refugee households reported receiving assistance in the last 3 months compared with Lebanese households (85% vs 14% respectively, $p<0.001$).

Table 10-a. Socio-demographic characteristics of the study population (n=333)

	Total sample Mean ± SD or n (%) (n=333)	**Lebanese** Mean ± SD or n (%) (n=225)	**Syrian refugee** Mean ± SD or n (%) (n=108)	***p*-value**
Demographic characteristics of the household				
Number of individuals in the household	6.6 ± 2.5	6.2 ± 2.2	7.3 ± 3.0	**0.001**
Average number of children in the household	4.0 ± 1.9	4.0 ± 2.0	4.0 ± 1.8	0.844
Average age of child participant (years)	6.7 ± 2.1	6.8 ± 2.1	6.9 ± 1.9	0.348
Gender of child participant				
Female	172 (51.7)	118 (52.4)	54 (50.0)	0.676
Male	161 (48.3)	107 (47.6)	54 (50.0)	
Age of the mother (Years)	33.3 ± 7.5	34.2 ± 7.5	31.4 ± 7.1	**0.001**
Mother's marital status				
Married	319 (96.1)	218 (97.3)	101 (93.5)	0.094
Divorced/Widowed/Other	13 (3.9)	6 (2.7)	7 (6.5)	
Mother's educational level				**0.004**
Illiterate	32 (9.6)	13 (5.8)	19 (17.6)	
Primary school	126 (37.8)	85 (37.8)	41 (38)	
Intermediate school	100 (30.0)	71 (31.6)	29 (26.9)	
High school or above	75 (22.5)	56 (24.9)	19 (17.6)	
Mother majored in health related field *				
Yes	3 (0.9)	3 (1.3)	0 (0.0)	0.228
Mother's employment status				
Not employed	304 (91.3)	199 (88.4)	105 (97.2)	**0.008**
Employed	29 (8.7)	26 (11.6)	3 (2.8)	
Spouse's educational level				0.347
Illiterate	40 (12.0)	28 (12.4)	12 (11.2)	
Primary school	145 (43.7)	103 (45.8)	42 (39.3)	
Intermediate school	79 (23.8)	54 (24.0)	25 (23.4)	
High school/Technical school/University degree	68 (20.5)	40 (17.8)	28 (26.2)	
Spouse's employment status				
Not employed	58 (17.5)	23 (10.2)	35 (32.7)	**< 0.001**
Employed	274 (82.5)	202 (89.8)	72 (67.3)	
Socio-economic characteristics of households				

Monthly income (L.L.)				**< 0.001**
Less than 300,000	74 (23.8)	14 (6.7)	60 (58.3)	
300,000-1,000,000	158 (50.8)	116 (55.8)	42 (40.8)	
More than 1,000,000	79 (25.4)	78 (37.5)	1 (1.0)	
Crowding status				
Not crowded (< 2 persons per room)	153 (46.2)	67.0 (150)	3 (2.8)	
Overcrowded (≥ 2 persons per room)	178 (53.8)	74 (33.0)	104 (97.2)	**< 0.001**
Assets:				
Owns home	219 (66.0)	217 (96.9)	2 (1.9)	**< 0.001**
Owns land	73 (22.0)	73 (32.6)	0 (0.0)	**< 0.001**
Owns vehicle	144 (43.4)	144 (64.3)	0 (0.0)	**< 0.001**
Total number of assets	1.4 ± 1.4	2.1 ± 1.2	0.2 ± 0.1	**< 0.001**
Number of electrical appliances	3.5 ± 1.7	4.1 ± 1.5	2.3 ± 1.5	**< 0.001**
Total expenditure in the last month (L.L)**	838,289 ± 745,489	935,741 ± 822,029	533,938 ± 248,118	**< 0.001**
Average percentage of total expenditure spent on: **				
Food	63.9 ± 32.3	68.2 ± 33.4	49.5 ± 23.3	**< 0.001**
Health	15.7 ± 17.2	14.6 ± 17.3	19.1 ± 16.6	0.066
Education	14.3 ± 29.2	17.9 ± 32.6	3.4 ± 7.1	**< 0.001**
Other	9.0 ± 18.4	2.2 ± 8.2	29.7 ± 24.5	**< 0.001**
Received assistance in the last 3 months				
Yes	123 (37.0)	31 (13.8)	92 (85.2)	**< 0.001**
No	209 (63.0)	193 (86.2)	16 (14.8)	
Forms of assistance				
In kind assistance	51 (15.4)	3 (1.3)	48 (44.4)	**< 0.001**
E-card/voucher	88 (26.5)	3 (1.3)	85 (78.7)	**< 0.001**
In conditional cash *	2 (0.6)	0 (0.0)	2 (1.9)	**0.042**
Other types of assistance	32 (9.7)	27 (12.1)	5 (4.6)	**0.031**

* Some cells have expected count less than 5.

** Expenditure was reported by 79.3% out of 333 households (203 Lebanese and 61 Syrian refugees) in our study population.

Table 10-b explores the demographic and socio-economic differences between Lebanese households from low versus high Syrian refugee load villages. These two groups appeared to be largely similar with no major differences except at the level of land ownership, number of electrical appliances owned, and monthly expenditure whereby Lebanese from high Syrian refugee load villages had significantly lower percentage of owning lands and higher values of the electrical appliances and monthly expenditure ($p<0.05$).

Table 10-b. Socio-demographic characteristics of Lebanese in the study population (n=225)

	Total Lebanese Mean ± SD or n (%) (n=225)	**Lb (low SR load) (n=95)** Mean ± SD or n (%) (n=109)	**Lb (high SR load) (n=105)** Mean ± SD or n (%) (n=116)	***p*-value**
Demographic characteristics of the household				
Number of individuals in the household	6.2 ± 2.2	6.2 ± 2.5	6.3 ± 1.8	0.734
Average number of children in the household	4.0 ± 2.0	4.0 ± 2.3	4.1 ± 1.7	0.850
Average age of child participant (years)	6.7 ± 2.1	6.6 ± 2.2	6.8 ± 2.1	0.566
Gender of child participant				
Female	118 (52.4)	64 (58.7)	54 (46.6)	0.068
Male	107 (47.6)	45 (41.3)	62 (53.4)	
Age of the mother (Years)	34.2 ± 7.5	33.6 ± 8.0	34.8 ± 6.8	0.246
Mother's marital status *				
Married	218 (97.3)	106 (97.2)	112 (97.4)	0.947
Divorced/Widowed/Other	6 (2.7)	3 (2.8)	3 (2.6)	
Mother's educational level				0.726
Illiterate	13 (5.8)	5 (4.6)	8 (6.9)	
Primary school	85 (37.8)	39 (35.8)	46 (39.7)	
Intermediate school	71 (31.6)	36 (33.0)	35 (30.2)	
High school or above	56 (24.9)	29 (26.6)	27 (23.3)	
Mother majored in health related field *				
Yes	3 (1.3)	1 (0.9)	2 (1.7)	0.598
Mother's employment status				
Not employed	199 (88.4)	92 (84.4)	107 (92.2)	0.066
Employed	26 (11.6)	17 (15.6)	9 (7.8)	
Spouse's educational level				0.359
Illiterate	28 (12.4)	11 (10.1)	17 (14.7)	
Primary school	103 (45.8)	48 (44.0)	55 (47.4)	
Intermediate school	54 (24.0)	26 (23.9)	28 (24.1)	
High school/Technical school/University degree	40 (17.8)	24 (22.0)	16 (13.8)	
Spouse's employment status				
Not employed	23 (10.2)	14 (12.8)	9 (7.8)	0.208
Employed	202 (89.8)	95 (87.2)	107 (92.2)	
Socio-economic characteristics of households				

Monthly income (L.L.)				0.731
Less than 300,000	14 (6.7)	6 (6.4)	8 (7.0)	
300,000-1,000,000	116 (55.8)	50 (53.2)	66 (57.9)	
More than 1,000,000	78 (37.5)	38 (40.4)	40 (35.1)	
Crowding status				
Not crowded (< 2 persons per room)	67.0 (150)	77 (71.3)	73 (62.9)	0.183
Overcrowded (≥ 2 persons per room)	74 (33.0)	31 (28.7)	43 (37.1)	
Assets:				
Owns home*	217 (96.9)	104 (96.3)	113 (97.4)	0.631
Owns land	73 (32.6)	44 (40.7)	29 (25.0)	**0.012**
Owns vehicle	144 (64.3)	68 (63.0)	76 (65.5)	0.690
Total number of assets	2.1 ± 1.2	2.1 ± 1.0	2.1 ± 1.3	0.877
Number of electrical appliances	4.1 ± 1.5	3.9 ± 1.4	4.4 ± 1.5	**0.017**
Total expenditure in the last month (L.L)**	935,741 ± 822,029	811,490 ± 351,720	1,051,710 ± 1,081,190	**0.033**
Average percentage of total expenditure spent on: **				
Food	68.2 ± 33.4	70.6 ± 41.5	66.0 ± 23.5	0.333
Health	14.6 ± 17.3	16.9 ± 20.3	12.5 ± 13.8	0.068
Education	17.9 ± 32.6	19.8 ± 43.1	16.1 ± 18.1	0.422
Other	2.2 ± 8.2	1.4 ± 4.9	3.0 ± 10.6	0.169
Received assistance in the last 3 months				
Yes	31 (13.8)	15 (13.9)	16 (13.8)	0.983
No	193 (86.2)	93 (86.1)	100 (86.2)	
Forms of assistance				
In kind assistance	3 (1.3)	0 (0.0)	3 (2.6)	0.092
E-card/voucher	3 (1.3)	0 (0.0)	3 (2.6)	0.092
Other types of assistance	27 (12.1)	15 (13.9)	12 (10.4)	0.429

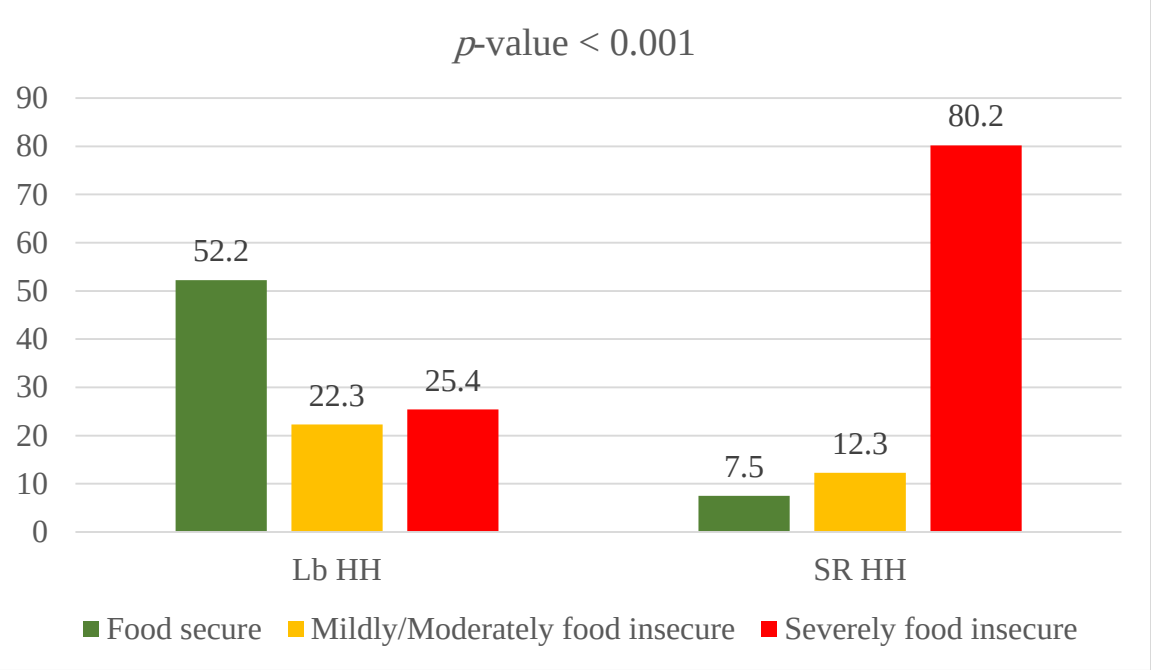
* Some cells have expected count less than 5.

** Expenditure was reported by 90.2% out of 225 Lebanese households in our study population.

C. Food Security and Household Hunger Status among Study Sample

The food security status of Lebanese and Syrian refugee households in the Governorate of Akkar are displayed in figure 1-a. A higher percentage of Syrian refugee households appear to be severely food insecure compared to Lebanese households (80% vs 25%, respectively). Lebanese households were found to have a higher level of mild to moderate food insecurity compared to Syrian refugee households (22% vs 12% respectively; $p<0.001$).

Figure 1-a. Food security status of Lebanese and Syrian refugee households in the Governorate of Akkar, North of Lebanon (n=330)



In addition, a significant difference in the food security status of Lebanese households from low versus high SR load villages was found (p=0.02). Lebanese households from low Syrian refugee load villages were more food secure and had a lower level of mild to moderate food insecurity compared to Lebanese households from high Syrian refugee load villages (60% vs 45% and 15% vs 29% respectively; figure 1-b).

Figure 1-b: Food security status of Lebanese households from low versus high Syrian refugee load villages in the Governorate of Akkar, North of Lebanon (n=224)

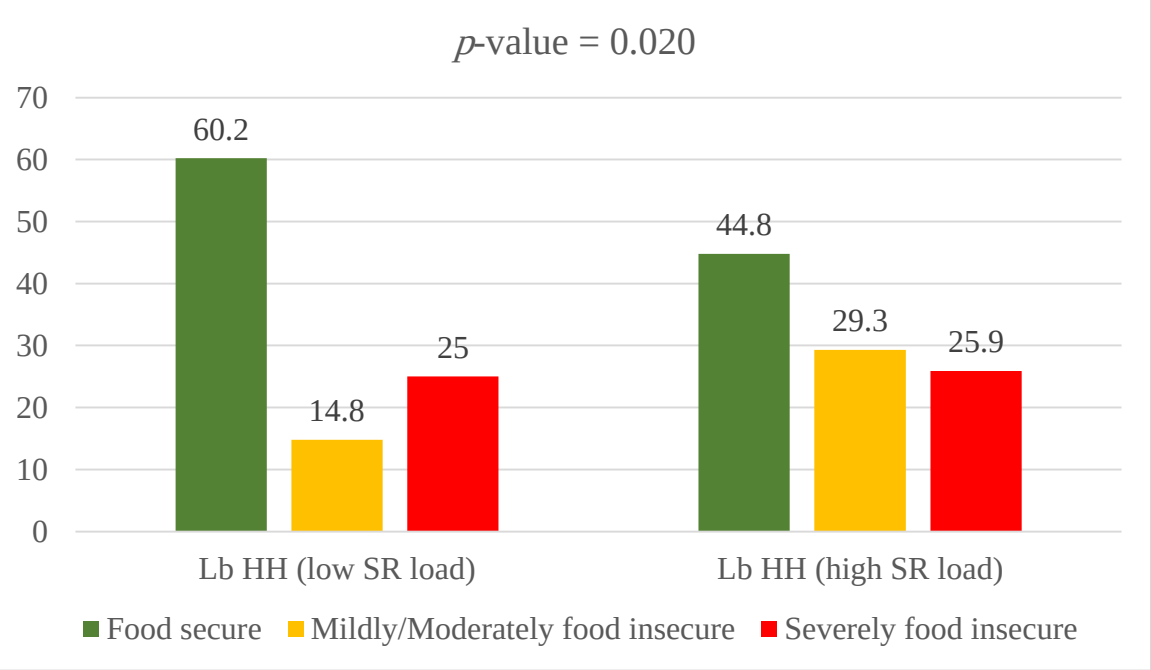
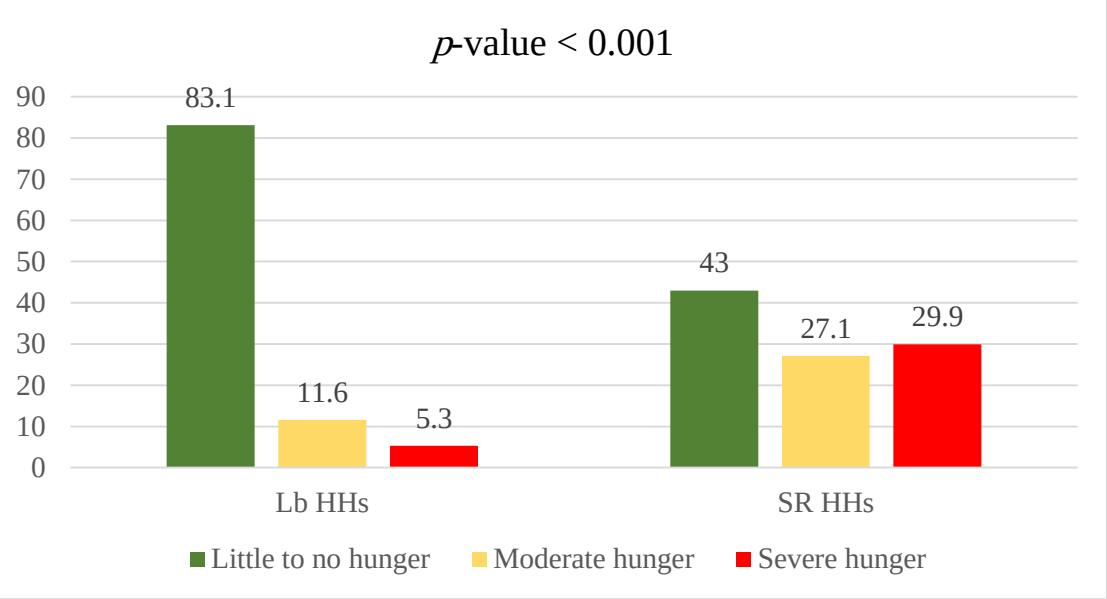


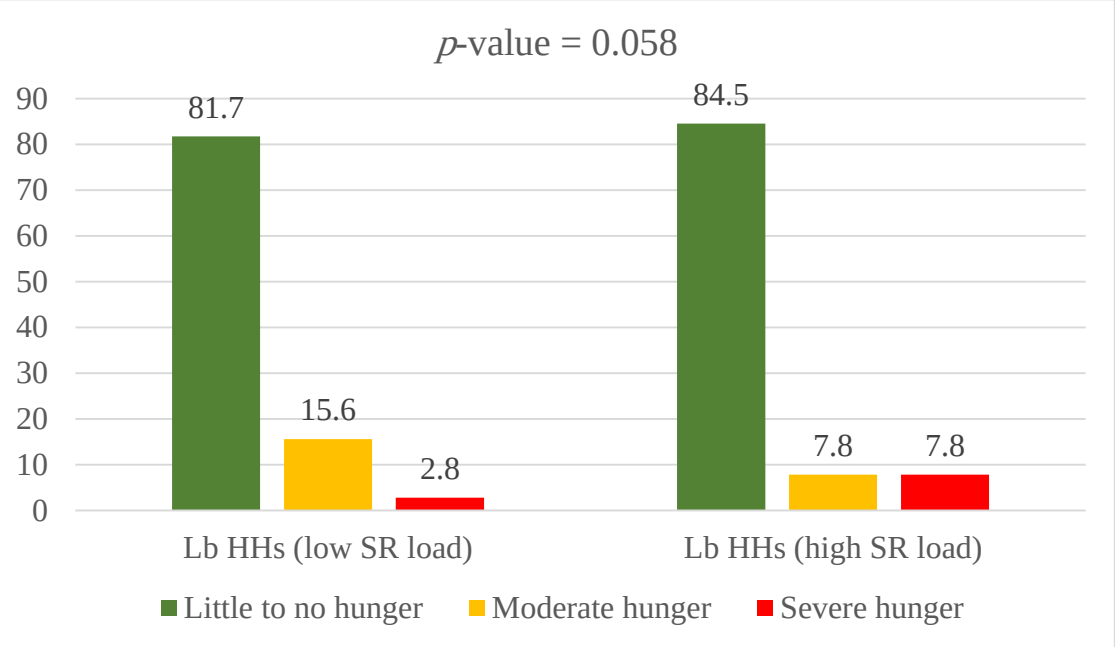
Figure 2-a presents the household hunger status of Lebanese and Syrian refugee households. It was noticed that a total of 57% of Syrian refugee households suffer from any form of hunger with 30% suffering from a severe form of hunger. A lower yet still considerable proportion of Lebanese households reported suffering from any form of household hunger, 17%, with 5% suffering from severe hunger.

