AMERICAN UNIVERSITY OF BEIRUT

CULINARY AND NUTRITION TRANSITIONS WITHIN A LEBANESE BEDOUIN TRIBE

by
KIMBERLY ANN GREEN

A thesis
submitted in partial fulfillment of the requirements
for the degree of Master of Science
to the Food Security Program
of the Faculty of Agricultural and Food Sciences
at the American University of Beirut

Beirut, Lebanon
September 2021

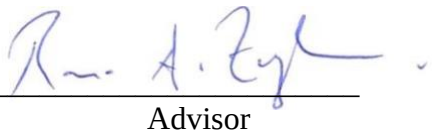
AMERICAN UNIVERSITY OF BEIRUT

CULINARY AND NUTRITION TRANSITIONS WITHIN A LEBANESE BEDOUIN TRIBE

by

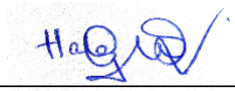
KIMBERLY GREEN

Approved by:



Dr. Rami Zurayk, Professor — Advisor
Landscape Design and Ecosystem Management

Dr. Ali Chalak, Associate Professor — Member of Committee
Department of Agriculture



Dr. Hala Ghattas, Associate Research Professor — Member of Committee
Department of Epidemiology and Population Health

Date of thesis/dissertation defense: September 1, 2021

AMERICAN UNIVERSITY OF BEIRUT

THESIS RELEASE FORM

Student Name: ____ Green_____Kimberly_____Ann_____
Last First Middle

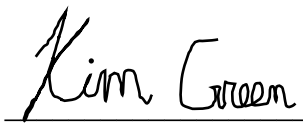
I authorize the American University of Beirut, to: (a) reproduce hard or electronic copies of my thesis; (b) include such copies in the archives and digital repositories of the University; and (c) make freely available such copies to third parties for research or educational purposes:

☒ As of the date of submission

☐ One year from the date of submission of my thesis.

☐ Two years from the date of submission of my thesis.

☐ Three years from the date of submission of my thesis.


_____September 17, 2021_____

Signature Date

ACKNOWLEDGEMENTS

First and foremost, I am incredibly grateful to my supervisor Dr. Zurayk for his invaluable advice, guidance, continuous support, and patience during the last year and a half of my studying. I am especially grateful for his direction in helping to find this topic of research that I found so enjoyable.

I would also like to thank Dr. Chalak, Dr. Ghattas, and Ms. Bahn for their technical support of my study. I would also like to thank Aphroditi for making me a part of the Cultural Corridors of Peace project, a once-in-a-lifetime experience for me.

A special thanks goes to Nour El Houda Amhez for her transport, translation, support, and friendship.

Finally, I must express my gratitude for my friends in Lebanon for helping me survive the last year and a half in Beirut. I could not have made it without them. Also, for Sydnee Clinton, who supported me in my endeavors from abroad. This accomplishment would not have been possible without them.

ABSTRACT
OF THE THESIS OF

Kimberly Ann Green for Master of Science
Major: Food Security

Title: Culinary and Nutrition Transitions within a Lebanese Bedouin Tribe

Background: A nutrition transition is a process in which a diet rich in vegetables, fruits, and wholes grains is changed into a diet heavy in processed foods and red meat. This transition has been brought about by the globalization of the agriculture and food manufacturing industries. The introduction of ready-made meals resulted in less time spent in the kitchen cooking. Globally, roughly 50% of meals eaten are homemade, while the other half are restaurants or ready-made meals. The culinary transition is observed by changes in the methods and ingredients used for people to eat. According to select studies, a lack of cooking skills has been shown to affect proper nutrient intake. This, in turn, can affect the food and nutrition security of people not obtaining the recommended amount of nutrients and micronutrients.

Objectives: This research aims to examine if the Abu Eid Bedouin tribe of Bekaa Valley, Lebanon, are experiencing a nutrition and a culinary transition and how those transitions interact with their food (in)security.

Methods: This study was conducted in Bekaa Valley, Lebanon, with 142 households from the Abu Eid Bedouin tribe. Two surveys were administered using a household dietary diversity survey (the Food Consumption Score) and a food security survey capturing the worries and anxieties of food (in)security (the Arab Family Food Security Scale). In addition, three focus groups discussions were held covering changes in food preparation and ingredients used for cooking as observed by three different generations of Bedouin.

Results: Results found that the nutrition transition, observed by changes from a whole-foods based diet to a diet heavy in processed-food, was observed in the Abu Eid tribe. The population's diet consisted primarily of staples, vegetables, oil, and sugar and the majority of the households diet diversity was adequate based on FCS. Further, the results showed that the culinary transition, determined by changes in the methods and practices of consuming food, was also observed. This was presented by the effects of a switch from a pastoralist to a sedentary lifestyle. Moderate and severe insecurity in the Abu Eid tribe represents 39.4% and 23.2% of the population, respectively, based on the AFFSS.

Conclusion: Both the nutrition and culinary transition were observed in the Abu Eid Bedouin tribe. Despite the transition from a whole-foods diet to one heavy in processed foods, the population still has high consumption of vegetables, and most meals were made at home with few meals ordered as takeout[1]. The changes in food preparation and ingredients used for cooking stemmed mainly from new methods of cooking and preserving foods that reduced time spent. Also, it was noted that food preferences influence the food chosen for consumption, whether that be because of an aversion for strongly flavored foods or the introduction of different meals through family or neighbor influences. The tribe has significant levels of food insecurity. Further research is needed to determine the causes of food insecurity and look into the severity of the nutrition transition.

[1] According to the focus group discussions

TABLE OF CONTENTS

ILLUSTRATIONS

Figure

TABLES

Table

GLOSSARY

Burghul – wheat that has been steamed or parboiled, dried, and ground
Foul – a stew of cooked fava beans with oil, cumin, and the makers choice of parsley, garlic, onion, lemon juice, chili pepper or other vegetables.
Hajj – annual Islamic pilgrimage to Mecca
Kibbeh – a mix of burghul and meat made into a paste then formed into balls with pine nuts and spices
Kishik – a powdery cereal of burghul fermented with milk and labneh
Laban – fermented milk beverage
Labneh – strained yogurt that has been strained to remove most of the whey, resulting in a thicker consistency
Labnet al jarra – labneh prepared in a traditional pottery jar
Loobieh – made of green beans, tomatoes, onions, garlic, and salt, sauteed in olive oil
Mansaf – a traditional dish made of lamb cooked in a sauce of fermented dried yogurt and served with rice or burghul
Malfouf – cabbage stuffed with beef or lamb and rice
Mezze – a selection of small dishes served as appetizers
Mouneh – foods processed and sealed in airtight containers
Mujadara – cooked lentils with rice, garnished with sauteed onions
Mulukiyeh – jews mallow an annual herb
Saj bread – a Middle Eastern unleavened flatbread cooked on a saj which is a convex metal griddle
Samna - ghee or clarified butter
Shanklesh – mold ripened cheese typically formed into balls and often covered in za'atar
Shishbarak – meat dumplings in a yogurt sauce
Shneneh – a water-diluted, salty yogurt drink
Sumac – any one of about 35 species of flowering plants in the genus Rhus. The fruits are ground into a powder and used as a spice to add a tart, lemony, taste to a variety of dishes.
Tabbouleh – a Levantine salad made of parsley, tomatoes, mint, onion, burghul and seasoned with olive oil, and lemon juice
Tawook – skewered chicken marinated in spices, yogurt, lemon juice and garlic
Za'atar – a spice blend of dried thyme, sumac, and toasted sesame seeds

CHAPTER I

INTRODUCTION

Food. An ever-evolving part of the human experience, something as natural and paramount as the air we breathe or the water we drink. And as the rest of the universe does, it evolves. Diets from the last century have drastically transitioned by varying degrees throughout the globe but not as drastically in previous decades (Hawkes et al., 2017, Khoury et al., 2014). Changes mainly stemming from food obtained primarily by pastoralism, self-sufficient agriculture, and local markets to processed, 'fast' foods. The changes in people's diets are linked to globalization[1], global agriculture policies, and global mass media (Popkin, 2006). Technology has allowed food knowledge and commodities to be shared and honed in a way that enhances a globalized economy and culture. This creates a wide variety of food choices for people worldwide, specifically the introduction of heavily processed foods (Henderson et al., 1996).

The *nutrition* transition is a shift from diets rich in plant-based foods and low in meat to a diet heavy in meat-based and processed foods (Popkin, 1993). This transition coincides with advancements brought about by economic, and demographic, and epidemiological changes. The introduction of new types of foods, through global trade, into the average diet created a shift in the cooking habits within households. Laborious kitchen tasks were reduced by kitchen machinery and ready processed foods. Long gone are the days of no sliced bread.

A *culinary* transition refers to a "process in which whole cultures experience fundamental shifts in the pattern and kind of skills required to get food onto tables and down throats" (Caraher & Lang 2001). This transition focuses *more* on how people interrelate and eat their food *rather* than a focus on the nutritional aspect of consumed

food. People's ability to cook has become less important because of the introduction of processed and ready-made meals. On a *global* average, the number of meals cooked at home was 6.9 out of a possible 14 meals per week in 2019 (Gallup, 2019), which means that, on average, roughly 50% of meals were not prepared at home. The consequences of the nutrition and culinary transition on food security are decreases in proper nutrient and micronutrient intake. Bedouin and their ancient way of life are a perfect example that is explored throughout this thesis.

Bedouin are nomadic pastoralists who have historically inhabited the Levant, Arabian Peninsula, and Northern Africa. They are divided into tribes and share a common culture of herding livestock, typically sheep or camels. Traditionally, these herds and herders would roam along specific routes, following the seasons, to find new pastures for their flocks. Several geopolitical structures and reformations have forced the Bedouin to settle into rural and urban societies due to borders being created and freedom of movement hindered. Settlement into a more urban style life has caused an abrupt shift in the traditional Bedouin way of life. Most have turned to jobs in the agriculture and service sectors, giving up their flocks and traditions, which in turn have transformed their interactions with the food they eat.

This research intends to address the gap in food and nutrition security literature; by studying the implications of nutrition and culinary transitions and their possible associations with food security within a Bedouin tribe in the Bekaa Valley of Lebanon. This thesis will first investigate the changes in daily consumption of certain food groups within the Bedouin tribe due to changes in their diet from the nomadic lifestyle to a more sedentary lifestyle. It then studies change in culinary habits and traditions stemming from the same transition from nomadic pastoralist to a sedentary life. This

will help determine the probability of a nutrition or culinary transition within the tribe. It also explores the food security status of the tribe and the possible associations between food security and the nutrition and culinary transitions. This specific research is accomplished by implementing a household food consumption survey and a household food security survey coupled with guided focus group discussions involving members of the Bedouin tribe.

The research was part of a larger project focusing on preserving the Bedouin of the Levant's culture. Cultural Corridors of Peace was an 18-month project that aimed to preserve the historical pastoral routes of the Bedouin and their intangible cultural heritage. It was funded through the British Council's Cultural Protection Fund and partnered with the American University of Beirut, the Council for British Research in the Levant, Coventry University, and the Institute for Heritage and Sustainable Human Development. The project was directed by Aphrodite Sorotou, with Nour El Houda Amhez as a project assistant and Hamra Abu Eid as project coordinator.

CHAPTER II

LITERATURE REVIEW

A. Bedouin

1. Bedouin of Lebanon

Bedouins (Al Badu in Arabic) are traditionally nomadic pastoralists of Arab descent, indigenous to the Middle East and North African region. Bedouin does not denote a specific ethnic, religious, or national group but rather a particular way of life. Some scholars, however, propose that the term has morphed into a cultural identity with certain behavior norms or kinship ties, such as dress, dialect, and marriage customs, that link groups together (Abu-Rabia-Queder, 2018). Historically, Bedouins originate from the Syrian Steppe (other names included Badia, Jordanian Steppe, or Middle East Steppe), covering 500,000 square kilometers and stretches from the Levant, Western Iraq, to the Arabian Peninsula. There are many different Bedouin tribes in Lebanon; the more prominent and better-known tribes include the 'Aneza Hassanna, the Mawali, the Beni Khalid, the Naim, and the L'Ouways (Chatty, 2011).

Bedouin tribes are separated into different tribal allegiances but share a common culture of herding sheep or camels and rich in oral history, textile making, and food culture. As pastoral nomads (a form of subsistent agriculture), their lives were centered around raising livestock, and they continuously moved to look for new pastures. Since Bedouins were always roaming, they did not practice traditional agriculture. Instead, they would trade the goods produced from their livestock, for grains, vegetables, fruit, or forage for wild grains and vegetables. Some Bedouins would practice small-scale vegetable farming during the summer months while staying in their seasonal

encampments. In these encampments, the Bedouin lived in tents of their own making, usually out of goat or sheep hair produced from their flocks.

Figure 1. Map of Lebanon

Mansour (2014).

Bedouins of the Lebanon/Syria region seasonally migrated in and out of the Bekaa Valley, the Anti-Lebanon mountains, and the Syrian Desert according to weather patterns and changes in the seasons. The Bekaa Valley sits in between Mount Lebanon and Anti-Lebanon Mountains that separates Lebanon from Syria. The Bekaa Valley is of great importance to the Bedouin as this is where they would migrate to let their herds graze during the summer months. During the winter months, the Bedouin would

typically migrate to the Syrian desert, their winter grazing location. With this freedom of movement, their flocks always had fresh pastures to graze and left a low-environmental impact in the region. Migration in and out of the Bekaa Valley decreased steadily over the last century due to newly drawn state borders, settlement campaigns of the Ottoman Empire and French colonial power, and out of necessity to provide an income for their families.

The Ottoman Empire exercised control of the Syria/Lebanon region between 1516-1831 and 1841-1918. Between the seventeenth century and the last half of the nineteenth century, the Empire had little control over the Badia, due to a lack of settlements and the harsh climate. Their management focused mainly on cities and the cultivated areas around those cities, in which the Bedouin did not settle. The Bedouin tribes exerted dominion over the Badia and seldomly interacted with settled people. Nonetheless, the Ottoman rulers and Bedouin were not free from influence from each other. The Ottoman Empire recognized some sheikhs (tribal leaders) as representatives of the tribal confederacy residing in the Badia and employed certain tribes to safeguard pilgrims on *Hajj* (annual Islamic pilgrimage to Mecca) against other tribes. Conversely, Bedouins relied on the markets in Ottoman-controlled cities to sell their livestock and animal products and to buy textiles, weapons, and food (Alon, 2016).

The Tanzimat (or reorganization) occurred between 1839-1871, in which the Ottoman Empire attempted to modernize, increase revenue, assert the empire's sovereignty, and to establish control over the Bedouin tribal confederacies. During this period, one of the main goals included expanding agricultural areas to grow cash crops to bolster the economy and increase tax revenues. In 1858, a land law was passed granting land ownership as an individual right, instead of a privilege granted by the

sultan, as it had been previously. The Ottoman authorities hoped that land ownership would help sedentarize the Bedouin, allowing them to participate in agricultural activities to increase tax revenues and increase government control.

Ottoman rule over the greater Syria region and the Badia (including modern day Lebanon) consisted of a hierarchy of authority positions. The *wilaya* (state or province) was ruled by a *wali* (governor), which was divided into *liwa (*districts) overseen by an *emir liwa (*general), and the *liwa* subdivided into *cazas*, and the *cazas* into *nahies (*Traboulsi, 2007). Ottoman authorities appointed specific favored Bedouin *sheikhs* into varying positions of power for them to monitor certain areas of land, collect taxes, protect trade routes, and occasionally escort caravans for *Hajj.* This establishment of power given to certain Bedouin leaders resulted in clashes between tribes in the Badia confederacy and conflicts between the Ottoman army and unfavored tribes. These clashes lasted until the end of the Ottoman rule over the Levant region and proceeded into further conflicts between tribes and the new European authority (Alon, 2016).

After World War 1, the Ottoman Empire was divided up by the League of Nations, creating new territories and then states under British or French rule. The League of Nations gave the French government power to rule over Lebanon, Syria, and southeastern Turkey. Under this 'French Mandate,' the Bekaa Valley was drawn inside Lebanese borders, dividing the Bedouin routes between two states, and limiting their movement. These borders were drawn and organized according to international economic, strategic, and political requirements with little input from the region's inhabitants. French authorities hoped to transform nomadic Bedouins into sedentary pastoralists like their Ottoman counterparts before. However, the Bedouin tribes did not accept the foreign power and viewed sedentarization as detribalization (Thomas, 2003).

The limitation of movement and sedentarization fostered hatred for the new colonial power. In protest of this new government, some Bedouins took up arms against the French and refused to be registered in the Lebanon's first census in 1932 (Chatty et al., 2013).

The 1932 census in Lebanon was highly politized, favoring a Christian majority, and it was the last official census to be conducted. Rania Maktabi (1999) revisited the census and found exclusions of a considerable number of residents on Lebanese territories and the inclusion of many emigrants. Bedouins were some of those who were excluded in the census and denied citizenship, partly because they resided in the frontier areas bordering Syria. The census was officially announced through Decree 8837 of the French Mandate, which gave details for the enumeration process of Lebanese residents and emigrants. Article 12 of the Decree stated, "that only Bedouin who 'normally' reside on Lebanese territories more than six months were to be counted as Lebanese." This directive resulted in the exclusion of Muslim Bedouin (which make up the majority of Bedouin in Lebanon) because they could not prove proof of residence in the Lebanese territories and, in turn, reduce the percentage of Muslim residents (Maktabi, 1999).

The lack of registration and marginalization created many problems for the Bedouins. Since they were not registered as Lebanese nationals, they did not have access to the state's services, such as education and public health care. The French also started dividing the Bekaa Valley into agricultural plots, destroying their flocks' grazing land. This left the Bedouin at a disadvantage because they could not purchase land because of the lack of citizenship and could not participate in the agricultural economy. Furthermore, some Bedouins were forced to illegally settle because they could no longer sustain their lifestyles due to land loss and regulated migration routes.

In Lebanon, Bedouins are categorized into three different groups of nationality: full citizenship, "nationality under-study," and "without records" (Chatty. et al., 2013). A small percentage of Bedouins, who were first registered in 1932 during the French Mandate, were granted full citizenship. Those who were not register were considered "without record." In 1958, Lebanon's government issued a "nationality under-study" status for Bedouins who were not registered in the first census and were living in the country unregistered at that time. However, this "nationality under-study" status did not provide Bedouins with full citizenship, including the before-mentioned social benefits of healthcare, education, and political inclusion.

In 1994, the Lebanese government moved to grant full citizenship to some 10,000 Bedouins who had "under-study" status but only after a ten-year waiting period could they receive their citizenship (Gani, 2020). Nevertheless, before this was implemented, the Maronite Christian political party (Rabita al Marouniya) appealed the law in 2000 to make the waiting period indefinite (Chatty et al., 2013). Children born to parents who have the "under-study" are considered "stateless and without documentation," leaving generations of Bedouin marginalized. It is estimated that some 150,000 Bedouins reside in Lebanon, but only roughly 50,000 have full citizenship (Chatty et al. 2013, Gani, 2020).

