A Cost of the Diet Analysis in Azraq Refugee Camp, Jordan

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COST OF THE DIET

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Summary

Cost of the Diet: Estimates at the lowest cost, the quantity and combination of local foods that are needed to provide a typical family with foods that meet their average needs for energy and their recommended intakes of protein, fat and micronutrients.

Purpose of the CotD assessment

- To understand the extent to which economic poverty and typical dietary habits prevent households and vulnerable individuals from consuming a nutritious diet;
- To understand how refugees in settings such as Azraq Camp can meet energy and nutrient requirements using local foods, and use this information to inform nutrition and food security program design;
- To inform and influence nutrition and food security related policy and advocacy processes within Azraq Camp, and in similar protracted camp settings;
- To build capacity of key partners in this methodology.

Location of the CotD assessment: Azraq Refugee Camp, Jordan

Background

- 656,400 Syrian refugees in Jordan; 37,659 currently living in Azraq Camp (July 2016);
- No food security and dietary diversity indicators available for Azraq Camp.

Methodology

- Market survey to obtain prices of all foods available in the camp;
- Interviews to check which foods are usually, often, rarely and never eaten by the families
- Focus group discussions – to get a better understanding about dietary and food habits

Key findings

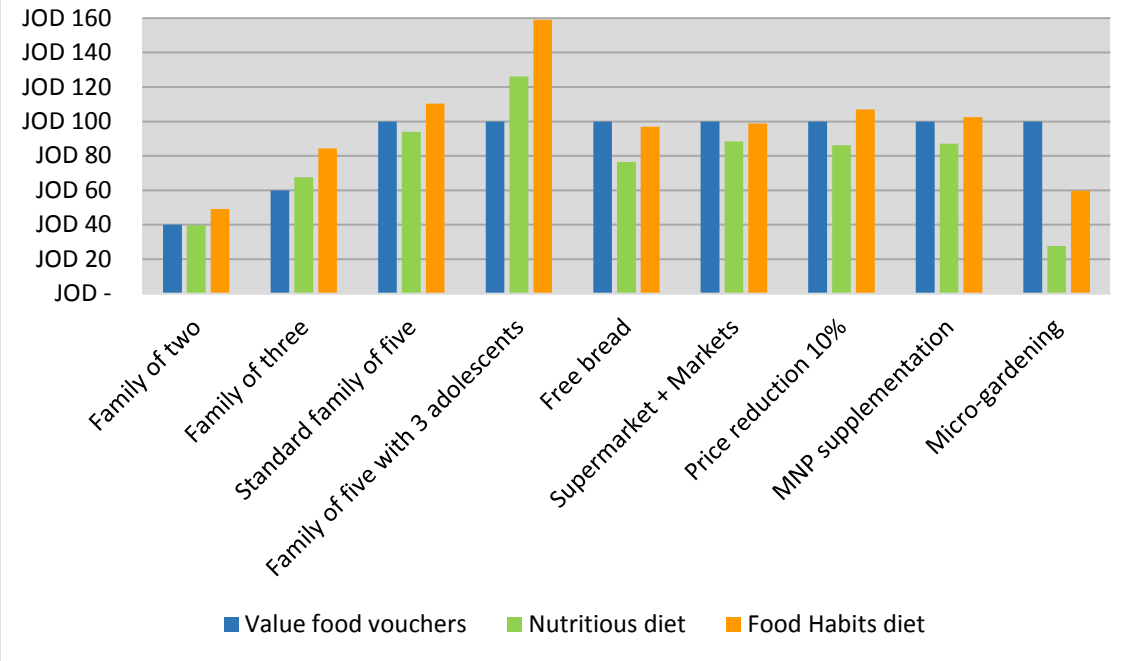
- For a standard family of five (2 parents, 3 children aged 12-23 months, 4-5 years and 9-10 years) a nutritious diet is available in Azraq Camp, but a nutritious diet that takes into account the dietary habits of the refugees (food habits diet) is not affordable;
- Although bread is provided for free, a food habits diet is barely affordable, and there is no money to vary the food items or to purchase herbs or condiments in order to prepare meals;
- Although for the standard family of five a nutritious diet is available, this is not the case for families with a different composition;
- If vegetables would be available at no cost, for example through micro-gardening, a food habits nutritious diet would be affordable for families, and would even better reflect the diet people used to consume when still living in Syria;
- MNP supplementation for children aged 6-59 months and/or pregnant and lactating women (PLW) reduces the costs of both the nutritious diet and the food habits diet, but a food habits diet remains unaffordable.

Lessons learned from adapting the CotD tool to a camp setting

- Essential to get buy-in and participation from all partners active in the refugee camp response;
- It is critical to properly plan and prepare the CotD study, especially when the time available for training and data collection are limited;
- Questionnaires should be adapted to the camp setting
- Seasonality may be less important than aid distribution schedules for the CotD modeling in a camp setting;

- Wealth status considerations should take into account both wealth status coming into the camp, and adapted wealth status given camp conditions;
- Further modeling should be considered based on services/aid possible in a camp setting (e.g. free bread, micro-gardening) and individual-specific conditions (e.g. diabetes).

Figure I – Summary of the models run in the Azraq Camp CotD; showing the costs of the nutritious diet and food habits diet compared to the value of the food vouchers within the family.



Conclusion: the Cost of the Diet tool can be used in closed camp settings with only minor adjustments to the methodology

Recommendations

These recommendations can be used as advocacy messages, or to inform program design and development.

- Re-evaluate the value of the food vouchers as not all households can afford a nutritious diet and no households can afford a food habits diet;
- Instead of increasing the food vouchers' value, find ways to reduce the prices of food items in the supermarket;
- Investigate the use of vouchers or credit card in the markets instead of only in the supermarket;
- Work with the supermarket to ensure availability at affordable prices of fruits, vegetables and meats, as well as availability of food items in smaller quantities for smaller families as (fresh) foods cannot be stored long without refrigerator;
- Support families that would like to do micro-gardening so people can grow free vegetables as part of their diet;
- Do a market survey and run the CotD analysis for the winter season
- Create more jobs for people living in Azraq Camp, with a preference to recruit people from smaller families or families with only adolescents and/or adults; make arrangements to allow single parents to get a job (e.g. child care); support income-generating activities;
- Conduct a study on the prevalence of diabetes mellitus type II among people living in Azraq Camp, as well as into the availability of insulin and drugs, or dietary advice being available for DM Type II patients.