Figure 2-a. Household Hunger status of Lebanese and Syrian refugee households in the Governorate of Akkar, North of Lebanon (n=332).



Lebanese households from low Syrian refugee load villages had higher levels of moderate to severe hunger compared to Lebanese households from high Syrian refugee load villages, but this difference did not reach statistical significance (16% vs 8%, respectively; p=0.058). It was also noteworthy that Lebanese households from high Syrian refugee load villages had higher rates of severe hunger (8% vs 3% among Lebanese households from low Syrian refugee load villages; figure 2-b).

Figure 2-b. Household Hunger status of Lebanese and Syrian refugee households in the Governorate of Akkar, North of Lebanon (n=225)



D. Coping Strategies among Study Sample

Table 11-a explores the coping strategies adopted by Lebanese and Syrian refugee households. Overall, significantly more Syrian refugee households reported depending on any form of coping strategies to adjust for food insecurity compared to Lebanese households (100% vs 61%, respectively; $p<0.001$). More than 90% of Syrian refugee households reported relying on less preferred and less expensive foods as well as borrowing money to buy food, while almost a quarter of these households reported spending a whole day without eating and withdrawing children from school. Lebanese households, on the other hand, were found to resort more than Syrian refugee households to following coping mechanisms: relying on help from a friend or relative to secure food, selling jewelry or household goods, selling transportation means, selling house or land, and reducing essential non-food expenditures. No households from either groups reported sending an adult household member to seek work outside of Lebanon.

Table 11-a. Coping strategies of Lebanese and Syrian refugees households (n=246)

	Lebanese (n=225) **n (%)**	**Syrian refugee (n=108)** **n (%)**	***p*-value**
Had enough food or money to buy food in the last month			
Yes	138 (61.3)	108 (100.0)	**< 0.001**
No	87 (38.7)	0 (0.0)	
Relied on less preferred and less expensive foods?			
Yes	121 (87.7)	106 (98.1)	**0.002**
No	17 (12.3)	2 (1.9)	
Borrowed money to buy food?			
Yes	116 (84.1)	98 (90.7)	0.122
No	22 (15.9)	10 (9.3)	
Relied on help from a friend or relative to secure food?			
Yes	93 (67.4)	65 (60.2)	0.242
No	45 (32.6)	43 (39.8)	
Limited portion size at meal times?			
Yes	84 (60.9)	88 (81.5)	**< 0.001**
No	54 (39.1)	20 (18.5)	
Restricted consumption by adults in order for small children to eat?			
Yes	70 (51.5)	82 (78.1)	**< 0.001**
No	66 (48.5)	23 (21.9)	
Reduced number of meals eaten in a day?			
Yes	72 (52.2)	90 (83.3)	**< 0.001**
No	66 (47.8)	18 (16.7)	
Sent family members to eat elsewhere?			
Yes	39 (28.5)	44 (41.1)	0.089
No	98 (71.5)	63 (58.9)	
Spend whole day without eating?			
Yes	17 (12.3)	28 (25.9)	**0.006**
No	121 (87.7)	80 (74.1)	
Spent savings?			

Yes	27 (19.6)	26 (24.3)	0.372
No	111 (80.4)	81 (75.7)	
Sold jewelry or household goods (furniture, television, radio…)?			
Yes	34 (24.6)	19 (17.6)	0.182
No	104 (75.4)	89 (82.4)	
Sold transportation means?			
Yes	14 (10.1)	0 (0.0)	**< 0.001**
No	124 (89.9)	108 (100.0)	
Sold house or land? *			
Yes	3 (2.2)	0 (0.0)	0.122
No	134 (97.8)	108 (0.0)	
Reduce essential non-food expenditures such as education, health?			
Yes	58 (42.3)	42 (39.3)	0.627
No	79 (57.7)	65 (60.7)	
Withdrew children from school?			
Yes	17 (12.4)	26 (24.3)	**0.016**
No	120 (87.6)	81 (75.7)	
Have school children (6 -15 years old) involved in income generation?			
Yes	12 (8.7)	12 (11.1)	0.526
No	126 (91.3)	96 (88.9)	
Have a child married under the age of 16?			
Yes	6 (4.3)	7 (6.5)	0.458
No	132 (95.7)	101 (93.5)	
Sent an adult household member to seek work outside of Lebanon? **			
Yes	0 (0.0)	0 (0.0)	-
No	138 (100.0)	108 (100.0)	

* Some cells have expected count less than 5.

** *p*-value not calculated

Individual coping mechanisms that were adopted differed between the two communities' households ($p<0.05$). More Lebanese households from low Syrian refugee load villages were found to rely on help from a friend or relative to secure food, and to send family members to eat elsewhere compared with the other group of Lebanese households. However, these differences did not reach statistical significance (table 11-b).

More than 60% of Lebanese households from high Syrian refugee load villages were found to use coping strategies such as relying on less preferred and less expensive foods, limiting portion size at meal times, and restricting consumption by adults in order for small children to eat. Furthermore, almost 17% of these households reported spending whole day without eating, compared to 6% of Lebanese households from low Syrian refugee load villages.

Table 11-b. Coping strategies of Lebanese from low versus high Syrian refugee households (n=138)

	Lb HHs (low SR load) (n=64) n (%)	**Lb (high SR load) (n=74) n (%)**	***p*-value**
Had enough food or money to buy food in the last month			
Yes	64 (58.7)	74 (63.8)	0.434
No	45 (41.3)	42 (36.2)	
Relied on less preferred and less expensive foods?			
Yes	56 (87.5)	65 (87.8)	0.952
No	8 (12.5)	9 (12.2)	
Borrowed money to buy food?			
Yes	52 (81.3)	64 (86.5)	0.402
No	12 (18.8)	10 (13.5)	
Relied on help from a friend or relative to secure food?			
Yes	45 (70.3)	48 (64.9)	0.496
No	19 (27.9)	26 (35.1)	
Limited portion size at meal times?			
Yes	32 (50.0)	52 (70.3)	**0.015**
No	32 (50.0)	22 (29.7)	
Restricted consumption by adults in order for small children to eat?			
Yes	25 (40.3)	45 (60.8)	**0.017**
No	37 (59.7)	29 (39.2)	
Reduced number of meals eaten in a day?			
Yes	31 (48.4)	41 (55.4)	0.414
No	33 (51.6)	33 (44.6)	
Sent family members to eat elsewhere?			
Yes	20 (31.7)	19 (25.7)	0.433
No	43 (68.3)	55 (74.3)	
Spend whole day without eating?			
Yes	4 (6.3)	13 (17.6)	**0.044**
No	60 (93.8)	61 (82.4)	
Spent savings?			
Yes	16 (25.0)	11 (14.9)	0.134

No	48 (75.0)	63 (85.1)	
Sold jewelry or household goods (furniture, television, radio…)?			
Yes	3 (4.7)	31 (41.9)	**< 0.001**
No	61 (95.3)	43 (58.1)	
Sold transportation means?			
Yes	2 (3.1)	12 (16.2)	**0.011**
No	62 (96.9)	62 (83.8)	
Sold house or land? *			
Yes	0 (0.0)	3 (4.1)	0.106
No	63 (100.0)	71 (95.9)	
Reduce essential non-food expenditures such as education, health?			
Yes	21 (33.3)	37 (50.0)	**0.049**
No	42 (66.7)	37 (50.0)	
Withdrew children from school?			
Yes	7 (11.1)	10 (13.5)	0.671
No	56 (88.9)	64 (86.5)	
Have school children (6 -15 years old) involved in income generation?			
Yes	5 (7.8)	7 (9.5)	0.732
No	59 (82.2)	67 (90.5)	
Have a child married under the age of 16?*			
Yes	5 (7.8)	1 (1.4)	0.063
No	59 (92.2)	73 (98.6)	
Sent an adult household member to seek work outside of Lebanon? **			
Yes	0 (0.0)	0 (0.0)	-
No	64 (100.0)	74 (100.0)	

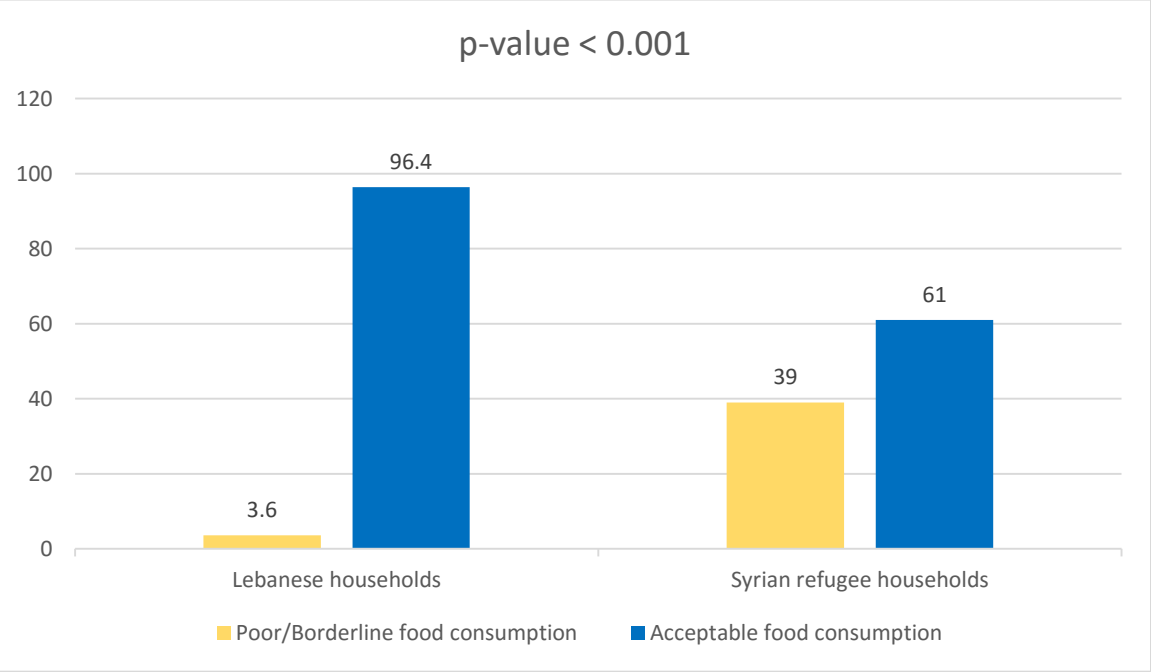
* Some cells have expected count less than 5.

** *p*-value not calculated

E. Household Food Consumption

Figure 3-a displays the household food consumption status of Lebanese and Syrian refugee households. A significantly higher proportion of Syrian refugee households reported poor or borderline food consumption compared with Lebanese households (39% vs 4% respectively, with a p<0.001). In addition, the average consumption of all food groups (frequency per week) was lower among Syrian refugee households in comparison with Lebanese households, and these differences were statistically significant for pulses, fruits, vegetables, meat, chicken, fish, eggs, and dairy products, $p < 0.001$ (see table 12-a).

Figure 3-a. Household Food Consumption Status† of Lebanese and Syrian refugee households (n=305)



† Food Consumption Status was assessed based on the following categories of scores, cut offs are determined as follows: Poor (0-28.49); Borderline (28.5-42); Acceptable (> 42).

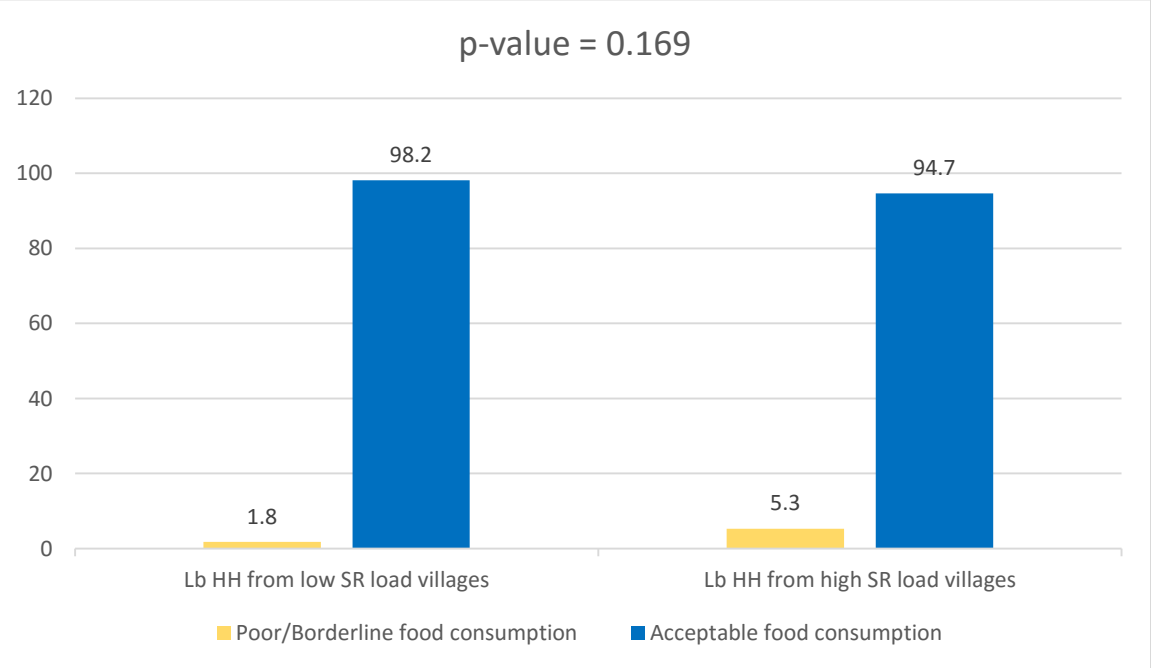
Table 12-a. Intake of food groups among Syrian refugee and Lebanese households (n=306)

	Lebanese (n=224) Mean ± SD	**Syrian refugees (n=82)** Mean ± SD	***p* value**
Cereals and tubers	7.0 ± 0.0	7.0 ± 0.2	0.320
Pulses	2.9 ± 2.2	1.7 ± 1.4	< **0.001**
Vegetables	6.4 ± 1.4	5.1 ± 2.3	< **0.001**
Fruits	4.4 ± 2.5	1.2 ± 1.6	< **0.001**
Meat, chicken, and fish	2.3 ± 1.8	0.7 ± 1.4	< **0.001**
Eggs	2.9 ± 2.3	1.0 ± 1.5	< **0.001**
Dairy products	5.6 ± 2.1	2.7 ± 2.5	< **0.001**
Sugar	6.9 ± 0.6	6.8 ± 1.1	0.191
Oil	7.3 ± 4.7	6.9 ± 0.5	0.426

Frequency per week

No significant differences in terms of household food consumption status were observed between Lebanese households from low versus high Syrian refugee load villages with more than 95% of all households reporting acceptable food consumption (See figure 3-b). In addition, Lebanese households from high versus low Syrian refugee load villages were found to have similar average consumption of all food groups (frequency per week), except pulses, vegetables, and dairy products. Pulses were consumed more frequently among Lebanese households from high Syrian refugee load villages, while vegetables and dairy products were consumed more frequently among Lebanese households from low Syrian refugee load villages (See table 12-b).

Figure 3-b. Household Food Consumption Status† of Lebanese households from low versus high Syrian refugee load villages (n=223)



† Food Consumption Status was assessed based on the following categories of scores, cut offs are determined as follows: Poor (0-28.49); Borderline (28.5-42); Acceptable (> 42).

Table 12-b. Intake of food groups among Lebanese households from low versus high Syrian refugee load villages (n=224)

	Lebanese from low Syrian refugee load (n=109) Mean ± SD	**Lebanese from high Syrian refugee load (n=115)** Mean ± SD	***p* value**
Cereals and tubers	7.0 ± 0.0	7.0 ± 0.0	-
Pulses	2.0 ± 1.4	3.7 ± 2.5	< **0.001**
Vegetables	6.9 ± 0.5	6.0 ± 1.8	< **0.001**
Fruits	4.5 ± 2.5	4.3 ± 2.4	0.565
Meat, chicken, and fish	2.2 ± 1.8	2.3 ± 1.9	0.732
Eggs	2.8 ± 1.9	3.0 ± 2.6	0.478
Dairy products	6.0 ± 1.9	5.3 ± 2.3	**0.010**
Sugar	7.0 ± 0.0	6.9 ± 0.8	0.081
Oil	7.6 ± 6.7	7.0 ± 0.2	0.307

Frequency per week

F. Dietary characteristics of mothers

The dietary characteristics of mothers from Lebanese and Syrian refugee households were explored in this study (as presented in table 13-a). Mothers from Lebanese households were found to have significantly higher energy intake (1272 ± 517 vs 985 ± 408 kcal than mothers from Syrian refugee load households, respectively; $p < 0.001$). In addition, average carbohydrate, sugar, protein, fat, and saturated fat intake were higher among mothers from Lebanese households compared with mothers from Syrian refugee households ($p< 0.003$).

Table 13-a. Mean macronutrients intake of Lebanese and Syrian refugee mothers (n=260*)

	Lebanese (n=178) Mean ± SD	**Syrian refugees (n=82)** Mean ± SD	***p* value**
Energy intake (kcal)	1271.9 ± 517.3	984.9 ± 407.8	< **0.001**
Carbohydrates (g/day)	159.8 ± 70.9	125.3 ± 60.9	< **0.001**
% of CHO from total calories	50.8 ± 11.4	51.3 ± 11.5	0.788
Sugar (g/day)	39.1 ± 34.5	19.1 ± 18.5	< **0.001**
% of sugar from total calories	11.8 ± 8.7	7.7 ± 6.0	< **0.001**
Protein (g/day)	39.8 ± 21.1	23.6 ± 13.0	< **0.001**
% of protein from total calories	12.5 ± 3.9	9.8 ± 4.0	< **0.001**
Fat (g/day)	55.6 ± 26.4	45.5 ± 22.9	**0.003**
% of fat from total calories	38.8 ± 8.5	40.7 ± 11.4	0.181
Saturated fat (g/day)	10.4 ± 8.3	7.2 ± 4.2	< **0.001**
% of sat fat from total calories	7.0 ± 3.3	6.5 ± 2.6	0.197

* This data excluded pregnant women and women who reported an unusual 24 hour recall.

A further analysis of macronutrient adequacy (table 14-a) revealed that significantly more mothers from Syrian refugee households consumed carbohydrate and protein below acceptable level (130g and 46g minimum requirement of carbohydrate and protein respectively; $p<0.001$). Percentage of sugar from total calories above acceptable level of 10%, on the other hand, was significantly higher among mothers from Lebanese households (52% vs 24% among mothers from Syrian refugee households respectively; $p < 0.001$).

Table 14-a. Adequacy of macronutrients intake among Lebanese and Syrian refugee mothers (n= 260)

		Lebanese (n=178) n (%)	**Syrian refugees (n=82)** n (%)	***p* value**
CHO*	Below acceptable range (< 45%)	54 (30.3)	23 (28.0)	0.424
	Within acceptable range (45% - 65%)	116 (65.2)	52 (63.4)	
	Above acceptable range (> 65%)	8 (4.5)	7 (8.5)	
CHO	Below acceptable range (< 130 g)	65 (36.5)	51 (62.2)	**< 0.001**
	Above acceptable range (> 130 g)	113 (63.5)	31 (37.8)	
Sugar	Below acceptable range (<10%)	85 (47.8)	62 (75.6)	**< 0.001**
	Above acceptable range (> 10%)	93 (52.2)	20 (24.4)	
Protein	Below acceptable range (< 10%)	47 (26.6)	54 (66.7)	**< 0.001**
	Within acceptable range (10% - 25%)	130 (73.4)	27 (33.3)	
	Above acceptable range (> 25%)	0 (0.0)	0 (0.0)	
Protein	Below acceptable range (< 46g)	126 (70.8)	76 (92.7)	**< 0.001**
	Above acceptable range (> 46g	52 (29.2)	6 (7.3)	
Fat*	Below acceptable range (< 20%)	3 (1.7)	4 (4.9)	0.143
	Within acceptable range (20% - 35%)	57 (32.0)	19 (23.2)	
	Above acceptable range (> 35%)	118 (66.3)	59 (72.0)	
Saturated fat	Below acceptable range (< 10%)	154 (86.5)	76 (92.7)	0.148
	Above acceptable range (> 10%)	24 (13.5)	6 (7.3)	

* Some cells have expected count less than 5.