Table 1. Lebanese Bedouin citizenship status and legal papers

Type of Identification papers	Meaning
Lebanese identification before 1994	Full benefits of Lebanese citizenship
Lebanese identification after 1994	Required a 10-year waiting period to be granted full citizenship benefits, but extended indefinitely in 2000 by the Maronite political party

Nationality under-study (Qayd al Dars)	Nationality of under-study, birthplace recognized as Lebanon, but no rights guaranteed
Without records (Maktum al Qayd)	No known nationality, not recognized to be born in Lebanon

(Chatty el al., 2013)

2. The Abu Eid

The Abu Eid are a Bedouin tribe located in the Bekaa region of northwestern Lebanon. They are only one tribe of many located throughout Lebanon. They are members of the larger tribal confederation, the 'Aneza, who migrated from the Arabian Peninsula to the Syrian Steppe. The Bekaa valley proved to have milder summers than the Syrian Steppe, so they would migrate to the Bekaa during the summer and return to the Steppe in the winter. Due to the establishment of Lebanon as a country separating their pastoral routes, some of the Abu Eid settled in Lebanon in the early twentieth century (Eid & Zurayk, 2010; Chatty, 2010).

The Abu Eid are the focus of this study because they have been subjected to marginalization and forced to settle, which has caused changes in their livelihoods, traditional ways of being, and their health. Sedentariness altered the way Bedouins related to the land and their food by hindering the ability to participate in traditional practices and limiting their access to traditional foods. While living as pastoralists, the Bedouin had a diet rich in milk products, wheat, barley, vegetables, and meat. Since they have settled, their methods of collecting food have switched to either self-sufficient agriculture or food purchased from markets (Ghattas et al., 2013).

3. Effects of Sedentarization on pastoral and indigenous communities

The effects of sedentarization of the Bedouin throughout the Levant and Arabian Peninsula are varied. Sedentarization was supported by the King of Saudi Arabia (Abdul Aziz Al Saud, the first king of Saudi Arabia), allowing Bedouins to own land and given socioeconomic opportunities resulting in positive nutritional health outcomes (Sebai & Reinke, 1981). Sedentarization has harmed the Bedouin of the Negev (Southern Israel), who have a high prevalence of diabetes than non-Bedouin neighbors (Amkraut et al., 2018). Another study on Bedouins of the Negev found that settled Bedouins had higher percentages of overweight and obesity than Bedouins still living a semi-nomadic life. The settle Bedouins also had higher levels of LDL-cholesterol. The researchers concluded that 'settlement and the changes associated with it, alter the pattern of cardiovascular risk factors for the Bedouin' (Fraser et al., 1990). A study from Jordan showed that after sedentarization, Bedouin children have poorer nutritional health. The researchers attribute poor nutritional health to poverty by which Bedouin families are seldom able to purchase milk, meat, fruits, and vegetables which are more expensive in the markets (Khatib et al., 2009).

Sedentarization has been shown to negatively affect the health of pastoralists in other countries and regions as well (Fratkin et al., 2004, 2018, Fujita et al., 2004, Galvin et al., 2015, Khatib and Elmadfa, 2009, Page et al. 2018). A nutritional study on the Maasai (pastoralists of southern Kenya) compared results from earlier dietary data of the same group. They found that even with continuous efforts to increase nutritional security through livelihood diversification, sedentarization, and greater access to market integration, nutritional health did not improve significantly (Galvin et al., 2015).

A comparison study on two communities with the same heritage (one pastoralist and one settled) in Northern Kenya shows that sedentism is associated with dietary change. In this study, dairy products were substituted with starches, and the pastoralist's starch consumption is affected by changes in the seasons, leading to a decrease in nutrition security (Fujita et al., 2004). Children's positive nutritional health is associated with higher weight and height in northern Kenya communities. Pastoralist children have higher growth rates than sedentary children due to increased consumption of dairy products (Fratkin et al., 2004). Thus, sedentism is shown to decrease diet diversity and nutrition security by reducing the number of dairy products consumed to a diet heavy in processed grains. A highly diverse diet focusing on traditional foods has been shown to build dietary support strategies against noncommunicable diseases (Sarkar et al., 2019).

4. Effect of settlement on Bedouin communities in Lebanon

A study conducted in the wake of the global food price crisis of 2008 showed the Abu Eid tribe having a high percentage (49%) of community members with low food security. It was found that diversifying livelihoods with household food production and income generation outside of agriculture can be a protective measure against food insecurity. The Abu Eid had low diet diversity with high consumption of refined cereals and low consumption of fresh foods. Lack of fresh food and low protein intake in diets can cause micronutrient deficiencies when replaced with refined grains and ultra-processed foods (Ghattas et al., 2013).

Another study conducted with Bedouin children living in the Bekaa valley showed that settlement did not positively affect the children's growth. All children in the study were shorter than the average height compared to the American National Center

for Health Statistics (NCHS). Children of fully settled Bedouins had a more inferior nutritional status when compared to children of semi-settled Bedouins. Stunting was attributed to the low socioeconomic status of the Bedouin caused by poor nutritional quality in their diets (Baba et al., 1993).

A further study on Lebanese and Syrian Bedouin children living in the Bekaa valley, Akkar region of northern Lebanon, and the Palmyra and Aleppo desert, showed that all children suffered from stunting and underweight to low intake of macro and micronutrients. The children living in the Bekaa valley were better off than the other three communities due to their proximity to markets, giving them a better socioeconomic status. The children with the lowest intake of macro and micronutrients lived in the Aleppo desert, whose families were settled and herding government-controlled livestock in a restricted area. This group relied on the government for their income and food rations, and their only access to markets were mobile vendors. However, even with the varied outcomes in the different populations, a high percentage of all the children were stunted and underweight compared to NCHS averages (Baba et al., 1994).

5. Case study on effects of American Indian sedentarization

Indigenous people worldwide often face extreme poverty, with all its adverse complications, making them some of the most vulnerable and marginalized peoples (Hall & Patrions, 2014; UN, 2018). Several adverse effects stem from the sedentarization and social integration of nomadic people, including increased poverty, which negatively impacts diet, health, and growth patterns, particularly in children. The

colonization of indigenous people's native land and their subsequent settlement is considered a significant health disadvantage by the WHO (Mowbray, 2007).

Much like the Bedouin of the Middle East, American Indians faced an abrupt change in their traditional lifestyle and eating habits, resulting in adverse health consequences. Traditional food and the wisdom around the cultivation, preparation, and consumption of that food is a protective strategy against diet- and lifestyle-related noncommunicable diseases in the American Indian indigenous tribes of the United States (Sarkar et al., 2019). Many American Indian populations were considered semi-nomadic and would follow the bison and other game's seasonal grazing and migration routes. They would leave their permanent villages in the spring after planting crops and would then return in the fall to harvest those crops. Corn, squash, beans, and meat from hunting were the dominant foods within the American Indian population. They have a culture rich in food culture, oral histories, and a great connection to the natural world around them, like the Bedouin.

However, due to colonial powers exerting their control over the land inhabited by the American Indians, the near extermination of the bison, and a movement towards assimilating them into colonial society, the American Indians lost a great deal of their heritage or were afraid to practice it within the modern society. In addition, many tribes were forced off their land to make way for colonial settlers and were forced onto reservations causing disruptions in their food systems and lifestyles. This marginalization has caused many health problems within the American Indian population, and now many are inflicted with dietary-related diseases such as heart disease, diabetes, and chronic liver disease (Indian Health Services, 2019).

The change in American Indian's diets and lifestyles happened in a blink of an eye when they were forced off their ancestorial land, which has had negative implications on their health (Frank, 2020, Nabhan, 2013). Initiatives have been created to restore traditional food systems for American Indians combined with education on the history and importance of these food systems. Studies have shown that a switch to traditional food habits and practices can improve the physical and mental health of American Indians (Sarkar, Walker-Swaney, & Shetty, 2019, Satterfield et al., 2016).

B. Nutrition Transition

1. Overview

Today's westernized diets consist of processed and fast foods that are readily available but lack proper nutrition (Cordain et al., 2005, Pollan, 2009, Nabhan, 2013). The progression from healthy to unhealthy processed food has developed over time but not as quickly as it has in the last two centuries. Food has been processed for preservation and consumption for thousands of years, from bread to breakfast cereals, and most recently, lab-grown meat (Kim, 2013). Unfortunately, ultra-processed foods now dominate the supermarket. This transition has occurred rapidly thanks to the agro-industrial revolution.

This revolution brought the capability to produce more food, a more complex but user-friendly food system, and money to purchase the new abundance of food. Scientific advances within the agriculture industry brought about new fertilizers, pesticides, mechanization, and genetic improvements. This led to large-scale, mono-crop production, doubling, and redoubling yields. The increase in crop yields exceeded demand for the growing population, resulting in decreases in food prices. In addition,

this helped industrialize agrarian societies by freeing up labor for other job sectors and families who could accumulate more capital. It also led to women joining the workforce, which ultimately transformed the traditional family system and left laborious home-cooking skills to the wayside.

The industrialization of foodstuffs gave way to a change in diets. Food generally prepared at home is now designed in factories and sold in non-traditional markets. Industrialized food is full of high amounts of salt, sugar, and other preservatives, giving the food a longer shelf life but reducing the nutritional quality. This change in quality, from healthy, low processed foods to a diet with heavily processed and meat-centered food, is termed the nutrition transition.

2. Nutrition Transition Methodologies

a. Barry Popkin

Barry Popkin developed the concept of a nutrition transition. The nutrition transition defined by Popkin in 1993 is "a recent overall worldwide trend… toward a diet relatively high in fat and processed foods and low in fiber, fresh fruits and vegetables, and carbohydrates" (Popkin, 1993). In addition to this change, the fat consumed comes mainly from animal origin and vegetable oils. To put this change into perspective, from 1962 to 2015, calorie availability from animal products in the Near East and North African region rose from 215 to 312 calories per day per person. Worldwide calorie availability from animal products during the same period rose from 281 to 397 calories per day per person (Schmidhuber & Shetty, 2005). This meaning that on average calories from meat has increase by roughly 100 per person in the last half a century.

Popkin started researching and observing nutrition transition in 1993 to understand the issues surrounding these drastic changes in diet. Popkin states in his paper that:

> "recognizing broad changes in dietary patterns and exploring their relationships with economic, social, demographic, and health factors will improve our understanding of the causes and consequences of dietary change, which in turn will help us understand how to promote healthful dietary change systematically" (Popkin, 1993).

Popkin states that changes in nutrition are affected by and affect two different historical processes: demographic and epidemiological transitions. The demographic transition switches from high fertility and high mortality to one of low fertility and low mortality, which is representative of industrialized countries. With lifestyle changes, people are waiting longer to have kids and having fewer kids than in past generations. And with more money to spend on better quality foods, there is an increase in nutrition, enabling people to live longer, healthier lives.

The epidemiological transition switches from a high prevalence of diseases caused by malnutrition, famine, or poor sanitation to one that has a high prevalence of non-communicable diseases (NCD) caused by foods high in energy and low in nutrients and a sedentary lifestyle (Popkin, 1993). Increased consumption of a wide variety of foods protects people against diseases caused by malnutrition. However, the overconsumption of processed foods leads to overnutrition and NCDs. So instead of conditions such as gout, caused by iodine deficiency, or childhood blindness caused by vitamin A deficiency, there are increasing percentages of people affected by heart disease and diabetes, sometimes caused by overconsumption of processed sugar (Levy et al., 2021; Bonaccio et al., 2020).

Popkin states five broad nutrition patterns that are not restricted to a particular period of human history. These patterns outline different situations in which individuals, groups, or communities have difficulties consuming acceptable qualities and quantities of food.

- Collecting food: This diet is characterized by hunter-gather groups which forage, cultivate, or hunt their food. Their diet is high in carbohydrates and fiber and low in fat. It is characteristic of low birth rates, high mortality, and high rates of infectious diseases.
- Famine: This diet is characterized by less variety and periods of food scarcity. Social stratification starts appearing with dietary variation based on gender and social status. There is high fertility and low life expectancy (particularly with women and children), epidemics occurring, and starvation common in this group.
- Receding famine: In this pattern, there are increases in vegetable, fruit, and animal protein consumption, and staples become less important. Chronic hunger and famines recede, leading to shifts in the diet. There are declining mortality rates, fertility rates, and rates of communicable diseases decline.
- Degenerative disease: This diet is high in fat, cholesterol, sugar, and fiber and accompanied with an inactive lifestyle. This leads to increased levels of obesity and leads to degenerative diseases. Life expectancy is very high, and fertility remains low. Infectious disease rates decline.
- Behavioral change: This diet appears to be emerging and focuses on preventing delaying degenerative diseases by consuming a wide variety of

fruits, vegetables, and carbohydrates with less fat and processing. Life expectancy is high.

b. Robert Paarlberg

Robert Paarlberg developed another methodology to assess a nutrition transition. Paarlberg (2012) broke down this idea into simpler terms to help assess whether nutrients are being missed or not; he called it a dietary transition. There are three stages of this dietary transition that he lists: stage one is a diet low in calories and micronutrients, stage two is a diet that provides adequate basic energy for most people but an inadequate balance of nutrients, and stage three is an affluent diet that begins to provide excessive calorie energy, which can lead to health problems linked to obesity (Paarlberg, 2012).

Paarlberg states that in stage one, the community or country should be assessed to discover what public goods are missing, causing a deficit in food consumption. It could be linked to a lack of development where roads have not been built, and it is difficult for food to be transported into the community. People living in these rural areas tend to be smallholder farmers or herdsmen. Without access to public goods such as increased access to markets, health care, new technologies, and education, their productivity stays low. With low productivity, their income remains low, affecting the quality and quantity of food consumed.

In stage two, the community already has the basic public goods developed, so the focus instead is on finding the people not benefitting from the development. Some groups or communities are not benefiting from the new gains in income, nutrition, and health because they are ultra-poor or marginalized due to race, ethnicity, or language.

Countries in stage two can target these communities by funding extension services, maternal and child health care, nutrition education, and agriculture programs. With an adequate staple food supply, the main concern for marginalized communities is sufficient micronutrient intake.

In the third stage, the community's economic status is in good standing, and the private sector provides most services. It is the job of the government to regulate the private sector. This relates to the farming industry, retailers, and restaurant industry. Without regulation, the private sector will develop without concern for their consumer. And without consumer education, consumption of unhealthy foodstuffs rises, which causes several NCDs.

3. Case Studies

Both methods, from Popkin and Paarlberg, are similar and can specify a nutrition transition within a specific group, community, or country. Popkin's system has a lot of information included in broad categories. He goes into greater depth about how each pattern is characterized by different factors, such as health, economics, demographics, etc. In contrast, Paarlberg's method is simpler and easier to put into smaller groups. Paarlberg focuses mainly on the consumption of food and whether it benefits a person or a group. Paarlberg also focuses on the development of the community and what kind of social programs are in place to improve people's nutrition and health. Both descriptions of a nutrition transition can be used to assess the extent of a nutrition transition within a specific community or group.

A study that was done in Kenya and Tanzania (Keding, 2016) took both approaches from Popkin and Paarlberg in determining what stage or pattern of a

nutrition transition different populations were in. It was determined that most Sub-Saharan African countries are going through three patterns of the nutrition transition. Urban communities are affected by 'receding famine' and 'degenerative diseases', whereas rural areas are affected by 'famine' and 'receding famine.' According to this study, urban and rural areas are affected by all three in one way or another. This is further emphasized by "the prevalence of overweight/obesity and hypertension in many southern Africa countries exceeds that of HIV, and they often occur concurrently with stunting in children" (Keding, 2016). This is worrying because it highlights the need to focus on nutrition and how it can alleviate health problems that are starting to become more significant than communicable diseases. Proper nutrition also strengthens the immune system, helping someone to fight off these communicable diseases as well.

This is a concern for rural communities, specifically pastoralists. Their livelihoods and food culture are centered around the herds that they tend to daily. This has caused them to become even more marginalized through the privatization and sectioning off land they used to use freely. Since their food culture is heavily centered around their herds and the constant state of movement, it has been drastically altered.

In Samburu County, Kenya, a study investigated the nutrition of two different pastoralist communities and how their nutrition evolved over fifteen years, with more members of each community settling every year (Iannotti and Lesorogol, 2014). They found that wealth and income affected nutrition quality, which they hypothesized before the study. However, they found that land tenure didn't affect nutrition quality even though they thought it might. Also, milk was an essential source of nutrients and improved their health, although they lacked adequate amounts of vitamin A, C, and B12 due to a lack of variety in fruits and vegetables. Over fifteen years, they also saw an

increase in the consumption of maize and sugar, which shows that they are going through a negative nutrition transition (Iannotti and Lesorogol, 2014). They are converting to more processed, convenient, and less nutrition-heavy foods. With the community settling and gaining tenure to land, it could be assumed that they would start farming, which wasn't the case. Programs promoting milk, fruit, and vegetable consumption and programs creating jobs for community members in need of work and income were found to be needed.

This change in the diet leads to an increase in malnutrition, over-nourishment, micronutrient deficiencies, and a higher prevalence of NCDs. These issues can create a lack of vitamin and mineral intake due to a diet low in quality, resulting in a lack of proper health, mental and growth development, and working ability. For the most part, globally, undernourishment has been steadily decreasing since 2002 but with small fluctuations between 2015 to 2018 (World Bank, 2019). Alongside undernourishment, micronutrition deficiencies affect around two billion people globally (FAO, 2009). The most common types of micronutrient deficiencies are iron deficiency anemia, vitamin-a deficiency, and iodine deficiency. The cause of death by NCDs worldwide rose from 71.2 to 73.6 percent of total deaths between 2015 and 2019 (World Bank, 2019). According to the World Health Organization, in 2016, 1.9 billion adults over the age of 19 were considered overweight, and of those adults, 650 million were obese (WHO, 2018). These statistics paint a bleak outlook on the status of health in the world. It clarifies how important it is to study and understand the effects that the nutrition transition is having on people's diet. "National dietary-related programs have traditionally focused on micronutrient deficiency and food security and failed to acknowledge unhealthy dietary intakes as a risk factor that contributes to the

development of non-communicable diseases (NCD)" (Ronto, R., et al., 2018). NCDs including CVD (cardiovascular diseases), cancers, and diabetes which are the leading causes of mortality and disability worldwide. To combat increases in NCD worldwide, it is important to recognize unhealthy dietary intake of processed and ultra-processed foods worldwide.

C. Culinary Transition

1. Overview

Tim Lang and Martin Caraher coined the term 'culinary transition' in 2001 as "the process in which whole cultures experience fundamental shifts in the pattern and kinds of skills required to get food onto tables and down throats" (Lang & Caraher, 2001). In other words, it is not as much what people are eating and how healthy or unhealthy the food is but how important are the processes and skills needed to prepare that food. There are many different aspects of preparing and consuming food:

- The methods in which it is prepared.
- The cultural significance embedded in food making.
- The types of ingredients used.
- Food preparation knowledge.

With an increasingly hi-tech world where foods can be processed and prepared in hundreds of different ways, there is little need or time for from-scratch cooking at home. Lang and Caraher present three main reasons why these skills matter and should not be forgotten:

1. Cooking skills are necessary for understanding what constitutes a healthy diet.

2. Cooking skills give people power over their food choices and food intake by providing them with knowledge about their food choices.