List of abbreviations

CHVs	Community Health Volunteers
CMAM	Community-based Management of Acute Malnutrition
CotD	Cost of the Diet
DM	Diabetes mellitus
EAR	Estimated Average Requirement
FAO	Food and Agriculture Organization of the United Nations
FFP	USAID's Office of Food for Peace
FGD	Focus Group Discussion
g	grams
GI	Glycemic Index
HDDS	Household Dietary Diversity Score
HEA	Household Economic Approach
IMC	International Medical Corps
IOCC	International Orthodox Christian Charities
IYCF	Infant and Young Child Feeding
JHAS	Jordan Health Aid Society
JOD	Jordanian Dinar
kg	kilograms
MNPs	Micronutrient Powders
NFI	Non-Food Items
NFSL	Nutrition, Food Security and Livelihoods
NGO	Non-Governmental Organization
PLW	Pregnant and lactating women
RDI	Recommended Daily Intake
RNI	Recommended Nutrient Intake
SBC	Social and Behavior Change
TOPS	Technical and Operational Performance Support
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development
USD	US Dollar
WFP	World Food Program
WHO	World Health Organization

1 Introduction

1.1 Introduction to Azraq Camp

Large numbers of Syrians have migrated to Jordan in search of asylum from the deteriorating security situation in Syria. Azraq Camp, a Syrian refugee camp started in April 2014 situated 90 kilometers from the Jordanian-Syrian border, currently hosts 37,659 Syrian refugees, with a total of 54,679 refugees registered there[1]. This camp differs from Zaatari camp, the biggest Syrian refugee camp in Jordan, as it was centrally planned to increase security screening and measures, also limiting refugee access to the outside (a 'closed camp' setting).

In response to the Syrian refugee crisis in Jordan, International Medical Corps is operational in Azraq Camp (among other locations in Jordan) working to run primary and secondary healthcare services; prevent micronutrient deficiencies through counseling, supplementation, and promotion of a diverse diet; deliver support, counseling, and messaging to strengthen infant and young child feeding (IYCF) practices and promote optimal nutrition during pregnancy; and lead the management of non-complicated severe acute malnutrition cases as part of the community-based management of acute malnutrition (CMAM) program for the camp. International Medical Corps Jordan has conducted capacity building of health care providers, aid workers, refugee communities, and community-based organizations. Trainings focus on referrals, awareness raising on health and nutrition topics, and disease prevention.

Refugees residing in Azraq Camp receive 20 Jordanian Dinars (JODs) per month (28 USD) via electronic vouchers to obtain food from a WFP-supported supermarket and several newly opened shops within the camp. In Jordan, camp-based refugees (about 18% of all refugees in Jordan) have poorer dietary diversity, an indicator of food insecurity, than non-camp refugees and employ a variety of coping strategies to adapt to their situation[2]. However, detailed analysis triangulating market prices with household economics and caretaking/feeding practices has not been carried out among this population in Jordan.

Food diversity and food basket options are limited in camp settings in Jordan, a key concern for the humanitarian response. Although food security and dietary diversity indicators for Azraq Camp were not available at the time of this study, these statistics were available for Zaatari Camp, a setting which can serve as a proxy for Azraq Camp in many respects (though Zaatari is likely to have better food security than Azraq Camp as it is not a closed camp and refugees have access to a variety of markets). The average Household Dietary Diversity Score (HDDS) in Zaatari camp is 5.1 and among Syrian refugees living in host communities 7.1, indicating that the Syrian refugees in host communities have a more diverse diet than Syrian refugees in Zaatari camp. It is assumed that dietary diversity in Azraq Camp is more limited. The Coping Strategies Index, an indicator used as a proxy for household food security in the short term, is 19.1 in Zaatari camp and 17.8 in host communities, indicating that many Syrian refugees, particularly those in camps, are adopting negative coping strategies (such as decreasing the quality of foods consumed and decreasing the number of meals in a day) due to the inability to meet all their main needs.[3]

International Medical Corps received a TOPS Micro-Grant to conduct a Cost of the Diet (CotD) assessment in Azraq Camp to help inform the voucher program and further activities and initiatives to address food security and dietary diversity among camp residents, with the objective of ensuring that the nutritional needs of the family can be met. Additionally, the CotD

[1] UNHCR Jordan. Azraq Camp Fact Sheet July 2016. http://data2.unhcr.org/en/documents/details/50810

[2] Interagency Nutrition Survey on Syrian Refugees in Jordan, Final Report, August 2014. http://www.unicef.org/jordan/Interagency_nutrition_survey_final_report.pdf

[3] Interagency Nutrition Survey on Syrian Refugees in Jordan, Final Report, August 2014. http://www.unicef.org/jordan/Interagency_nutrition_survey_final_report.pdf

training provided to partners in Jordan serves to build capacity in this useful tool, which can be applied in future humanitarian and development program settings. The CotD assessment sought to answer the following question in the Azraq Camp setting: *Is it possible for a typical family to have a culturally appropriate diet that meets all energy and nutrient requirements using the resources available to them in Azraq Camp, and considering cultural appropriateness of the diet? And if not, what might be done?* This information can help in determining how to adapt the current resources made available to refugees in Azraq Camp, including but not limited to the food voucher, to be able to achieve a nutritious diet for individual family members and as a household. It will also help us document what foods are available to Syrian refugees in Azraq Camp, if a nutritious diet is achievable with the available foods, if this diet is affordable, and how this availability might affect the nutrition and health status of this population.

Not only does this CotD training and assessment initiative provide important information to inform programming and capacity building for partners, it also offers lessons learned for other organizations who may be interested in conducting a CotD in a closed refugee camp setting. This CotD was adapted and applied in a camp-based, protracted emergency setting in an upper middle-income country – which differs greatly from many of the low-income, non-camp settings where the tool has primarily been used.

1.2 Objectives of the CotD study

The aim of carrying out the CotD training and analysis in Azraq refugee camp was two-fold. First, International Medical Corps aimed to build capacity among local and international partners, including FFP-funded implementing partners, responding to the Syria crisis in Jordan and the region. Second, by carrying out a CotD in Azraq Camp, International Medical Corps aimed to gather information to be used for the following purposes:

- To understand the extent to which economic poverty, typical dietary habits, and the unavailability of food prevents households and vulnerable individuals from consuming a nutritious diet;
- To understand how refugees in settings such as Azraq Camp can meet energy and nutrient requirements using local foods, and use this information to inform nutrition and food security program design;
- To inform and influence nutrition and food security related policy and advocacy processes within Azraq Camp, and in similar protracted camp settings where UNHCR, WFP and FFP-funded implementing partners may be working.

Ultimately, International Medical Corps hopes the findings in this report will be used by NGOs and UN agencies to improve behavior change programming in Azraq Camp, providing the population with context-specific and beneficiary-informed practical guidance to ensure a nutritious diet for children under age two. Additionally, NGO and UN agency partners can use the findings to advocate for specific actions to improve food security and dietary diversity for Azraq Camp residents, including potentially increasing food voucher value with the specific goal of meeting the dietary needs of all members of a typical family, including children under two, if the results show this is needed. Finally, the findings from the CotD will be shared widely with FFP-funded implementing partners as an example of utilizing this tool to improve nutrition in a protracted refugee camp setting. Many FFP-funded implementing partners are responding to the Syrian refugee crisis, or similar refugee crises, and may benefit from lessons learned on adapting the CotD tool to closed-camp settings with limited market access and poor complementary feeding indicators.