The dietary characteristics of mothers from households recruited from low versus high Syrian refugee load villages were shown to be similar with the exception of sugar intake which was significantly higher among mothers in Lebanese households from high Syrian refugee load villages (See table 13-b and 14-b).

Table 13-b. Mean macronutrients intake of Lebanese mothers from low versus high Syrian refugee load villages (n= 178*)

	Lb (low SR load) (n=87) Mean ± SD	**Lb (high SR load) (n=91)** Mean ± SD	***p* value**
Energy intake (kcal)	1245.4 ± 467.2	1297.1 ± 562.5	0.507
Carbohydrates (g/day)	155.1 ± 61.3	164.3 ± 79.1	0.391
% of CHO from total calories	51.0 ± 13.1	50.7 ± 9.4	0.899
Sugar (g/day)	33.6 ± 30.2	44.4 ± 37.6	**0.037**
% of sugar from total calories	10.8 ± 9.4	12.8 ± 8.0	0.126
Protein (g/day)	40.1 ± 21.2	39.6 ± 21.1	0.879
% of protein from total calories	12.7 ± 4.2	12.3 ± 3.5	0.438
Fat (g/day)	54.4 ± 24.5	56.8 ± 28.2	0.552
% of fat from total calories	38.7 ± 8.9	38.8 ± 8.2	0.884
Saturated fat (g/day)	10.3 ± 7.5	10.5 ± 9.0	0.867
% of sat fat from total calories	7.1 ± 3.0	6.9 ± 3.5	0.729

* This data excluded pregnant women and women who reported an unusual 24 hour recall.

Table 14-b. Adequacy of macronutrients intake among Lebanese mothers from low versus high Syrian refugee load villages (n= 178)

		Lb (low SR load) (n=87) n (%)	**Lb (high SR load) (n=91)** n (%)	***p* value**
CHO*	Below acceptable range (< 45%)	29 (33.3)	25 (27.5)	0.684
	Within acceptable range (45% - 65%)	54 (62.1)	62 (68.1)	
	Above acceptable range (> 65%)	4 (4.6)	4 (4.4)	
CHO	Below acceptable range (< 130 g)	36 (41.4)	29 (31.9)	0.188
	Above acceptable range (> 130 g)	51 (58.6)	62 (68.1)	
Sugar	Below acceptable range (<10%)	49 (56.3)	36 (39.6)	**0.025**
	Above acceptable range (> 10%)	38 (43.7)	55 (60.4)	
Protein	Below acceptable range (< 10%)	24 (27.6)	23 (25.6)	0.760
	Within acceptable range (10% - 25%)	63 (72.4)	67 (74.4)	
	Above acceptable range (> 25%)	0 (0.0)	0 (0.0)	
Protein	Below acceptable range (< 46g)	63 (72.4)	63 (69.2)	0.641
	Above acceptable range (> 46g)	24 (27.6)	28 (30.8)	
Fat*	Below acceptable range (< 20%)	2 (2.3)	1 (1.1)	0.820
	Within acceptable range (20% - 35%)	28 (32.2)	29 (31.9)	
	Above acceptable range (> 35%)	57 (65.5)	61 (67.0)	
Saturated fat	Below acceptable range (< 10%)	77 (88.5)	77 (84.6)	0.447
	Above acceptable range (> 10%)	10 (11.5)	14 (15.4)	

* Some cells have expected count less than 5.

G. Anthropometric characteristics of the mothers

Table 15-a shows that no significant differences were observed between mothers from Lebanese and Syrian refugee households with respect to BMI and waist circumference status. However, more than two thirds of mothers from both communities were overweight and obese, and almost 50% of mothers had an elevated waist circumference.

Table 15-a. Anthropometric characteristics of mothers from Lebanese and Syrian refugees households (n=301)

	Lebanese (n=203) **n(%)**	**Syrian refugee (n=98)** **n(%)**	***p*-value**
Mother's BMI			0.259
Normal	57 (28.5)	23 (23.7)	
Overweight	69 (34.5)	43 (44.3)	
Obese	74 (37.0)	31 (32.0)	
Mother's waist circumference			
Normal	93 (45.8)	46 (46.9)	0.854
Elevated	110 (54.2)	52 (53.1)	

Similar results were observed when comparing the anthropometric characteristics of mothers from both Lebanese households recruited from low and high Syrian refugee load villages (See table 15-b).

Table 15-b. Anthropometric characteristics of mothers from Lebanese households in low versus high Syrian refugee load villages (n=203)

	Lb (low SR load) (n=97) n(%)	**Lb (high SR load) (n=106) n(%)**	***p*-value**
Mother's BMI			0.613
Normal	25 (26.3)	32 (30.5)	
Overweight	36 (37.9)	33 (31.4)	
Obese	34 (35.8)	40 (38.1)	
Mother's waist circumference			
Normal	45 (46.4)	48 (45.3)	0.874
Elevated	52 (53.6)	58 (54.7)	

It was worth noting that five mothers were found to be underweight (BMI < 18.5 kg/m^2): one from Syrian refugee households and four mothers from Lebanese households distributed equally between low and high Syrian refugee load households. In addition, acute malnutrition determined using MUAC measurement (MUAC < 22.5 cm) was found only among three mothers: two Lebanese mothers from high Syrian refugee load villages and one Syrian refugee mother.

H. Dietary characteristics of children

Table 16-a presents the dietary characteristics of children from Lebanese and Syrian refugee households. Children from Lebanese households were found to consume significantly more calories (1396 ± 518 vs 950 ± 376 kcal respectively; $p < 0.001$). In addition, average carbohydrate, sugar, protein, fat, and saturated fat intake were also higher among children from Lebanese households. Furthermore, significantly more children from Syrian refugee households had carbohydrate intake and percentage of protein from total calories below acceptable level compared with Children from Lebanese households who had significantly higher percentage of sugar and saturated fat from total calories above acceptable level, $p< 0.006$ (See table 17-a).

Table 16-a. Mean macronutrients intake of Lebanese and Syrian refugee children (n=317*)

	Lebanese (n=218) Mean ± SD	**Syrian refugees (n=99)** Mean ± SD	***p* value**
Energy intake (kcal)	1396.0 ± 518.4	950.6 ± 375.7	< **0.001**
Carbohydrates (g/day)	171.8 ± 64.2	116.4 ± 48.2	< **0.001**
% of CHO from total calories	49.6 ± 7.9	49.5 ± 9.5	0.882
Sugar (g/day)	53.6 ± 35.3	21.9 ± 18.4	< **0.001**
% of sugar from total calories	43.1 ± 31.0	22.5 ± 19.1	< **0.001**
Protein (g/day)	36.6 ± 18.7	20.4 ± 9.6	< **0.001**
% of protein from total calories	10.5 ± 3.5	8.7 ± 2.5	< **0.001**
Fat (g/day)	64.7 ± 29.8	46.3 ± 21.5	< **0.001**
% of fat from total calories	41.2 ± 7.4	43.3 ± 9.7	0.064
Saturated fat (g/day)	12.9 ± 9.0	7.6 ± 4.0	< **0.001**
% of sat fat from total calories	10.3 ± 7.5	8.3 ± 6.0	**0.023**

* This data excluded children who reported that the 24 hour recall is not a usual one.

Table 17-a. Adequacy of macronutrients intake among Lebanese and Syrian refugee children (n= 317)

		Lebanese (n=218) n (%)	**Syrian refugees (n=99)** n (%)	***p* value**
CHO*	Below acceptable range (< 45%)	57 (26.3)	31 (31.3)	0.159
	Within acceptable range (45% - 65%)	153 (70.5)	61 (61.6)	
	Above acceptable range (> 65%)	7 (3.2)	7 (7.1)	
CHO	Below acceptable range (< 130 g)	61 (28.0)	67 (67.7)	**< 0.001**
	Above acceptable range (> 130 g)	157 (72.0)	32 (32.3)	
Sugar	Below acceptable range (<10%)	28 (12.8)	29 (29.6)	**< 0.001**
	Above acceptable range (> 10%)	190 (87.2)	69 (70.4)	
Protein	Below acceptable range (< 10%)	114 (52.3)	75 (75.8)	**< 0.001**
	Within acceptable range (10% - 25%)	104 (47.7)	24 (24.2)	
	Above acceptable range (> 25%)	0 (0.0)	0 (0.0)	
Protein	Below acceptable range (< 46g)	211 (96.8)	99 (100.0)	0.071
	Above acceptable range (> 46g	7 (3.2)	0 (0.0)	
Fat*	Below acceptable range (< 20%)	4 (1.8)	5 (5.1)	0.187
	Within acceptable range (20% - 35%)	36 (16.5)	12 (12.1)	
	Above acceptable range (> 35%)	178 (81.7)	82 (82.8)	
Saturated fat	Below acceptable range (< 10%)	137 (62.8)	77 (78.6)	**0.006**
	Above acceptable range (> 10%)	81 (37.2)	21 (21.4)	

* Some cells have expected count less than 5.

Table 16-b shows that children from Lebanese households from low Syrian refugee load villages consumed significantly more carbohydrates, fat, and sugar of total calories in their diet compared with Lebanese children from high Syrian refugee load. Children from low Syrian refugee load villages were also found to consume significantly higher percentage of sugar from total calories above acceptable range, and lower percentage of fat from total calories above acceptable range compared with Lebanese children from high Syrian refugee load villages (table 17-b).

Table 16-b. Mean macronutrients intake of Lebanese children from low versus high Syrian refugee load villages (n= 218)

	Lb (low SR load) (n=109) Mean ± SD	**Lb (high SR load) (n=109)** Mean ± SD	p value
Energy intake (kcal)	1392.0 ± 484.4	1400.0 ± 552.4	0.909
Carbohydrates (g/day)	168.8 ± 62.8	174.8 ± 65.7	0.497
% of CHO from total calories	48.6 ± 7.0	50.7 ± 8.5	**0.042**
Sugar (g/day)	47.2 ± 32.6	60.0 ± 36.9	**0.007**
% of sugar from total calories	38.1 ± 28.5	48.0 ± 32.7	**0.018**
Protein (g/day)	35.5 ± 16.4	37.8 ± 20.7	0.368
% of protein from total calories	10.4 ± 3.5	10.7 ± 3.5	0.541
Fat (g/day)	66.1 ± 26.5	63.2 ± 32.9	0.471
% of fat from total calories	42.5 ± 6.7	40.0 ± 7.8	**0.010**
Saturated fat (g/day)	12.7 ± 8.0	13.0 ± 10	0.839
% of sat fat from total calories	10.5 ± 8.3	10.0 ± 6.6	0.629

This data excluded children who reported that the 24 hour recall is not a usual one.

Table 17-b. Adequacy of macronutrients intake among Lebanese children from low versus high Syrian refugee load villages (n= 218)

		Lb (low SR load) (n=109) n (%)	**Lb (high SR load) (n=109)** n (%)	***p* value**
CHO*	Below acceptable range (< 45%)	32 (29.4)	25 (23.1)	0.109
	Within acceptable range (45% - 65%)	76 (69.7)	77 (71.3)	
	Above acceptable range (> 65%)	1 (0.9)	6 (5.6)	
CHO	Below acceptable range (< 130 g)	31 (28.4)	30 (27.5)	0.880
	Above acceptable range (> 130 g)	78 (71.6)	79 (72.5)	
Sugar	Below acceptable range (<10%)	20 (18.3)	8 (7.3)	**0.015**
	Above acceptable range (> 10%)	89 (81.7)	101 (92.7)	
Protein	Below acceptable range (< 10%)	60 (55.0)	54 (49.5)	0.416
	Within acceptable range (10% - 25%)	49 (45.0)	55 (50.5)	
	Above acceptable range (> 25%)	0 (0.0)	0 (0.0)	
Protein	Below acceptable range (< 46g)	106 (97.2)	105 (96.3)	0.701
	Above acceptable range (> 46g	3 (2.8)	4 (3.7)	
Fat*	Below acceptable range (< 20%)	0 (0.0)	4 (3.7)	**0.009**
	Within acceptable range (20% - 35%)	12 (11.0)	24 (22.0)	
	Above acceptable range (> 35%)	97 (89.0)	81 (74.3)	
Saturated fat	Below acceptable range (< 10%)	69 (63.3)	68 (62.4)	0.889
	Above acceptable range (> 10%)	40 (36.7)	41 (37.6)	

* Some cells have expected count less than 5.

I. Anthropometric characteristics of children

Anthropometric characteristics of children from Lebanese and Syrian refugee households are presented in table 18-a. Using WHO and CDC criteria, children from Lebanese households were significantly more overweight (BMI-for-age) compared with children from Syrian refugee households (37% vs 17% respectively). No differences were noted in the stunting levels and waist-to-height ratio between children from both groups with almost half of children having an elevated ratio (54% vs 43% for children from Lebanese and Syrian refugee households respectively). Furthermore, no acute malnutrition was observed among children in both communities (MUAC for age using WHO criteria).

Table 18-a. Anthropometric characteristics of Lebanese and Syrian refugee children (n=329)

	Lebanese HH (n=223) **n (%)**	**Syrian refugee HH (n=106)** **n (%)**	***p*-value**
Child's WHtR			
Normal (≤ 0.5)	103 (46.2)	60 (56.6)	0.077
Elevated (>0.5)	120 (53.8)	46 (43.4)	
Using WHO criteria			
Child's BMI for Age z score			
Not overweight	139 (63.2)	88 (83.0)	**< 0.001**
Overweight	81 (36.8)	18 (17.0)	
Child's weight for height Z score			
Not overweight	41 (56.9)	19 (73.1)	0.148
Overweight	31 (43.1)	7 (26.9)	
Child's weight for age z score			
Normal	212 (95.9)	96 (90.6)	0.052
Underweight	9 (4.1)	10 (9.4)	
Child's height for Age z score			

Normal	171 (77.7)	85 (80.2)	0.612
Stunted	49 (22.3)	21 (19.8)	
Using CDC criteria			
Child's BMI for Age z score			
Not overweight	147 (66.8)	90 (84.9)	**0.001**
Overweight	73 (33.2)	16 (15.1)	
Child's weight for height Z score			
Not overweight	96 (63.6)	59 (83.1)	**0.003**
Overweight	55 (36.4)	12 (16.9)	
Child's weight for age z score			
Normal	200 (90.5)	86 (81.1)	**0.017**
Underweight	21 (9.5)	20 (18.9)	
Child's height for Age z score			
Normal	171 (77.7)	85 (80.2)	0.612
Stunted	49 (22.3)	21 (19.8)	

Surprisingly, table 18-b shows that children from Lebanese households from low Syrian refugee load villages were not only more overweight (BMI-for-age and weight-for-age) but also more stunted (height-for-age) than children from Lebanese households from high Syrian refugee load villages by WHO and CDC criteria, and these differences reached statistical significance ($p < 0.05$).

Table 18-b. Anthropometric characteristics of children from both Low versus high SR load and Syrian refugees children (n=223)

	Lb (low SR load) (n=107) n (%)	**Lb (high SR load) (n=116) n (%)**	***p*-value**
Child's WHtR			
Normal (≤ 0.5)	43 (40.2)	60 (51.7)	0.084
Elevated (>0.5)	64 (59.8)	56 (48.3)	
Using WHO criteria			
Child's BMI for Age z score			
Not overweight	56 (52.8)	83 (72.8)	**0.002**
Overweight	50 (47.2)	31 (27.2)	
Child's weight for height Z score			
Not overweight	16 (41.0)	25 (75.8)	**0.003**
Overweight	23 (59.0)	8 (24.2)	
Child's weight for age z score *			
Normal	104 (97.2)	108 (94.7)	0.355
Underweight	3 (2.8)	6 (5.3)	
Child's height for Age z score			
Normal	73 (68.9)	98 (86.0)	**0.002**
Stunted	33 (31.1)	16 (14.0)	
Using CDC criteria			
Child's BMI for Age z score			
Not overweight	60 (56.6)	87 (76.3)	**0.002**
Overweight	46 (43.4)	27 (23.7)	
Child's weight for height Z score			
Not overweight	36 (48.0)	60 (78.9)	**< 0.001**

Overweight	39 (52.0)	16 (21.1)	
Child's weight for age z score			
Normal	96 (89.7)	104 (91.2)	0.702
Underweight	11 (10.3)	10 (8.8)	
Child's height for Age z score			
Normal	76 (71.7)	95 (83.3)	**0.038**
Stunted	30 (28.3)	19 (16.7)	

No acute malnutrition was observed among children less than five years in this study sample (MUAC < 12.5 cm). On the other hand, two children from Lebanese households in high Syrian refugee households were wasted (BMI-for-age according to WHO < -2 z scores), and seven children were severely wasted (BMI-for-age according to WHO < -3 z scores): 4 among Lebanese households from low Syrian refugee load and 2 among Lebanese households from high Syrian refugee load and 1 among Syrian refugee households.

CHAPTER IV

DISCUSSION

A. Differences in the Socio-demographic Characteristics and Food Security Status among the Study Population Groups

Results from this study indicate extremely high rates of food insecurity among Syrian refugee households, reaching 92.5%, and almost double the food insecurity levels observed among Lebanese households. Syrian refugee households were also significantly more severely food insecure compared with Lebanese households (80% vs 25%, respectively). In addition, results from this study showed that the socio-demographic characteristics of Syrian refugee households were worse than Lebanese households. Syrian refugee households were significantly more likely to have lower educational levels, lower employment rates, lower monthly income and expenditure, higher number of individuals in the household, higher crowding index, and fewer assets. The refugee status by itself can put Syrian refugees at a disadvantage socially and economically particularly in terms of the restrictions enforced by the Lebanese governments on work permits and asset ownership on Syrians, their limited access to public services, and the fact that these refugees arrived with very little (if any) of their assets, which were rapidly depleted during their residence in Lebanon (Verme, 2014). These findings corresponded with results from other studies conducted in rural settings within developing countries like Mongolia, Ghana, and Bangladesh whereby lower socio-demographic status and poverty were strongly associated with food insecurity (Aidoo, Mensah, & Tuffour, 2013; Chimeddulam, Dalaijamts, Bardos, & Tsevegdorj, 2008; Harris-Fry et al., 2015). Furthermore, a study conducted in Jordan on

Syrian refugee households showed similar results of high food insecurity (89%) (Albandak, Al-Smadi, Gammouh, Dababneh, & Shamieh, 2016). High levels of food insecurity among internally displaced people (IDP) in Kenya (95%) were also observed (Singh, Bhoopathy, Worth, Seale, & Richmond, 2016).

It was noteworthy that there were higher levels of mild to moderate food insecurity among Lebanese HH compared with SR HHs (22% vs 12% respectively). Furthermore, Lebanese HHs from high SR load had significantly higher levels of mild to moderate food insecurity in comparison to Lebanese HHs from low SR load villages (29% vs 15%). The high prevalence of moderate food insecurity among Lebanese HHs from high SR load villages can be attributed to the increased competition of Lebanese with Syrian refugees on limited employment opportunities as well as to the raised prices of goods in this area due to increased demand (WFP, 2014). Labor supply increased by more than 50 percent in 2013 and affected the wages of low-skilled laborers in particular, and price inflation became a concern as the refugee influx pushed up demand for a number of common products in areas with high refugee concentrations (DMI, 2013; UNHCR, 2013). According to a report published by FAO, REACH, and the Lebanese ministry of Agriculture in 2014, the competition on jobs and limited resources may render the Lebanese households' status more food insecure compared with other Lebanese households that are not hosting refugees (FAO, REACH, & MoA, 2014).