3. It connects people through social engagement because food is heavily linked to existence and identity.

2. Case Studies

The first two reasons presented by Lang and Careher as to why cooking skills matter are intertwined and related. By understanding what constitutes a healthy diet, individuals can acquire power over their food choices through knowledge and perceptiveness. Culinary interventions focusing on education in nutrition, physical activity, and gardening have been shown to improve participants' attitudes towards cooking, self-efficacy to organize and execute cooking skills, and healthier diets. Hasan et al. (2019) conducted a review on the effect of culinary interventions on dietary intake and behavioral change while also looking for impacts on cardiometabolic outcomes. They found that while cooking interventions improved nutritional intake and behavioral change, there was no change associated with cardiometabolic risk factors. Cardiometabolic outcomes included looking at glucose levels, insulin and insulin resistance, total cholesterol, blood pressure, and anthropometric measurements such as body mass index, waist circumference, and body fat percentage. There was no significant change in any cardiometabolic factors, but the dietary intake and behavioral attitudes improved. To find associated changes with the improved dietary intake, longer trials with lengthier follow-up assessments would be needed (Hasan et al., 2019).

Improved dietary intake and behavioral changes while cooking dinner at home have been associated with a healthier diet whether or not one is trying to lose weight

(Wolfson & Bleich, 2015). Wolfson & Bleich concluded that having a home-cooked meal is associated with lower consumption of total kilojoules (1 calorie = 4.2 kJ), carbohydrates, fat, sugar, and fast food, which establishes a healthier diet. Another study on the role of cooking classes in weight loss interventions found that when comparing an active-participant cooking class versus a demonstrative cooking class, the active-participant class participants lost more weight than the demonstrative cooking class participants (Alpaugh et al., 2020). So, not only does cooking at home lead to weight loss and an overall healthier diet, but when people can participate in cooking their food, they lose more weight and keep it off.

However, the association between home cooking and increases in diet quality and health outcomes is still ambiguous. A study on overweight and obese cardiac rehabilitation patients in Ireland had no significant reduction in body mass index (BMI) when participating in cooking intervention classes versus receiving written material on cooking and meal preparation (McGorrian et al., 2015). Another study done on overweight and obese adults in Denmark found no change in the percent of weight loss when taking a cooking class versus taking a neurolinguistic programming therapy[2] course (Sørensen et al., 2011). Sørensen et al. found that participants maintained their weight loss with both interventions, but there was a lower dropout rate for participants in the cooking classes.

Improved diets are not the only benefits that can come from home cooking but also a sense of identity and belonging, which are additional reasons cooking skills matter. Humans are social creatures, and for most of our existence, we have hunted and

[2] A therapy-based course based in behavior modification and aimed to help participants sense their bodies needs

gathered food as a group, providing support for one another. Not only that, but humans have developed into diverse social groups that have strong histories and systems tied to the type of food produced and eaten. A study done in Canada found that home cooking provided families with connections to each other, to have control over their food supply, and explore their own and others' food culture (Simmons & Chapman, 2011). The theme that emerged most frequently from this study was participants' desire to connect with others as a reason for home cooking. This theme emerged from responses including catering to family food preferences, thinking about others when cooking meals, cooking with family members, and eating those meals with each other. One participant stated that it was not the food in as much as the quality time spent with her family members that were most desirable (Simmons & Chapman, 2011).

Eating meals together as a family has been shown to decrease substance use, depressive symptoms, and suicidal ideation and improve academic performance and self-esteem in a study done with adolescents in the United States (Eisenberg et al., 2004). The meaning of eating family meals together in this study did not specify whether those meals were home-cooked or bought pre-prepared from a grocery store or restaurant. Yet, it still shows the importance of eating food with family, especially at a critical development stage to develop self-fulfillment. Families that engaged in rituals such as eating dinner together gained numerous advantages such as eating healthier meals, building familial identity and consistency, and encouraging family communication.

Eating together as a family encourages personal contentment and creates an identity in which to relate to a wider community. Food has recently become a new marker for cultural identity, with some food cultures listed as intangible cultural

heritages of the United Nations Educational, Scientific, and Cultural Organization (UNSECO). There has always been a connectedness between people and food, and with some food cultures disappearing, there are growing concerns. Trainer et al. examined anxieties (of 3 different cities and countries) around the fading of local cuisines and foodways. They found that "identity similarly anchored in the sense of loss and memory, pivoting at the intersection of what people ate, what they thought they should eat, and how they placed these in the contexts of local cuisines they felt were fading" (Trainer et al. 2020). This study's overwhelming theme was that people are worried about their traditional and local cuisines fading. Their identity is intertwined with what they put on their tables and share with their loved ones.

Interviewees (aged from the twenties to sixties) were asked questions about their food memories within their family structures and how they compare to eating habits nowadays. A few main emerging concerns came from each country and most age groups; these concerns include fading familial connections, time, and money constraints for eating traditional food, and losing health. The most worrying problem is the loss of traditional foodways, which the authors felt was a primary contributor to most other concerns. In Samoa, one of the focus countries, an interviewee stated that once their country joined the WTO (World Trade Organization), fast food, restaurants, and processed foods were introduced into the daily diet. This change disrupted the foodways[3] within Samoa families lost the quality time spent preparing meals together, which opened dialogue between the generations and passed on traditional knowledge.

[3] In social science, foodways are the cultural, social, and economic practices relating to the production and consumption of food. Foodways often refers to the intersection of food in culture, traditions, and history

Ruth, an interviewee, said, “If we’re not partaking in food preparation, that’s been a tradition for generation, for years… What sort of language are we giving up?... Cooking is more than food, right?... It’s about the relationships and knowledge… at the center of everything we do… is the family” (Trainer et al., 2020). Food production was a central theme within family structures, and this led to cultural reproduction. Losing this main aspect of cultural normality has disrupted the familial structure (Trainer et al., 2020).

D. Food Security

1. Overview

The current, widely accepted definition of food security, coined by the Food and Agriculture Organization (FAO) in their annual report “ The State of Food Insecurity in the World 2001”: “food security is a situation that exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2001). There were initially four accompanying dimensions, two more were added in 2020 (HLPE, 2020). The definition for each is provided below.

- Availability – focuses on what is physically available in the market from local production or sales. Availability is achieved when quantities of food are open to all people within a community, region, or country.

- Access – focuses on a household’s or individual’s ability to purchase or obtain food available in the market. Access is achieved when all households and individuals have the resources to get food for a nutritional diet.

- Utilization – refers to the preparation, processing, and cooking of foods obtained. Proper utilization is attained when individuals have appropriate food quantity and quality. And when the food or water consumed by a household or individual is safe and clean.

- Stability – refers to shocks within the food system and other pillars and the ability to recover from those shocks.

- Agency – refers to the capacity of individual's or households to make their own decisions about what foods they eat, what foods they produce, how that food is produced, processed, and distributed within food systems, and their ability to engage in processes that shape food system policies and governance

- Sustainability – refers to the long-term ability of food systems to provide food security and nutrition in a way that does not compromise the economic, social, and environmental bases that generate food security and nutrition for future generations

The concept of food security is dynamic and has evolved over the last few decades. The definition was revised in 2009 to include the dimension of stability and modified again more recently with two more dimensions, agency, and sustainability (FAO, 2009, HLPE, 2020).

The different dimensions of food security can be seen at multiple different levels:

- availability – national or regional

- access – household

- utilization/agency – individual
- stability – short term
- sustainability – long term

It is important to see how each level can affect an individual or a household's food security to pinpoint the factors leading to food insecurity. However, it is also important to understand how each dimension is interrelated and connected, not static. For example: if stability is affected due to a natural disaster, this can affect the availability/amount of food that can be transported into a community due to blockages in food supplies. This can also lead to increases in prices due to the increased demand for certain foodstuffs. And if a natural disaster causes damage to the community infrastructure, the quality of food and water supplies may decline.

Hunger and food insecurity are currently on the rise due to the Covid-19 pandemic, and the Sustainable Development Goal 2: Zero Hunger is not on track to be achieved. Current estimates predict that there are 690 million hungry people or 8.9 percent of the world population, and in 2019 approximately 750 million people were subjected to severe levels of food insecurity (FAO 2020). The total effects of the Covid-19 pandemic are not yet known. However, the most vulnerable populations are at risk of a worsening state of food insecurity affected by socio-economic impacts, which will, in turn, affect their diet quality and nutritional health. This can lead to further increases in malnutrition, undernutrition, and overweight and obesity.

Lebanon is currently experiencing an economic disaster and humanitarian crisis. Lebanon has been plagued by political instability with ethnic and religious differences that have left the economy and balance of the country volatile. In the past decade,

Lebanon has taken in a vast number of Syrian refugees fleeing the Syrian War, in addition to the hundreds of thousands of Palestinian refugees already residing in Lebanon. Lebanon has the second greatest number of refugees per capita globally, with figures at 134 refugees per 1000 inhabitants (UNHCR 2019).

Multiple assessments have been developed to evaluate food insecurity. One of those assessments is the Food Insecurity Experience Scale (FIES). The FIES was developed by the Food and Agriculture Organization (FAO) in 2013. It is part of the UN's Sustainable Development Goals (SDG), specifically SDG 2, which aims to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture by 2030. Indicator 2.1.2 of the SGD primarily focuses on the prevalence of moderate or severe food insecurity in a particular population based on the FIES.

Assessments like the FIES have been standardized for international use, however the translation of the FIES can lack the same ideas or meaning imbedded in those questions. The Arab Family Food Security Scale (AFFSS) were developed from the US Household Food Security Survey Module and the Yemeni National Food Security Survey. Questions from the AFFSS were translated into Modern Standard Arabic and the Lebanese and Palestinian dialects, then adapted to be culturally accepted for use within Lebanon. Data was collected from residents in Tyre and surrounding southern villages of Lebanon and in Palestinian camps within Lebanon to test the validity of the questions. When the AFFSS was published in 2013, the survey was the only validated food security experience tool within Lebanon. The questions included in the survey can be compared to the FIES for international use (Ghattas et al., 2013).

2. Case Studies

a. Food Security and Nutrition Transition

Nutrition is one concept within the definition of food security; to have food security, one must have "access to sufficient, safe and *nutritious* food." Nutrition has been argued to be integral for food security, that it should be included in all four dimensions, and terminology should be opted to be 'food and nutrition security' (Hwalla et al., 2016). Nutrition is interlinked with food security, meaning proper nutrition and diet quality is vital for food security. Food insecurity affects diet quality in several ways, potentially resulting in undernutrition, malnutrition, and overnutrition (FAO, 2020). The nutrition transition happens when people switch from a diet rich in vegetables, fruits, and whole grains with little meat products to a diet consisting of heavily processed foods and heavy in meat products. This, in turn, affects the food security of an individual or household because they are not achieving proper nutrition.

The Global Burden of Disease study done by the Lancet in 2017, with 195 countries surveyed, found diets low in fruits, vegetables, and whole grains cause more deaths than diets high in trans fats, sugar, and processed and red meats. A total of one in five, or roughly 11 million, deaths were attributed to poor diet in 2017, with diets high in sodium, low in whole grains, and fruit together accounting for over half of the deaths. In addition to that, the study found that global consumption of nearly all healthy food groups (nuts and seeds, whole grains, milk, fruit, and vegetables) was suboptimal, with only central Asia meeting the daily recommended intake of vegetables. In addition, global consumption of all unhealthy food groups and nutrients exceeded the daily recommended intake. Consumption of processed meats per day is ninety percent greater than the daily recommended average; daily consumption of sugar per day is eighty-six

percent greater than the daily recommended average. The only regions with optimal daily intake were vegetables in central Asia, seafood (omega-3 fatty acids) in the high-income Asia Pacific, legumes in the Caribbean, tropical Latin America, South Asia, western sub-Saharan Africa, and eastern sub-Saharan Africa (Afshin et al., 2019). This study indicates that most of the world lacks adequate nutrition and is consuming a diet that is detrimental to their health, resulting in malnutrition, undernutrition, and overnutrition.

b. Food Security and Culinary Transition

The utilization pillar of food security is not often the focus of research, but that does not discount its importance. How well someone utilizes the food they have to consume the right amount of nutrients is just as important for food security as having the right access to food. In other words, one might have complete access to food monetarily or regionally but if they do not know how to use those ingredients to consume the right amount of nutrients or calories, they do not have sufficient food security (Burchi & De Muro, 2016).

Proper cooking habits and culinary-know-how can improve nutrition, which can in turn improve food security (Flynn et al., 2013). A study conducted on the effectiveness of food literacy interventions in improving food security and food literacy found that after completing a 6-week program in promoting food security and food literacy, participants' food security rose 28 percent from the baseline. This was due to greater nutritional knowledge, confidence in cooking skills, higher vegetable intake, and a decrease in sugary and salty foods. The utilization dimension of food security was the

main element improved, and the access dimensions of food security remained a barrier for participants due to economic hardships (West et al., 2020).

It is important to note that advanced cooking skills and money management does not always translate to increases in food security. A study of rural Canadian women found that even when they managed their food budget, cooked from scratch, and had home gardens, financial stressors left the mothers unable to provide enough food for their families (Buck-McFadyen, 2015). Even with all the right tools to *utilize* the foods available, there still needs to be adequate *amounts* of food.

Furthermore, determining what constitutes healthy food is subjective and depends on personal and cultural ideologies. Access to food that is deemed culturally appropriate for a group is important and should be a necessary part of food security. A study implemented in the Canadian Artic explored the changes to traditional food systems and the perceived advantages and health benefits of traditional food and preferences for those foods among indigenous women. Traditional foods were found to offer physical and nutritional health advantages as well as social and cultural value. The traditional foods are important to the Arctic indigenous women and their access to these foods is an important factor in their food security (Lambden et al., 2007).

CHAPTER III

METHODOLOGY

This research aims to examine if the Abu Eid Bedouin tribe of Bekaa Valley, Lebanon, is going through a nutrition transition and a culinary transition and how those transitions interact with their food (in)security. This paper explores the many ways that food plays a role in everyday life.

A. Study area and community

The Abu Eid are traditionally a nomadic community that has settled in the Baalbek-Hermel Governorate of Bekaa Valley in the Northeast region of Lebanon. The valley is situated between Mount Lebanon to the west and the Anti-Lebanon mountains to the east. It has a climate of wet, sometimes snowy winters and dry, warm summers. The Bekaa Valley is the most important farming area in Lebanon, consisting of about 40 percent of the country's arable land (FAO, 2008).

There is a total of 143 households within the Abu Eid community. Due to settlement, community members have diversified their livelihood strategies by joining the service or agriculture sector. Some families have access to land, allowing them to participate in self-sufficient agriculture. Moreover, few families have retained their flocks, a primary source of income and food products. However, families working in the service sector must rely more on food purchased from the market (Ghattas et al., 2013).

B. Research Process/Data Collection

A mixed-methods of quantitative food and nutrition security assessments and qualitative focus group discussions were carried out in the Abu Eid community in the

Bekaa Valley during January 2020. This research follows this specific approach to understand the food and nutrition security and culinary habits and traditions of the Abu Eid. A questionnaire was administered for food security analysis using the Arab Family Food Security Scale (AFFSS) and the Food Consumption Score (FCS). Verbal consent was obtained with each survey and was administered by youth community members. Three focus groups were conducted, each composing of different age groups, to discuss generational culinary and eating habits. Focus groups were run in Arabic by a native Arabic speaker (member of the research team) and were then transcribed into English.

1. Focus Group Discussions

Three focus groups were conducted to help explore if a nutrition or culinary transition appears within the Abu Eid tribe. Focus group participants consisted of all women, who are the primary food-makers in their houses. In the Bedouin culture, women are considered the housekeeper and oversee all domestic matters, including everyday cooking and meal planning (Abu Eid & Zurayk, 2010). Men participate in cooking less often than women, so it was concluded that the women would be the focus of the discussions. The participants were recruited by word-of-mouth through Hamra Abu Eid. Hamra is a member of the Abu Eid tribe, who acted as a point of contact for the Cultural Corridors of Peace project and this research. Hamra helped to coordinate the survey and focus groups. Two of the focus groups were conducted in Hamra's market store, and one was held at the house of one of the participants, all located in the Bekaa Valley.

Questions were modified to fit the cultural context of the Bedouin tribe. The conversations during the focus groups were recorded with the participants' permission. Those conversations were then translated and transcribed in English from Arabic.

2. Nutrition Transition – focus group & secondary data

Three focus group discussions, data from the food consumption score, and secondary data were used to explore the possibility of a nutrition transition in the Abu Eid Bedouin tribe. The questions in the focus group discussions were focused on weekly meat and fast-food consumption, with a focus on changes in food consumption from past to present. The responses to the questions asked were compared with the results from the FCS, focusing on the oil, sugar, and meat food groups. In addition, data were analyzed from the FCS to understand the diet diversity and frequency of foods consumed in a week by the population (Popkin, 1993, Paarlberg, 2012). Secondary data was used to explore the prevalence and obesity in the Abu Eid tribe (Ghattas, 2013).

3. Culinary Transition

The focus groups covered topics such as how cooking has shifted over time and the factors that caused these changes. It focused on broad aspects of a culinary transition, including cooking methods, cooking utensils, and ingredients. A focus on three main dishes was made to provide an in-depth discussion on specific changes in the making of that dish. Those dishes included the staple, everyday dishes *labneh*[4] and

[4] strained yogurt that has been strained to remove most of the whey, resulting in a thicker consistency

kishik[5], as well as *mansaf*[6], which is prepared for celebrations and welcoming guests. The questions were adapted from different research papers on culinary transitions (Lang & Caraher, 2001; Weerasekara et al., 2018).

Table 2. Questions adapted to Bedouin culture

Questions from published sources	Meaning	Bedouin Questions
How did people practice and experience cooking in the past?	Historical overview, development of culinary cultures, similarities, and differences	What meals are eaten every day? Special occasions? What were meals eaten in the past before settlement? How have ingredients changed over time?
What food practices are currently practiced in the home?	Who purchases and prepares food, how, where, and why, what skills are utilized, and how are they acquired, what are the occasions and locations for cooking?	How/what/when are the dishes prepared and eaten? What utensils are used to prepare and eat food?
What are the factors that influence change/ continuity concerning domestic food practices?	the significance of technology and family structures, attitudes to food and cooking, and cultural identity	What new foods were introduced over time? Why was this new food introduced? Which foods have been forgotten? How have certain foods and ingredients changed over time?

[5] a powdery cereal of burghul fermented with milk and labneh

[6] a traditional dish made of lamb cooked in a sauce of fermented dried yogurt and served with rice or burghul

4. Arab Family Food Security Scale – questionnaire

Questions included within the survey are a combination of AFFSS and FIES so that, if needed, the survey can be validated for international use. The survey consisted of ten questions that included 'yes,' 'no,' and 'don't know/refuse to answer.' To construct the AFFSS, questions 1-7 were used. If there is a future need to use the scale for international use (FIES), questions 2,3,4,5,6,8,9,10 can be used.