2 Methods

A detailed description of the Cost of the Diet tool can be found in Annex I, and in the CotD Practitioner's Guide[4]. In the methodology described in this section of the report, adjustments have been made whenever it was felt necessary to adjust for the closed camp settings of Azraq Refugee Camp. These adjustments have been clearly indicated. This CotD is innovative, as it is the first CotD to be carried out in a closed camp setting, and thus adjustments were needed as most cost of the diet studies have been carried out in rural areas of countries.

The first main adjustment was the duration of the assessment; this is usually a 2-3 week process, while in Jordan all training and data collection was done in six days. The main reduction was for the data collection period that is often a ten-day period in order to visit six to eight of the main markets and three or four sampled villages in the target area, while the data collection stage in Azraq Camp took two days only - one day to visit the supermarket and two markets for the market survey and one day for the interviews and focus group discussions (FGDs). Since living in a camp has a unifying effect on socio-economic strata and wealth groups, as all people receive the same services, the people selected for the interviews and FGDs did have different backgrounds and did come from different wealth groups in Syria. However, this was not significant for the immediate setting as the only difference in wealth in the camp is the difference between being dependent fully on the food vouchers and bread provided, or having some form of income (such as shopkeepers, working for one of the agencies in the camp, etc.).

In the modeling stage (see paragraphs 2.5 and 3.6) the models run were accounting for camp-specific conditions and are thus slightly different than for previous Cost of the Diet studies as well.

2.1 Location

This Cost of the Diet assessment took place in Azraq Camp, in Jordan. A map in Annex II shows the location of the camp in Jordan. In July 2016, 37,659 people were estimated to be actually present in the camp, out of the 54,679 people registered at the camp[5].

The camp is split up in various different administrative units which are called villages. Villages 3 and 6 are villages in which the residents are receiving food vouchers to use to purchase their foods and are freely accessible, so these Villages have been included in this study (see figure 2.1 on the next page). The other villages were not included as they are not freely accessible for security reasons and these people did not purchase foods from the supermarket or markets, but received a general food basket as they were not allowed to leave the village in which they were located.

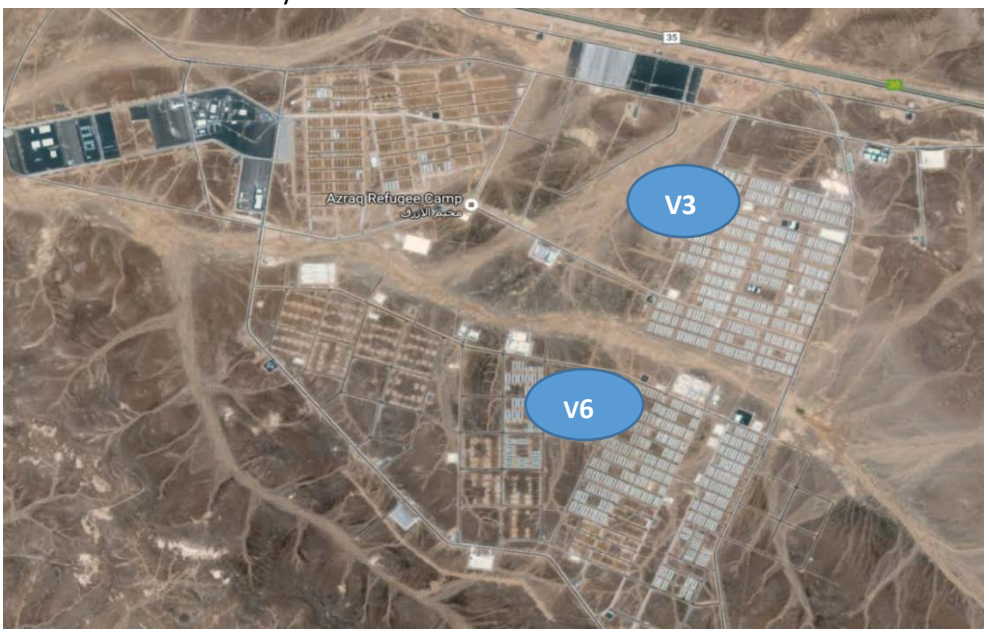
As indicated in the introduction, no food security or dietary diversity indicators were available for Azraq Camp, so statistics from Zaatari camp were used as a proxy for Azraq Camp. It is important to note that the situation in Zaatari is likely to be better as it is not a closed camp and refugees have access to a variety of markets, while the majority of the residents in Azraq Camp are fully dependent on the foods available in the Sameh Supermarket, as this is the only location where the WFP food vouchers can be used. A few months prior to this CotD, two markets opened in Azraq Camp, one in Village 3 and one in Village 6. These two markets consist of 100 kiosks (of

[4] Cost of the Diet (2014). Cost of the Diet A Practitioner's Guide. A method and software to calculate the lowest cost of meeting recommended nutrient intakes using local foods. Version 2. London: Save the Children
[5] UNHCR Jordan. Azraq Camp Fact Sheet July 2016. http://data2.unhcr.org/en/documents/details/50810

which 50 are owned by Jordanian traders and 50 by Syrian refugees from Azraq Camp) that include food shops, restaurants, and shops selling accessories and many more items to the camp[6]. However, refugees can only pay in these kiosks using cash, and it is estimated that only a small percentage of the people has access to some cash through jobs at the NGOs working in the camp.

On 19 July, 775 people were holding jobs with the agencies present in the camp[7], but it was known that not all agencies had shared updates on registered jobs yet, so it was assumed that a few more people would have a job with an agency. On top of these 775+ jobs, 50 refugees were owners of a kiosk in one of the markets in the camp and getting an income from this shop. It was not known if these people were employing any other people to work in their shops. Based on UNHCR data, there were 13,623 households/families in the camp on 18 July (one of the days of data collection for the CotD)[8], so this would mean 6.1% of the households/families (825 people out of 13,623 families) would have additional income available to purchase foods. As indicated, this total of 825 people with a job is known to be an underestimation due to yet unreported jobs, but even if the number of jobs would be 10% higher (so 908 jobs instead of 825), the number of families with extra income is not significantly higher: 6.7%. This is a smaller number of families with extra income than was initially estimated; within the team of CotD training participants it was estimated that 10 to 15% of all households would have some extra income. However, as the above-mentioned figures are based upon the official camp statistics, these are being used when presenting the results.