The food insecurity levels among Lebanese households observed in the present study (47%) resemble levels observed in studies conducted among similar population groups in the Bekaa and South of Lebanon (52% and 42% respectively) (Naja et al., 2014;

Sahyoun et al., 2014). The rural settings of Akkar and Bekaa in particular, can explain the high levels of household food insecurity due to the high poverty levels and larger household size (DMI, 2013). This has been also demonstrated by previous studies regarding the presence of a strong association between residing in rural settings and food insecurity. The main source of income of households in rural areas tend to be agriculture-related and considered as inconsistent jobs affected by natural shocks and seasonality, thus affecting the sustainability of their livelihoods (DFID, 2000). Some rural areas, as in the case of Akkar, also lack the sufficient expertise and knowledge to take advantage of the available natural resources such as arable land and water for irrigation. These agricultural regions are outdated in terms of technologies used in crop harvesting which leads to lower benefit per yield (FAO, 2000).

The food insecurity levels reported among Lebanese households were found to be higher than those observed among Jordanian households in 2012 (47% vs 32% respectively) (Bawadi, Tayyem, Dwairy, & Al-Akour, 2012). Jordan, a neighboring Arabic country, has been suffering from the burden of Syrian refugees following the crisis in 2011, ranking third globally in terms of the numbers of refugees after Turkey and Lebanon (UNHCR, 2016). Syrian refugees in Akkar were also more food insecure than Syrian refugees in Jordan in 2014 whereby food insecurity levels reached 93% and 44% respectively (WFP & REACH, 2014). However, the observed difference in food insecurity levels between Lebanon and Jordan could be largely related to better strategies and policies enforced to deal with the influx of Syrian refugees within Jordan, including the no-camp policy in Lebanon that may have contributed to the deterioration of socio-economic status

of Lebanese in host communities as well as the worsening of Syrian refugees in these communities. While creating camps for refugees would place its management on international organizations or international communities and thus would become, to a certain extent outside the responsibility of the host state, the no-camp policy adopted in Lebanon have led to the scattering of refugees across regions where they have to pay for food, rent, and medicine thus causing increased prices of goods and higher rent (ECHO, 2016; UN, 2015). The large difference between the food security status of Syrian refugees in Akkar with Syrian refugees in Jordan could also be attributed to WFP's food assistance that was found to cover almost 98% of the registered refugees in Jordan compared to 85% in Akkar (WFP & REACH, 2014). In fact, many of the Syrian refugees in Akkar were complaining during interviews conducted in the present study, of the dwindling amounts of food vouchers in the past year, which made procuring enough food for the household a challenge. Some households even reported that they have been cut-off from the UN assistance while others stated that food vouchers' values were reduced from 30$ at the start of the crisis to 13% during the fall of 2015.

In addition, food insecurity levels of Syrian refugee households in Akkar (93%) exceeded levels reported earlier among Syrian refugees across Lebanon (74%) as well as other refugee populations in Lebanon, including Iraqi (80%), Palestinians (62%), and Bedouins (49%) (Ghattas et al., 2013; Ghattas et al., 2014; Sahyoun et al., 2014; WFP, 2014). These discrepancies in food insecurity levels could be attributed not only to the influx of the refugees into an already under-served and vulnerable area (Akkar), but also to the fact that Syrian refugees are considered as more recent refugees and thus have not yet

developed appropriate adaptation mechanisms to compensate for their lack of assets upon arrival as did the other refugee populations (Ghattas et al., 2013).

B. Discrepancies of Household Hunger Levels between Lebanese and Syrian Refugee Households

High levels of household hunger were observed in this study sample, whereby 57% of Syrian refugee households reported moderate to severe hunger compared with about 17% of Lebanese households. These differences were statistically significant and conform with the households' food insecurity levels observed within the study sample. Hunger levels among Lebanese households in Akkar were found to be lower than those in the West Bank/Gaza Strip in 2010 and Yemen in 2013 (25% and 22% respectively, two areas that have been marginalized and were suffering from constant conflicts) (Deitchler, Ballard, Swindale, & Coates, 2010; Murtaza, 2013). On the other hand, Hunger levels among Jordanian households in 2012 were lower than those among Lebanese households in Akkar (14% vs 17 respectively) (Bawadi et al., 2012).

These high levels of household hunger could have detrimental effects on all household members, particularly the most vulnerable including mothers and children. Hunger is believed to be a threat to the lives and future of household members in particular children and mothers. Studies have shown that hunger is linked to serious academic, psychosocial, and health problems for children which can, interactively or individually, impede normal development and growth (Brown, 2002). Children suffering from hunger are vulnerable to acute and chronic health problems such as infectious diseases such as

urinary tract infections as well as increased risk of chronic diseases on the long-term including diabetes. They are also at increased risk for developing learning problems and lower IQ levels later in life (APA, 2012). The adverse impact of hunger affect women and mothers as well. According to Ke et al. (2015), mothers from households suffering from hunger were found to be more likely to have depression, post-traumatic stress disorder, drug abuse, and unresponsive caregiving practices (Ke & Ford-Jones, 2015). In addition, mothers suffering from chronic hunger tend to have to higher risk of nutrient-deficiencies in particular iron, vitamin B12, iodine, vitamin D, vitamin C, magnesium, and zinc (Breyer, 2013; UNICEF, 2006).

On the other hand, the difference between household hunger status of Lebanese households from low versus high Syrian refugee load villages approached significance as moderate household hunger reached higher levels among Lebanese households from low Syrian refugee load villages whereas severe household hunger was higher among Lebanese households from high Syrian refugee load villages. These results are in parallel with the food security status of Lebanese households from low and high Syrian refugee load villages. The higher levels of moderate household hunger and lower levels of severe household hunger among Lebanese households from low Syrian refugee load villages indicate that these households are still faring better than their counterparts from high Syrian refugee load villages as they have not reached severe levels yet.

C. Frequency and Severity of Coping Strategies Adopted among Study Sample

All Syrian refugee households and more than half of Lebanese households from both high and low Syrian refugee load villages within our study sample reported using some form of coping strategies to procure food. Both short-term and long-term coping strategies were common among all groups. Short-term strategies, mainly borrowing food and money, were more common among Lebanese, whereas longer term strategies, such as changing the quantity and quality of food consumed, were more common among Syrian refugees. This high reliance on coping strategies associated with the high levels of food insecurity in the study sample reveals evidence that households are under stress particularly Syrian refugee households. Furthermore, what was also noticeable in this study was that very few Syrian refugees reported selling assets, transportation means, or any jewelry or household goods, which could reflect the state of deprivation that they have reached. Many refugees complained during the interviews conducted as part of the study that they are living in dire situations, and that they have depleted all their belongings since they arrived from Syria at the beginning of the crisis. In addition, a considerable number of Lebanese and Syrian refugee households reported reducing the number and size of meals, spending a whole day without eating, withdrawing children from school, and having a child marry under the age of 16. The use of such severe coping mechanisms indicate that with the persistence of the crisis, and in the absence of appropriate responses, the situation in this area is only getting worse. These harsh conditions can subject households, particularly mothers and children, to exploitation and abuse, and can cause irreversible dietary changes influencing the nutritional, physical, and psychological health of affected populations (UNICEF, 2010).

Our results are in parallel with those reported in 2015 by the Vulnerability Assessment of Syrian Refugees (VASyR) in Lebanon, with similar coping strategies adopted such as eating less preferred and less expensive foods, reducing meals portion size, reducing number of meals, borrowing food or money from friends or relatives, and restricting consumption by adults (UNHCR, 2015b). Similar coping strategies to those of Syrian refugees were observed among Iraqi refugees in Lebanon that mainly focused on the reduction of food variety due to the absence of constant high-coverage food support (Ghattas et al., 2014). Furthermore, the coping strategies of Lebanese households from Akkar resembled those reported among Bedouins and a Southern sample of Lebanese households, whereby borrowing food and money as well as selling assets were the main coping mechanisms used (Ghattas et al., 2013; Sahyoun et al., 2014).

D. Dietary Diversity within Lebanese and Syrian Refugee Households

More than one third of the Syrian refugee households in the study sample had poor or borderline food consumption patterns, whereas the majority of Lebanese households reported adequate food consumption. We noticed that Syrian refugee households in our study showed poorer household food consumption patterns compared with Syrian refugees from a national sample in Lebanon interviewed by the WFP in 2014 (39% vs 13% of households, respectively) (WFP, UNHCR, & Unicef, 2014). The poor food consumption of the Syrian refugee households in Akkar, compared with Lebanese households in Akkar and with Syrian refugee households across Lebanon, could be attributed not only to the refugee status by itself but also to the presence of these refugees in Akkar, one of the poorest

regions in Lebanon that does not have a support system to tolerate and sustain the presence of large numbers of refugees. In addition, with the influx of refugees and the dwindling conditional cash transfer provided by WFP and the INGOs in Lebanon, the ability of households to provide these numbers of constant supply of adequate and nutritious food is compromised (REACH & UNHCR, 2014).

Results from this study show that Lebanese households had a better dietary diversity compared to Syrian refugee households reflected through the higher consumption frequency of the majority of the food groups including fruits, vegetables, pulses, meat, fish, poultry, eggs, and dairy products. The lower dietary diversity among Syrian refugees is a concern because food groups least consumed are the main sources of proteins and essential vitamins and minerals, including iron, calcium, iodine, folate, and vitamin A, C, E, and D among others. These essential macro and micronutrients are crucial for the health of all household members, including highly vulnerable groups such as children and mothers (USDA, 2016). Deficiencies in protein intake may lead to Marasmus and Kwashiorkor, severe forms of malnutrition responsible for the very high post-neonatal and toddler mortality ratios of developing countries (Wharton, 1991). Whereas inadequate nutrient intake leads to numerous deficiency symptoms such as lethargy, poor appetite, dry skin, hair loss, muscle cramps, and numbness in the extremities (Bowers, 2014).

Children are prone to acute and chronic malnutrition if poor quality of diet persists over time. Furthermore, undernourished children are at increased risk of infectious diseases, as well as of vitamin deficiency-related diseases such as scurvy and rickets. Their cognitive development can also be impaired if long term deficiency (especially of iodine

and iron) persists leading to lower IQ and school performance (Laus, Vales, Costa, & Almeida, 2011). Maternal malnutrition can also have adverse effects. It can affect not only the health of the mother but also leads to an increased risk of poor pregnancy outcomes including low-birth-weight or premature babies, obstructed labor, and postpartum hemorrhage. In fact, premature babies are at increased risk of infections, growth retardation, and illnesses during childhood and adolescence. They are also at risk of developing chronic diseases later in life (such as diabetes type 2, obesity, cancer) and of having lower levels of performance cognitively (MCHET, 2016).

Lebanese households from both low and high Syrian refugee load villages scored well in terms of acceptable household food consumption (98% vs 95% respectively). However, the frequency of intake of vegetables and dairy products was significantly higher among Lebanese households from low Syrian refugee load villages compared with their counterparts from high Syrian refugee load villages that had significantly higher frequency of consumption of pulses. These differences could be attributed to the more rural setting of the villages with low Syrian refugee load that encourage more animal farming and agricultural practices compared with the slightly less access to lands and bigger markets that of high Syrian refugee load villages that encourage the consumption of dried seeds and legumes (Mfikwa & Kilima, 2014).

E. Dietary Inadequacy of Mothers and Children from Lebanese and Syrian Refugee Households

Our results demonstrated that mothers and children from both Lebanese and Syrian refugee households had a caloric intake well below the average needed to meet dietary needs of women of reproductive age (2,100 kcal) and children four to ten years (1,200-1,800 kcal) (AHA, 2015; USDA, 2015a). These results are surprising given the extensive efforts exerted by numerous international and local agencies, including primarily the WFP, to provide sufficient and nutritious food to reach a minimum of 2,100 kcal per day per refugee through provision of vouchers (UNHCR, 2014a). However, the high dietary inadequacy observed among mothers and children from Lebanese and Syrian refugee households from this study sample corresponds with the household dietary diversity data and the coping strategies reported within the study sample. Households from both communities reported reducing the number and size of their meals. In addition, the high levels of food insecurity and the low socio-economic status reported among most of the study households can lead to the reliance on the cheapest food basket, that could be composed of low-nutrient energy-dense foods, such as, french fries, rice, sweets, and sugar sweetened beverages (Drewnowski & Specter, 2004). This was further demonstrated by a trend of fat intake above acceptable range and carbohydrates and protein intake below acceptable range among mothers and children from both communities.

The comparison between the dietary intake of Lebanese mothers and children from low versus high Syrian refugee load villages shows a slightly higher overall intake among Lebanese from high Syrian refugee load villages. However, these differences were not

statistically significant. Two hypotheses are suggested to explain this trend of higher intake among Lebanese from high Syrian refugee load villages. The first hypothesis relates to the wider availability and access to goods in villages with higher Syrian refugee load due to higher population size residing in these areas in comparison with low Syrian refugee load that tend to be more rural and more remote to markets. The other explanation of these differences could be due to the presence of refugees in the high Syrian refugee load villages and the availability of various food aid modalities that leads to increased access to foods within the Lebanese markets, thus potentially improving access and utilization of food (IRIN, 2015).

F. Trends of Overweight and Obesity among Mothers from the Study Sample Households

Similar high levels of elevated waist circumference among mothers from both Lebanese and Syrian refugee households were observed in this study (more than half had elevated waist circumference). Elevated waist circumference is considered as an indicator of abdominal obesity and predicts increased risk of heart disease, type 2 diabetes, and mortality (Janssen, Katzmarzyk, & Ross, 2004). In addition, overweight and obesity levels were similarly high among mothers from both Lebanese and Syrian refugee households with more than two thirds of mothers being overweight or obese.

When comparing results from this study regarding the prevalence of overweight and obesity among Lebanese mothers from Akkar with findings from a national survey in 2009, we notice that levels in our study were higher (71.5% of mothers from the study in

Akkar vs 60.9% of mothers from the national survey) (Nasreddine et al., 2012). Similarly, overweight and obesity levels of Lebanese mothers in this study were higher than those observed among mothers in the Bekaa in 2014 that reached only 58% (Naja et al., 2014). In addition, mothers from Syrian refugee households in the present study had higher overweight and obesity levels than Bedouin mothers residing in rural Lebanon in 2013 (76% vs 56% respectively) (Ghattas et al., 2013).

The high prevalence of overweight and obesity among mothers from Lebanese and Syrian refugee households can be attributed to a number of reasons. The first reason would be the overall low socio-economic status of both Lebanese and Syrian refugee households, which compels them to purchase cheaper foods that are also less healthy, leading to a higher intake of sugars, fat and a lower intake of fresh nutrient-dense produce (Darmon & Drewnowski, 2008). Another reason for the high levels of overweight and obesity among mothers in Akkar can be related to the inconsistent assistance that households receive in this area. The uncertainty of whether food will be procured through relief agencies can affect various household members and lead to different nutritional status consequences. Mothers may be highly susceptible to excess female obesity as they are the most affected by food shortage due to their roles within households, gender inequalities in the society, and to the fact that they adjust their nutrition to buffer the effect of food insecurity on their offspring (Dubois et al., 2011; Ghattas, 2014). The third reason relates to the nutrition transition trend observed in Lebanon in the last 10 years with levels of overweight and obesity on the rise across the country associated with the shift from the healthy Lebanese Mediterranean diet toward the adverse westernized diet (Nasreddine et al., 2012). This

nutrition transition is characterized by a series of changes in the diet and physical activity patterns whereby there's a shift towards more processed, high-fat, and sugar-sweetened foods and a sedentary lifestyle (Popkin, Adair, & Ng, 2012). An additional reason can be attributed to the lack of nutrition education among the majority of mothers from both Lebanese and Syrian refugee communities. During interviews in this study, mothers showed low health literacy levels, for example women were not well-aware of the side effects of fried food, the side effects of overconsumption of snacks like chips and chocolate on children, the need to avoid drinking tea with meals because it hinders the absorption of various nutrients, the benefits of fruits and vegetables among other health- and nutrition-related topics.

Associations between food insecurity and obesity were not explored in this study, however numerous studies have shown strong associations between overweight, obesity, and food insecurity among women of reproductive age (Dinour, Bergen, & Yeh, 2007; FRAC, 2015; Ghattas, 2014). On the other hand, the higher prevalence of overweight and obesity among Lebanese and Syrian refugee mothers in Akkar compared with similar populations elsewhere in Lebanon could be linked to the worse socio-demographic status of this area suffering from economic marginalization and a lack of public services long before the Syrian crisis started (ACTED, 2014). Poverty levels in North of Lebanon including Akkar reached 38%, compared with about 2% in Beirut, showing the vast wealth inequality within the country (UNDP, 2008). Furthermore, a systematic review in developing countries confirm this hypothesis whereby a negative association between obesity and socio-economic status for women was found. This association was attributed to

the increased reliance on cheaper energy-dense foods and to the sedentary lifestyle particularly of mothers (Dinsa, Goryakin, Fumagalli, & Suhrcke, 2012).

G. Differences in the Nutritional status of Children from Lebanese and Syrian Refugee Households

This study showed that the prevalence of overweight and obesity was significantly lower among children from Syrian refugee households compared with children from Lebanese households. Linking these higher levels of overweight to the better food security status of children from Lebanese households cannot be confirmed since studies exploring the association between food security and children weight status show mixed evidence. Few studies conducted in developing nations such as Colombia, Jamaica, and Brazil found weak or no associations between food insecurity and higher weight status among school-aged children and children aged 10-11 years (Dubois et al., 2011; FRAC, 2015; Isanaka, Mora-Plazas, Lopez-Arana, Baylin, & Villamor, 2007; Kac, Schlussel, Perez-Escamilla, Velasquez-Melendez, & da Silva, 2012). Other studies in more developed nations such as the United States, found contradictory results regarding the relationship between food insecurity and overweight among children although there is substantial evidence that these two nutritional problems can coexist (Ghattas, 2014; Larson & Story, 2011).

The high prevalence of overweight among children from this study households can be attributed to the children's dietary patterns (43% vs 27% of children from Lebanese and Syrian refugee households, respectively). The low socio-economic status of households in this study results in the consumption of low-nutrient energy-dense food items and thus a

shift from Lebanese diet rich in fruits and vegetables and whole grains and low in fat, into a more westernized diet high in fat and refined sugar and low in fiber. This shift has been shown in other studies in Lebanon to be associated with increased overweight levels among children (Nasreddine et al., 2014), adolescents (Naja et al., 2015), and adults (Jomaa et al., 2016).

On the other hand, significantly higher prevalence of overweight was observed among children in households from low Syrian refugee load villages compared with children in households from high Syrian refugee load villages. These results support the theory of an association between food security and children overweight since households from low Syrian refugee load villages were more food secure in comparison with households from high Syrian refugee load villages.

Surprisingly, high rates of stunting were observed among children in this study sample (22% vs 20% among children from Lebanese and Syrian refugee children, respectively). In addition, Lebanese children from households from high Syrian refugee load villages were significantly more stunted than their counterparts from low Syrian refugee load villages (31% vs 14%, respectively). These results may suggest an association between food insecurity and lower levels of stunting which contradicts previous findings. Studies conducted in developing countries such as Kenya, Brazil, and Colombia found a positive association between food insecurity and stunting, while more developed countries such as Canada and the US showed a lack of association (Hackett, Melgar-Quinonez, & Alvarez, 2009; Kac et al., 2012; Kaiser et al., 2002; Lopes et al., 2013; Mark, Lambert, O'Loughlin, & Gray-Donald, 2012). Since stunting is a result of chronic nutrition and

health inadequacy and caring practices, these contradictory results may be explained in terms of the rural setting and the remoteness of the low Syrian refugee load villages and their remoteness. Services in these areas are usually lacking, particularly primary health care facilities essential for the monitoring of normal child development, and markets are more limited in terms of available products and access (Deshmukh, Sinha, & Dongre, 2013; Smith, Ruel, & Ndiaye, 2005).