Table 3. Arab Family Food Security Questionnaire

Q 1	Which of these sentences applies the most to the food eaten by your household during the past 6 months?	We had enough to eat of the kinds of food we wanted (quantity & quality)	We had enough to eat but not always the kinds of food we wanted (only quantity)	Sometimes we did not have enough to eat (quantity)	Often, we did not have enough to eat	**Don't Know/ Refuse to answer**
Q 2	In the last 6 months, was there a time when you were concerned that you would run out of food for your household for the next month?		**Yes**	**No**	**Don't know/refuse to answer**	
Q 3	Did the following statement apply to your household in the last 6 months? "The food that we bought was not enough and we didn't have money to get more."		**Yes**	**No**	**Don't know/refuse to answer**	
Q 4	Are there any foods you feel your family does not eat enough of?		**Yes**	**No**	**Don't know/refuse to answer**	
Q 5	In the past 6 months, did you or any other adult in your household ever cut the size of your meal because there was not enough food?		**Yes**	**No**	**Don't know/refuse to answer**	
Q 6	In the past 6 months, did you or any other adult ever skip a meal because there was not enough food?		**Yes**	**No**	**Don't know/refuse to answer**	
Q 7	In the past 6 months, did you or any adult in your household not eat for a whole day or go to bed hungry because there was not enough food?		**Yes**	**No**	**Don't know/refuse to answer**	
Q 8	During the last 6 months, was there a time when you or any adult in your household were unable to eat healthy and nutritious food because of a lack of money or other resources?		**Yes**	**No**	**Don't know/refuse to answer**	
Q 9	During the last 6 months, was there a time when you or any adult in your household were hungry but did not eat because there was not		**Yes**	**No**	**Don't know/refuse to answer**	

	enough money or other resources for food?				
Q 10	During the last 6 months, was there a time when you or any adult in your household went without eating for a whole day because of a lack of money or other resources?	**Yes**	**No**	**Don't know/refuse to answer**	

The total score, or raw score[7], for the AFFSS is the sum of all questions answered with an affirmative response ranging from zero to seven. This score is then categorized into different groupings: zero to two as food secure, three to five as moderately food insecure, and six to seven as severely food insecure (Ghattas et al., 2013). Thus, this survey will help determine the anxieties about food insecurity of the Abu Eid tribe members and its potential severity.

The FIES is a metric of the severity of food insecurity at the household level and consists of eight "yes" or "no" questions regarding their access to sufficient food. These questions reveal that the experience of food insecurity is portrayed by "uncertainty and anxiety regarding food access and changes in the quality of the diet" (FAO, 2017). As the severity of food insecurity increases, there is a pattern of decreasing quantity of food, declining quality of food, and skipped meals. There are two global standard thresholds for the severity of food insecurity of two specific FIES items: ATELESS and WHLDAY, each defining moderate and severe food insecurity, respectively (FAO, 2017). Labeling for each of the eight questions is included in the table below.

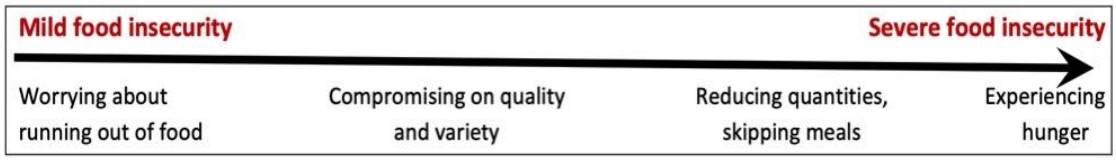
[7] Number of affirmative responses to the survey questions

Table 4. Food Insecurity Experience Scale questions and labels

	Standard Label	Question-Wording
1	WORRIED	During the last 12 months, was there a time when YOU were worried you would not have enough food to eat because of a lack of money or other resources?
2	HEALTHY	Still thinking about the last 12 months, was there a time when you were unable to eat healthy and nutritious food because of a lack of money or other resources?
3	FEWFOODS	Was there a time when you ate only a few kinds of food because of a lack of money or other resources?
4	SKIPPED	Was there a time when you had to skip a meal because there was not enough money or other resources?
5	ATELESS	Still thinking about the last 12 months, was there a time when you ate less than you thought you should because of a lack of money or other resources?
6	RANOUT	Was there a time when your household ran out of food because of a lack of money or other resources?
7	HUNGRY	Was there a time when you were hungry but did not eat because there was not enough money or other resources for food?
8	WHOLEDAY	During the last 12 months, was there a time when you went without eating for a whole day because of a lack of money or other resources?

Questions are labeled one through eight, and the severity of food insecurity increases with each question answered with a 'yes,' as represented in the figure below.

Figure 2. Food Insecurity Experience Scale severity



5. Food Consumption score – questionnaire

The Food Consumption Score (FCS) is a tool developed by the World Food Programme in 1993 to indicate diet diversity and consumption of certain food groups; it can also be used as a proxy indicator for household caloric availability (INDDEX,

2018). This tool gathers information about nine food groups and the regular consumption within a household over the last seven days before participating in the survey. This analysis tool compiles a score giving a certain weight to each food group based on the relative nutritional significance. The food groups include main staples, pulses/legumes/nuts, vegetables, fruits, meat (meat, poultry, and fish), eggs, milk, dairy, sugar, oil, and condiments. Because meat is nutritionally dense, it is given a higher score than the lower nutritional density of vegetables and fruits. Foods, such as condiments, are given a score of zero for the lack of nutrition provided. The weighted food items are as follow:

Table 5. Food Consumption Score weighted food groups

	Food Group	**Food Items**	**Weight**
1	Staples	Cereals and tubers	2
2	Pulses	Beans, peas, and nuts	3
3	Vegetables	Vegetables and leaves	1
4	Fruits	Fruits	1
5	Meat and Fish	Beef, goat, poultry, pork, eggs, and fish	4
6	Milk	Milk, yogurt, and other dairy	4
7	Sugar	Sugar and sugar products	0.5
8	Oil	Oils, fat, and butter	0.5
9	Condiments	condiments	0

When calculating the score, each group's frequency consumed during the previous seven days is multiplied by the weights of each group and summed together. The standard cutoff points recommended by the World Food Programme are as follow: a range from 0-21 equals poor food security, 21.5-35 equals borderline food insecurity,

and greater than 35 equals acceptable food security. In the instance that there is high sugar and fat consumption, which shows low nutritional value, the recommended cutoff points are increased by seven points each. This will result in new cutoff points: 0-28 equals poor food security, 28.5-42 equals borderline food security, and greater than 42.5 equals acceptable food security. Adjustments will be made when needed.

The FCS will give insight into the foods frequently consumed by members of the Abu Eid, capturing the quantity and quality of foods, translating into energy and nutrient adequacy. By administering both the AFFSS and FCS, information can be gathered about the food and nutrition security of the Abu Eid. When coupled with the focus group findings of culinary and eating habits, it is hoped that this will provide insight into whether or not the Abu Eid are experiencing a nutrition transition.

C. Qualitative and Statistical Analysis

The qualitative data from the focus group discussions were carefully read and analyzed. The discussion results were broken down into three main points and then three main subgroups to analyze the focus group findings. This was used to explore the possibility of a culinary and nutrition transition from before settlement and after settlement.

- Types of food eaten
- Methods of preparation and consumption
- Utensil usage
- Changes and drivers of change
- Specific dishes or type of food eaten

Each of these topics was further broken down into subgroups:

- Past domestic food practices
- Current domestic food practices
- Preferences in domestic food practices

The topics were examined throughout all discussions and categorized accordingly. The answers gave insight into the changes and the drivers of change in the culinary practices and eating habits of the Bedouin. Discussion guides for each focus group are included in the appendix.

The quantitative data has three main objectives. The first is to determine the current food security and nutrition security status of the Abu Eid via the AFFSS and FCS. The second objective was to determine the diet diversity and frequency of food groups consumed by the Abu Eid via the FCS. The third objective was to test the AFFSS and FCS against each other to examine food security and food and nutrition security interactions. The quantitative data from the AFFSS and FCS was collected and coded using Kobotool box and analyzed using SPSS (statistical programming for the social sciences) and Excel. Continuous and categorical variables were used, and statistical tests were done with those variables. The tests used for analysis are present in table # below.

Table 6. Statistical tests conducted by topic of analysis

Topic	Dependent variable	Independent variable	Test
Food Security	AFFSS	Level of food security	Frequency table
	AFFSS	Affirmative answer to questions	Frequency table

Food and nutrition security	FCS	Frequency of food groups consumed	Frequency table
			Stacked area chart
			Cluster Analysis
	FCS	Level of food security	Frequency table
	FCS	FIES	Scatter plot/ best fit line
			Regression test

CHAPTER IV

RESULTS

A culinary transition within the Abu Eid tribe can be determined through identifying changes in the knowledge and use of preparation methods, ingredients, and utensils for food making. Similarly, a nutrition transition can be established through a shift in the consumption of fresh foods to processed food and high meat consumption. All households within the tribe were surveyed for the prevalence of food security. Furthermore, a select number of women were assembled to discuss the changes in food consumption and preferences within the household. The analysis aims to answer the research question of this paper "Is the Abu Eid Bedouin tribe experiencing a culinary and nutrition transition, and how do those transitions interact with their food security?"

A. Demographics

A total of 143 households were approached for the survey, and 142 (99.3%) households consented to participate. The head of the house or adult available was interviewed. Of those interviewed, 61.3 percent were women, and 38.7 percent were men. The respondents' average age was thirty-nine years old, with the youngest being 17 and the oldest being 75.

B. Nutrition Transition

The possibility of a nutrition transition was explored by using data from the focus group discussions, results from the FCS, and secondary sources. The nutrition transition is based on the shift from a diet rich in whole foods towards a diet based heavily on processed foods and high meat consumption, resulting in a rise in

noncommunicable diseases. In addition, there is a shift from an active to a sedentary lifestyle, resulting in weight gain. The focus group data explored the changes in eating habits over the last few decades, while the FCS examined the current consumption habits of the Abu Eid tribe. Secondary data was used to explore the prevalence of obesity within the tribe, which is a cause of many non-communicable diseases.

The focus group data showed changes in food habits, from a diet based around meat and dairy products to a more traditional Lebanese-style diet rich in various vegetables and grains. The meat consumption is relatively low for the tribe. Only about 50 percent of the population eats meat daily. As for the rest of the population, there is not a specific number of days of meat eaten within the week that is significantly greater than other.

Table 7. Weekly meat consumption

Food Group	Percentage of population that consumes X days per week							
	7 days	6 days	5 days	4 days	3 days	2 days	1 day	0 days
Meat	50.7	4.9	7.7	9.2	7	7.7	7.7	4.9

Additionally, the food group meat encompasses white and red meat as well as fish. Although a nutrition transition exclusively implies increased red meat consumption. So, this data cannot point towards an increase in red meat consumption specifically.

Furthermore, the consumption of meat was examined within the focus group discussions. One respondent stated that 'it is once in a month that I buy meat for the house. I do not buy (often). We consume mostly potatoes.' Similarly, another respondent said, 'Once every week either red meat or chicken (is consumed).' One

woman even stated that meat consumption was higher in the past because families had their livestock and had access to meat whenever they wanted or saw fit. There was also a preference for meat consumption in the past because the meat was cleaner. Whereas, now they claim the meat is not as clean because 'the animals now are all given chemicals and drugs.'

As for processed foods, there was not a specific food group focused upon in the FCS. However, the food group oil included reference to any food consumed with any type of oil, ghee, butter, margarine, or any other fats. Oil was the third most consumed group after 'staples' and 'vegetables.' Additionally, the question proposed in the FCS sugar group included the weekly consumption of processed candies, cookies, cakes, and sugary drinks. Sugar was the fifth most consumed group after 'staples,' 'vegetables' 'oil,' and 'dairy.' Most of the population consumes oil and sugar seven days per week, making those food groups consumed regularly.

Table 8. Weekly consumption of oil and sugar

Food Group	Percentage of population that consumes X days per week							
	7 days	6 days	5 days	4 days	3 days	2 days	1 day	0 days
Oil	69	2.8	6.3	7.7	2.1	6.3	0.7	4.9
Sugar	59.2	5.6	4.2	9.2	7.7	8.5	2.1	3.5

A preference for fried and fast foods was notable with the younger generation in all three discussion groups. One of the main factors in determining a nutrition transition is the increased consumption of processed foods. Most foods prepared for takeaway meals are preserved or frozen for longevity and ease of use. This means that many additives are added to the food and processed to have a longer shelf life. There also

tends to be high levels of salt and sugar, which are two types of preservatives and affect the nutritional quality of the food. In addition, the high levels of consumption (more than four times per week) of fried foods lead to an increase in high cholesterol (Gadiraju et al., 2015). A combination of both processed and fried foods can lead to non-communicable diseases and weight gain (Poti et al., 2017).

Secondary anthropometric data collected in 2010 showed a high prevalence of overweight and obese adults in the Abu Eid population. Out of 302 adults surveyed, 30.7% were considered overweight, and 25.4% were deemed to be obese. Adults are considered overweight with a Body Mass Index (BMI) between 25.0 and 29.9 kg/m. Additionally, adults are considered obese with a BMI of 30 kg/m and above. The food insecure portion of the population were found to have a low diet diversity, but there was not a significant association between adult overweight and obesity and food insecurity. The researchers stated this could be due to the high prevalence of overweight and obesity within the tribe (Ghattas et al., 2013).

C. Culinary transition

The focus groups were divided into categories based on the women's age. This gave insight into changes in food and cooking habits over three generations. The age cutoffs were: 65 and older, ages 40-65, and ages 24-40, and each group consisted of 4-5 people. Age groups were chosen to represent eating habits from pre-settlement and after settlement. They also reflect the historical significance of sedentism over the last century, corresponding with the following important dates:

- 1926 – French government power starts collecting census records, not including the majority of Bedouins

- 1958 – Lebanese government gives out 'understudy' status to Bedouins seeking citizenship
- 1994 – most recent law passed granting Bedouins who had 'understudy' status, citizenship – initially a 10-year waiting period but extended to indefinite by Maronite Christian political party (Rabita al Marouniya)

Women ages 65 and older have stories or direct memories of life before settlement and integration into a settled life, giving insight into past culinary habits. Their parents and grandparents were alive during the transition from pastoralism to sedentarism, while others have distant memories. Women aged 40-65 are the start of a new generation that does not have memories of pastoral life but can give great insight into culinary and dietary changes due to globalization and industrial food production. Women aged 25-40 were born and raised in the age of industrial food production with ultra-processed foods readily available for consumption. It is hoped that this will show changes in culinary traditions and eating patterns by asking each group the same questions about current and past eating habits.

Indicators of a culinary transition are changes in the preparation of food, ingredients used, consumption, and utensil use from a traditional pattern to a more modern pattern. The indicators are as follows, each divided into their respected groups:

1. Types of foods consumed

The different types of foods consumed by families have shifted since the Bedouin settled. The group of elderly (ages 65 and up) women discussed mainly what was eaten before settlement. Many fresh fruit and vegetables were dried in the sun and ready to eat when needed. The different vegetables and fruit that would be salted and

dried were tomatoes, okra, eggplant, zucchini, raisins, chickpeas, and figs. These foods would be stored and packed, ready for consumption. A typical breakfast would include ghee and grape molasses, a lunch of bulghur and ghee, a dinner of fried potatoes and ghee, and a dessert of *saj*[8] bread with ghee, according to the elderly group. Ghee was an important staple in the daily life of mobile Bedouin. Ghee, (*samna* in Arabic) is clarified butter in which butter is melted and the milk solids are separated and discarded, leaving just the liquid fat. Although, Bedouins processed ghee quiet differently by putting fresh milk into bag made of sheepskins until the fat separates from the whey. Nowadays, it is rare to find a family that still makes ghee at home, and the majority buy either coconut ghee or cow's ghee from the market. In addition, according to the elderly group, meat consumption has decreased because it now has to be purchased. Whereas before settlement, meat was available whenever needed depending on the size of the family's flock.

The diet of mobile Bedouins described by the older women varies from the current day diet. The group of women aged 45-64 described a typical daily meal as breakfast consisting of *laban*[9], *labneh*, olives, *za'atar*[10], eggs, f*oul*[11], and *kishik*, lunch consisting of potatoes, rice or bulghur, French fries, beans with meat, *mulukiyah*, *mujadara*[12], and a side salad, dinner being stated to be usually leftovers from lunch or food similar to breakfast foods. However, many women said that French fries were the most requested food by their children in this group. One woman stated, "yesterday I

[8] a Middle Eastern unleavened flatbread cooked on a saj, which is a convex metal griddle
[9] fermented milk beverage
[10] a spice blend of dried thyme, sumac, and toasted sesame seeds
[11] a stew of cooked fava beans with oil, cumin, and the makers choice of parsley, garlic, onion, lemon juice, chili pepper or other vegetables a stew of cooked fava beans with oil, cumin, and the makers choice of parsley, garlic, onion, lemon juice, chili pepper or other vegetables
[12] cooked lentils with rice, garnished with sauteed onions

cooked zucchini with meat! I swear meat! But no one ate it. All they wanted was French fries".

The importance of fried foods was also present in discussion with the women aged 25-40. One woman said, "a boy like his father will eat fried foods. They will get bored of some foods and want to try new foods from restaurants and delivery". There were several dishes that most of the women said their children refused. The dishes named were: *malfouf*[13], *loobieh*[14], bulghur with tomatoes, *mujadara,* and *shishbarak*[15]. They all said that their kids would rather eat anything from a restaurant such as fries, hamburgers, *tawook*[16], or *kibbeh*[17]. Just as the elderly generation of women stated, meat consumption depends on the family's income level. Whatever they can afford, they will purchase, and their family will eat. As for fruits and vegetables, the families will buy whatever their kids prefer and when they are provided at the market. Lastly for bread, some women make the bread at home, and others rely on the market.

2. Methods of preparation

Most respondents in all three focus groups stated that the methods and materials used to prepare food have changed over time. One respondent said, "no, we do not learn the way food was prepared before. We do not use the old methods; we follow the modernized one". For example, before settlement, the Bedouins would cook using fire, and now after sedentism, families overwhelmingly use stoves and ovens. There are

[13] cabbage stuffed with beef or lamb and rice
[14] made of green beans, tomatoes, onions, garlic, and salt, sauteed in olive oil
[15] meat dumplings in a yogurt sauce
[16] skewered chicken marinated in spices, yogurt, lemon juice and garlic
[17] a mix of burghul and meat made into a paste then formed into balls with pine nuts and spices

some exceptions when cooking for many people, specifically when preparing *mansaf* for a wedding because the pots used are too big to fit onto a modern oven.

Ingredients also have evolved since settlement. One respondent stated that they used to make ghee from home but now buy it from the store- once a laborious task, now ready in the pantry. Now, families use ghee purchased from the market (either coconut or cow's ghee) and different types of oil. Additionally, this led to a decrease in the amount of time spent in the kitchen. Due to new preparation items such as cheesecloths and mechanical grinders, reductions in time spent preparing food were also noted with *labneh* and *kishik*. When the Bedouins still roamed along their pastoralist routes, they did not have daily access to markets and relied on food made from their animal products or items foraged. It was also common with mobile Bedouin to dry most of their food, unlike the current preservation method, *mouneh*[18]. One woman (from the age group 45-65) said, "they used to chop, dry, and add salt to it (the vegetables). Then they soak and cook. In the past they used to dry everything. They did not boil and put it in jars or bottles".

3. Utensil usage

Methods of consuming food and utensils used for cooking have evolved since sedentarization. In the past, families would eat from one large pan with their hands. One woman described this style of eating as, "they used to eat using only one hand, the right hand. It is a shame to eat with the left hand…They roll with their three fingers… and throw it in their mouths". This has almost entirely reversed to eating with individual utensils and individual plates. Nevertheless, some families still use their hands for

[18] foods processed and sealed in airtight containers

eating and a communal plate. To satisfy all guests, one woman lamented, "now it is never the same. We need to serve (*mansaf*) with plates and spoons".