Figure 2.1 – Azraq Refugee Camp, Jordan; showing village 3 and village 6 – the target location for the Cost of the Diet study



[6] UNHCR Jordan. Azraq Camp Fact Sheet July 2016. http://data2.unhcr.org/en/documents/details/50810
[7] Email communication with CARE. 19 July 2016
[8] UNHCR. Azraq camp daily statistics 18 July 2016. http://data.unhcr.org/syrianrefugees/settlement.php?id=251&country=107&region=73

Data collection, sources and entry

2.2.1 Market survey to collect price data

All data were collected in the camp supermarket and in the newly opened markets in Village 3 and Village 6. For the two newly opened markets only those kiosks selling food items were visited to collect price data.

During the training stage a comprehensive food list was compiled including all foods available to the refugees in Azraq Camp. No home production or wild foods were included (as is normally done in a CotD food list), as no information on home gardening was available. It was known that no agency had run such a program, and it was not likely that any residents of the camp would be able to gather any wild foods, as Azraq Camp is located in a remote desert and residents of the camp are not allowed to move freely outside the camp to go to any villages or other areas. However, during the data collection phase it became clear that many residents of the camp do try to grow some vegetables in or directly outside their caravans (see paragraph 3.6.5 on the impact of micro-gardening).

For all foods available in the supermarket and in the two markets the prices were collected. Any foods that were not included yet in the Food List compiled during the training were added with their price. In a typical CotD where data is collected in several markets at the same time, it is essential for the quality of the survey to have a list that is comprehensive and the same list for all markets as this Food List is guiding the market survey (which price data to collect). In the camp setting of this CotD it is less important as the main analysis is done using data from only one 'market' – the supermarket where the majority of the people from Village 3 and Village 6 obtain all of their foods.

Due to the short time period available for both the training and the data collection, no field trial was done to test the Food List. However, as there were only 3 market survey sites and most training participants had experience working in Azraq Camp or one of the other refugee camps in Jordan this was not considered a problem.

The Food List was used to collect data on price and weight of all foods in the camp supermarket and markets.

For the purpose of this assessment, real-time data were collected for the season in which the CotD was conducted: the summer season. During the training the seasons in the camp were determined based on the experience and feedback of the training participants:

Summer season:	1 April – 14 October
Winter season:	15 October – 31 March

To collect the information needed to estimate the cost of the diet, market traders were asked the price on the day of data collection for the smallest unit of each food item that they sold. This is because families living on limited resources typically buy foods in small amounts as they cannot afford bulk purchases, which are relatively cheaper, but have a higher up-front cost. During data collection in the market, if certain foods were available at different prices, the price of the cheapest product was listed, as it was assumed that the poorest people would not have the option to choose the more expensive option.

For foods that were sold in a specific weight (tins, bottles, jars, etc.), weight and price were recorded. It was noted that many foods had weight-dependent prices, so the price was provided per kilogram (kg) or 100 gram (g), but automatically calculated based on the actual weight purchased. For these

foods the price as indicated was recorded, mostly price per kg. For foods sold in specific units that were not weight-dependent such as a bunch of leaves, or a sachet of rice, three samples of the food were weighed, using standardized electronic scales with a precision of 1 gram[9] and recorded. When possible, prices and weights from different traders were collected for these foods. All price and weight data were entered into the CotD software in order to calculate the average price and weight for each food item for each market, from which the cost per gram of each food item was calculated.

Due to the limited time available for this training, including the data collection for the assessment, no additional information was collected on the availability of foods in the winter season or any change in prices during this season. Unavailability of a food item was not always a seasonal matter as some traders indicated that a food was not available that specific day, but could be available for sale the next day. As information on the temporary lack of availability was not systematically collected, and was not always similar between traders, it was not taken into consideration.

Each food item identified in the market survey was then selected from the food composition database in the Cost of the Diet software, choosing the variety consumed in the region nearest to Jordan if there was more than one type available to select. The calculated cost per 100g for all food items was then entered for the summer season into the Cost of the Diet program.

In the supermarket it was possible to pay with both the WFP food vouchers and cash, whereas in the markets it was only possible to pay cash as previously mentioned. It is estimated that about 6.1% of the people in Azraq Camp has some money in addition to the food vouchers, either due to a job with one of the agencies in the camp or due to savings. However, the majority of the people in the camp are entirely dependent on the food vouchers (20 JOD per person per month) and free bread (240 gram per person per day) provided by WFP. Therefore, it was decided to run the main Cost of the Diet analyses with the foods and prices from the supermarket only, as this is the reality for most Syrian refugees. In one of the models in chapter 3, the foods and prices of the markets have been included, to check the impact of these markets on the cost of the various diets (see below for an explanation of the different diets that can be calculated by the CotD software).

2.2.2 Interviews and focus group discussions to collect data on typical food consumption habits

To estimate a diet that is nutritious but takes into account typical food habits of households in the camp, the software needs to be programmed as to how many times a week it can or cannot include a food. This is called the minimum and maximum food frequency constraints, which need to be determined for each food found on the market. For example if the minimum constraint for Irish potato is set at 5 and the maximum is set at 14, this means that the software must include potato in the diet no less than 5 times a week but no more than 14 times a week (twice a day). It is important to note that the constraints applied are intended to reflect typical dietary patterns rather than reflect economic constraints, because the Cost of the Diet is a tool to illustrate a diet that could be achieved if economic limitations were removed.

To create these constraints, individual interviews based on a questionnaire and focus group discussions (FGD) were carried out to understand local dietary patterns. The questionnaire was based upon the food list generated by the market survey and aimed to determine how often the

[9] Salter Disc/Color Weigh Electronic Digital Kitchen Scale. Models 1036BKSSDR, 1046 PKDR and 1046 GNDR. http://www.salterhousewares.co.uk/catalog/product/view/id/31/s/salter-disc-electronic-digital-kitchen-scales-black/

foods were consumed. The questions asked during the FGD were based on early observations from the market data, comments from traders, and responses to the questionnaire. In particular, information was collected on the foods that infants and young children or pregnant and lactating women were or were not consuming, cultural taboos, 'normal' consumption patterns, and key staple foods. The training participants received written guidance with the topics to discuss in the FGDs (see Annex III), but FGDs were open-ended and not all questions were asked; this depended on the discussion in the group.

The normal CotD method is to conduct the individual interviews and FGDs in about half of the six to eight selected villages. Each group usually consists of eight women, two from each wealth group[10]. In order to follow the commonly adopted methodology as closely as possible while taking into consideration that wealth grouping was not relevant in the camp setting, four groups of eight women each were selected from the two participating villages of the camp (two groups in Village 3 and two groups in Village 6). The community health volunteers (CHVs) assisted in selecting the participating women, and were asked to identify women that were the main caretakers and responsible for preparing the food in their households, and to select women from different backgrounds. They were also asked to select some women from households with an income in their households. In Azraq Camp women are not always the decision-makers on what is eaten or purchased, so in each village a focus group discussion was done with men as well, to hear their perspectives.