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

A. Strengths and Limitations

i. Strengths

This study is the first in Lebanon and the MENA region to compare the effect of the presence of Syrian refugees on their host communities using a control sample that resemble the host to account as a baseline. A main strength of this study is the use of validated tools such as HFIAS, CSI, and HFCS tools, to assess food security status, coping mechanisms adopted, and household dietary diversity within developing settings (Maxwell & Caldwell, 2008; Naja et al., 2014; WFP, 2008). Another strength is the rigorous dietary intake data collected by trained nutritionist not only at the household level, but also at the individual level among the most vulnerable groups, namely mothers and children. This data is important to interpret because household level data does not reflect individual consumption patterns and dietary adequacy. An additional strength relates to the field interviewers that underwent intensive training to minimize inter- and intra-interviewer bias and errors in data collection by employing standardized techniques, maintaining a neutral attitude, and probing answers using non-leading questions, thus reducing information bias and maximizing the internal validity.

ii. Limitations

A potential limitation in this study is the respondent bias, particularly among Syrian refugees who may have exaggerated in reporting coping strategies and food deprivation in hope of receiving benefits or assistance. Over-reporting of severe food insecurity has been observed while conducting Syria Needs Analysis Project (SNAP) questionnaires with camp-based refugees in regional host countries, who overstated their vulnerability and needs to receive more assistance (SNAP, 2013). In addition, this study sheds the light on Akkar, a highly rural and underprivileged district in Lebanon, thus results cannot be necessarily generalized to all rural areas in the country. However, findings from Akkar would be relevant to similarly deprived settings. Another limitation to this study is not collecting further elaborate data on livelihood opportunities available for local communities including in-depth data about individuals within households, and detailed data on income and expenditure among other information to further examine the sustainability of the livelihood strategies and coping mechanisms adopted by refugees and improve the local communities.

B. Conclusion

Results from this study showed that food insecurity is common among Lebanese and Syrian refugee households and is the highest and most severe among the latter. Syrian refugee households appear to have exhausted their assets and are resorting to some irreversible coping mechanisms that are affecting their households' dietary diversity. Mothers and children from Syrian refugee households are also heavily influenced at the

level of dietary adequacy and are showing trends of overweight and obesity in parallel with low-nutrient energy dense diets. Syrian refugee households appear to be worse than Lebanese households and need support on all levels despite receiving more assistance from NGOs.

On the other hand, levels of food insecurity among Lebanese households from both low and high Syrian refugee load villages in Akkar were higher than levels observed in other Lebanese regions namely the Bekaa and South of Lebanon as previously mentioned. Lebanese households were also found to adopt severe coping mechanisms, such as spending whole day without eating and reducing the size and number of meals. The use of these coping mechanisms was reflected clearly in the dietary inadequacy of mothers and children that showed no difference compared with data from Syrian refugee households with the majority of individuals consuming a diet with fat and carbohydrates intake above recommendations and protein intake below acceptable range. Other used coping strategies, mainly selling assets (including jewelry, household goods, transportation means), indicates that if situation continues to worsen these assets will be exhausted. In addition, higher levels of overweight and stunting were observed among children from Lebanese households, and particularly in areas with lower numbers of Syrian refugees.

In conclusion, the situation of Lebanese in Akkar after the refugee influx -in communities with both low and high Syrian refugee concentrations- appears to be bad and getting worse if no interventions are put into action. However, the presence of the Syrian refugees may not have necessarily worsened the situation in Akkar on all levels. The arrival of refugees increased the need for services, which became more available for

Lebanese in areas with high Syrian refugee load, and brought with it various NGOs that could have revived the economy and increased market access and demand in these villages.

C. Recommendations

The refugee situation in Akkar shifted from initial emergency to protracted crisis as it enters its fifth year. While host communities' capacity to support and provide basic services as well as international funding and assistance continue to shrink, the refugee situation continues to worsen.

Thus, as the crisis drags on, it is essential to reshape crisis response and to recognize the need for long-term support strategies. It is vital that national governments and aid organizations that participate in the coordinated regional response efforts better coordinate their strategies to accommodate the scope of this crisis. The global community is urged to find approaches to invest in precious resources in smarter and more efficient ways (MercyCorps, 2014).

Results from this study emphasize that the situation of Syrian refugees is worse than Lebanese communities in Akkar, although both appear to be in need of assistance and support on all levels. On the other hand, little differences exist between Lebanese communities with low versus high Syrian refugee load villages in terms of food security and nutritional status. Hence, attention should be provided to avoid the marginalization of Lebanese from low Syrian refugee load villages and assistance should be provided to the same extent as Lebanese from high Syrian refugee load villages as their situation is the

same if not worse. Continuous surveillance and monitoring systems that recognize and identify the most vulnerable households are needed in order to steer assistance toward those most in need among Lebanese and Syrian refugees similarly, particularly with the diminishing international and regional funding (UNHCR et al., 2015). Such systems can be run by the local governments, mainly the municipalities that have constant contact with people within villages and are more aware of their needs.

In addition, farmers and agricultural systems in Akkar need to be supported, particularly in terms of large uncultivated arable lands due to lack of capital in order to promote local food production and thereby food security (Cargill, 2014). Farmers need assistance in cultivating lands and finding or expanding markets for their produce. The government can play a role in reducing taxes forced on agricultural products, providing farmers with seeds and crops to start producing, encouraging the local food system, and increasing farmers' access to credit and financial services through improved legal and regulatory frameworks, to strengthen productivity and resilience of smallholder farmers (B20, 2012). Agricultural productivity in Akkar can also be optimized by supporting technology transfer, training and capacity-building to maximize access to and the utilization of available technologies to all farmers. The integrated efforts of the ministries of agriculture (MoA) and finance (MoF) are fundamental for providing funding and expertise to assist farmers in Akkar. However, the attention of international agencies such as the UNDP and WFP should also be steered toward Akkar to provide the needed funding for projects to invest in small farms and increasing production of local products. International aids can be invested with coordination of local governments mainly

municipalities that plan projects and implement them based on local efforts and needs. In 2015, the ministry of agriculture formulated a strategy for the years 2015-2019 under the framework of the European Union (EU) funded Agriculture and Rural Development Programme (ARDP) with three-fold objectives: 1) to provide safe and quality food; 2) to improve the contribution of agriculture to the economic and social development of the country; 3) to promote the sustainable management of natural and genetic resources. Olive oil, honey, medicinal and aromatic plants and wild fruit trees were among the sectors that were to be developed in Akkar by this strategy (MoA, 2015). The scope of such projects should be enlarged to support a greater number of farmers in Akkar and encompass all types of agricultural species.

Furthermore, the ability of the local food system to provide healthy and culturally acceptable food items that encourage the adoption of the healthy Lebanese dietary pattern is an additional benefit that will help to achieve dietary adequacy among individuals while also providing livelihoods opportunities for Lebanese in their land. The nutrition improvement can be achieved through coordinated efforts across ministries to take an integrated approach to agriculture, nutrition and health, and strengthening nutrition education programmes, particularly among the most vulnerable subgroups with the aim of preventing micronutrient deficiencies and overweight levels (B20, 2012). Community kitchen activities can be implemented, where cooked meals of diversified quality are prepared by local individuals and are distributed to those most in need. Such activities have been previously implemented in Akkar and were shown to have beneficial effects, however more funding is needed to expand these activities to reach larger numbers of vulnerable

individuals (IAC, 2015). School meals can also be another way to provide at least one healthy and nutritious meal for children during school days. These meals should be available at an affordable price or even free of charge. The WFP launched in April 2016 a program that targeted both Lebanese and Syrian refugee children in 15 public schools. Although this program did not reach Akkar yet, however it holds promising results if it is to be expanded and applied across Lebanon (WFP, 2016).

Longer term recommendations include the integration of efforts across various governmental and non-governmental organizations to target this underserved region in Lebanon (Akkar) and providing more welfare programs, social assistance, and support to be able to tolerate the burden of refugees on the longer term while maintaining acceptable livelihoods and social cohesion with refugees. There is need to create an enabling environment for investment through establishing effective public-policy frameworks and incentives, and investing in essential infrastructure and services and encouraging the sustainable use of resources via policy measures, including subsidies. However, long-term social planning in Lebanon and particularly in Akkar, is usually halted by political instability, while social services provided alleviate rather than heal the suffering of vulnerable population (MoSA, 2011). On the other hand, community projects for refugee hosting communities in Akkar and Bekaa by the UNHCR targeting the renovation of infrastructure were underway in 2014 in collaboration with the Lebanese government (UNHCR, 2014c). Additional similar projects are still needed in these marginalized areas.

Furthermore, there is a need to identify employment opportunities for refugees and train them with job skills that can be used to restore their lives once they return to their

home country, while at the same time protecting the Lebanese labor market (MercyCorps, 2014; UNHCR et al., 2015). In addition, the implementation of support initiatives to improve inter-communities' social cohesion is advisable as tensions between Lebanese hosts and Syrian refugees are escalating in some Lebanese areas while both are competing for the same services and resources. Such initiatives were applied in Akkar and Bekaa in 2014, but did not attain the desired goals due to some limitations in the design (Harb & Saab, 2014). Complementary programs based on the previous initiatives and modified accordingly should be established, where both Lebanese and Syrian refugee laborers are integrated into the same projects and cooperate to provide services to their communities without discrimination.

APPENDIX I

ETHICAL APPROVAL LETTER FORM FROM THE INSTITUTIONAL REVIEW BOARD – SOCIAL AND BEHAVIORAL SCIENCES AT THE AMERICAN UNIVERSITY OF BEIRUT

APPROVAL OF RESEARCH AMENDMENT

September 3, 2015

Dr. Lamis Jomaa
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Dear Dr. Jomaa,

On September 3, 2015, the IRB reviewed the following protocol:

Type of Review:	Modification, Expedited
Project Title:	Comparison of the food and nutrition security status of Syrian refugees and their Lebanese host communities: the case of Akkar
Investigator:	Lamis Jomaa
IRB ID:	NUT.LJ.06
Funding Agency:	Departmental Research Fund
Documents reviewed:	Received August 28, 2015: Amendment Letter, Amended Oral Script (Arabic and English version), Amended Questionnaires for mother and child (Arabic and English version).

The IRB reviewed and approved the proposed amendment to the oral script and questionnaires from September 3, 2015 to August 5, 2016 inclusive.
Before June 5, 2016 or within 30 days of study close, whichever is earlier, you are to submit a completed "FORM: Continuing Review Progress Report" and required attachments to request continuing approval or study closure.

If continuing review approval is not granted before the expiration date of August 5, 2016, approval of this research expires on that date.

Please find attached the stamped approved documents:

- Oral Script Arabic and English version (received August 28, 2015),
- Questionnaires for mother and child Arabic and English version (received August 28, 2015).

Kindly, Use copies of these documents to document consent.

Thank You.

Beirut POBox 11-0236 (F15), Riad El Solh 1107 2020, Beirut, Lebanon | Tel: +961-1-350000 Ext: 5445 | Fax: +961-1-738025 | Email: irb@aub.edu.lb
New York 3 Dag Hammarskjold Plaza, 8th Floor | New York, NY 10017-2303, USA | Tel: +1-212-583-7600 | Fax: +1-212-583-7651

The American University of Beirut and its Institutional Review Board, under the Institution's Federal Wide Assurance with OHRP, comply with the Department of Health and Human Services (DHHS) Code of Federal Regulations for the Protection of Human Subjects ("The Common Rule") 45CFR46, subparts A, B, C, and D, with 21CFR56; and operate in a manner consistent with the Belmont report, FDA guidance, Good Clinical Practices under the ICH guidelines, and applicable national/local regulations.

Sincerely,

Michael Clinton, PhD
IRB Vice Chairperson
Social & Behavioral Sciences

Cc: Fuad Ziyadeh, MD, FACP, FRCP
Professor of Medicine and Biochemistry
Chairperson of the IRB

Ali K. Abu-Alfa, MD, FASN
Professor of Medicine
Director, Human Research Protection Program

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APPENDIX II

ORAL SCRIPT (ENGLISH VERSION)

AUB

Title of study: Comparison of the Food and Nutrition Security Status of Syrian Refugees and their Lebanese Host Communities in Lebanon: The case of Akkar

Protocol number:

Script to be used for the recruitment of mother and child (4-10 years) pair.

Hello, my name is_____, I am part of a research team at the American University of Beirut. We are aiming to study the food security and economic status of Syrian refugees in Akkar and their Lebanese host community, and to examine the coping strategies and mechanisms among both communities, as well as to explore associations between food security and nutritional outcomes among children and women from both communities. These information will allow us to highlight food security status and its effect on children and mothers' nutritional status. For this reason, we are conducting interviews in the governorate of Akkar, North of Lebanon with mothers and children aged between 4 and 10 years old. We would like to invite you and one of your children to join us in this study.

Your participation in this study involves answering some questions through an interview that will take around 30 minutes of your time. We will also measure your height, weight, waist circumference, and mid-upper arm circumference, as well as your child's height, weight, waist circumference, and mid-upper arm circumference (if aged less than 5 years). You have the right to refuse to participate in this study and to not answer particular questions. Please understand that your participation is voluntary and you have the right to refuse or discontinue participation at any time without penalty or any problems. All the information that I receive from you will be treated with strict confidentiality and will be kept under lock and key. Your child will receive a dietary consultation upon the completion of the interview.

Would you like to consider participating in this study? Yes/No

For you to be eligible to participate in this study, we have a couple of questions to ask you.

Questions	Yes	No	Comments
Are you Lebanese OR Syrian?			
Do you have a child aged 4 to 10 years?			
Is your child Lebanese OR Syrian?			
Is your child present in the house today?			
Does your child have any medical problems that may affect his/her normal growth? (GI complications, respiratory illness, inborn errors, malformations or others)			
Is your child taking medications that			

may interfere with his eating patterns or body weight?			
Do you have any chronic illness (Diabetes, CVD, etc.)?			
Are you taking medications that may interfere with your eating patterns or body weight?			
For Syrians only: have you been in Lebanon for more than 6 months since the beginning of the Syrian crisis?			

Contact Information and Questions
If you have any questions or concerns about the research you may contact:

Dr. Lamis Jomaa, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4544) **E-mail**: lj18@aub.edu.lb

Dr. Farah Naja, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4504) **E-mail**: fn14@aub.edu.lb

Dr. Nahla Hwalla, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4400) **E-mail**: nahla@aub.edu.lb

If you have any questions, concerns or complaints about your rights as a participant in this research, you can contact the following office at AUB:
Social & Behavioral Sciences Institutional Review Board
Address: American University of Beirut; Riad El Solh, Beirut 1107 2020, Lebanon
Tel: 00961 1 374374, ext: 5445 **Email:** irb@aub.edu.lb

APPENDIX III

ORAL SCRIPT (ARABIC VERSION)

AUB

عنوان الدّراسة البحثية: مقارنة الأمن الغذائي والحالة الغذائية للاجئين السوريين والعائلات اللبنانية المستضيفة: عيّنة من عكّار

رقم البروتوكول:

نص يساعد على تطوع ثنائي الأم وابنها/ابنتها (٤-١٠ سنة) للمشاركة في الدراسة .

مرحباً، اسمي _____، وأنا عضو في فريق البحث في الجامعة الأمريكية في بيروت.
اننا نسعى لدراسة حالة الأمن الغذائي والحالة الاقتصادية عند اللاجئين السوريين والبيئة اللبنانية المضيفة في عكار، والبحث عن استراتجيات ووسائل التكيّف لدى كلا المجتمعين، بالاضافة الى استكشاف العلاقة ما بين الأمن الغذائي وتأثيرها على الغذاء عند الأطفال والأمهات في هذين المجتمعين. يمكننا من خلال هذه المعلومات أن نسلط الضوء على حالة الأمن الغذائي وتأثيرها على الحالة الغذائية للأطفال والأمهات. لهذا السبب، نحن نجري مقابلات في محافظة عكّار –شمالي لبنان، مع الأمهات وأطفال تتراوح أعمارهم ما بين ال٤ و١٠ سنوات. لذلك نود أن ندعوك وأحد أطفالك للمشاركة في هذه الدراسة.

تشمل مشاركتكم في هذه الدّراسة الإجابة على بعض الأسئلة من خلال مقابلة ستأخذ ٣٠ دقيقة من وقتكم. وسوف نقوم أيضا بقياس طولك ووزنك ومحيط خصرك وذراعك بالإضافة إلى طول ووزن ومحيط خصر طفلك. يحقّ لكم رفض المشاركة في هذه الدّراسة أو رفض الإجابة عن أسئلة معيّنة. إنّ مشاركتكم هي طوعية ويحقّ لكم رفض المشاركة أو التوقّف عن المشاركة في اي وقت من دون عقوبة أو أية مشاكل. جميع المعلومات التي سنحصل عليها منكم ستتمّ معالجتها بسرّيّة تامّة وسيتمّ تخزينها تحت القفل والمفتاح. سيحصل ابنك/ابنتك على استشارة غذائية عند الإنتهاء من المقابلة.

هل ترغبين بالمشاركة في هذه الدّراسة؟ نعم\ كلا

لتكوني مؤهّله للمشاركة في هذه الدّراسة، سنطرح بضعة أسئلة عليك.

الأسئلة	نعم	كلا	تعليقات (ملاحظات)
هل جنسيتك لبنانية أو سورية؟			
هل جنسية طفلك/طفلتك لبنانية أو سورية؟			
هل لديك طفل يتراوح عمره بين ال٤و١٠ سنة؟			
هل طفلك موجود في المنزل اليوم؟			
هل يعاني طفلك من مشاكل صحية قد تؤثّر على نموّه الطبيعي؟ (مضاعفات الجهاز الهضمي، أمراض الجهاز التنفّسي، أخطاء وِراثية، تشوّهات أو غيرها)			
هل يتناول طفلك أدوية قد تتداخل مع نمط غذائه أو وزنه؟			
هل تعانين من امراض مزمنه (كالسكّري، القلب)			
هل تتناولين أدوية قد تتداخل مع نمط غذائك أو وزنك؟			
للسوريين: هل مضى على وجودكم في لبنان أكثر من 6 أشهر منذ بدء الأزمة في سوريا			

معلومات الإتّصال

إذا كان لديكِ أي أسئلة او استفسارات حول هذا البحث، يُرجى الإتّصال ب:

الدكتورة لميس جمعة، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 961-1-350000، تحويلة (4544)، **البريد الإلكتروني**: lj18@aub.edu.lb

الدكتورة فرح نجا، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 961-1-350000، تحويلة (4504)، **البريد الإلكتروني**: fn14@aub.edu.lb

الدكتورة نهلا حولا، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 961-1-350000، تحويلة (4400)، **البريد الإلكتروني**:nahla@aub.edu.lb

إذا كانت لديكِ أي أسئلة، مخاوِف أو شكاوى حول حقوقكِ كمشاركة في هذا البحث، يمكنكِ الإتّصال بالمكتب التالي في الجامعة الأمريكية في بيروت:
لجنة الأخلاقيّات للعلوم الإجتماعية والسّلوكية
العنوان: الجامعة الأمريكية في بيروت؛ شارع رياض الصّلح، بيروت 2020 1107، لبنان
هاتف: 374374 1 00961، تحويلة: 5445، البريد الإلكتروني: irb@aub.edu.lb

APPENDIX IV

CONSENT FORM (ENGLISH VERSION)

Consent Form (English)
Mothers

Title of Research Study: Comparison of the Food and Nutrition Security Status of Syrian Refugees and their Lebanese Host Communities in Lebanon: The case of Akkar

Principal Investigators: Dr Lamis Jomaa, Department of Nutrition and Food Sciences, American University of Beirut.