Even the materials used to make cooking and eating utensils have changed. The utensils the Abu Eid used for eating and cooking have been replaced from wood and clay, to now, mainly aluminum or Tafel[19]. A woman stated that when the Bedouin were still mobile, "all utensils were wooden, even the big pots." However, secondary research shows that Bedouin in other areas of the region used utensils made of wood, brass, iron, or clay (Iddison, 2011). Another woman said that the most popular place to purchase wooden utensils was in Homs, Syria. All the food prepared by the Bedouin would be cooked on the fire as there were no ovens and electricity for ovens. Now, almost every family has an oven and only cooks on fire for rare circumstances. In one instance during data collection, *mansaf* cooked over a fire was observed. The Bedouin were cooking a meal for many people, and the pot that was used was too large for a standard oven.

The cooking equipment used to make *kishik* and *labneh* have been updated to reduce the time spent preparing the dishes, as stated earlier. Machines are used to sift the *kishik* into a fine grain and have replaced the need for sieves. In the past, *kishik* would be filtered onto fabric made of goatskin, and now there is no need for a cloth of any kind since it is sifted in a machine. Goat's skin or clay pottery was used to strain and process the milk used for *labneh* and *kishik*. Now, most Bedouin will use cheesecloth exclusively because it requires less time. For almost all foods prepared in the home, the time spent processing and cooking has decreased. One woman said, "Before, they spent all day on the roof making the food and preparing, but now they don't spend as much time because a machine will do it."

[19] a non-stick coating for pots and pans

4. Changes and drivers of change

According to the women in the focus groups, changes in current food practices and consumption were caused by various reasons. Most respondents said that kids' preferences were the leading cause of change. Their preferences are influenced by other kids that they interact with, according to a few respondents of the focus groups. One interviewee stated, ‘they see other kids at school and learn of new things to eat’. If their kids do not eat a dish, the mother will not continue to cook, no matter how healthy it might be. The dishes that kids requested and refused varied from family to family. One woman said her children refused *loobieh*, while others stated that it was a staple dish within their house. Dishes that kids rejected were based mainly on food taste, with many stating that their kids would refuse to eat certain foods such as *shankleesh* (mold-ripened cheese) and traditional Arabic ghee. One respondent said, "the new generation does not eat the Arabic ghee. If we add a few spoons to the cooked rice, they refuse it the moment they smell it". Another woman said, "They (the kids) change the food (in the household) because we are cooking for them, and if they don't like it, then we should change it. They sometimes get sick of a certain type of food, and we will then cook something else". Some kids even go as far as ordering food over the phone secretly when they do not like what has been prepared for the household.

According to a few women, there was also a stress on the kids' fascination with takeout foods, with fries being the top requested food, at almost every meal. According to one woman, "They (the kids) don't get bored (of fries) … every day they would like it". Another response to the topic of kid's preferences for takeout stated, "They prefer fast food to stew, they always prefer delivery food." However, it is not just the kid's fondness for take-out that have changed food preferences within the home.

A Bedouin woman noted that she learned how to cook *kibbeh* from her mother-in-law because her mother did not know how to cook it. Another woman in the same group mentioned that her parents did not know how to cook *loobieh*, "they (her parents) did not know how to save it (*loobieh*) from the summer to the winter. All I knew was to bring that kilo(gram) of *loobieh* and cook it right away with tomatoes. But since I got married and I learned how to prepare the *loobieh* for *mouneh*". The drivers of change are not consistently negative but can include positive change, such as integrating a vegetable dish into frequent and long term consumption.

5. Specific dishes of focus

To explore the concept of a culinary transition within the Abu Eid tribe, a focus on changes in foods eaten, ingredients, and food preparation was the focus. Three main dishes were focused on providing details about the preparation and components of each dish. Those dishes focused upon were *labneh*, *keshik*, and *mansaf*. There were some changes in how these dishes are made, mainly stemming from new utensils used in the preparation to decrease the time spent making them. There are also changes in the ingredients used during preparation due to families not having livestock and purchasing ingredients from a market.

a. Labneh

*Labne*h is a staple in almost every home within Lebanon. It is a primary component of breakfast, usually eaten as a sandwich with Lebanese bread. It also is consumed for lunch or dinner as *mezze*[20] served with a drizzle of olive oil and scooped

[20] a selection of small dishes served as appetizers

up with bread. When exploring the changes in the preparation and ingredients used to make *labneh*, many differences were present. When Abu Eid were still mobile, *labneh* was made in a jar or with a bag made of sheep or goat's skin. However, now it is strained using cloth bags. When *labneh* is made using jars (*labnet al jarra*), the process begins in early March and is ready for consumption at the end of September. When *labneh* is prepared in goat's skin (*labnet bi ldaref*), the *labneh* is left to cure inside the goat's skin for four months, usually from June to August. Comparatively, *labneh* produced with the cloth bag only takes a few days, cutting the time spent preparing *labneh* significantly. A participant within the discussion stated that "some still make *labneh* in the pottery jar and some stopped. As for the goat's skin, only a few people in the village Talya[21] still do it… but people now are using the bags because it is faster".

When the Bedouins were mobile, they would use the milk produced from their animals, meaning just goat or sheep milk was used. However, now most families must rely on purchasing milk from the market. Depending on the taste preferences of each family, cow's milk or a mix between cow, sheep, and goat milk are used to make *labneh.* Some women mentioned that goat's milk is still used because it makes the *labneh* tastier, and others stated that it makes the *labneh* thicker and better able to stay in the form of balls.

b. Kishik

Kishik is another staple in Bedouin households. Kishik is characterized as a fermented milk product made of bulghur and mixed with either milk or yogurt. It is a

[21] Talya in a municipality located south of Baalbek, relatively close to the where the Abu Eid live.

dish that is time-consuming to prepare, both before and after sedentarization of the Bedouin. The bulghur is left in yogurt or milk to absorb the liquid, which takes 3-4 days, after which it is dried under the sun for an additional nine days or until thoroughly dried. The main difference is in past preparation methods; the Bedouin used to sift the kishik by hand through a sieve into a fine powder. The kishik was also filtered on fabric made of goat hair which was placed on the ground. Nowadays, they take it to a mill to be sifted in a machine, then drying it on a piece of fabric place it on a table under the sun. In the past, the sifting of the kishik was a social event where the women would get together and share stories while they worked. Sadly, the women do not gather to prepare the kishik anymore. To show this change, the younger generation does not know how to prepare *kishik* and relies even further on their mothers or the market to get it.

Like *labneh, kishik* was prepared with the milk from livestock before sedentarization, sometimes even using spoiled milk. Now the milk is purchased from the market, and mainly cow's milk is used. One respondent stated, "I do not put sheep nor goat milk; I only add cow's milk because of my kids. They only like the cow's milk." *Kishik* on the market is made mainly of cow's milk, as goat's milk gives it a strong, acidic taste, which is not appealing to most of the public.

c. Mansaf

Mansaf is a traditional Bedouin dish made of lamb cooked in a fermented yogurt sauce, usually served with bulghur or rice. It is made for special occasions such as weddings, significant holidays, births, or honored guests. Traditionally it is served on a large platter and eaten with the right hand instead of utensils. Nowadays, the Abu Eid serve *mansaf* with the option of individual plates and is eaten with spoons. One woman

even said, "now it is disgusting to have someone eating like that on the table." This is not always the case and usually depends on the preferences of each individual. Women and men traditionally eat *mansaf* separately in different areas or rooms. In the past, men would be served first, and whatever was leftover, the women would add more to the plate then eat together; this has progressed and now the women prepare their own *mansaf* and *do not wait* for the men to finish.

The preparation of *mansaf* has even changed slightly over time. In the past, the meat was boiled with onions and homemade ghee and served with bulghur. The meat came from the livestock owned by the family or relatives. Today, the meat is fried with store-bought ghee, after which it is boiled with added spices of cardamom, cinnamon, peppers, nutmeg, lemon, and onions (preferences depending on whoever is cooking). With the spices and meat, the water is then used for cooking the rice or bulghur, sometimes with magi cubes added. Depending on the family's preferences or availability, rice, bulghur, or a mix of both are used. It is then finished by adding nuts to the top. The meat is usually bought from the market or someone with a large flock.

D. Arab Family Food Security Scale

The AFFSS was analyzed using SPSS and Excel. A raw score was calculated then grouped into the level of food (in)security which is coded as food secure (0-2), moderately food insecure (3-5), and severely food insecure (6-7). AFFSS scores were calculated and given the values listed above. After running a frequency test on SPSS, it found that 23.2 percent of the population are severely food insecure, 39.4 percent are moderately food insecure, and 37.3 percent are food secure.

Table 9. Arab Family Food Security Scale: level of food (in)security

	Participants	Percent of population
Food secure	53	37.3
Moderately food insecure	56	39.4
Severely food insecure	33	23.2
Total:	142	100

Question one from the survey covers the overall feeling of food security and has four different responses; the responses are as follow: 1: we had enough to eat of the kinds of foods we wanted, 2: we had enough to eat but not always the kinds of food we wanted, 3: sometimes we did not have enough to eat, and 4: often we did not have enough to eat. After running a frequency of these questions, the following was found.

Table 10. AFFSS survey question 1 response

AFFSS question 1 response	Number of responses	Percent of population
Don't know/refuse to answer	11	7.7
Answer 1	30	21.1
Answer 2	74	52.1
Answer 3	19	13.4
Answer 4	8	5.6
Total:	142	100

21.1 percent of responses choose the first answer, implying that they had enough food to eat and the kinds of foods they wanted to eat. 52.1 percent had enough food to eat but not always the types of food they wanted to eat. 13.4 percent sometimes did not

have enough to eat, and 5.6 often did not have enough to eat. There was a total of eleven respondents who chose not to answer the question.

When analyzing the questions from the AFFSS/FIES survey, the questions are posed in increasing severity. In other words, question one indicates an acceptable level of food security, and each question after, food insecurity is increased. Since the AFFSS can be coupled with the FIES, knowing which questions were answered affirmatively will help with further analysis if needed at an international scale. The table below shows which questions were answered affirmatively and the percentage of the population's response to the specific question.

Table 11. Percentage response to each AFFSS question

Survey question number	Survey question	percent of population
2	In the last 6 months, did you or any adult in your household ever cut the size of your meal because there was not enough food?	35.9
3	In the last 6 months, was there a time when you were concerned that you would run out of food for your household for the next month?	60.6
4	In the last 6 months, did you or any adult in your household not eat for a whole day or go to bed hungry because there was not enough food?	25.4
5	Does the following statement apply to your household in the last 6 months? "The food we bought was not enough and we did not have money to get more"	61.3
6	In the past 6 months, are there any foods you feel your family does not eat enough of?	52.1
7	In the past 6 months, did you or any other adult skip a meal because there was not enough food?	32.4
8	During the last 6 months, was there a time when you or any adult in your household were unable to eat healthy and nutritious food because of a lack of money or other resources?	44.4

9	During the last 6 months, was there a time when you or any adult in your household were hungry but did not eat because there was not enough money or other resources for food?	31.7
10	During the last 6 months, was there a time when you or any adult in your household went without eating for a whole day because of a lack of money for other resources?	24.6

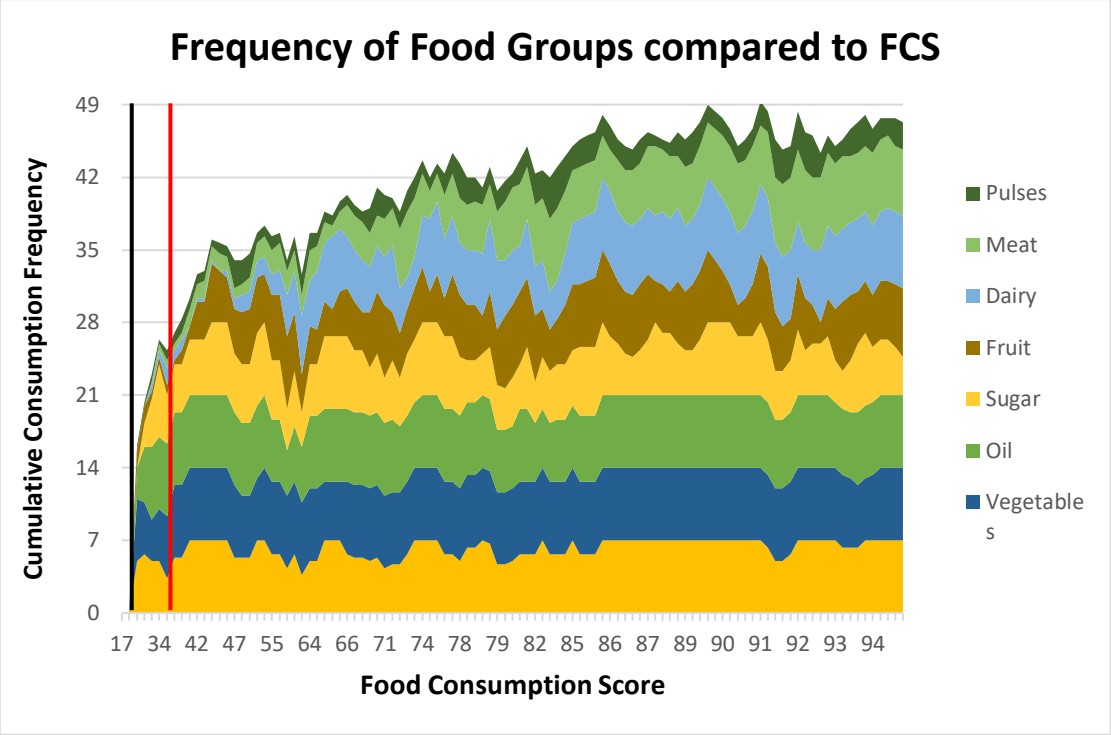
The most common question answered affirmatively was number five, with 61.3 percent of the population, meaning that most of the population was worried about not having enough money to buy more food during the month. The question that indicates a high level of food insecurity, number ten, was answered affirmatively the least at only 24.6 percent of the population. This percent of the population went hungry for a whole day because of a lack of money to purchase food. Comparatively, question four was answered affirmatively by 25.4 percent of the population, indicating a small percent of the population went a whole day or went to bed hungry because there was not enough food. Comparing the two questions is made due to their similar nature, both relating to going hungry because of a lack of food or money to purchase food.

E. Food Consumption Score

The FCS focuses on diet diversity by observing the frequency of different food groups consumed in a typical week. The FCS was calculated using the statistical programming software SPSS. A stacked area graph was made to visualize the data in order to make appropriate cutoff thresholds for the FCS. The standard cutoffs included: 0-21 indicates poor food security, 21.5-35 indicates borderline food insecurity and greater than 35 indicates acceptable food security. The frequency of consumption for each food group during a 7 day period (y-axis) was compared to the FCS (x-axis). The

black and red lines on the chart represent the standard cutoff points for the FCS, both 21 and 35.

Figure 3. Frequency of food groups compared to FCS, standard thresholds



The graph illustrates that staples and vegetables are the two most consumed food groups, with oil and sugar the third and fourth most consumed, specifically within the poor and borderline diet diversity groupings. According to the World Food Programme (WFP), when oil and sugar make up a majority of the diet, it is recommended to increase the thresholds when other food groups are infrequently consumed and there is a relatively low score. A cluster analysis was run to determine whether an increase in the thresholds is needed due to the high consumption of oil and sugar food groups.

Table 12. Cluster Analysis of food groups and FCS

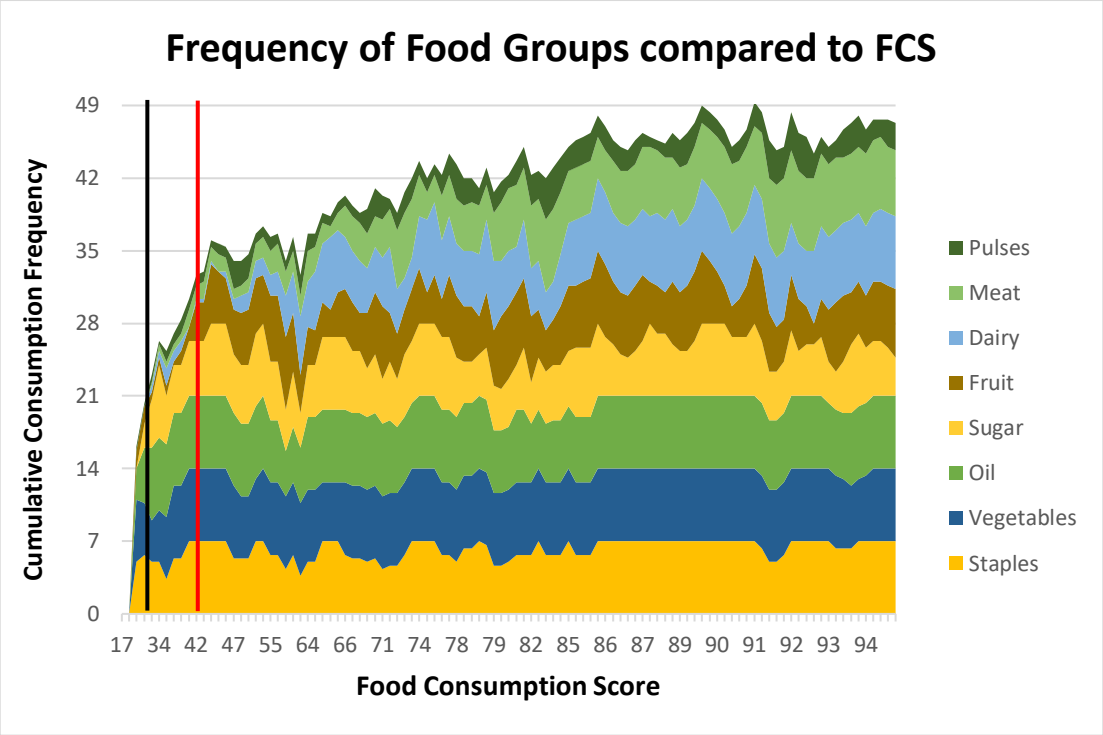
Cluster	Number in each cluster	Mean FCS	Mean number of days food group consumed by a cluster								Classification by the analyst based on the cluster description
			Staples	Pulses	Meat	Dairy	Veg	Fruit	Oil	Sugar	
1	4	21.75	7	0.25	0.25	0.00	1.50	1.25	3	3	Poor Diet Clusters
2	6	36.42	6.17	0.83	1.33	0.50	4.50	3.33	6.67	6.17	
3	19	46.22	7	1.67	1.33	1.44	5.67	4.22	6.67	5.78	Borderline Diet Clusters
4	29	58.75	7	1.50	2.25	3.75	6.75	6	2.25	4.75	
5	4	65.13	7	1	1.88	5.75	6.38	4.75	6.38	6.63	Acceptable Diet Clusters
6	9	75.24	7	1.79	4.37	5.37	6.79	4.84	5.53	5.05	
7	8	85.98	6.83	2.66	5.66	5.83	6.90	5.86	5.79	5.55	
8	18	93.79	7	2.30	6.80	6.93	6.80	5.45	6.23	5.43	
9	44	101.25	7	4	6.94	7	7	6.50	6	5.94	
All	141										

In most clusters, sugar and oil are eaten on average between 5-6 days a week. Staples are eaten on average every day, except for two clusters in which they are eaten roughly six days per week. The second cluster is considered a poor diet cluster because of the high frequency of oil and sugar and a mean score of 36. Both clusters considered poor have a high frequency of oil and sugar consumption (both which have low nutritional value) and are consumed more frequently than vegetables.