During the individual interviews the women were asked to state the frequency with which they ate each food item on the list. The frequency options given were: 'never', 'rarely', 'sometimes' (1-4 times a week) and 'often' (more than five times a week). The responses were given a numerical score ('never' and 'rarely' were awarded 0 points, 'sometimes' 1 point and 'often' 2 points) and then the total for each food item from all 8 respondents was calculated. This meant that each item could receive a minimum total score of 0 and maximum of 16. A total score of 0-1 points was translated into a maximum constraint of 0, a score of 1-8 points was translated into a maximum constraint of 7 (a food eaten once a day) and a total score of 9-16 points was translated into a maximum constraint of 14 (a food eaten two times a day)[11].

During the FGDs the women were asked about the number of meals they consumed, which were the staple foods, and which foods were specifically or not at all consumed by children aged 6-23 months, pregnant and lactating women or other family members.

The minimum and maximum constraints for each food were based on the information from the interviews as well as the number of meals per day which was information obtained during the FGDs. If for example the number of meals eaten per day was 2, the maximum number of times that foods could be consumed per week was set as 14; with 3 meals per day the maximum constraint was set at 21.

With the market and food consumption data, the cost of three theoretical diets were estimated using the Cost of the Diet software:

- A lowest cost diet that only meets recommended average energy requirements (energy-only diet);
- A lowest cost diet that meets recommended intakes for energy and macro- and micro-nutrients (nutritious diet);

[10] Cost of the Diet (2014). Cost of the Diet A Practitioner's Guide. A method and software to calculate the lowest cost of meeting recommended nutrient intakes using local foods. Version 2. London: Save the Children
[11] *idem*

- A lowest cost 'nutritious' diet that meets recommended intakes for energy and nutrients taking into account typical food consumption habits of households in Azraq Camp (food habits nutritious diet or simply food habits diet).

The average cost of each diet is given in Jordanian dinar (JOD). Costs have been converted to US dollars using the exchange rate of 17 July 2016 on https://www.oanda.com/currency/converter/

2.2.3 Specification of a typical family

No Household Economy Approach (HEA) was conducted in Jordan, or in Syria, so it was not relevant to select one of the typical HEA families pre-entered in the CotD software. During the training, a discussion was held about a typical family in Azraq. Information available was not always consistent with the experience of the CotD training participants, but as most worked on a daily basis in the camp, it was decided to use this expertise to program for a typical family in Azraq Camp.

This typical family would include five people, and is referred to in the further sections of this report as the 'standard family', or standard family of five:

- 1 Child (either sex), 12-23 months
- 1 Child (either sex), 4-5 years
- 1 Child (either sex), 9-10 years
- 1 Woman, 30-59 years, moderately active, 65 kg, lactating
- 1 Man, 30-59 years, 75kg, moderately active

During the discussion the training participants indicated that for a typical household it was probably possible to have what could be described as 'normal' meals, although very different from what people would prefer to eat and what they consumed in Syria before the war. They also indicated that for a smaller household or a household with a (chronically) ill person it was much more problematic to purchase enough foods for preparing proper meals. In the modeling sessions we have checked the various diets and costs of these diets for a small household (paragraph 3.6.4) as well as impact of activities such as micro-gardening (paragraph 3.6.5) or micronutrient supplementation (paragraph 3.6.7).

2.2.4 Recommended intakes for energy and micronutrients

The needs of individuals for energy are taken from a database embedded in the Cost of the Diet software that specifies the estimated average requirement (EAR) recommended by the WHO and FAO for individuals by age, sex and activity level[12]. As this intake is based on the estimated average requirement, the probability that any given individual's requirement is met is 0.5 or 50%.

The needs of individuals for protein are taken from a database embedded in the software which specifies the 95th percentile recommended by the WHO and FAO[13] for individuals by age and sex. The needs of individuals for fat are specified as between 30% and 60% of total energy intake[14].

The needs of individuals for vitamins and minerals (collectively called micronutrients) are taken from a database embedded in the software which specifies the recommended nutrient intake (RNI) proposed by the WHO and FAO[15] for individuals by age and sex. This intake is defined as

[12] WHO/FAO (2001). *Human energy requirements*. Geneva: World Health Organization. http://www.fao.org/3/a-y5686e.pdf
[13] WHO/FAO (2007). *Protein and amino acid requirements in human nutrition*. Geneva: World Health Organization
[14] WHO/FAO (2008). *Fats and Fatty Acids in Human Nutrition*. Geneva: World Health Organization
[15] World Health Organization (2004) *Vitamin and mineral requirements in human nutrition*. Second edition. Geneva: World Health Organization

the 97.5th percentile of the distribution of individual requirements, so the probability that any given individual's requirement is met is 0.975 or 97.5%.

A diet selected by the Cost of Diet software which meets all of the requirements described above is called a 'nutritious' diet.

2.2 Estimating the affordability of diets

The cost of a nutritious diet becomes a more meaningful figure when compared with the income and purchasing power of the poorest members of the community. A diet may be inexpensive in comparison to other contexts, but if it is beyond the means of the poor, then the risk of malnutrition remains. In the camp settings for this assessment the situation is different, as there is no variety of 'wealth groups' as all people receive the exact same support services; each person receives the same value food voucher (20 JOD per month) and 240 grams of bread per day, and many services such as education and health services are provided for free to all residents of the camp.

In order to determine if the diets selected by the CotD (energy-only, nutritious, and food habits nutritious diets) are affordable, the costs of these diets need to be compared with what is available for food. Due to the very different context in a camp setting, compared to non-camp settings, this is done slightly different than usual.

Normally the data on annual income and money available for both foods and other essential expenses, such as school and health costs (and for different wealth groups in a population or community), are compared to the costs of the various diets. However, the situation in Azraq Camp is entirely different. Each person registered in the camp, independent of age, gender or socio-economic background, receives 20 JOD per month as an e-voucher, as well as 240 grams of bread per day. Thus, a standard family of five as described above (paragraph 2.2.3), would have 100 JOD per month to purchase foods, as well as 1200 grams of bread per day.

Some of the families have some additional income from working for one of the agencies working in the camp, or sometimes from savings. These people are able to use the e-voucher at the supermarket and to buy from the markets in Village 3 and Village 6 as well, as they have cash to do so. Thus, these people have more money available for food, and are considered 'better off'. Although only an estimated 6.1% of the households have this extra income, as indicated earlier, it is still important to investigate the effects of this extra income, so it is taken into account when looking into affordability.

The 775+ people working for the agencies in the camp have jobs such as animator, black smith, camp cleaner, caravan assistant, case manager, child activity facilitator, classroom teacher, cleaner, school cleaner, community mobilization assistant, community center activities worker, community mobilizer, construction worker, data collector, data entry person, electrician, English teacher, field waste monitor, focal point, friendly-space activities animator, guard, guide, hygiene promoter, IT-cleaner, junior community mobilizer, kitchen staff, kitchen assistant, laborer, moving forward activities (animator), NFI laborer, nurse, outreach worker, playground assistant, playground (minder), plumber, porter, psychosocial support activities (animator), receptionist, reception area support worker, reception laborer, science teacher, shelter constructor, sports ground trainer, Syrian support teacher, teacher, teaching assistant, technician, usher, water filler, water quality monitor, or youth activities facilitator.