Co-Investigators: Dr Farah Naja, Department of Nutrition and Food Sciences, American University of Beirut.

Dr Nahla Hwalla, Department of Nutrition and Food Sciences, American University of Beirut.

You and your child are invited to participate in a research study conducted by the Department of Nutrition and Food Sciences at the American University of Beirut. It is important that you read the information below carefully before agreeing that you and your child participate in the study, to understand the purpose, actions, benefits and risks related to you and your child's participation in the project. Please feel free to ask any questions if you need any clarification about what is stated in this form or if you need any additional information. You will be provided with this consent form which includes the project information as well as contact information of those carrying out the study for your future reference.

Objectives of the Study:

Food insecurity is a global burden that seems to be of particular concern in the MENA region, and in Lebanon particularly after the Arab Spring movement and mostly with the recent Syrian Refugees crisis. Many investigations reveal a high percentage of food insecurity among Syrian refugees and their Lebanese host communities, however these studies are not conclusive and do not present sufficient data. The objectives of this study are to compare the food security status of Syrian refugees in Akkar and their Lebanese host community, examine coping strategies and mechanisms among both communities, and to explore associations between food security and nutritional outcomes among children and women from both communities. By knowing these, we can provide data to better deal with this crisis and to prevent and alleviate the arising tension.

Project Description and Duration

We will conduct face-to-face interviews with 324 Syrian refugees and Lebanese hosts children aged 4-10 years and their mothers. Below is a description of what will happen if

you decide to participate in the study and you allow your 4-10 year old child's participation:

You will be interviewed at your house or elsewhere if you wish so. The interview will require around 30 minutes of your time. Both you and your child will be involved in the interview.

You (mother):
You will be privately asked some questions about the availability of food in your household, coping strategies, and some personal information like your age, education level, income, etc. We assure you that this information will be kept strictly confidential, even to other members of your family. In addition, you will be asked to provide a 24-hour dietary recall where you share with the interviewer what you ate and drank in the past 24 hours. Also, the interviewers will measure your weight, height, waist circumference and mid-upper arm circumference.

Your participating child (age 4-10 years):
Since your child is younger than 10 years, the interview will be conducted with you (mother). Your child will also be present during the interview and is allowed to assist you in answering the questions. During the interview, we will ask you to provide a 24-hour dietary recall for your child. In addition, we will measure the weight, height, waist circumference, and mid-upper arm circumference (if less than 5) of your child.

Risks, Discomforts, and Benefits

There are no risks resulting from you and your child's participation in this study. You may experience some discomfort when answering questions related to income and food availability however you or your child can choose not to answer any question if you wish. Your child will receive an individualized dietary consultation upon the completion of the interview.

Confidentiality

The data you provide will be kept strictly confidential. Your name will not be recorded on the questionnaire. Only members of our research group will have access to the questionnaires that will be used for research purposes only. Your name will not be reported when disseminating research findings. The filled questionnaires will be locked in a cabinet at a secure location. Electronic versions of the data will also be secured and locked by a password. Records will be monitored and may be audited by the IRB, however, measures will be taken to make sure confidentiality is not being violated.

Please acknowledge that your participation in this study is completely voluntary and that you are free to leave the study at any time without any penalty. Your decision not to participate will not influence your relationship with AUB in any possible way. However, your participation will allow us to highlight food security status and its effect on children and mothers' nutritional status.

Future Follow-Up Studies

There is potential that the data we obtain from this study may create the need for follow up studies which have an important role in determining the impact of food insecurity on different dimensions of your lives and those of your households, and to assess the efficiency of assistance and welfare programs put in place to address your needs. We are seeking your consent to contact you in the event that these follow-up studies are created. There is no obligation for you to participate in these follow-up studies if you provide your consent to be contacted. If you decline to be contacted, it will not affect your involvement with this study. Your contact details will be kept confidential. Only the principle and co-investigators of the research group will have access to your details which will be locked in a cabinet at a secure location.

Can we contact you again in the event of further follow up studies are created (please circle)?

Yes ***No***

If yes, please provide us with your contact telephone number:

Landline: _____ ***Mobile:***

_____ _____

Contact Information and Questions
If you have any questions or concerns about the research you may contact:

Dr. Lamis Jomaa, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4544) **E-mail:** lj18@aub.edu.lb

Dr. Farah Naja, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4504) **E-mail:** fn14@aub.edu.lb

Dr. Nahla Hwalla, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4400) **E-mail:** nahla@aub.edu.lb

If you have any questions, concerns or complaints about your rights as a participant in this research, you can contact the following office at AUB:
Social & Behavioral Sciences Institutional Review Board
Address: American University of Beirut; Riad El Solh, Beirut 1107 2020, Lebanon
Tel: 00961 1 374374, ext: 5445 **Email:** irb@aub.edu.lb

Institutional Review Board
American University of Beirut
06 AUG 2015
APPROVED

Participant Consent:
I have read and understood the above information.
I voluntarily agree to participate in the research study and I give you permission interview and obtain anthropometric measurements of both me and my child.

Participant Name: _____

Participant Signature: _____

Investigator/Research Staff

I have explained the research to the participant before requesting the signature above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name and signature of the person obtaining consent

_____

Date

_____

Witnessing of Consent (In case participant illiterate):
I have witnessed the interviewer reading the above text to the participant, and I am signing on behalf of the participant who has voluntarily agreed to participate in the study.

Witness Name: _____ Date: _____

Witness Signature: _____

Relationship to participant: _____

Institutional Review Board
American University of Beirut
06 AUG 2015
APPROVED

APPENDIX V

CONSENT FORM (ARABIC VERSION)

AUB American University of Beirut الجامعة الأميركية في بيروت

Consent form (Arabic)
إستمارة موافقة
الأمهات

عنوان الدّراسة البحثية: مقارنة الأمن الغذائي والحالة الغذائية للّاجئين السوريين و العائلات اللبنانية المستضيفة: عيّنة من عكّار

الباحثون الرّئيسيون: الدكتورة لميس جمعة - قسم التغذية وعلوم الغذاء، الجامعة الأميركية في بيروت.

الباحثون المساعدون: الدكتورة فرح نجا- قسم التغذية وعلوم الغذاء، الجامعة الأميركية في بيروت.

الدكتورة نهلا حولا- قسم التغذية وعلوم الغذاء، الجامعة الأميركية في بيروت.

أنتِ وطفلك مدعوّان للمشاركة في دراسة بحثيّة يُجريها قسم التغذية وعلوم الغذاء في الجامعة الأميركية في بيروت. من المهمّ أن تقرأي المعلومات المذكورة أدناه بعناية قبل الموافقة على مشاركتك و مشاركة طفلك في الدّراسة، من أجل فهم الأهداف، الإجراءات، الفوائد والأخطار المرتبطة بمشاركتكِ أنت وطفلك بهذا المشروع. لا تتردّدي في طرح الأسئلة إذا كنتِ بحاجة إلى توضيح حول ما ورد في هذه الإستمارة أو إذا كنتِ بحاجة إلى أي معلومات إضافية. سوف تعطيكِ هذا الإستمارة اللتي تتضمن معلومات عن المشروع وكذلك معلومات عن كيف الاتصال مع الفريق الذي يجري الدراسة للرجوع اليها في المستقبل.

أهداف الدّراسة:

إن انعدام الأمن الغذائي عبء عالمي خاصة في منطقة الشرق الأوسط وشمال افريقيا، وعلى وجه الخصوص في لبنان بعد الربيع العربي ومع أزمة اللاجئين السوريين الحديثة. تظهر العديد من البحوث نسبة مرتفعة من انعدام الأمن الغذائي عند اللاجئين السوريين والبيئة اللبنانية المضيفة، إلا أن هذه الدراسات غير حاسمة ولا تقدم معطيات كافية. الأهداف من هذه الدراسة هو مقارنة حالة الأمن الغذائي بين اللاجئين السوريين والبيئة اللبنانية المضيفة في عكار، بحث استراتجيات ووسائل التكيّف لدى كلا المجتمعين، واستكشاف العلاقة ما بين الأمن الغذائي وتأثيرها على الغذاء عند الأطفال والأمهات في هذين المجتمعين. يمكننا من خلال هذه المعلومات تأمين البيانات اللازمة لتعامل أفضل مع الأزمة، ولتجنّب وتخفيف وطأة التوتّر الحاصل.

وصف المشروع ومدّته

سيتم القيام بمقابلات مع ٣٢٤ طفل/طفلة عمره بين ٤-١٠ سنة وأمهاتهم من اللاجئين السوريين والمضيفين اللبنانيين.. وفيما يلي شرح لما سيحدث إذا قررت المشاركة في الدراسة وإذا سمحت لطفلك/طفلتك البالغ(ة) من العمر ٤-١٠ سنة بالمشاركة:

ستتم مقابلتكِ في منزلكِ أو في مكان آخر إذا كنتِ ترغبين بذلك. سوف تستغرق المقابلة حوالي ٣٠ دقيقة من وقتكِ و ستشاركين أنت وطفلك في هذه المقابلة.

أنت (الأم):
ستُطرح عليك بعض الاسئلة مع الحفاظ على خصوصيتك، وتدور هذه الأسئلة حول توفر المواد الغذائية في منزلك وعن بعض المعلومات الاجتماعية والديموغرافية مثل العمر ، المستوى العلمي، المدخول المادي، وما إلى ذلك. نحن نؤكد لك أن المعلومات التي ستوفرينها ستبقى في غاية السرية، حتى من أفراد عائلتك الآخرين. بالإضافة إلى ذلك، سوف يطلب منك تحديد ما أكلت وشربت خلال ال-٢٤ ساعة الاخيرة (مأخوذك الغذائي). وايضاً، سيقيس الباحثون وزنك، طولك، محيط خصرك ، و محيط ذراعك.

طفلك المشارك (عمر ٤-١٠ سنة):
بما أن عمر طفلك أقل من ١٠ سنوات من العمر، سيتم إجراء المقابلة معك (الأم) وسيكون طفلك متواجد خلال المقابلة حيث يسمح له/ها بمساعدتك في الإجابة عن الأسئلة. خلال المقابلة، سنسألك أن تقدمي مأخوذ طفلك الغذائي خلال ال-٢٤ ساعة الماضية (ما هي المأكولات و المشروبات التي يتناولها عادة). وايضاً سيقيس الباحثون وزن طفلك/طفلتك وطوله، ومحيط خصره.

المخاطر، المشاكل والفوائد

ليس هناك مخاطر ناتجة عن مشاركتكِ ومشاركة طفلك في هذه الدّراسة. لكن في حال تعرضتِ لأي نوع من الانزعاج عند الإجابة عن أي سؤال ، كالأسئلة المتعلقة بو ضع العائلة الغذائي فبإمكانك أن تختاري عدم الإجابة عن أي سؤال. سيحصل طفلك/طفلتك على استشارة غذائية خاصّة به/ها عند الإنتهاء من المقابلة.

السرّية

إنّ المعلومات التي ستوفّرينها ستبقى في غاية السريّة. لن يُسجَّل اسمكِ على الاستبيان. فقط أعضاء فريق البحث سيتمكّنون من الحصول على الإستبيانات التي ستُستعمل لأهداف بحثيّة فقط لا غير. لن يتمّ الإبلاغ عن اسمكِ عند نشر نتائج البحث، وسيتمّ خزن الإستبيانات التي تمّ ملؤها في خزانة بمكان آمن. كما سيتمّ حفظ نسخ إلكترونية من البيانات والتأمين عليها بكلمة سرّ. قد يتمّ مراجعة استمارتك وقد تستعمل للتدقيق من قبل اجنة الأخلاقيّات، ولكن عندها سيتم أخذ الأجراءات اللازمة للحفاظ على الخصوصية التامة.

الرجاء أن تعلمي بأنّ مشاركتكِ في هذه الدّراسة طوعيّة تماماً ويحقّ لكِ التوقّف عن ذلك في أي وقت من دون أي مشاكل. وإذا قرّرتِ عدم المشاركة، فلن يؤثّر ذلك بأي شكل من الأشكال على علاقتكِ بالجامعة الأميركية في بيروت.

دراسات مستقبلية ومُتابعة

هناك احتمال أنّ المعلومات التي نحصل عليها من خلال هذه الدراسة قد تخلق الحاجة إلى دراسات مُتابِعة والتي لها دور مهمّ في تحديد وقع انعدام الأمن الغذائي على مختلف أبعاد حياتكِ وحياة أهل بيتكِ، وفي تقدير فعاليّة برامج المساعدات والانعاش التي وضعت لتلبية حاجاتكم.

نحن نسعى لموافقتكِ على الاتصال بكِ فقط في حال تمّ إنشاء هذه الدراسات المُتابعة. لستِ مُلزمة بالمشاركة في هذه الدراسات في المستقبل إذا وافقتِ على أن نتّصل بكِ. وإذا كنتِ ترفضين أن نتّصل بكِ، فإنّ هذا لن يؤثر على مشاركتكِ في دراستنا الحالية. سوف يتمّ الاحتفاظ بالمعلومات الخاصّة بكِ بسرّيّة. فقط الباحثون الرئيسيون والمساعدون في هذا البحث سوف يتمكّنون من الحصول على المعلومات الخاصّة بكِ والتي ستحفظ في خزانة مُقفلة بمكان آمن.

هل يمكننا الاتصال بك مرةً أخرى في حال تمّ إنشاء المزيد من الدراسات المُتابعة؟ (يُرجى وضع دائرة حول)

نعم كلا

إذا كانت الإجابة نعم، يرجى تزويدنا برقم الهاتف الخاص بكِ_____

لمزيد من المعلومات والأسئلة حول البحث، يُرجى الإتّصال بالأشخاص المذكورين أدناه:

الدكتورة لميس جمعة، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 961-1-350000، تحويلة (4544)، **البريد الإلكتروني:** lj18@aub.edu.lb

الدكتورة فرح نجا، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 961-1-350000، تحويلة (4504)، **البريد الإلكتروني:** fn14@aub.edu.lb

الدكتورة نهلا حولا، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 961-1-350000، تحويلة (4400)، **البريد الإلكتروني:**nahla@aub.edu.lb

إذا كانت لديكِ أي أسئلة، مخاوِف أو شَكاوى حول حقوقكِ كمشاركة في هذا البحث، يمكنكِ الإتّصال بالمكتب التالي في الجامعة الأميركية في بيروت:

لجنة الأخلاقيّات للعلوم الإجتماعية والسّلوكية
العنوان: الجامعة الأميركية في بيروت؛ شارع رياض الصّلح، بيروت 2020 1107، لبنان
هاتف: 00961 1 374374، تحويلة: 5445، البريد الإلكتروني: irb@aub.edu.lb

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موافقة المشاركة: لقد قرأتُ وفهمتُ المعلومات الواردة أعلاه.

أوافق طوعاً على المشاركة في هذه الدّراسة البحثية وأسمح لكم بالحصول على القياسات الخاصّة بي وبطفلي

اسم المشاركة: _____

توقيع المشاركة: _____

توثيق الموافقة على الإشتراك:

لقد شرحت البحث للمشارك قبل طلب التوقيع أعلاه. لا توجد فراغات في هذه الوثيقة. وقد أعطيت نسخة من هذا النموذج للمشترك أو ممثله/ها.

إسم و توقيع الشخص المصرح له بالحصول على موافقة المشترك:

_____

التاريخ: _____

الشهادة على الموافقة (في حال كانت المشاركة أميّة):

أشهد على أنّ المقابِل قرأ النّص الوارد أعلاه للمشارِكة، وها أنا أوقّع نيابةً عن المشتركة التي وافقت طوعاً على المشاركة في الدّراسة.

اسم الشّاهِد: _____

توقيع الشّاهِد: _____

علاقة الشّاهد بالمشارِكة: _____ التّاريخ: _____

APPENDIX VI

ASSENT FORM (ENGLISH VERSION)

AUB

Institutional Review Board
American University of Beirut
14 JUL 2015
RECEIVED

Assent Form
Children aged 6-10 years

Title of the study: Comparison of the Food and Nutrition Security status of Syrian Refugees and their Lebanese Host Communities in Lebanon: The case of Akkar

Principle Investigators:	Dr. Lamis Jomaa. Department of Nutrition and Food Sciences, American University of Beirut
Co-Investigators:	Dr. Farah Naja. Department of Nutrition and Food Sciences, American University of Beirut Dr. Nahla Hwalla. Department of Nutrition and Food Sciences, American University of Beirut

Introduction:

- You are being asked to be in a research study. Studies aim to improve the quality of life that we live by understanding how we think and behave as kids and adults in given situations and at different times.
- This form will tell you about the study to help you decide whether or not you want to participate.
- You should ask any questions you have before making up your mind. You can think about it and discuss it with your family or friends before you decide.
- It is okay to say "No" if you don't want to be in the study. If you say "Yes" you can change your mind and quit being in the study at any time without getting in trouble.
- If you decide you want to be in the study, an adult (usually a parent) will also need to give permission for you to be in the study.

1. What is this study about?

The recent conflict in our region have led to many social and economic challenges that negatively affected the livelihood of adult and children. Our study aims to compare the socioeconomic status, food security, and nutritional status of Lebanese and Syrian mothers and children of your age.

2. What will I need to do if I am in this study?

We will ask you questions about what you commonly eat and drink. Your mother will be around to help you answer the questions. Also, we would like to take your height, weight, and waist circumference. You only have to remove your shoes for this and any heavy clothing like a sweater if you have one on you.

Institutional Review Board
American University of Beirut
06 AUG 2015
APPROVED

3. How long will I be in the study?

The interview will last for around 30 minutes with you and your mother. This will be the only visit and interview we will have with you in this study.

4. Can I stop being in the study?

You can stop being in the study at any time. We would not be upset and it would not affect you or your parents' relationship with the American University of Beirut.

5. What bad things might happen to me if I am in the study?

Nothing bad will happen to you by joining this study. No one outside the interview other than your mother and I will know what you answered. If you do not want to answer a question, you can choose not to.

6. What good things might happen to me if I am in the study?

There is no direct benefit for you by being in the study, but sharing your experiences will help us better understand the effect of the conflict in the region on the food security status and relationship between refugees and their host. This way we can encourage the planning of programs and interventions to ameliorate the living conditions of both groups and to prevent any future tensions.

7. Will I be given anything for being in this study?

We will give your mother some recommendations that will help to enhance your health, and contribute to a better development and progress.

8. Who can I talk to about the study?

For questions about the study you can contact:

Dr. Lamis Jomaa, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4544) **E-mail:** lj18@aub.edu.lb

Dr. Farah Naja, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4504) **E-mail:** fn14@aub.edu.lb

Dr. Nahla Hwalla, Faculty of Agricultural & Food Sciences-AUB
Tel: 961-1-350000 (Ext 4400) **E-mail:** nahla@aub.edu.lb

To discuss other study-related questions with someone who is not part of the research team, you can contact the AUB Social & Behavioral Science Institution Review Board at:

Address: American University of Beirut; Riad El Solh, Beirut 1107 2020, Lebanon
Tel: 00961 1 374374, ext: 5445 **Email:** irb@aub.edu.lb

Signing the assent form

I have read (or someone has read to me) this form. I have had a chance to ask questions before making up my mind. I want to be in this research study.

Printed name of subject **Date and time**

Investigator/Research Staff

I have explained the research to the participant before requesting the signature above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining assent **Signature of person obtaining assent**

Date and time

This form must be accompanied by an IRB approved parental permission form signed by a parent/guardian.

Institutional Review Board
American University of Beirut
06 AUG 2015
APPROVED

APPENDIX VII

ASSENT FORM (ARABIC VERSION)

AUB

نموذج للموافقة على الإشتراك ببحث علمي للمشترك القاصر

الاطفال ذو العمر الذي يتراوح بين 6-10 سنوات

إسم البحث: مقارنة الأمن الغذائي والحالة الغذائية للّاجئين السوريين و العائلات اللبنانية المستضيفة: عيّنة من عكّار

الباحثون الرّئيسيون: الدكتورة لميس جمعة - قسم التغذية وعلوم الغذاء، الجامعة الأميركية في بيروت.