Cluster one presented the lowest scoring group; staples made up 43.07 percent of the diet diversity, with sugar and oil accounting for 18.4 percent each. All three food groups add up to 79.87 percent of the diet in cluster one, presenting a poor diet. Similarly, oil was the most consumed group in cluster two making up 22.6 percent of the diet. Both staples and sugar were the second most consumed group at 20.9 percent

of the diet, resulting in a poor diet. Because of this, it is suggested by the WFP to increase the thresholds by 7 points each to cancel out the oil and sugar groups to categorize the population into more appropriate levels of diet diversity. This results in the thresholds corresponding to the following scores, poor (0-28), borderline (28.5-42), and acceptable (>42) (WFP, 2008).

Figure 4. Frequency of food groups compared to FCS, updated thresholds



With the updated thresholds being used, it was found that 3.5 percent of the population has poor diet diversity, 4.9 has borderline diet diversity, and 91.5 percent has acceptable diet diversity concerning the food consumed during a typical week. The average score of all respondents is 79.9. The highest score is 107.50, and the lowest is 19.

Further examination of the cluster analysis found that cluster seven was the only acceptable diet cluster that did not have seven days of staples consumption. Instead, that cluster presented the second highest consumption of pulses, fruits, and vegetables resulting in a highly diverse diet group that is not reliant on mainly staples. Cluster three and four, both a borderline diet cluster have variations in the oil and sugar groups. Cluster four has the lowest consumption of oil and the second lowest consumption of sugar of all clusters compared to cluster three which has the highest rate of oil consumption and a high rate of sugar intake. Increases in the meat, vegetable, dairy, and fruit categories make of up the decrease in oil and sugar consumption

Staples are shown to be consumed the most frequently during the week, with 96.5 percent of the population eating cereals seven days per week. Vegetables were the next most consumed group, at 83.1 percent of the population eating vegetables seven days per week. Pulses and nuts were the least consumed group, with .7 percent of the population eating them seven days per week. The percentage of each food group consumed seven days during a week is shown below.

Table 13. Percent of the population consuming each food group weekly

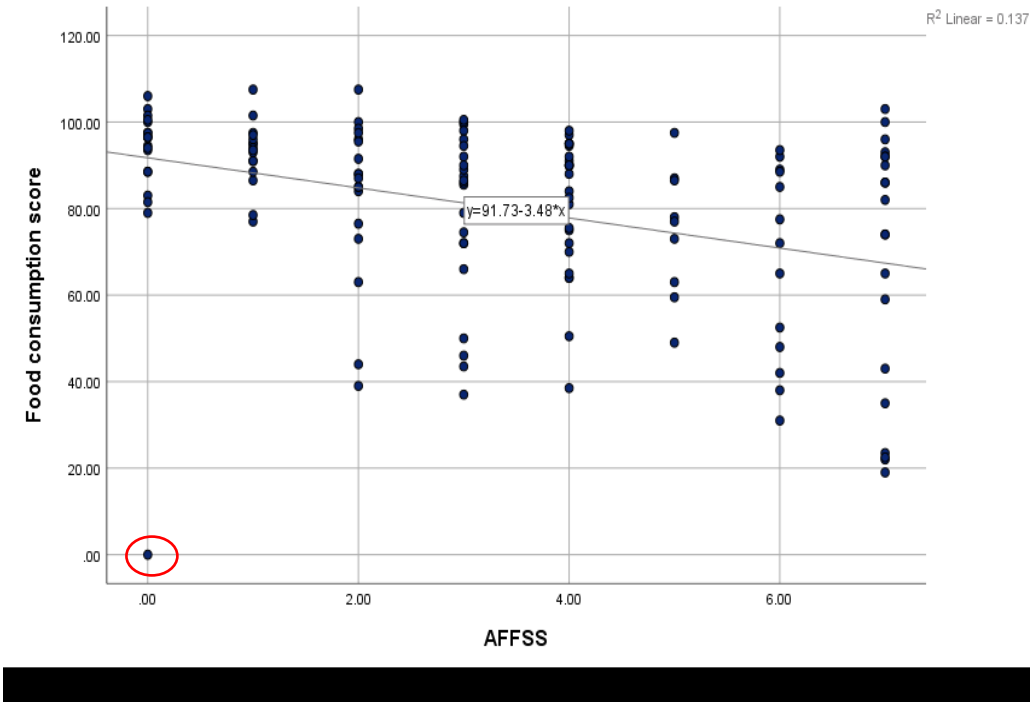
Food Group	Percentage of population that consumes X days per week							
	7 days	6 days	5 days	4 days	3 days	2 days	1 day	0 days
Staples	96.5	0.7	1.4	0	0	0.7	0	0.7
Vegetables	83.1	4.2	3.5	0.7	4.2	2.1	0.7	1.4
Oil	69	2.8	6.3	7.7	2.1	6.3	0.7	4.9
Sugar	59.2	5.6	4.2	9.2	7.7	8.5	2.1	3.5
Fruit	46.5	14.8	10.6	5.6	4.2	9.2	3.5	5.6
Dairy	65.5	3.5	3.5	4.9	5.6	5.6	3.5	7.7
Meat	50.7	4.9	7.7	9.2	7	7.7	7.7	4.9
Pulses	0.7	1.4	7	7.7	18.3	34.5	21.1	9.2

F. Food Consumption Score and Arab Family Food Security Survey

The AFFSS and FCS were tested against each other with a scatter plot to determine whether to use regression analysis or a Pearson's correlation test to examine the variable interactions. The FCS documents the frequency and nutritional diversity of diet, while the AFFSS indicates the participant's anxiety and food security experiences. This comparison between the food security analyses' is important to explore because both determine the level of food security according to different indicators.

The scatter plot shows a negative correlation between the FCS and AFFSS, meaning that the higher the FCS, the lower the AFFSS score. Or in other words, those who are food secure (low AFFSS score) have a high food consumption score. Pearson's correlation was used instead of regression analysis to test this assumption further because there was a significant outlier in the data.

Figure 5. Scatter plot with significant outlier highlighted



The Pearson's correlation was used to explore a relationship between the two factors and a relationship between one or more changes with the data. The data shows a statistically significant, moderate negative correlation between the two variables, $r(140) = 0.37$, $p < 0.0005$. In other words, higher values of the Food Consumption Score are associated with a lower Arab Family Food Security Score. The moderate negative correlation is determined via table 14, as shown below, with a score of -0.368 (Pearson's correlation coefficient). The coefficient of determination is a proportion of variance in one variable that is explained by the other variable and is calculated using the square of Pearson's correlation coefficient. The results show that the FCS statistically explained a negative of 13 percent of the variability in the AFFSS.

Table 14. Pearson's Correlation

		FCS	AFFSS
FCS	Pearson's Correlation	1	-0.368**
	Sig. (2-tailed)		.000
	N	142	142
AFFSS	Pearson's Correlation	-0.368**	1
	Sig. (2-tailed)	.000	
	N	142	142

*** correlation is statistically significant at the 0.01 level (2-tailed)*

CHAPTER V

DISCUSSION

The main objective of this study was to examine the food and nutrition security of the Abu Eid Bedouin tribe and its associations with a culinary and nutrition transition. The first research question explores the possibility of a nutrition transition within the tribe. The second research question investigates if the nutrition transition is accompanied by a culinary transition. The last research question examines if both transitions are contributing to an improvement or decline in the Bedouin's food security.

A. Nutrition Transition

The types of foods consumed by the Abu Eid have shifted because of the transformation from a pastoralist/nomadic lifestyle to a sedentarized lifestyle. While nomadic, the Bedouin had a diet rich in dairy, staples (such as bulghur and wheat bread), animal products, and vegetables. Nowadays, the Bedouin consume less meat and whole grains but still consume adequate amounts of dairy and have increased vegetables and fruits. Also, a sedentary lifestyle involved a significant drop in physical activity. The labor requirements involved in maintaining livestock, pastoral activities, and traditional food production are extensive. Nowadays, with new methods of food production, little to no herds to manage, and proximity to grocery stores and other social services, physical activity has decreased (Abu-Saad et al., 2001).

The findings suggest that the Abu Eid are experiencing overlapping stages of the nutrition transition. With a high prevalence of food insecurity and low diet diversity, many of the Abu Eid might not be getting an adequate amount of multiple nutrients.

This can be characterized by the 'receding famine' pattern of Popkin's nutrition transition (Popkin, 1993). There is also a prevalence of adult overweight and obesity, as shown through secondary data (Ghattas et al., 2013). This corresponds with the 'degenerative disease' pattern of Popkin's nutrition transition.

The main factor in measuring a nutrition transition within a group is a switch from a diet rich in vegetables, fruits, and whole grains to a diet heavy in processed foods, high in fat, and red meat consumption. The changes in diet patterns lead to inadequate nutrient intake and an increase in non-communicable diseases (Astrup et al., 2008, Hawkes, 2006). The Abu Eid tribe has a high consumption of vegetables within their diet. The vegetable food group was the second-highest in consumption, with 83.1 percent of the population consuming vegetables seven days per week. The high consumption of vegetables is good from a nutrition standpoint, but the low consumption of whole grains, fruit, and meat means that other nutrients are missed. Meat consumption was relatively low in the group, with only 50.7 percent of the population eating meat seven days per week. In addition, only 46.5 percent of the population ate fruits seven days per week. There is high consumption of fast and fried foods within the tribe, which is a trend among the Bedouin kids. The Bedouin women talked of making healthy, nutritious food for their families, but their kids would demand takeout or fast foods.

One major consequence of switching to a 'westernized' diet is an increase in the overweight and obese population. The Abu Eid has a high prevalence of adult overweight and obese population with 30.7% being overweight and 25.4% being obese (Ghattas et al., 2013). Bedouin women in southern Israel are going through a nutrition transition. Even with inadequate intakes of several nutrients, overweight and obesity

were still a major concern for the women (Abu-Saad et al., 2012). A study about overweight and obesity rates in children living in the United Arab Emirates found that urbanization and the nutrition transition are to blame for increases in weight (Malik & Bakir, 2006). In addition, a study on Tibetan pastoralists found that a dietary transition and urbanization increased the likelihood of overweight and obesity (Peng et al., 2019).

In summary, the Abu Eid are currently experiencing a nutrition transition. Inadequate intake of micronutrients linked to low dietary diversity and a decrease in physical activity leading to weight gain are two major factors in the nutrition transition of the Abu Eid.

B. Culinary Transition

Indicators for a culinary transition include changes in the methods of preparing food, ingredients used, consumption patterns, and utensil use. Methods of preparing food at home have adapted since the Bedouin since stopped practicing pastoralism; core foods, such as ghee, are now purchased at the market or replaced by other ingredients. Fire was used before settlement as the main source for cooking since the Bedouin had no access to electricity or gas. However, now that they have settled into permanent dwellings, they rely mostly on gas stoves. Utensils have also replaced from wooden, brass, iron, or clay to aluminum or Tafel. These make up a considerable amount of kitchenware compared to the past. Traditional methods surrounding food making and habits are fading and replaced with modernized methods or consuming take-out foods, *suggesting a culinary transition*.

While most of the older and mid-aged generations know how to cook both traditional and newly introduced meals, the younger generation does not have the same

breadth of knowledge. Several of the Bedouin women participating in the focus group discussions stated that many young adults from the newer generations do not know how to cook and even refuse to learn certain dishes. The younger generation mainly relies on their mothers or family members cooking simple-made meals or take out. This can create problems if the younger generation moves away from home and no longer has someone to cook. This could produce a complete reliance on takeout foods and a lack of know-how regarding meal preparation and cooking.

Yet, a report produced by Gallup and Cookpad found that home cooking is on the rise in Lebanon due to the economic collapse. The number of meals cooked at home rose 39% from 2018 to 2019 from 2.8 to 3.9 meals per week, the most significant percentage increase worldwide. For comparison, the average number of meals cooked at home worldwide was 6.9 per week. It was reported as 4.8 per week in 2019 (out of a possible 14 for both lunch and dinner) within the MENA region. However, there is not a clear comparison between this data and the experience of the Abu Eid. The data used for this study was collected mainly from urban populations and consisted of up to 1000 respondents. The Abu Eid live in a rural area and already had less disposable income than most families in the urban areas, making it difficult to compare (Gallup, 2019).

However, it is important to note that changes in food habits from traditional to modern have less to do with the disappearance of ‘traditional’ cooking practices and more based on cooking knowledge to health. As explored in the literature review, there is an association between cooking skills and suitable diet quality and health outcomes (Hasan et al., 2019, Wolfson & Bleich, 2015, Alpaugh et al., 2020). To explore this further, a study conducted on 8500 adolescents in New Zealand reported that cooking skills are positively associated with better diet quality, better mental health, and stronger

familial connections. Adolescents within this study who reported having the highest cooking skills were more likely to meet fruit and vegetable consumption recommendations and were less likely to frequently consume fast foods (Utter et al., 2015).

Even so, adherence to a traditional diet has many benefits ranging from an increase in diet quality (Blanchet et al., 2020) and decreases in different non-communicable diseases (specifically the Mediterranean diet) (Salas-Salvado et al., 2014, Sofi et al., 2013, Satterfield et al., 2016).

C. Food Security

The results indicate that severe and moderate food insecurity is predominant within the Abu Eid tribe according to the AFFSS (62%) but has acceptable food consumption when accessed with the FCS (91.5%). For comparison between the two food security surveys, more households are considered food insecure when the AFFSS is used as an indicator than the FCS. This is not uncommon when using two different indicators. A study on rural households in Rwanda had similar differences when analyzing the FIES and FCS (Gideon Danso-Abbeam et al., 2021).

According to the AFFSS, many households (39% at moderately food insecure) have experiences worrying about what to eat or not consuming food that is considered desirable. However, they do not reduce their food intake or run out of food to eat. Additionally, 23% of the households have experienced one or more the severe food access situations: going a whole day or to bed early without eating and/or food shortages. More specifically, 25% and 24% of the population answered affirmatively that there was a time when someone in the household did not eat for a whole day

because there was not enough food and did not eat for an entire day because of a lack of money or other resources, respectively. While the question with the most affirmative answers indicates that 61% of the population could not buy enough food and did not have money to buy more.

Ghattas et al. (2013) assessed the food security of the Abu Eid tribe seven years prior to this study, finding that 50.5% of the households were food secure, 37.4% were moderately food insecure, and 12.1% were severely food insecure. The level of food security decreased within the Abu Eid tribe from 50.5% to 37.3% of the population surveyed being food secure. Additionally, the level of severe food insecurity increased from 12.1% to 23.2% of the population surveyed for this study. Ghattas et al. (2013) used six questions derived from the U.S. food security survey module and the Yemen National Food Security Survey, adapted to the Lebanese context.

Furthermore, the AFFSS was used in two studies different studies to test the soundness, throughout Lebanon. The first study focused on two of the communities, one located in South Lebanon and the other, a Palestinian community. The results showed that ten percent of the participants in South Lebanon experiencing severe food insecurity, while twenty percent of participants in a Palestinian camp were severely food insecure (Naja et al., 2014). In addition, the other study located in the Bekaa Valley was assessed using the Household Food Insecurity Access Scale (HFIAS). The results showed that 21 percent of the community were experiencing severely food insecurity (Sayhoun et al., 2014). These findings show (below) that the Abu Eid have a similar food security status to the Palestinian community, using the same food security scale. However, it is difficult to compare the two communities, as the surveys were conducted in different years and under different circumstances.

Table 16. Food security results

	South Lebanon (AFFSS)	Palestinian community (AFFSS)	Bekaa Valley (HFIAS)
Food secure	58	38	48.3
Mildly food insecure	-	-	17.7
Moderately food insecure	32	42	12.9
Severely food insecure	10	20	21.1

Levels of food insecurity for Bedouins throughout the Middle East and North African (MENA) region vary from country to country. A UNDP report found that 55% of a Bedouin population in the West Bank (Area C) were food insecure (UNDP, 2013). Another joint report carried out by the UNRWA, UNICEF, and the WFP found that 79% of the herding communities living in or having their livelihoods in Area C of the West Bank were food insecure (UNRWA, 2010). Likewise, almost half (43%) of Bedouins living in the Northern Badia of Jordan were found to be food insecure, using the same module as Ghattas et al. (2013) (Abuamoud et al., 2016). Comparatively, the Food and Agriculture Organization of the UN findings show that the prevalence of food insecurity (both moderate and severe) within the MENA region is 30.8% and 32.9% when excluding high-income countries (FAO, 2018). Official data on the food security situation in Lebanon is unclear due to the government not running national surveys on poverty, nutrition, and household expenditure.

A beautiful aspect of Bedouin culture includes the sharing of food amongst tribe members as well as guests. Coffee or tea and a small snack are always offered to guests when arriving in a member of the community's house. Although this welcoming

method is not just reserved for guests or as a receiving gesture but also provided to all members within the community. This was exemplified in comments made in the focus group discussions by multiple participants. One respondent stated that she obtained fresh vegetables from her mother's garden. Another participant noted that her mother-in-law would gift meals to her family, specifically for dishes she did not know how to make.

This style of food sharing has been recognized as an informal coping mechanism to food insecurity. Research among Native Canadian communities found that social networks, namely food sharing, are used to increase food intake and reduce hunger (Tam et al., 2014). Furthermore, eight communities in Kenya have exhibited food sharing techniques to combat low food production due to less precipitation. Those communities with ample rainfall and excess harvest share their crops with the other communities that experience a drier season that reduces their yield (Giroux et al., 2020).

The FCS findings show that many households (91.5%) have an acceptable level of food consumption. Additionally, 4.9% of the population has a borderline FCS score, and 3.5% having poor FCS score. The households with an acceptable FCS have sufficient diversity and quantity in the foods consumed. The primary diet for the Abu Eid tribe is based on staple foods (wheat, rice, potatoes), vegetables, and dairy, with high levels in consumption of sugar and oil. Staple foods were the most consumed food group, with 96.5% of the population eating staples seven days per week. Households within the poor and borderline food security consume low amounts of fruit, meat, and pulses. The pulses food group was the least consumed food group by a large margin.

The food consumption of the Abu Eid in 2013 showed a similar pattern in the foods consumed. The staples food group was consumed the most, followed by

vegetables and high consumption of sweetened beverages and high-calorie snacks. The data is hard to compare, however, because different analyses were used. A food consumption survey consisted of 14 food groups, and participants were asked the frequency of consumption in the household (per day, per week, per month, or never) (Ghattas et al., 2013).

The FCS of the Abu Eid is comparable to FCS reported by United Nations Economic and Social Commission for Western Asia (ESCWA). The report found that 89 percent of Lebanese had an acceptable FCS, 6.9 percent had a borderline FCS score, and 2.4 percent had a poor FCS score (Halabi et al., 2016). All scores are within a few percentages of each other, meaning that the food consumption level of the Abu Eid is very similar to the whole of Lebanon.

In summary, most of the Abu Eid experience anxieties and concerns about their food security, with 61% worrying that the food they bought was not enough but did not have money to get more. 39% of the sample was moderately food insecure, and 23% of the sample was severely food insecure. Yet, 91.5% of the sample had an acceptable food consumption score. The diet consists of mostly staples, vegetables, and dairy but with high consumption of sugar and oils.

CHAPTER VI

CONCLUSION

Results from this study show that the Abu Eid Bedouin tribe are currently undergoing a nutrition and culinary transition, while also experiencing high levels of moderate and severe food insecurity as indicated by the Arab Family Food Security Scale. There was adequate diet diversity detected by the Food Consumption Score. However, the severity of the nutrition transition was not clear.