People are allowed to work for a maximum of 6 hours per day, and earn 1 JOD per hour for unskilled positions and 1.5 JOD per hour for skilled positions. Assuming people work for five days

per week, a person with a job would earn 30 JOD per week for unskilled labor and 45 JOD per week for skilled labor, or between 120 and 180 JOD per month (150 JOD on average), which can be spent on food and other needs. In the next chapters the assumption is made that one person in a household has an income and half of the income earned is used to purchase extra food for the household, so a family of five would have food vouchers worth 100 JOD for a particular month, as well as 75 JOD in cash to spend on food items[16]

As the situation is so different from a normal context, and thus normal expenditure data are not available – mainly because many services that normally constitute the main non-food costs, such as school fees, medical bills and clothing, are provided at no cost in a refugee camp – expenditure data is not taken into account in this analysis.

Although a ration of 240 grams of bread per person per day is provided by WFP, the participants in the interviews and focus group discussion were very clear that they would purchase the bread if it was not provided for free, and many indicated that they purchased additional bread as the ration alone was not considered sufficient. In the initial analysis bread is included in the food list at the price used in the supermarket, so the software can chose it as a possible food that can contribute to the various diets calculated, without any constraints (such as a fixed minimum or maximum number of times a food item can be eaten, or reducing the price to zero). As such, the software can 'decide' if bread would contribute to the lowest cost diets or not.

In one of the models the impact of free bread vs purchasing bread was investigated (paragraph 3.6.1).

2.3 Seasonality

In order to estimate if a nutritious diet would be available in all seasons, data should be collected for each season. This can be done retrospectively or as real-time data in each season throughout a one-year period. Real-time data collection will produce the most reliable data on food availability and prices, but it will take a long time to collect data for all seasons. Although retrospective data collection is quicker, the quality of the data may not be as good as traders are expected to remember the price and availability of foods, possibly for several seasons over quite a long period. Thus, for the Cost of the Diet in Azraq Camp, it was decided to focus on real-time data collection for the on-going season only, the summer season.

Only data for the current summer season was collected and analyzed. If an overview per year is required, the food list should be revised and the market survey repeated in the winter season to see if a nutritious diet would be available and at what cost. In this report only availability and affordability of a nutritious diet in the summer season are investigated and reported on.

2.4 Modeling

During the first two days of the CotD training, certain specific situations were brought up in the discussions with all training participants about challenges for some households in Azraq Camp. Some examples were the struggle to purchase enough foods to prepare proper meals in smaller size households, the difficulty to purchase the right foods for people with certain illnesses such as diabetes mellitus, and the desire to have certain other foods such as rice and tomatoes for free as well as, or instead of, bread alone. In order to check the impact of such specific situations,

[16] Average of 120 JOD and 180 JOD =150 JOD, of which an estimated 50% or 75 JOD will be spend on purchasing extra food items. Thus, the various diets (energy-only, nutritious, and food habits nutritious diet) are compared to 100 JOD available for food for a standard family and to 175 JOD for a standard family with extra income

the constraints set in the software were adjusted and the impact on availability and affordability of a nutritious diet and a food habits diet was further analyzed.

The impact of certain possible activities that could be set up and supported by agencies working in the camp (such as International Medical Corps, CARE, ACTED, Save the Children) was also investigated by adjusting the constraints of the software and analyzing the costs of the various diets in comparison to the food vouchers and bread provided.
Possible activities to help people in Azraq Camp improve their diet within the available voucher system were discussed with all training participants and activities that were thought to be able to improve the diet of people living in Azraq were modeled in the CotD software. Activities identified as possibly beneficial were micro-gardening, micronutrient supplementation and an increase in access to outside income (through work). Other activities such as chicken rearing or livestock distribution were discussed but not considered as beneficial, mainly due to the circumstances in the camp: both fodder and water would have to be brought to the camp, and families are typically not able to afford these resources, as most are fully dependent on what is provided free of charge. Additionally, agencies working in Azraq Camp considered the cost of bringing in fodder and water for animals too high.

3 Results

All results presented in this chapter are for the summer season; as no information was available on the foods and costs during the winter season, these have not been taken into account. The results are compared to 'monthly income' available for food (the food vouchers, or food vouchers plus extra income).

The energy-only, nutritious, and food habits diets are calculated using foods available in the supermarket only, as this is the only option for purchasing food for the majority of the households in the camp using the voucher. An analysis of the diets using data from both the supermarket and the markets is found in paragraph 3.7.2.

3.1 The availability of foods in the local markets

The total Food List compiled for this study included 140 foods. During data collection, a total of 108 foods was found in the supermarket and entered into the Cost of the Diet software. A few foods were found in the supermarket, but not entered into the software, because the composition of these foods was not available in the CotD software. As these foods were more expensive than other available items included in the Food List and would not contribute any nutrients in addition to those available through the items on the Food List, it was not considered a problem for the overall CotD analysis, and these foods have not been added to the Food List later on. These food items were: pickled beetroot, pickled hot pepper, pickled mixed vegetables, pomegranate juice, dried mint and some processed meats such as chicken burgers.
For two food items that were consumed regularly, the food composition was searched and entered into the CotD software. These foods were canned luncheon meat and zaatar mix, an herb mixture[17].

In the markets in Village 3 and 6, 73 and 101 foods were found respectively, of which 25 foods were only found in the markets, but not in the supermarket, see Table 3.1.

Foods from all food groups were available, in both the supermarket and the markets. For most foods, especially pre-packaged foods (cans, packets, bottles, sachets), different brands were available, and in most food groups there was a choice between different food items.

Some observations were made during the data collection in the supermarket and markets: fresh meat and fish were not available, and the explanation was that these would need to be consumed immediately after purchase, as there is no electricity in the camp yet, and the caravans are not equipped with a refrigerator to keep these items fresh. However, most of the frozen meat and fish was only sold in one quantity that was too large to be consumed entirely, especially for smaller families (2-3 people)[18], but could also not be kept very long outside a refrigerator. Many different fruits and vegetables were available, but the quality was visibly not as good as the quality offered in supermarkets in Amman. The prices of several vegetables, especially tomatoes, fluctuated on a daily basis and with large differences; this was partly explained by

[17] Luncheon meat composition was entered from the Dutch Food Composition Database, NEVO online version 2016/5.0, RIVM, Bilthoven (http://nevo-online.rivm.nl/). Zaatar mix, a mixture of 80% thyme, 10% sumac and 10% sesame seeds was calculated using the composition of thyme and sesame from the CotD database, and the composition of sumac from Ereifej KI, Feng H, *et al.* (2015). Microbiological Status and Nutritional Composition of Spices Used in Food Preparation. *Food and Nutrition Sciences* 2015;6:1134-1140. http://www.scirp.org/journal/PaperInformation.aspx?PaperID=59814

[18] this comment occurred frequently in the FGDs, and was expressed by several CotD participants as well

import and export prices, as good quality fruits and vegetables were exported as this would give a much better price then sale within Jordan[19].