الباحثون المساعدون: الدكتورة فرح نجا- قسم التغذية وعلوم الغذاء، الجامعة الأميركية في بيروت.

الدكتورة نهلا حولا- قسم التغذية وعلوم الغذاء، الجامعة الأميركية في بيروت.

مقدّمة:

- أنت مدعو للمشاركة في دراسة بحثية. الدراسات تهدف إلى تحسين نوع الحياة التي نعيشها من خلال فهم كيف نفكر و نتصرف كصغار و كبار في مجالٍ معين و أوقات مختلفة.
- سيعرّفك هذا النموذج عن الدراسة لمساعدتك في أن تقرر ما إذا كنت ترغب في المشاركة.
- لك مطلق الحرية بأن تسأل أي سؤال قبل إتخاذ قرارك. يمكنك التفكير بالأمر ومناقشته مع عائلتك أو أصدقائك قبل أن تقرر.
- يمكنك رفض المشاركة في الدراسة إذا أردت ذلك. وإن وافقت على المشاركة، بإمكانك أن تغير رأيك لاحقاً وتترك الدراسة في أي وقت من دون أي مشاكل.
- إذا قررت المشاركة في هذا البحث،على أحد الكبار أيضاً (أحد الوالدين عادةً) إعطاء الإذن بالسماح لك بالمشاركة.

١. عما يدور هذا البحث؟

ان الصراع الأخير في منطقتنا أدّت الى العديد من التحديات الاجتماعية والاقتصادية أثّرت سلبيا على معيشة الراشدين والأطفال. دراستنا تهدف لمقارنة الوضع الاجتماعي-الاقتصادي، الأمن الغذائي، والحالة الغذائية للأمهات والأطفال الذين من عمرك، من السوريين واللبنانيين.

٢. ماذا علي أن أفعل إذا كنت مشاركاً في هذا البحث؟

سوف نسألك بعض الاسئلة عما تأكله عادةً. وستكون والدتك متواجدة لمساعدتك في الإجابة عن الأسئلة. وأيضا، نود الحصول على طولك، وزنك، ومحيط خصرك. لذا يُطلب منك إزالة حذاءك فقط و أية ملابس ثقيلة كسترة.

٣. كم من الوقت سيستغرق هذا البحث؟

سوف تستغرق المقابلة حوالي ٣٠ دقيقة معك ومع أمك. ستكون هذه الجلسة والزيارة الوحيدة في هذه الدراسة.

٤. هل بإمكاني التوقف عن المشاركة في البحث؟

يمكنك التوقف عن المشاركة في البحث في أي وقت. لن نستاء منك وقرارك لن يؤثر على علاقتك أو علاقة عائلتك بالجامعة الأمريكية في بيروت.

٥. هل ممكن أن يحصل لي أي ضرر؟

إنّ مشاركتك لن تؤدي إلى أي أذى. لا أحد خارج المقابلة سواي أنا وأمك سيعلم بإجابتك. وإذا أردت عدم الإجابة عن سؤال، يمكنك إختيار ذلك.

٦. ما الإفادة من مشاركتك في الدراسة؟

ليس هناك فوائد مباشرة لكونك في الدراسة، ولكن تبادل خبراتك ستساعدنا على فهم تداعيات الصراع في المنطقة على حالة الأمن الغذائي والعلاقة بين اللاجئين السوريين والبيئة اللبنانية المضيفة. وبهذه الطريقة يمكننا أن نشجع على قيام برامج وتدخلات لتحسين الحالة المعيشية لكلتا الفئتين ولتجنّب أي توتر في المستقبل.

٧. هل سأمنح تعويض مقابل المشاركة في هذه الدراسة؟

سوف نقدّم لوالدتك بعض النصائح والارشادات التي تساعد على تحسين صحتك، وتساهم في نموك وتطورك بشكل سليم.

٨. مع من أستطيع التحدث عن الدراسة؟

لطرح أية اسئلة عن الدراسة، يمكنك الاتصال ب:

الدكتورة لميس جمعة، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 350000-1-961، تحويلة (4544)، **البريد الإلكتروني**: lj18@aub.edu.lb

الدكتورة فرح نجا، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 350000-1-961، تحويلة (4504)، **البريد الإلكتروني**: fn14@aub.edu.lb

الدكتورة نهلا حولا، كلية العلوم الزراعية والأغذية، الجامعة الأمريكية في بيروت
هاتف: 350000-1-961، تحويلة (4400)، **البريد الإلكتروني**:nahla@aub.edu.lb

إذا كانت لديك أية أسئلة، أو كنت ترغب في التحدث مع شخص من خارج فريق البحث، يمكنك الإتّصال بالمكتب التالي في الجامعة الأمريكية في بيروت:
لجنة الأخلاقيّات للعلوم الإجتماعية والسّلوكية
العنوان: الجامعة المريكية في بيروت؛ شارع رياض الصّلح، بيروت 2020 1107، لبنان
هاتف: 374374 1 00961، تحويلة: 5445، **البريد الإلكتروني**: irb@aub.edu.lb

التوقيع على نموذج الموافقة

إذا أردت الإشتراك في هذه الدراسة، الرجاء كتابة الإسم.

لقد قرأت (أو شخص قد قرأ لي) هذا النموذج. وقد أتيحت لي فرصة لطرح الأسئلة قبل اتخاذ قراري. وبالتالي أوافق طوعاً على الإنضمام إلى البحث.

_____ _____

اسم المشترك(ة) التاريخ و الساعة

<u>توثيق الموافقة على الإشتراك:</u>

لقد شرحت البحث للمشارك قبل طلب التوقيع أعلاه. لا توجد فراغات في هذه الوثيقة. وقد أعطيت نسخة من هذا النموذج للمشترك أو ممثله/ها.

_____ _____

إسم الشخص المصرح له بالحصول على موافقة المشترك

توقيع الشخص المصرح له بالحصول على موافقة المشترك

_____

التاريخ و الساعة

APPENDIX VIII

QUESTIONNAIRE (ENGLISH VERSION)

Faculty of Agricultural and Food Sciences

Department of Nutrition and Food Sciences

Comparison of the Food and Nutrition Security Status of Syrian Refugees and their Lebanese Host Communities in Lebanon: The case of Akkar

Questionnaire for Mother and Child (age 4-10 years)

2015

1

Contents

Comparison of the Food and Nutrition Security Status of Syrian Refugees and their Lebanese Host Communities in Lebanon: The case of Akkar

Date: ..... **ID:** .....

Interviewer: ..... **Village/Area:** .....

Time started: .....

Instructions: The following section includes some questions that you are kindly asked to answer to the best of your knowledge. All information you provide will remain confidential and no one outside the study will have access to it or to your identity. You have the freedom of choice to refuse to participate in the questionnaire and to refuse to answer any question within, as well as to stop participating at any time during the questionnaire.

I. Socio-demographic information

(MOTHER)

This section comprises general questions pertaining to you (mother) and your family.

No	Question	Answer codes
1.	What is your nationality?	1. Lebanese 2. Syrian
2.	What is your age? (date of birth)	_____
3.	Marital status	1. Married 2. Widowed 3. Divorced 4. Other, specify: _____
4.	What is the participant child's age? (date of birth)	_____
5.	What is the participant child's gender?	1. Male 2. Female
6.	What is the highest educational level that you have attained?	1. No schooling 2. Primary school 3. Intermediate school 4. High school 5. Technical diploma 6. University degree

7.	What is your husband's highest educational level?	1. No schooling 2. Primary school 3. Intermediate school 4. High school 5. Technical diploma 6. University degree
8.	What kind of work do you do?	1. Homemaker 2. Employee, full time 3. Employee, part time 4. Self- employed, please specify in which area:_____
9.	What kind of work does your husband do?	1. Not working 2. Employee, full time 3. Employee, part time 4. Daily manual laborer 5. Self- employed, please specify in which area:_____
10.	Did you specialize in a health related major (medicine, biology, public health, pharmacy…)?	1. Yes 2. No
11.	Do you own the house you currently live in?	1. Yes 2. No
12.	How many assets do you have? (Cars, lands, apartments…)	Type of asset: Cars / Lands / Apartments / Other: — How many?: ____ / ____ / ____ / ____ / ____
13.	How many electrical appliances do you have in your household?	_____
14.	In the house that you live in for the majority of the year, how many rooms does it have? (NTS: This excludes the kitchen, bathroom, garage, or **open** balconies)	_____

15.	What is the total number of individuals living in your household? (NTS: This includes helpers, relatives or family members that frequently live with you on a permanent or semi-permanent basis)	_____
16.	Specify the monthly income of the family (L.L.)	1. Less than 300,000 2. 300,001 – 600,000 3. 600,001 – 999,000 4. 1,000,000 – 1,499,000 5. 1,500,000 – 1,999,000 6. 2,000,000 – 2,499,000 7. 2,500,000 – 3,000,000 8. Greater than 3,000,000

17. What is the estimated amount spent by the household during LAST MONTH for the following items (include cash and voucher assistance):

    Write 0 if there is no expenditure

    Lebanese POUNDS (L.L) spent **LAST MONTH**

    a. TOTAL expenditure by the household in the last month _____
    b. Food expenditure _____
    c. Health expenditures _____
    d. Education expenditures _____
    e. Other _____

18. Have you received any kind of assistance over the last 3 months? If you have please tick accordingly among the following options a) No b) Yes:

Assistance	
☐	Food assistance : in kind (food basket)
☐	Food assistance : e-card / voucher
☐	In conditional cash
☐	Other

Adapted from ((WFP), 2015)

Notes:

_____

_____

_____

If Lebanese please skip to question 20:

19. How long have you and your family lived in this locality?
    a. ≤ 1 Month
    b. 1 - 6 Months
    c. ≥ 6 Months

20. How many children do you have? _____
    In the table provided below, list your children specifying the age (years) and whether they attend school (public or private school):

Child number	Age in years	School		
		Private	Public	Doesn't attend school

II. Anthropometric assessment:

For these measurements, please remove shoes and any heavy clothing like a sweater if you are wearing one.

Mother

21. Are you currently pregnant?
    a) No
    b) Yes, Specify which month or week: _____

22. Are you currently lactating (breast feeding)?
    a. No
    b. Yes

Current measurements:

No	Question	Answer codes
23.	Weight (cm)	_____
24.	Height (cm)	_____
25.	Waist circumference (cm)	_____
26.	MUAC (cm)	_____

Child

No	Question	Answer codes
27.	Weight (cm)	_____
28.	Height (cm)	_____
29.	Waist circumference (cm)	_____
30.	MUAC (cm) –only for children <5years	_____

III. Household Food Security Measurement

(MOTHER)

NUMBER	QUESTION	RESPONSE OPTIONS
31.a	In the past 4 weeks, did you worry that your household would not have enough food?	**1.** No **2.** Yes
31.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4 weeks) **2.** Sometimes (3 to 10 times in the past 4 weeks) **3.** Often (more than 10 times in the past 4 weeks)
32.a	In the past 4 weeks, were you or any household member not able to eat the kinds of food you preferred because of a lack of resources?	**1.** No **2.** Yes
32.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4 weeks) **2.** Sometimes (3 to 10 times in the past 4 weeks) **3.** Often (more than 10 times in the past 4 weeks)
33.a	In the past 4 weeks, did you or any household member have to eat a limited variety of food due to a lack of resources?	**1.** No **2.** Yes
33.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4 weeks) **2.** Sometimes (3 to 10 times in the past 4 weeks) **3.** Often (more than 10 times in the past 4 weeks)
34.a	In the past 4 weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	**1.** No **2.** Yes
34.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4 weeks) **2.** Sometimes (3 to 10 times in the past 4 weeks) **3.** Often (more than 10 times in the past 4 weeks)
35.a	In the past 4 weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	**1.** No **2.** Yes

35.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4 weeks) **2.** Sometimes (3 to 10 times in the past 4weeks) **3.** Often (more than 10 times in the past 4 weeks)
36.a	In the past 4 weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	**1.** No **2.** Yes
36.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4 weeks) **2.** Sometimes (3 to 10 times in the past 4weeks) **3.** Often (more than 10 times in the past 4weeks)
37.a	In the past 4 weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	**1.** No **2.** Yes
37.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4 weeks) **2.** Sometimes (3 to 10 times in the past 4 weeks) **3.** Often (more than 10 times in the past 4 weeks)
38.a	In the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?	**1.** No **2.** Yes
38.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4 weeks) **2.** Sometimes (3 to 10 times in the past 4 weeks) **3.** Often (more than 10 times in the past 4 weeks)
39.a	In the past 4 weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	**1.** No **2.** Yes
39.b	How often did this happen?	**1.** Rarely (1 or 2 times in the past 4weeks) **2.** Sometimes (3 to 10 times in the past 4weeks) **3.** Often (more than 10 times in the past 4 weeks)

IV. Coping Strategies Index Questionnaire

This questionnaire is to be administered to the mother in each of the participants' household

	Coping Strategies Index						
40.	**In the past month, have you had enough food or money to buy food for your Family?**	**0** = NO 1 = YES IF 'No" ignore question 38					
41.	**During the past month, how often did you have to do the following…**	**All the time (everyday)**	**Pretty Often (3-6 times a week)**	**Once in a while (1-2 times a week)**	**Hardly at all (<1 per week)**	**Never**	**NA**
	Relied on less preferred and less expensive foods?						
	Borrowed money to buy food?						
	Relied on help from a friend or relative to secure food?						
	Limited portion size at meal times?						
	Restricted consumption by adults in order for small children to eat?						
	Reduced number of meals eaten in a day?						
	Sent family members eat elsewhere?						
	Spend whole day without eating?						
	Spent savings?						
	Sold jewelry or household goods (furniture, television, radio…)?						
	Sold transportation means?						
	Sold house or land?						
	Reduce essential non-food expenditures such as education, health?						
	Withdrew children from school?						

10

	Have school children (6 -15 years old) involved in income generation?						
	Have a child married under the age of 16?						
	Sent an adult household member to seek work outside of Lebanon?						

V. 24 Hour Recall

Mother

Please recall what you (**mother**) ate and drank from the time you woke up yesterday until the next morning (before breakfast). Specify the timing of their intake including water, milk, snacks and meals.

Time	Food eaten	Amount	Method of preparation

Is this your usual eating pattern?

a. Yes
b. No

If the answer is no, why?

.....

.....

Child

Since the child is **NOT younger than 10 years**, then he is requested to be the primary respondent and the mother can assist in answering the questions.

Dear Child Participant,

Please recall what **you** ate and drank from the time you woke up yesterday until the next morning (before breakfast). Specify the timing of your intake including water, milk, snacks and meals.

Time	Food eaten	Amount	Method of preparation

Is this the usual eating pattern of the child?

a. Yes
b. No

If the answer is no, why?

.....

.....

VI. Household Food Consumption Score

Mothers are asked to recall the foods that were consumed in the household in the previous seven days

Food item	Number of days when the food was eaten last week (0 to 7)
Cereals, Grains and Cereal Products (Rice, corn, wheat, bulgur, other cereal)	
Bread and Pasta	
Roots, Tubers (Potato, Other Tuber) DO NOT INCLUDE ORANGE SWEET POTATO IN THIS GROUP	
Nuts and Pulses Bean; lentils, Pigeon Pea; Chick peas, Groundnut; Ground Bean; green peas, Cow Pea; Other Nut/Pulse), Garden Peas, (Sweet Peas)	
Green leafy vegetables:, spinach, chicory, amaranth, wild leaves, rockets, quets, other dark green leaves,	
Vit A rich vegetables (pumpkin, squash, red sweet pepper, Carrots, sweet potato) ORANGE-COLOURED VEGETABLES	
Other vegetables: Onions, garlic, tomatoes, cucumber, radish, cabbage, lettuce, tomato paste	
Vit A rich fruits: mango, Apricots, peaches, papaya, ORANGE-COLOURED FRUITS-do not consider oranges/citrus)	
Other Fruits: banana, apple, avocado, citrus – (mandarin, lemon), melon, watermelon, pomegranate syrup.	
Liver, organ meat,	
Flesh meat. Beef; Goat; Chicken, turkey, sheep, other Meat,	
Eggs	
Fish (Dried/Fresh/Smoked Fish, Other Sea-food (Excluding Fish Sauce/Powder)	
Sugar/Sugar Products/Honey (Sugar; Sugar Cane; Honey; Jam; Jelly; Sweets/Candy/ Chocolate; Other Sugar Product, Biscuits, Pastries, Cakes)	
Milk/Milk Products (Fresh/Powdered/Soured Milk; Yogurt; Lebneh, Cheese; Other Milk Product - **Excluding Margarine/Butter or Small Amounts of Milk for Tea/Coffee)**	

Fats/Oil (olive Oil; other vegetable oil, gee, Butter; Margarine; Other Fat/Oil)	
Spices/Condiments (Tea; Coffee, Nescafe/Cocoa; Salt; Spices; Yeast/Baking Powder; ketchup/Hot Sauce; Maggy cubes; Powder; Other Condiment - Including Small Amounts of Milk for Tea/Coffee)	

Adapted from Vulnerability Assessment of Syrian refugees VASyr 2015

Time ended: .....

APPENDIX IX

QUESTIONNAIRE (ARABIC VERSION)

كلّية العلوم الزراعيّة والغذائيّة

قسم التغذية وعلوم الغذاء

مقارنة الأمن الغذائي والحالة الغذائية للّاجئين السوريين والعائلات اللبنانية المستضيفة: عيّنة من عكّار

استمارة الأم والطفل (من عُمر ٤-١٠ سنوات)

2015

1

جدول المحتويات

مقارنة الأمن الغذائي والحالة الغذائية للّاجئين السوريين والعائلات اللبنانية المستضيفة: عيّنة من عكّار

التاريخ: ..... **رقم الهوية:** .....

الباحث: ..... **القرية/المنطقة:** .....

وقت البدء: .....

الجزء التالي يتضمن بعض الأسئلة التي يرجى منك الاجابة عليها على أفضل وجه حسب معرفتك. كا المعلومات التي تعطيها سوف تبقى سرّية، ولا أحد خارج الدراسة سيستطيع الوصول اليها أو الى هويتك. لديك الحرّية بأن ترفض المشاركة في الاستمارة وبأن ترفض الاجابة على أيّ من الأسئلة التي يتضمنها، كما يمكنك التوقف عن المشاركة في أي وقت خلال تعبئة الاستمارة.

I. المعلومات الاجتماعية والديموغرافية:

(الأم)

هذا الجزء يتكون من أسئلة عامّة تتعلق بك (الأم) وبعائلتك.