The nutrition transition is manifested by changes in the types of foods consumed from a diet rich in vegetables, fruits, and whole grains to a diet heavy in processed foods and meat. Processed sweets and beverages, fried foods, and take-out were consumed frequently during the average week for the Abu Eid, according to the focus group discussions. The percentage of meat consumption was minor and was the third least consumed food group followed by fruits and pulses[1]. Nevertheless, data from the focus group discussion and FCS implicated that vegetable consumption is high and several participants stated that they ate higher amounts and a wider variety of vegetables compared to the past. Participants diets are still mainly fresh, and home cooked with the inclusion of some take-out and fried foods. Secondary data on anthropometric measurements revealed high rates of overweight and obesity within the tribe, 30.7% and 25.4% respectively (Ghattas et al., 2013).

The culinary transition, manifested by changes in the methods and ingredients used for cooking caused by the effects of sedentarization, was observed in these populations. One of the main factors in a culinary transition caused by sedentarization is the loss of flocks. As pastoralists, the main source of caloric intake came from their flocks, in the form of meat and dairy products. After sedentarization, meat and dairy

had to primarily be purchased in markets and that depended on the *ability* to purchase those items. On the contrary, sedentarization introduced the Bedouin to a wider variety of foods, which included both fresh and processed foods. The introduction of processed foods bought from the market also induced less time spent preparing food in the kitchen. One of those foods is ghee, once an all-day labor, now almost exclusively bought from the market. Other additions included new produce added to their diet, such as green beans (loobiyeh), not widely consumed before settlement but now adopted as a staple dish. In addition, increased access to markets have increased the diet diversity of pastoralist groups in Ethiopia (

The AFFSS, a food insecurity measurement tool, detected 23.3% of the population being severely food insecure and 39.4% as moderately food insecure, 62.6% total food insecurity. According to the study by Ghattas et al. (2013), this is an increase from 49% of food insecurity recorded in the tribe in 2013. Furthermore, 61.3% of the population stated that food purchased for the month was not enough, but they did not have money to get more. The FCS on the other hand showed that the population had adequate food diversity of 91.5%. The statistical comparison between the two surveys was significant.

Sedentarization has brought about a nutrition and culinary transition in the Abu Eid tribe causing changes in the daily consumption and making of foods. Some of the changes have included the introduction of new foods and meals, generating increases in vegetable and fruit consumption. This indicates that there have been some positive outcomes. Even with high levels of diet diversity, food insecurity is still prevalent. Further research is needed to determine the direct causes of food and nutrition insecurity.

APPENDIX

Arab Family Food Security Scale ENGLISH

Arab Family Food Security Questions:

Which of these sentences applies the most to the food eaten by your household during the last 6 months?

1. We had enough to eat of the kinds of foods we wanted (quantity and quality)
2. We had enough to eat but not always the kinds of food we wanted (only quantity)
3. Sometimes we did not have enough to eat (quantity)
4. Often we didn't have enough to eat
5. Don't know/Refuse to answer

In the past 6 months, did you or any adult in your household ever cut the size of your meal because there was not enough food?

1. Yes
2. No
3. Don’t know/refuse to answer

In the last 6 months, was there a time when you were concerned that you would run out of food for your household for the next month?

1. Yes
2. No
3. Don’t know/refuse to answer

In the past 6 months did you or any adult in your household not eat for a whole day or go to bed hungry because there was not enough food?

1. Yes
2. No
3. Don’t know/refuse to answer

In the past 6 months did you or any adult in your household not eat for a whole day or go to bed hungry because there was not enough food?

1. Yes
2. No
3. Don’t know/refuse to answer

In the past 6 months, are there any foods you feel your family does not eat enough of? - HEALTHY

1. Yes
2. No
3. Don’t know/refuse to answer

In the past 6 months, did you or any other adult ever skip a meal because there was not enough food?

1. Yes
2. No
3. Don’t know/refuse to answer

During the last 6 months, was there a time when you or any adult in your household were unable to eat healthy and nutritious food because of a lack of money or other resources?

1. Yes
2. No
3. Don’t know/refuse to answer

During the last 6 months, was there a time when you or any adult in your household were hungry but did not eat because there was not enough money or other resources for food?

1. Yes
2. No
3. Don’t know/refuse to answer

During the last 6 months, was there a time when you or any adult in your household went without eating for a whole day because of a lack of money or other resources?

1. Yes
2. No
3. Don’t know/refuse to answer

Arab Family Food Security Scale ARABIC

درجة الامن الغذائي للعائلة العربية AFFSS

أي من هذه الجمل تنطبق أكثر على معظم الأطعمة التي تناولتها أسرتك خلال 6 أشهر الماضية؟
1. كان لدينا ما يكفي من أنواع الطعام التي نريدها (النوعية والكمية
2. كان لدينا ما يكفي من الطعام، ولكن ليس دائماً أنواع الطعام التي نريدها (الكمية فقط
3. في بعض الأحيان لم يكن لدينا ما يكفي من الطعام (الكمية قليلة
4. في كثير من الأحيان لم يكن لدينا ما يكفي من الطعام
5. لا أعلم

خلال 6 أشهر الماضية هل مر عليك وقت شعرت فيه بالقلق من أن الغذاء لأسرتك قد ينفذ للشهر المقبل؟
1. نعم
2. لا
3. لا أعلم

خلال 6 أشهر الماضية، هل يمكن تطبيق العبارة التالية على أسرتك؟ "إن المواد الغذائية التي اشتريناها لم تكن كافية ولم يكن لدينا المال للحصول على المزيد."

1. نعم
2. لا
3. لا أعلم

هل هناك أي أطعمة تشعر أن عائلتك لا تأكل ما يكفي منها؟
1. نعم
2. لا
3. لا أعلم

خلال 6 أشهر الماضية هل خفّفت أنت أو أحد من أفراد أسرتك من كمية الطعام لأنه لم يكن هناك ما يكفي من الطعام؟
1. نعم
2. لا
3. لا أعلم

خلال 6 أشهر الماضية هل تخليت، أو أي فرد آخر في أسرتك، عن وجبة لأنه لم يكن هناك ما يكفي من الطعام؟
1. نعم
2. لا
3. لا أعلم

خلال 6 أشهر الماضية هل أمضيت، أو أي فرد آخر في أسرتك، يوماً كاملاً من دون تناول الطعام، أو خلدت إلى السرير جائعاً لأنه لم يكن هناك ما يكفي من الغذاء؟
1. نعم
2. لا
3. لا أعلم

خلال 6 أشهر الماضية،هل حدث وأن لم يكن باستطاعتك، أو باستطاع
أي فرد آخر في أسرتك، أكل طعام صحي ومغذي بسبب عدم توفر النقود الكافية أو المصادر الأخرى؟

1. نعم
2. لا
3. لا أعلم

خلال 6 أشهر الماضية،هل حدث وأن كنت أو أي فرد آخر في أسرتك، جائعاً لكنك لم تأكل أو لم يأكلون ألنه لم يكن هنالك ما يكفي من النقود أو المصادر االخرى للطعام؟

1. نعم
2. لا
3. لا أعلم

خلال 6 أشهر الماضية،هل حدث وأن بقيت أنت أو أحد من أفراد أسرتك دون تناول الطعام ليوم كامل بسبب نقص النقود أو المصادر االخرى

1. نعم
2. لا
3. لا أعلم

Food Consumption Score ENGLISH

Food Consumption Score Questions:

How many days over the last 7 days, did members of your household eat the following food items, prepared and/or consumed at home, and what was their source?

How many days over the last 7 days, did members of your household eat: Cereals (bread, rice, pasta, wheat, bulgur, other cereals)

How many days over the last 7 days, did members of your household eat: Roots and Tubers (potatoes)

How many days over the last 7 days, did members of your household eat: Legumes / nuts : beans, cowpeas, peanuts, lentils, nut, soy, pigeon pea, chick peas, Groundnut; Ground Bean; green peas, Cow Pea; and / or other nuts

How many days over the last 7 days, did members of your household eat: Milk and other dairy products: fresh milk / sour, yogurt, lebneh, cheese, other dairy products (Exclude margarine / butter or small amounts of milk for tea / coffee)

How many days over the last 7 days, did members of your household eat: Flesh meat: beef, pork, lamb, goat, rabbit, chicken, duck, turkey other birds

How many days over the last 7 days, did members of your household eat: Organ meat: liver, kidney, heart and / or other organ meats

How many days over the last 7 days, did members of your household eat: Fish/shellfish: dried, fresh and smoked fish, including canned tuna, and / or other seafood (fish in large quantities and not as a condiment)

How many days over the last 7 days, did members of your household eat: Eggs

How many days over the last 7 days, did members of your household eat: Green leafy vegetables:, spinach, broccoli, amaranth and / or other dark green leaves, cassava leaves, wild leaves, chicory, rockets, mulukhiyi

How many days over the last 7 days, did members of your household eat: Orange vegetables (vegetables rich in Vitamin A): carrot, red pepper, pumpkin, squash, orange sweet potatoes

How many days over the last 7 days, did members of your household eat: Other vegetables: onion, cucumber, radish, tomatoes, eggplants, zucchini etc…

How many days over the last 7 days, did members of your household eat: Orange fruits (Fruits rich in Vitamin A): mango, papaya, apricot, peach

How many days over the last 7 days, did members of your household eat: Other fruits: Banana, Apple, watermelon, cherry, dates

How many days over the last 7 days, did members of your household eat: Oil / fat / butter: olive oil, other vegetable oil, gee, Butter, margarine, other fats / oil

How many days over the last 7 days, did members of your household eat: Sugar, or sweet: sugar, honey, jam, cakes, candy, cookies, pastries, cakes and other sweet (sugary drinks)

How many days over the last 7 days, did members of your household eat: Condiments / Spices: tea, coffee / cocoa, salt, garlic, spices, yeast / baking powder, lanwin, tomato / sauce, meat or fish as a condiment, ketchup/hot sauce; u.Maggy cubes, powder; other condiments including small amount of milk / tea coffee

Food Consumption Score ARABIC

FCS الغذاء

كم يوم في خالل السبعة ايام الماضية تناولت فيه عائلتك
ألطعمة التالية

النشويات: الخبز, المعكرونة, ألرز، الذرة، القمح،
البرغل ، الفريكة

الدرنيات (البطاطس)

المكسرات والبقول : الفاصوليا، العدس ، الحمص، الفول
-السوداني، الفول، البازالء الخضراء، اللوبيا، وغيرها جوز
لوز-صنوبر /نواة(،)البازالء الحلوة

الحليب ومنتجات الحليب) حليب طازج أو مجفف،اللبن،
– اللبنة، الجبن، منتجات الحليب ألخرى
بإستثناء السمنة / الزبدة أو كميات صغيرة الحليب لصنع
الشاي / القهو

اللحوم الحمراء: لحم البقر، لحم الماعز، لحم الخنزير،
.الدجاج ،الديك الرومي ،ألغنام ،اللحوم ألخرى

اللحوم العضوية: الكبد، الكلى، القلب و / أو غيرها من اللحوم
العضوية

ألسماك: ألسماك المجففة، الطازجة، المدخنة، مأكوالت بحرية
أخرى)باستثناء صلصة ومسحوق السمك(ألسماك المستهلكة بكميات
كبيرة وليس باعتبارها مطيبا ت

بيض

الخضار الغنية في الفيتامين أ)اليقطين ،القرع، الفلفل
االحمر، الجزر، البطاطا الحلوة(الخضار البرتقالية و المتنوعة االلوان

الخضار ذات االوراق الخضراء: السبانخ، البروكلى،
قطيفة و / أو غيرها من االوراق الخضراء الداكنة، وأوراق
من الكسافاواألوراق البرية، الهندباء البرية والروكا
والملوخية

الخضار االخرى: البصل والخيار والفجل والطماطم
والباذنجان والكوسا الخ

الفاكهة الغنية في الفيتامين أ : المانجو، المشمش، الدراق،
البابايا، والفاكهة البرتقالية اللون

الفواكه االخرى: الموز، ألتفاح، البطيخ، الكرز، والتمر.

الدهون / الزيوت)زيت الزيتون ،الزيت النباتي ، زبدة، سمن،
) الدهون أخرى

لسكر / المنتجات السكرية/ العسل)السكر، قصب السكر،
العسل، مربى ،جيلي، حلويات / بونبون/ الشوكوالته، وغير ذلك من
منتجات السكر والبسكويت والباتيسري والكعك

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

Focus Group Discussion Outline ENGLISH

3 everyday meals

1. Breakfast – Moune + eggs (now) -> (before) ghee + dates, ghee + sugar, or yogurt + dates
2. Lunch – kebsah with chicken
3. Dinner – leftovers from lunch

3 Moune

1. kishik
2. mekdoos
3. lebneh

3 special meals

1. Mansaf
2. fasoleha
3. loobe

The questions are geared toward every dish unless otherwise noted.

1. What are the ingredients of this dish? Every ingredient including spices and condiments
2. How have the ingredients changed over time?
   - Local vs imported
   - Ghee vs oil
   - Store bought vs cultivated
3. If there was an introduction of a new food to a traditional dish, why was this food introduced? Why are these specific ingredients used as opposed to another type?
4. When/where/who are the dishes prepared and eaten
5. Has the dish changes over time? If so, how?
   - Ingredient
   - Preparation
   - Presentation
6. What utensils are used to eat the dish or used to prepare the dish?
   - Pots/pans/plates/mixing utensils
7. Is it cooked inside or outside?
8. With a gas stove or over a fire?
9. How long does it take to make the dish?
   - how has this changed?

BIBLIOGRAPHY

Abuamoud, I., Lillywhite, J., Simonsen, J., & Al-Oun, M. (2016). Factors Influencing Food Security in Less Popular Tourist Sites in Jordan's Northern Badia. *International Review of Social Sciences and Humanities, 11*(2), 20–36. https://www.researchgate.net/profile/Ismaiel-Abuamoud-2/publication/307965314_Factors_Influencing_Food_Security_in_Less_Popular_Tourist_Sites_in_Jordan's_Northern_Badia/links/57d3f3db08ae5f03b4914928/Factors-Influencing-Food-Security-in-Less-Popular-Tourist-Sites-in-Jordans-Northern-Badia.pdf.

Abu-Rabia-Queder, Sarab. *Routledge Handbook of Minorities in the Middle East*, by Paul S. Rowe, ROUTLEDGE, 2018, pp. 301–312.

Abu-Saad K, Shahar DR, Fraser D, Vardi H, Friger M, Bolotin A, Freedman LS. Adequacy of usual dietary intake and nutritional status among pregnant women in the context of nutrition transition: the DEPOSIT Study. Br J Nutr. 2012 Nov 28;108(10):1874-83. doi: 10.1017/S000711451100729X. Epub 2012 Jan 23. PMID: 22264559.

Afshin, Ashkan et al. 2019. "Health Effects of Dietary Risks in 195 Countries, 1990–2017: A Systematic Analysis for the Global Burden of Disease Study 2017." *The Lancet*.

Alon, Y. (2016). Sheikh and Pasha: Ottoman Government in the Syrian Desert and the Creation of Modern Tribal Leadership. *Journal of the Economic and Social History of the Orient, 59*(3), 442-472. doi:10.1163/15685209-12341404

Alonso, E. B., Cockx, L., & Swinnen, J. (2018). Culture and food security. *Global Food Security, 17*, 113-127. doi:10.1016/j.gfs.2018.02.002

Alpaugh, M., Pope, L., Trubek, A., Skelly, J., & Harvey, J. (2020). Cooking as a health behavior: Examining the role of cooking classes in a weight loss intervention. *Nutrients, 12*(12), 3669. doi:10.3390/nu12123669

Amkraut, J., Zaina, A., & Abu-Rabia, Y. (2018). Diabetes in the Bedouin population in the Israeli Negev – an update 2017. *Diabetes Research and Clinical Practice, 140*, 55-60. doi:10.1016/j.diabres.2018.03.029

ATEŞ, D. (2008). INDUSTRIAL REVOLUTION: Impetus Behind the Globalization Process. *Management and Economy*, *15*(2), 31–48.

Baba, N., Hamadeh, S., Hashim, M., & Adra, N. (1993). Effect of settlement on nutritional status of Bedouin children aged 6–10 years in the Lebanese Beqaa

valley†. *Ecology of Food and Nutrition, 30*(3-4), 293-307. doi:10.1080/03670244.1993.9991343

Baba, N., Shaar, K., Hamadeh, S., & Adra, N. (1994). Nutritional status of Bedouin children aged 6–10 years in Lebanon and Syria under different nomadic PASTORAL SYSTEMS*. *Ecology of Food and Nutrition, 32*(3-4), 247-259. doi:10.1080/03670244.1994.9991405

Bocpuet-Appel, J.-P. (2011). When the World's Population Took Off: The Springboard of the Neolithic Demographic Transition. *Science, 333*(6042), 560-561. Doi:10.1126/science.1208880

Braudel, F. (2001). *The perspective of the world.* London: Phoenix.

Buck-McFadyen, Ellen V. "Rural Food Insecurity: When Cooking Skills, Homegrown Food, and Perseverance Aren't Enough to Feed a Family." *Canadian Journal of Public Health*, vol. 106, no. 3, 2015, doi:10.17269/cjph.106.4837.

Burchi, F., & De Muro, P. (2016). From food availability to nutritional capabilities: Advancing food security analysis. *Food Policy, 60*, 10–19. https://doi.org/10.1016/j.foodpol.2015.03.008

Chatty, D. (2010). Bedouin in Lebanon: The transformation of a way of life or an attitude? *International Journal of Migration, Health and Social Care, 6*(3), 21-30. doi:10.5042/ijmhsc.2011.0061

Chatty, D., Mansour, N., & Yassin, N. (2013). Bedouin in Lebanon: Social discrimination, political exclusion, and compromised health care. *Social Science & Medicine*, 82, 43-50. Doi: 10.1016/j.socscimed.2013.01.003

Cheeseman, Abbie. "'People Will Die within Months': Lebanon Heads for Famine as Pandemic Accelerates Hunger." *The Telegraph*, 30 June 2020, www.telegraph.co.uk/global-health/science-and-disease/people-will-die-within-months-lebanon-heads-famine-pandemic/.

Data.worldbank.org. (2019). *Prevalence of undernourishment (% of population) | Data*. [online] Available at: https://data.worldbank.org/indicator/sn.itk.defc.zs [Accessed 17 Jun. 2019].

Data.worldbank.org. (2019). *Cause of death, by non-communicable diseases (% of total) | Data.*[online] Available at: https://data.worldbank.org/indicator/SH.DTH.NCOM.ZS [Accessed 17 Jun. 2019].

Disparities: Fact sheets. Indian Health Services (2019, October). Retrieved February 16, 2021, from https://www.ihs.gov/newsroom/factsheets/disparities

Eid, H. A., & Zurayk, R. (2010). *Tales of the Badia: Bedouin folk tales from Lebanon*. S.l.: Heinrich Boll Stiftung.

Eisenberg, Marla E. et al. 2004. "Correlations between Family Meals and Psychosocial Well-Being among Adolescents." *Archives of Pediatrics and Adolescent Medicine*.

Fann, S. (2014). *Overcoming the triple burden of malnutrition in the MENA region*. [online] Ifpri.org. Available at: http://www.ifpri.org/blog/overcoming-triple-burden-malnutrition-mena-region%E2%80%A8 [Accessed 28 May 2019].