The prices in the supermarket were indicated clearly on A4 printed papers; however, although prices were fluctuating from day to day, the price indication was regularly only adjusted halfway through the day, which caused tension and problems as people felt 'cheated'[20].

Table 3.1 – The number of foods found in each food group in the supermarket and the two markets of Village 3 and 6 in Azraq Camp, Jordan in the summer season 2016.

Food Group	Supermarket	Market Village 3	Market Village 6	All Markets
Cereals and cereal products	10	11	13	15
Pulses, seeds and nuts	17	8	16	19
Vegetables	20	17	14	24
Fruits and fruit products	23	11	18	26
Meat and offal	9	2	11	16
Fish and fish products*	3	2	2	3**
Eggs and egg products	1	1	1	1
Milk and milk products	8	6	8	13
Roots and tubers	1	1	1	1
Fats and oils	7	4	6	7
Remaining food groups**	9	10	11	15
TOTAL # foods found	108	73	101	140

* Several fish were identified, but these were not regularly available or available only at one kiosk in the market in small quantity, so it was decided not to include these items in the food list (frozen Argentinian catfish; frozen pangasius, whole fish; and frozen pangasius fillet).
** Sugar/confectionary and herbs/spices/condiments

3.2 Typical food consumption habits and food taboos

FGDs with women:
FGDs with women were held at the women's centers after conducting individual interviews separately with each woman, inquiring about the *frequency of consuming each of the foods on the Food List*.

During the FGDs, the frequency of food consumption of these women as a whole was examined (the total and average of frequencies was calculated promptly by the team). In summary, diets had shifted from the regularly and traditionally consumed meals eaten in Syria to adapting to what was available, and more importantly, affordable to them and their families in Azraq Camp. The voucher did not seem to stretch enough for them to consume foods they used to previously have. Fresh dairy products, fresh fruits and vegetables, fresh meats, as well as nuts and seeds were not very commonly consumed, though desired.

The women explained that Arabic bread was regularly consumed as it is a primary item traditionally eaten with all meals while most agreed that they were glad it was distributed for free. Items that were not easily cooked into different types of meals were also not consumed frequently as the versatility of a food item was deemed to be important. The fact that an item, such as spaghetti, can only be used in a few ways did not encourage women to buy it. On the contrary, items that were molded into various meals and were not expensive were more desired, such as potatoes, rice, and white flour. Legumes (lentils, white navy beans, fava beans, and

[19] Personal communication with WFP and CARE
[20] Information about the price changing policy in Sameh Mall was obtained from the Supermarket Manager

chickpeas) were generally purchased as dried or canned and accepted even though they are not very cheap, as they are part of their traditional diet.
It is when consumption of meats was examined that the women started reminiscing about how much fresh meats they ate when living in Syria. Meats in general, and lamb in particular, were missing from the diet among Syrian refugees in Azraq Camp. Almost all women discussed how meats were expensive in the camp and that frozen meats were not considered tasty nor desirable. Chicken was considered the least expensive, though it wasn't frequently consumed due to its price, lack of freshness, and perceived low quality. Minced beef used in small quantities could be added to cooked meals, while fish (canned) was rarely consumed due to its high price. As for dairy products consumption, evaporated milk powder was the most frequently consumed type of milk. Women were not reluctant to pay for the powdered milk brands they were used to (such as Nido) even though this particular brand was the most expensive among all available brands. Presence of children in the household determined if milk was purchased, regardless of price. As for fresh milk, labne (Greek yogurt), white cheeses, and yogurt, these items, though very much desired by the community, were not consumed as regularly as desired given their high prices and perishability. Because there was no electricity in the camp, buying these items was hazardous while pre-packaged cheeses (feta, cream cheese) were not desired.

Regarding fruits and vegetables, onions, tomatoes, and garlic were considered as staple vegetables used in almost all traditional meals. Green leafy vegetables were very much desired and missed, as they were previously an important part of various traditional meals in Syria (spinach, Jew's mallow, grape leaves, Swiss chard, etc.), but not consumed when moving to the camp. Prices of fruits and vegetables (especially tomatoes) fluctuated but are mostly expensive so their consumption varied day-by-day and season-by-season. Many even compared prices of fruits and vegetables with those in Zaatari camp or Amman in general, and thus, were very upset that there is such a difference in prices. Fresh fruits were considered very expensive while powdered juices were consumed as they were cheap. Dates, were distributed in donated food packages, especially during the Ramadan season (directly before the CotD took place), and therefore, were commonly consumed. Nuts and seeds were considered very expensive and even though they were part of their everyday meals in Syria, they are not regularly consumed while in Azraq Camp. Vegetable oils, mainly sunflower and soy, were consumed as they were the cheapest.

It is important to note that all attendees agreed that the voucher was not enough for them and their families as they were only able to buy (through the voucher) sugar, flour, milk, oil and sometimes legumes, rice and potatoes. The vouchers stretched until the 15^{th}-20^{th} of each month, which made the last 10 days of the month very challenging for almost everyone interviewed. Large-sized families and those with some form of income (working with NGOs or getting aid from family members outside the camp) were able to afford to buy some fresh meats, fresh dairy, fresh fruits and vegetables, and nuts and seeds. Those with income preferred to purchase all their items from the markets, rather than the supermarket, because the markets' prices were perceived as cheaper. Many women also used home production of olives and pickles to fight perishability challenges and stretch their resources while some were experimenting with micro-gardening of tomatoes, beans, onions, eggplants and parsley, though struggling with water availability.

In addition, the FGDs examined the *dietary habits of particular Syrian refugee members* such as pregnant women, lactating women, children, infants, elderly and sick people.

Pregnant women: If the financial condition of the family would allow for it, pregnant women would be provided with foods rich in iron (especially liver and meat) as well as eggs, fresh fruits and milk. Such foods are not being provided, however, as pregnant women are consuming similar

foods as everyone else, i.e. what is available and affordable. However, it is important to note that if the pregnant woman in a family was sick, family members try to give part of their own meals to the pregnant women as extra portions. Particular food habits for pregnant women were also discussed as almost everyone agreed that pregnant women are not allowed to consume any parsley (soaked, fresh, dried, cooked), cinnamon, fenugreek, and ginger as these items would increase the risk of miscarriages.

Lactating women: are advised to consumed parsley and fenugreek (to aid in milk let down) and to refrain from consuming hot spices, spicy foods, gassy foods (legumes, cruciferous vegetables, apricots, and cantaloupe) or any foods that they believe will pass through the milk and disturb the infant. Not all lactating women are able to eat as they used to in Syria, so they are now eating what is available, just as everyone else.