الرقم	السؤال	شفرة الجواب
.1	ما هي جنسيتك؟	1. لبناني 2. سوري
.2	كم عمرك؟ (تاريخ الولادة)	_____
.3	الوضع العائلي	1. متزوجة 2. مطلقة 3. أرملة 4. غير، حدّدي: _____
.4	كم هو عمر الطفل(ة) المشارك؟ (تاريخ الولادة)	_____
.5	ما هو جنس الطفل(ة) المشارك؟	1. أنثى 2. ذكر
.6	ما هو أعلى مستوى تعليمي لك؟	1. غير متعلمة 2. المدرسة الابتدائية 3. المدرسة المتوسطة 4. الثانوية 5. دبلوم في المهنية 6. شهادة جامعية

.7	ما هو أعلى مستوى تعليمي لزوجك؟	1. غير متعلمة 2. المدرسة الابتدائية 3. المدرسة المتوسطة 4. الثانوية 5. دبلوم في المهنية 6. شهادة جامعية
.8	ما نوع العمل الذي تمارسينه؟	1. ربّة منزل 2. موظفة بدوام كامل 3. موظّفة بدوام جزئي 4. أعمل لحسابي الخاص، رجاء حدّدي في أي مجال:
.9	ما نوع العمل الذي يمارسه زوجك؟	1. لا يعمل 2. موظف بدوام كامل 3. موظّف بدوام جزئي 4. عامل يومي 5. يعمل لحسابه الخاص، رجاء حدّدي في أي مجال:
.10	هل تخصّصت في مجال يتعلّق بالصحّة (طبّ، علم الحياة، صحّة عامّة، صيدلة،....)	1. نعم 2. كلا
.11	هل تملكين البيت الذي تعيشون فيه حاليا؟	1. نعم 2. كلا
.12	كم عدد الممتلكات التي تملكونها؟ (سيارات، أراضي، شقق،...)	نوع الممتلكات / عددها سيارات _____ أراضي _____ شقق _____ غيرها: _____
.13	كم عدد الأجهزة الكهربائية في مكان اقامتك؟	_____
.14	في مكان اقامتك خلال غلبية السنة، كم عدد الغرف؟ (يستثنى المطبخ، الحمام، الكاراج، الشرف **المفتوحة**)	_____

.15	ما هو العدد الاجمالي للأفراد الذين يقيمون في مكان سكنك؟ (يشمل المساعدين، الأقرباء أو أفراد العائلة الذين يعيشون معك بشكل متكرّر أو شبه متكرّر)	_____
.16	حدّدي الدخل الشهري للعائلة (ليرة لبنانية)	.1 أقل من 300.000 .2 300.001-600.000 .3 999.000-600.001 .4 1.499.00-1.000.000 .5 1.999.000-1.500.000 .6 2.499.000-2.000.000 .7 3.000.000-25.500.000 .8 أكثر من 3.000.000

17. ما هو المبلغ التقريبي الذي أنفق في المنزل **خلال الشهر الماضي** من أجل الأشياء التالية (اشمل المساعدات المالية والقسائم) :ضع 0 اذا لم يكن هناك أيّ مصروف

ليرة لبنانية (ل.ل.) أنفقت **الشهر الماضي**

a) المصروف الكامل للمنزل خلال الشهر الماضي
b) مصروف الطعام _____
c) المصروف الصحّي _____
d) المصروف التعليمي _____
e) أخرى _____

18. هل تلقيت أي نوع من المساعدات في الأشهر الثلاثة الأخيرة؟ اذا كان جوابك أجل، لطفا ضعي اشارة أمام الخيار المناسب من الخيارات التالية a) كلا b) نعم:

المساعدة	
مساعدات غذائية: عينية (سلة طعام)	☐
مساعدات غذائية: بطاقة الكترونية - قسيمة	☐
مساعدة مالية مشروطة	☐
أخرى	☐

ملاحظة:

_____
_____
_____

اذا كنت لبنانية، تخطّي السؤال 19:

19. منذ متى تعيشين أنت وعائلتك في هذا الموقع؟

a) ≥ شهر واحد
b) 1-6 أشهر
c) ≤ 6 أشهر

20. كم عدد أطفالك؟ _____

في الجدول أدناه، ضعي أولادك في لائحة محدّدة العمر (بالسنين) واذا ما كانوا يداومون في الدرسة (مدرسة رسمية أو خاصة):

عدد الأطفال	العمر (بالسنين)	المدرسة		
		خاصّة	رسميّة	لا يداوم في المدرسة

II. القياسات الانثروبومتريّة

من أجل أخذ القياس، رجاء خلع الأحذية وأي ملابس ثقيلة مثل سترة اذا كنت ترتدين (أو طفلك/طفلتك) ترتدين واحدة.

الأم

21. هل أنت حامل حاليا؟
   a) كلا
   b) نعم، حدّدي أي شهر أو أسبوع: _____
22. هل ترضّعين حاليا؟
   a) كلا
   b) نعم

القياسات الحالية:

الرقم	السؤال	شفرة الجواب
.23	الوزن (cm)	_____
.24	الطول (cm)	_____
.25	محيط الخصر (cm)	_____
.26	محيط العضد الحالي (cm)	_____

الطفل

الرقم	السؤال	شفرة الجواب
.27	الوزن (cm)	_____
.28	الطول (cm)	_____
.29	محيط الخصر (cm)	_____
.30	محيط العضد (cm) –للأطفال دون سنّ الخامسة فقط	_____

III. أداة قياس حالة الأمن الغذائي في المنزل

الرقم	السؤال	خيارات الأجوبة
31.a	في الأسابيع الأربعة السابقة، هل قلقتِ بأن منزلك لا يحتوي على الطعام الكافي؟	1- لا 2- نعم
31.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)
32.a	في الأسابيع الأربعة السابقة، هل أنت أو أحد أفراد الأسرة لم يتمكن من تناول أنواع الأطعمة المفضلة لديه لعدم وجود الموارد الكافية؟	1- لا 2- نعم
32.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)
33.a	في الأسابيع الأربعة السابقة، هل أنت أو أحد أفراد الأسرة وجب عليه تناول أنواع محدودة من الطعام لعدم وجود الموارد؟	1- لا 2- نعم
33.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)
34.a	في الأسابيع الأربعة السابقة، هل أنت أو أحد أفراد الأسرة وجب عليه تناول نوع من الطعام لم يكن يريد تناوله لعدم وجود الموارد للحصول على أنواع أخرى من الطعام؟	1- لا 2- نعم
34.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)
35.a	في الأسابيع الأربعة السابقة، هل أنت أو أحد أفراد الأسرة وجب عليه تناول وجبة أصغر من الحاجة لعدم وجود كمية كافية من الطعام؟	1- لا 2- نعم
35.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)

36.a	في الأسابيع الأربعة السابقة، هل أنت أو أحد أفراد الأسرة وجب عليه تناول وجبات أقل في اليوم لعدم وجود كمية كافية من الطعام؟	1- لا 2- نعم
36.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)
37.a	في الأسابيع الأربعة السابقة، هل، في أي وقت، لم يتواجد أي نوع من الطعام في المنزل لعدم وجود الموارد للحصول على الطعام؟	1- لا 2- نعم
37.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)
38.a	في الأسابيع الأربعة السابقة، هل أنت أو أحد أفراد الأسرة ذهب إلى النوم في الليل جائعاً لعدم توفر الطعام الكافي؟	1- لا 2- نعم
38.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)
39.a	في الأسابيع الأربعة السابقة، هل أنت أو أحد أفراد الأسرة بقي 24 ساعة دون تناول أي شيء لعدم توفر الطعام الكافي؟	1- لا 2- نعم
39.b	كم مرة حدث ذلك؟	1- نادراً (مرة أو مرتين في الأسابيع الأربعة السابقة) 2- أحياناً (3 إلى 10 مرات في الأسابيع الأربعة السابقة) 3- غالباً (أكثر من 10 مرات في الأسابيع الأربعة السابقة)

IV. استمارة مؤشّر استراتيجيات التكيّف

هذه الاستمارة يجب القيام بها مع الأم.

وسائل التكيف							
40.	خلال الشهر الماضي , هل واجهت الاسرة نقص في الطعام أو لم لكن لديها كفاية من المال لشراء الطعام ؟	لا =0 نعم= 1 اذا كانت الاجابة لا، إنتقل إلى السؤال 26					
41.	خلال الشهر الماضي ، كم عدد المرات التي ...	دائما" (يومياً)	غالبا" (٦-٣ مرات في الأسبوع)	بعض الأحيان (٢-١مرات في الأسبوع)	من النادر (<١ مرات في الأسبوع)	أبدا "	لا ينطبق
	اعتمدت على الأطعمة الغير محببة ، والأقل سعرا؟						
	استلفت المال لشراء الغذاء ؟						
	اعتمدت على مساعدة من الاصدقاء أو الاقارب لتأمين الغذاء						
	قللت حجم وجبات الطعام؟						
	قللت استهلاك البالغين لتوفير الحصص للأطفال؟						
	قللت عدد الوجبات المستهلكة يوميا؟						
	أرسلت افراد الأسرة (واحد أو أكثر) لتناول الطعام في مكان آخر؟						
	مرت أيام كاملة لم يتناول فيها أحد أفراد الأسرة الطعام؟						
	أنفقت المدّخرات؟						
	لجأت إلى بيع المجوهرات أو السلع المنزلية (الأثاث) أو الأدوات الكهربائية (التلفزيون) الخ؟						
	لجأت إلى بيع إحدى وسائل النقل (سيارة)؟						
	لجأت إلى بيع منزل أو أرض؟						
	خفّضت النفقات الأساسية غير الغذائية (مثل التعليم والصحة)؟						
	أخرجت أطفالك من المدرسة؟						
	أشركت أطفالك بسن المدرسة في زيادة دخل المنزل؟ (لجأت إلى عمالة الأطفال في سن مبكر؟)						
	زوجت أحد بناتك دون سن ال ١٦ ؟						
	أرسلت أحد أفراد الأسرة البالغين للعمل خارج لبنان و/أو للهجرة ؟						

V. المأخوذ الغذائي على مدار 24 ساعة

الأم

لطفا تذكّري ما أكلت وشربت منذ أن استيقظت البارحة حتّى الصباح التالي (قبل الفطور). حدّدي وقت استهلاكها شاملة الماء، الحليب، الوجبات لخفيفة، والوجبات الرئيسية.

الوقت	الطعام المستهلك	الكمّية	طريقة التحضير

هل هذا نمط تناولك الاعتيادي؟

a) نعم
b) كلّا

اذا كان الجواب كلّا، لماذا؟ .....

.....

الطفل

بما أن عمر الطفل ليس أقلّ من 10 سنوات، يطلب منه هة أن يكون المجيب الأساسي ويمكن لأمّه أن تساعد في الاجابة عل الأسئلة.

عزيزي (عزيزتي) الطفل/الطفلة المشارك(ة)،

لطفا تذكّر(ي) ما أكلت وشربت منذ أن استيقظت البارحة حتّى الصباح التالي (قبل الفطور). حدّد(ي) وقت استهلاكها شاملة الماء، الحليب، الوجبات لخفيفة، والوجبات الرئيسية.

الوقت	الطعام المستهلك	الكمّية	طريقة التحضير

الطفل

بما أن عمر الطفل ليس أقلّ من 10 سنوات، يطلب منه هة أن يكون المجيب الأساسي ويمكن لأمّه أن تساعد في الاجابة عل الأسئلة.

عزيزي (عزيزتي) الطفل/الطفلة المشارك(ة)،

لطفا تذكّر(ي) ما أكلت وشربت منذ أن استيقظت البارحة حتّى الصباح التالي (قبل الفطور). حدّد(ي) وقت استهلاكها شاملة الماء، الحليب، الوجبات لخفيفة، والوجبات الرئيسية.

الوقت	الطعام المستهلك	الكمّية	طريقة التحضير

هل هذا نمط تناول الطفل(ة) الاعتيادي؟

a) نعم
b) كلّا

اذا كان الجواب كلّا، لماذا؟ .....

.....

VI. مجموع استهلاك الطعام

الأم

لطفا تذكّري الأطعمة التي استهلكت في المنزل خلال الأيام السبعة الماضية

نوع الطعام	عدد الايام التي أكل فيها نوع الطعام الاسبوع الماضي (7-0)
(النشويات، والحبوب ومنتجات الحبوب (الأرز، الذرة، القمح، البرغل ، والحبوب الأخرى	___
الخبز و المعكرونة	___
البطاطا) لا تشمل البطاطا الحلوة البرتقالية في هذه المجموعة	___
المكسرات والبقول : الفاصوليا، العدس ، الحمص، الفول السوداني، الفول، البازلاء الخضراء، اللوبياء وغيرها جوز-لوز-صنوبر /نواة) ، (البازلاء الحلوة)	___
/الخضار ذات الأوراق الخضراء: السبانخ، الهندباء، القطيفة والألنبتات البرية ،الجرجير وغيرها من الخضار الورقية الداكنة.	___
الخضار الغنية في الفيتامين أ (اليقطين ،القرع، الفلفل الأحمر، الجزر، البطاطا الحلوة) الخضار البرتقالية و المتنوعة الالوان	___
خضار أخرى : البصل، الثوم، الطماطم (البندورة)، الخيار ،الفجل ،الملفوف ،الخس، معجون الطماطم	___
. الفاكهة الغنية في الفيتامين أ : المانجو، المشمش، الدراق، الباباي، والفاكهة البرتقالية اللون	___
فاكهة أخرى : الموز، التفاح، الأفوكادو، حمضيات(الافندي واللبمون)، الشمام، البطيخ، شراب الرمان	___
الكبد، واللحوم العضوية	___
اللحومالحمراء، لحم البقر، لحم الماعز، الدجاج ،الديك الرومي ،الأغنام ،اللحوم الأخرى.	___
بيض	___
الأسماك: الأسماك المجففة، الطازجة، المدخنة، مأكولات بحرية أخرى (باستثناء صلصة ومسحوق السمك)	___
السكر / المنتجات السكرية/ العسل (السكر، قصب السكر، العسل، مربى ،جيلي، حلويات / بونبون/ الشوكولاته، وغير ذلك من منتجات السكر والبسكويت والباتيسري والكعك	___
الحليب ومنتجات الحليب (حليب طازج أو مجفف،اللبن، اللبنة، الجبن، منتجات الحليب الأخرى – باستثناء السمنة / الزبدة أو كميات صغيرة الحليب لصنع الشاي / القهوة	___
(الدهون / الزيوت (زيت الزيتون ،الزيت النباتي ، زبدة، سمن، الدهون أخرى)	___
بهارات / توابل (شاي، قهوة، نسكافيه / كاكاو، ملح، توابل، خميرة / باكنج بودر، كاتشب/ صلصة حارة، (مكعبات ماجي، بهارات أخرى - بما في ذلك كميات صغيرة من الحليب لصنع الشاي / القهوة	___

وقت الانتهاء: _____

APPENDIX X

LETTER TO MUNICIPALITIES (ARABIC VERSION)

AUB American University of Beirut
الجامعة الأميركية في بيروت
Faculty of Agricultural and Food Sciences
Department of Nutrition and Food Sciences
كلية العلوم الزراعية والغذائية
دائرة التغذية وعلم الغذاء
www.aub.edu.lb

بيروت، لبنان

٢٠١٦/٨/١٣
لمن يهمه الأمر،

اسمي سارة خالد ضاهر، أنا طالبة ماجستير في قسم التغذية وعلوم الغذاء في الجامعة الأميركية في بيروت حيث أقوم بدراسة عن الأمن الغذائي والحالة الغذائية للّاجئين السوريين والعائلات اللبنانية المستضيفة في منطقة عكار تحت اشراف باحثين من الجامعة الأمريكية في بيروت. الأهداف من هذه الدراسة هي دراسة حالة الأمن الغذائي ووسائل التكيّف عند اللاجئين السوريين والبيئة اللبنانية المستضيفة في عكار، وبحث العلاقة ما بين الأمن الغذائي وتأثيرها على الحالة الغذائية عند الأطفال والأمهات في هذين المجتمعين. سوف أقوم كأخصائية تغذية وطالبة في الجامعة الأميركية في بيروت بالتواصل المباشر مع العائلات اللبنانية والسّورية في مناطق من عكار، لطرح الأسئلة الواردة في الاستمارة المرفقة مع هذه الرسالة.

إن مشاركة العائلات في هذه الدراسة هي طوعية بالكامل مع التأكيد أن المعلومات ستبقى في غاية السرية ولن تستعمل إلا لأهداف بحثية علمية فقط. إن هذه الدراسة تساعدنا على الحصول على معلومات تمكّننا من صياغة برامج غذائية لتحسين النمط الغذائي والحالة الصحّية للنساء والأطفال الذين هم أكثر عرضة للتأثيرات السلبية لسوء التغذية.

سأقوم بتقديم إستشارة غذائية خاصة لكل من الأم وطفلها/طفلتها كتعبيرعن الشكر للمشاركة في الدراسة عند انتهاء المقابلة، اضافة الى تنبيههم الى ضرورة استشارة جهة طبيّة مختصّة اذا تبيّن لزوم الأمر.

لكم الشكر و التقدير لدعمكم لنا ولتسهيل عملنا ضمن منطقتكم/ بلدتكم. في حال وردت هناك أية أسئلة أو إستفسارات حول البحث يُرجى الإتّصال بي أو بالباحثين الرئيسيين المذكورين أدناه.

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المشرفين على البحث:

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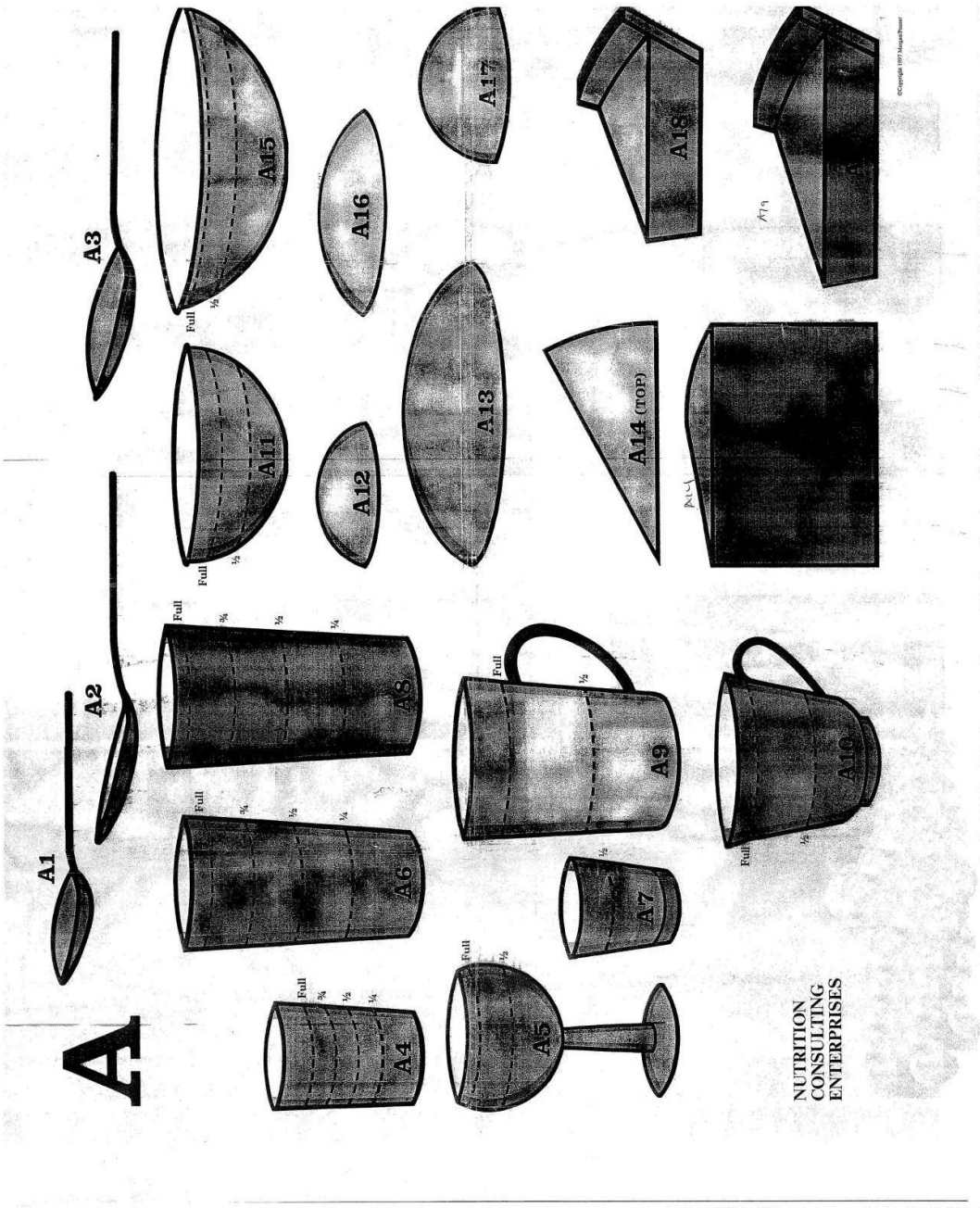
البريد الإلكتروني: fn14@aub.edu.lb

APPENDIX XI

THE 2-D PORTION SIZE FOOD VISUAL POSTER (NOT TO SCALE)



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