FAO (2002). The State of Food Insecurity in the World 2001. FAO, Rome.

FAO (2009). Declaration of the World Food Summit on Food Security. FAO, Rome

FAO (2009). *Preventing micronutrient malnutrition a guide to food-based approaches - Why policy makers should give priority to food-based strategies*. [online] Available at: http://www.fao.org/3/x0245e/x0245e01.htm#P38_2721 [Accessed 17 Jun. 2019].

FAO. 2017. The Food Insecurity Experience Scale: Measuring food insecurity through people's experiences. (2017, September). Retrieved from http://www.fao.org/3/i7835e/i7835e.pdf

FAO. 2020. Lebanon | Revised humanitarian response (May-December 2020). Rome. https://doi.org/10.4060/cb0204en

FAO (2020). The State of Food Insecurity and Nutrition in the World. http://www.fao.org/3/ca9692en/ca9692en.pdf

FAO Food and Agriculture Organization of the United Nations. (2013). FAOSTAT Statistical Database. http://www.fao.org/faostat/en/?#data/CL. [Rome]: FAO

FAO Food and Agriculture Organization of the United Nations. (2018). FAOSTAT Statistical Database. https://data.worldbank.org/indicator/SN.ITK.MSFI.ZS?locations=ZQ-XQ. [Rome]: FAO

FAO Food and Agriculture Organization of the United Nations. *The Food Insecurity Experience Scale: Measuring food insecurity through people's experiences* [PDF].

Fischler, Claude. 1988. "Food, Self and Identity." *Social Science Information*.

Flynn, Mary M, Steven Reinert, and Andrew R Schiff. 2013. “A Six-Week Cooking Program of Plant-Based Recipes Improves Food Security, Body Weight, and Food Purchases for Food Pantry Clients.” *Journal of Hunger & Environmental Nutrition* 8(1): 73–84. https://doi.org/10.1080/19320248.2012.758066.

Frank, L. (2020, November 30). History on A Plate: How Native American DIETS shifted After European colonization. Retrieved February 17, 2021, from https://www.history.com/news/native-american-food-shifts

Fraser D, Abu-Saad K, Abu-Shareb H. The relative importance of traditional and "modern" foods for Israeli Negev Bedouins. A population in transition. Nutr Metab Cardiovasc Dis. 2001 Aug;11(4 Suppl):66-9. PMID: 11894757.

Fraser, D., Weitzman, S., Blondheim, S., Shany, S., & Abou-Rbiah, Y. (1990). The prevalence of cardiovascular risk factors among male Bedouins: a population in transition. *European journal of epidemiology*, *6*(3), 273–278. https://doi.org/10.1007/BF00150432

Friedmann, H. and McMichael, P. (1989) ‘AGRICULTURE AND THE STATE SYSTEM’, *Landwirtschaft und staatliches System: Aufstieg und niedergang der nationalen Landwirtschaft von 1870 biz zur Gegenwart.*

Fratkin, E., Roth, E.A. & Nathan, M.A. Pastoral Sedentarization and Its Effects on Children’s Diet, Health, and Growth Among Rendille of Northern Kenya. *Hum Ecol* **32,** 531–559 (2004). https://doi.org/10.1007/s10745-004-6096-8

Fujita, M., Roth, E. A., Nathan, M. A., & Fratkin, E. (2004). Sedentism, Seasonality, and Economic Status: A Multivariate Analysis of Maternal Dietary and Health Statuses Between Pastoral and Agricultural Ariaal and Rendille Communities in Northern Kenya. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, *123*(32), 277-291. doi:https://doi-org.ezproxy.aub.edu.lb/10.1002/ajpa.10310

Gadiraju, T. V., Patel, Y., Gaziano, J. M., & Djoussé, L. (2015). Fried Food Consumption and Cardiovascular Health: A Review of Current Evidence. *Nutrients*, *7*(10), 8424–8430. https://doi.org/10.3390/nu7105404

Galvin, K. A., Beeton, T. A., Boone, R. B., & BurnSilver, S. B. (2015). Nutritional Status of Maasai Pastoralists under Change. *Human Ecology*, *43*(3), 411-424. doi:10.1007/s10745-015-9749-x

Gani, J. K. (2020). *The Routledge handbook to the Middle East and North African state and states system*. London: Routledge.

Gideon Danso-Abbeam, Lloyd J.S. Baiyegunhi, Mark D. Laing & Hussein Shimelis (2021)
Understanding the Determinants of Food Security among Rural Farming Households in Rwanda,Ecology of Food and Nutrition, DOI: 10.1080/03670244.2021.1913585

Giroux, S. A., McCord, P., Lopus, S., Gower, D., Dell'Angelo, J., Dickinson, S., Chen, X., Caylor, K. K., & Evans, T. P. (2020). Environmental heterogeneity and commodity sharing in smallholder agroecosystems. *PLOS ONE, 15*(1). https://doi.org/10.1371/journal.pone.0228021

Godfray, H. C., Aveyard, P., Garnett, T., Hall, J. W., Key, T. J., Lorimer, J., . . . Jebb, S. A. (2018). Meat consumption, health, and the environment. *Science, 361*(6399). doi:10.1126/science.aam5324

Ghattas, H. *et al.* (2013) 'Household Food Security Is Associated with Agricultural Livelihoods
and Diet Quality in a Marginalized Community of Rural Bedouins in Lebanon', *The Journal of Nutrition*. doi: 10.3945/jn.113.176388.

Golzarand, M. *et al.* (2012) 'Dietary trends in the Middle East and North Africa: An ecological
study (1961 to 2007)', *Public Health Nutrition*. doi: 10.1017/S1368980011003673.

Gouel, C. and Guimbard, H. (2019) 'Nutrition Transition and the Structure of Global Food
Demand', *American Journal of Agricultural Economics*. doi: 10.1093/ajae/aay030.

Halabi, S., Ghanem, N., & Ghattas, H. (2016, May). Review of *Strategic Review Of Food And Nutrition Security In Lebanon*. Retrieved from https://archive.unescwa.org/sites/www.unescwa.org/files/page_attachments/escwa_food_and_nutrition_security_in_lebanon_final_version_high_res_en.pdf

Hall, G., & Patrinos, H. A. (2014). *Indigenous peoples, poverty, and development*. New York: Cambridge University Press.

Hasan, B., Thompson, W. G., Almasri, J., Wang, Z., Lakis, S., Prokop, L. J., . . . Murad, M. H. (2019). The effect of culinary interventions (cooking classes) on dietary intake and behavioral change: A systematic review and evidence map. *BMC Nutrition, 5*(1). doi:10.1186/s40795-019-0293-8

Henderson, D. R., Handy, C. R., & Neff, S. A. (1996). Globalization of the Processed Foods Market. *Food and Consumer Economics Division. Economic Research Service, U.S. Department of Agriculture, Agricultural Economic Report No. 742*.

HLPE. 2020. Food security and nutrition: building a global narrative towards 2030. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.

Hawkes, Corinna, Harris, Jody, and Gillespie, Stuart. (2017). Changing diets: Urbanization and the nutrition transition. in 2017 Global Food Policy Report. Chapter 4. Pp 34-41. Washington, DC: International Food Policy Research Institute (IFPRI). http://doi.org/10.2499/978089629252904

Hwalla, Nahla, Sibelle El Labban, and Rachel A Bahn. 2016. "Nutrition Security Is an Integral Component of Food Security." *Frontiers in Life Science* 9(3): 167–72. https://doi.org/10.1080/21553769.2016.1209133.

Iannotti, L. and Lesorogol, C. (2014) 'Dietary Intakes and Micronutrient Adequacy Related to the Changing Livelihoods of Two Pastoralist Communities in Samburu, Kenya', *Current Anthropology*. doi: 10.1086/677107.

Iddison, P. (2011). Arabian Traveller's Observations on Bedouin Food. http://enhg.org/alain/phil/bedouin/bedouin.htm.

INDDEX Project (2018), Data4Diets: Building Blocks for Diet-related Food Security Analysis. Tufts University, Boston, MA. https://inddex.nutrition.tufts.edu/data4diets. Accessed on November 14, 2020.

Ingram, J. (2011). A food systems approach to researching food security and its interactions with global environmental change. *Food Security, 3*(4), 417-431. doi:10.1007/s12571-011-0149-9

Keding, G. (2016) 'Nutrition transition in Rural Tanzania and Kenya', *World Review of Nutrition and Dietetics*. doi: 10.1159/000442073.

Khatib, I., & Elmadfa, I. (2009). Poor Nutritional Health of Bedouin Preschool Children in Jordan: The Irony of Urbanization. *Annals of Nutrition & Metabolism, 54*(4), 301-309. doi:10.2307/48514023

Khoury, C. K., Bjorkman, A. D., Dempewolf, H., Ramirez-Villegas, J., Guarino, L., Jarvis, A., Rieseberg, L. H., & Struik, P. C. (2014). Increasing homogeneity in global food supplies and the implications for food security. *Proceedings of the National Academy of Sciences*, *111*(11), 4001–4006. https://doi.org/10.1073/pnas.1313490111

Kim, Evelyn. (2013) "The Amazing Multimillion-Year History of Processed Food." *Scientific American*, vol. 309, no. 3, 2013, pp. 50–55. *JSTOR*, www.jstor.org/stable/26017985.

Koebnick C, Strassner C, Hoffmann I, Leitzmann C (1999). Consequences of a Long-Term
Raw Food Diet on Body Weight and Menstruation: Results of a Questionnaire Survey. Ann Nutr Metab 1999;43:69-79. doi: 10.1159/000012770

Kuhnlein, H., Erasmus, B., Creed-Kanashiro, H., Englberger, L., Okeke, C., Turner, N., . . . Bhattacharjee, L. (2006). Indigenous peoples' food systems for health: Finding interventions that work. *Public Health Nutrition, 9*(08), 1013-1019. doi:10.1017/s1368980006009876

Lambden, J., Receveur, O., & Kuhnlein, H. V. (2007). Traditional food attributes must be included in studies of food security in the Canadian Arctic. *International Journal of Circumpolar Health*, *66*(4), 308–319. https://doi.org/10.3402/ijch.v66i4.18272

Lang, T. and Caraher, M. (2001) 'Is there a culinary skills transition? Data and debate from the
UK about changes in cooking culture', *Journal of Home Economics Institute of Australia*.

Lexico Dictionaries | English. (2019). *cooking | Definition of cooking in English*. [online] Available at: https://www.lexico.com/en/definition/cooking [Accessed 10 Jun. 2019].

Maktabi, R. (1999). The Lebanese census of 1932 Revisited. who are the Lebanese? *British Journal of Middle Eastern Studies, 26*(2), 219-241. doi:10.1080/13530199908705684

Malik M, Bakir A. Prevalence of overweight and obesity among children in the United Arab
Emirates. Obes Rev. 2007 Jan;8(1):15-20. doi: 10.1111/j.1467-789X.2006.00290.x. PMID: 17212792.

Map of Lebanon and Bekaa Valley. Mansour, N., Chatty, D., El-Kak, F., & Yassin, N. (2013). They aren't all first COUSINS: Bedouin marriage and health policies in Lebanon. *Ethnicity & Health*, *19*(5), 529–547. https://doi.org/10.1080/13557858.2013.848844

Maslow, A. H. (1943). A Theory of Human Motivation. *Psychological Review, 50,* 370-396. doi:10.4324/9781912282517

McGorrian, Catherine et al. 2015. "BMI Change in Australian Cardiac Rehabilitation Patients: Cookery Skills Intervention versus Written Information." *Health Promotion International*.

McMichael, P. (2009) 'A food regime genealogy', *Journal of Peasant Studies*. doi:

10.1080/03066150902820354.

Mowbray, M (2007). for the WHO commission on social determinants of health. Social determinants and Indigenous health: the international experience and its policy implications. International symposium on the social determinants of Indigenous health, Adelaide, World Health Organization,Geneva. http://www.who.int/social_determinants/resources/indigenous_health_adeladie_report_07.pdf (April, 2007)

Nabhan, G. P. (2013). *Food, Genes, and Culture Eating Right for Your Origins*. Washington, DC: Island Press/Center for Resource Economics.

Naja, F., Hwalla, N., Fossian, T., Zebian, D., & Nasreddine, L. (2015). Validity and reliability of the Arabic version of the Household Food Insecurity Access Scale in rural Lebanon. *Public Health Nutrition, 18*(2), 251-258. doi:10.1017/S1368980014000317

Paarlberg, R. (2012) 'Governing the dietary transition: linking agriculture, nutrition, and health.', in *Reshaping agriculture for nutrition and health: an IFPRI 2020 book*.

Page, A. E., Minter, T., Viguier, S., & Migliano, A. B. (2018). Hunter-gatherer health and development policy: How the promotion of sedentism worsens the Agta's health outcomes. *Social Science & Medicine, 197*, 39-48. doi:10.1016/j.socscimed.2017.12.002

Peng, Wen & Liu, Yongnian & Liu, Yan & Zhao, Hong & Chen, Hongru. (2019). Major dietary patterns and their relationship to obesity among urbanized adult Tibetan pastoralists. Asia Pacific Journal of Clinical Nutrition. 28. 10.6133/apjcn.201905/PP.0007.

Popkin, B. M. (1993) 'Nutritional Patterns and Transitions', *Population and Development Review*. doi: 10.2307/2938388.

Popkin, B. M. (2006). Global nutrition dynamics: The world is shifting rapidly toward a diet linked with noncommunicable diseases. *The American Journal of Clinical Nutrition, 84*(2), 289–298. https://doi.org/10.1093/ajcn/84.2.289

Poti, J. M., Braga, B., & Qin, B. (2017). Ultra-processed Food Intake and Obesity: What Really Matters for Health-Processing or Nutrient Content?. *Current obesity reports*, *6*(4), 420–431. https://doi.org/10.1007/s13679-017-0285-4

Pottier, J. (2007). *Anthropology of food: The social dynamics of food security*. Malden: Polity Press.

Ronto, R., Wu, J. H. Y. and Singh, G. M. (2018) 'The global nutrition transition: Trends, disease burdens and policy interventions', *Proceedings of the International Astronomical Union*. doi: 10.1017/S1368980018000423.

Sahyoun, N. R., Nord, M., Sassine, A. J., Seyfert, K., Hwalla, N., & Ghattas, H. (2014). Development and Validation of an Arab Family Food Security Scale. *The Journal of Nutrition, 144*(5), 751-757. doi:https://doi.org/10.3945/jn.113.187112

Sarkar, D., Walker-Swaney, J., & Shetty, K. (2019). Food diversity and Indigenous food systems to COMBAT diet-linked chronic diseases. *Current Developments in Nutrition, 4*(Supplement_1), 3-11. doi:10.1093/cdn/nzz099

Satterfield, D., DeBruyn, L., Santos, M., Alonso, L., & Frank, M. (2016). Health promotion and diabetes prevention in american indian and alaska native communities--traditional foods project, 2008-2014. *Morbidity and Mortality Weekly Report. Supplement, 65*(1), 4.

Schmidhuber, J., & Shetty, P. (2005). The nutrition transition to 2030. Why developing countries are likely to bear the major burden. *Food Economics - Acta Agriculturae Scandinavica, Section C, 2*(3-4), 150-166. doi:10.1080/16507540500534812

Sebai, Z. A., & Reinke, W.A. (1981). Anthropometric measurements among pre-school children in Wadi Turaba, Saudi Arabai. *Journal of tropical pediatrics*, 27(3), 150-154. https://doi.org/10.1093/tropej/27.3.150

Simmons, Dean, and Gwen E. Chapman. 2012. "The Significance of Home Cooking within Families." *British Food Journal*.

Sørensen, Lone Brinkmann et al. 2011. "Weight Maintenance through Behaviour Modification with a Cooking Course or Neurolinguistic Programming." *Canadian Journal of Dietetic Practice and Research.*

Standage, T. (2010). *An Edible History of Humanity.* London: Atlantic Books.

Tam, B. Y., Findlay, L., & Kohen, D. (2014). Social networks as a coping strategy for food insecurity and hunger for young aboriginal and Canadian children. *Societies, 4*(3), 463-476. doi:http://dx.doi.org.ezproxy.aub.edu.lb/10.3390/soc4030463

Thomas, M. (2003). Bedouin tribes and the Imperial intelligence services in Syria, Iraq and Transjordan in the 1920s. *Journal of Contemporary History, 38*(4), 539-561. doi:10.1177/00220094030384002

Traboulsi, F. (2007). *A History of Modern Lebanon*. Pluto Press.

Trainer, S., Hardin, J., Sturtzsreetharan, C., & Brewis, A. (2020). Worry-Nostalgia: Anxieties around the Fading of Local Cuisines and Foodways. *Gastronomica, 20*(2), 67-78. doi:10.1525/gfc.2020.20.2.6

United Nations (2018). *PROMOTING INCLUSION THROUGH SOCIAL PROTECTION Report on the World Social Situation 2018* (Rep.). Retrieved https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2018/06/rwss2018-full-advanced-copy.pdf

UNHCR (2019). *Global Trends: Forced Displacements in 2019* (Rep.). Retrieved from https://www.unhcr.org/5ee200e37.pdf

UNDP. (2013, September). INFOCUS: Bedouins in the occupied Palestinian territory. Retrieved from https://unispal.un.org/DPA/DPR/unispal.nsf/0/45CC88475CFF2EDC85257C59006D5186.

UNRWA. (2010, February). Food Security and Nutrition Survey For Herding Communities In Area C: Joint UNRWA – UNICEF – WFP Household Survey.

Usman, M.A., Callo-Concha, D. Does market access improve dietary diversity and food security? Evidence from Southwestern Ethiopian smallholder coffee producers. *Agric Econ* **9,** 18 (2021). https://doi.org/10.1186/s40100-021-00190-8

Weerasekara, P. *et al.* (2018) 'Nutrition Transition and Traditional Food Cultural Changes in Sri Lanka during Colonization and Post-Colonization', *Foods*. doi: 10.3390/foods7070111.

West, Elisha G., Rebecca Lindberg, Kylie Ball, and Sarah A. McNaughton. 2020. "The Role of a Food Literacy Intervention in Promoting Food Security and Food Literacy—Ozharvest's Nest Program." *Nutrients*.

WFP, Vulnerability Analysis and Mapping Branch. (2008, February). *Food consumption analysis Calculation and use of the food consumption score in food security analysis.* Retrieved from https://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp197216.pdf

WFP. (2020, September 04). 60% of people In Lebanon struggle to get enough food. Retrieved April 06, 2021, from https://www.actionagainsthunger.org/story/60-people-lebanon-struggle-get-enough-food

Who.int. (2018). *Obesity and overweight*. [online] Available at: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight [Accessed 17 Jun. 2019].

Wolfson, Julia A., and Sara N. Bleich (2015). "Is Cooking at Home Associated with Better Diet Quality or Weight-Loss Intention?" *Public Health Nutrition*.

Wrangham, R. (2017). Control of fire in THE Paleolithic: Evaluating the COOKING HYPOTHESIS. *Current Anthropology*, *58*(S16). doi:10.1086/692113

Wrangham, R., & Conklin-Brittain, N. (2003). 'Cooking as a biological trait'. *Comparative biochemistry and physiology. Part A, Molecular & integrative physiology*, *136*(1), 35–46. https://doi.org/10.1016/s1095-6433(03)00020-5