Children 6-23 months: There are no special/ particular foods given for children and no infant or young child formulas are available for purchase. Many expressed their wish to see baby foods in the market, but were worried these would be expensive as well. Currently, children are consuming the same food items as their families, with an extra snack or two per day and a small boost in powdered milk consumption for those above the age of 1. Some forbidden foods mentioned were honey and egg whites for those under 1.

Sick people: Based on the condition/illness, food offered to sick people may vary. In general, soups, yogurt, boiled potatoes, meats (if available, especially chicken liver), herbs and honey are offered. Additionally, some expressed concerns about the unavailability of brown/whole wheat bread or flour for people with diabetes while others mentioned celiac disease and the unavailability of corn flour.

Last but not least, the *acceptability of the cheapest nutritious diet* (generated by the CotD software) was discussed with Syrian refugee women. In general, the diet suggested was not considered acceptable by almost everyone, proposing that it should be further amended. Many discussed that it lacked variety, as well as rice and vegetables which they deemed a very important part of their diet (rice, onions, tomatoes, potatoes, garlic). Moreover, attendees stated that with the foods included in this diet, traditional meals were not possible and the list of foods was not balanced and would require other items to complement them. Some also considered that some of the items in this diet were in fact expensive and were surprised that these food items are considered as 'cheap'/affordable'. In summary, the cheapest nutritious diet was not considered acceptable as the items were considered not to be complementary as a meal and, more importantly, not part of their culture/ traditional meals.

FGDs with men:
FGDs were also held with refugee men in the camp, mainly because of the important role men play in decision-making, such as on how the voucher will be used and in actually purchasing the food items.

Men started by discussing that most of them are not consuming three meals per day, as they used to in Syria, because this level of consumption would use up the voucher very quickly. Men also discussed the unavailability of job opportunities and that there is no extra income for them to buy any foods. Food vouchers were, hence, their only source, which were in return only usable in the supermarket and not in the markets where the same goods were available for lower prices. Therefore, many were suggesting either switching to cash (rather than vouchers) or allowing the use of vouchers in the markets. Many also agreed that the voucher is not enough to buy the basic food items (rice, sugar, extra bread and some vegetables), especially for small families with less than five members. Moreover, because everyone is trying to stretch their vouchers, they try to

buy foods in bulk as this is overall cheaper. However, foods get spoiled faster by doing so, especially as there are no refrigerators to preserve the food items.

Most men suggested replacing frozen meats with fresh ones, since the quality of the frozen ones are perceived to be causing them and their children diarrhea and illnesses and the taste is undesirable. Currently, they are not consuming meat regularly, perhaps once every other week, and hence they are consuming legumes the rest of the days. Men also explained that traditional meals, such as a breakfast of labne, olive, vegetables, olive oil, and bread has now been replaced by bread with thyme and oil, as it is much cheaper. Some men also expressed sadness that their children do not know the names of many fruits and vegetables that they as parents consumed when they were young in Syria, because these items were simply very expensive in the camp.

3.3 The cost of the diets

3.3.1 Energy-only diet

The minimum cost of a diet that meets only a household's energy needs has been estimated at 1.39 JOD (≈1.95 US$) per day or 43.40 JOD (≈60.96US$) per month during the summer season for a typical family of five in the camp. This diet features only three foods from two food groups out of all 108 foods available in the supermarket, as well as breast milk for the youngest child (see Table 3.2). The four foods included in this energy-only diet are Arabic flat bread, white wheat flour, sunflower oil and breastmilk (for the youngest child only).

Table 3.2 – The lowest cost diet for the standard family of five in Azraq Camp, Jordan that only meets energy requirements during the summer season

Individuals	**Total cost per day (JOD)**	**Monthly cost (JOD)**
Child, 12-23 months	0.06	1.86
Child, 4-5 years	0.18	5.58
Child 9-10 years	0.26	8.06
Woman, 30-59yrs, moderately active, lactating	0.45	13.95
Man 30-59yrs, moderately active	0.45	13.95
Total	1.39	43.40

The cost of the diet for the child aged 12-23 months only includes the cost of the complementary foods the child is given; it does not include the cost of breast milk which are costed within the extra energy and nutrients required by the lactating mother every day. Breastmilk contribution is essential in this diet that only meets the energy needs for children aged 12-23 months. Although breastfeeding with complementary feeding only contributes approximately 31.8% of the average energy requirements, it makes the greatest contribution to a child's intake of fat, vitamin A, vitamin C, riboflavin, pantothenic acid, vitamin B12 and calcium. For the older children in the standard family (4-5 years old and 9-10 years old), the lowest cost diet that meets energy requirements provides even less of the RDIs for the above-mentioned nutrients as they are not consuming any breastmilk, and the food items selected are chosen because they are the cheapest way to meet energy requirements, but not for their nutrient content.

Although the energy-only diet meets the recommended requirements for energy and fat by design, it lacks most essential micronutrients as the software is selecting foods for their energy value but not for nutrient content. For the standard family of five the recommended daily intakes (RDIs) for vitamin A, vitamin C, thiamine, riboflavin, pantothenic acid, B6, folic acid, B12, calcium,

iron, magnesium and zinc are not met with the energy-only diet in the summer season. It is noted that one food item selected is actually not consumed as such but used to prepare other dishes: wheat flour. However, people in Azraq Camp have no oven available for baking bread, and only one small stove, so certain dishes cannot be prepared, and flour is not commonly consumed or used in cooking.

Annex IV shows the absolute weight and cost of the foods selected for the family for the summer season for the energy-only diet, with the percentage contributed by each food in terms of weight, cost, energy, protein and fat, along with the percentage contribution of each food for eight vitamins and four minerals and the percentage of the total requirements met for each nutrient in Azraq Camp.

3.3.2 Nutritious diet (macro- and micronutrients)

The minimum cost of a nutritionally adequate diet that meets the average energy requirements and the RNIs for macro- and micronutrients is estimated at 3.03 JOD (≈ 4.26 US$) per day for the standard family of five in the summer season, or a total of 93.62 JOD per month, which is just under the 20 JOD per person per month allotment currently given. Table 3.3 shows the costs by family member.

This nutritious diet includes nine foods from seven food groups, plus breastmilk for the youngest child: bulgur, Arabic flat bread, navy beans, chicken liver, sausage, powdered full cream cow's milk, guava juice, fenugreek seeds and breastmilk. Bread, navy beans powdered milk and fenugreek seeds would have to be eaten at three meals a day, every day. For most families in the camp it is normal to eat bread as part of every meal, but for fenugreek seeds and navy beans it is very unlikely that families will consume these every day, three times per day.

Table 3.3 – The lowest cost diet for the standard family of five in Azraq Camp, Jordan during the summer season that meets the needs for energy, macro- and micronutrients but does not take into account the typical diet

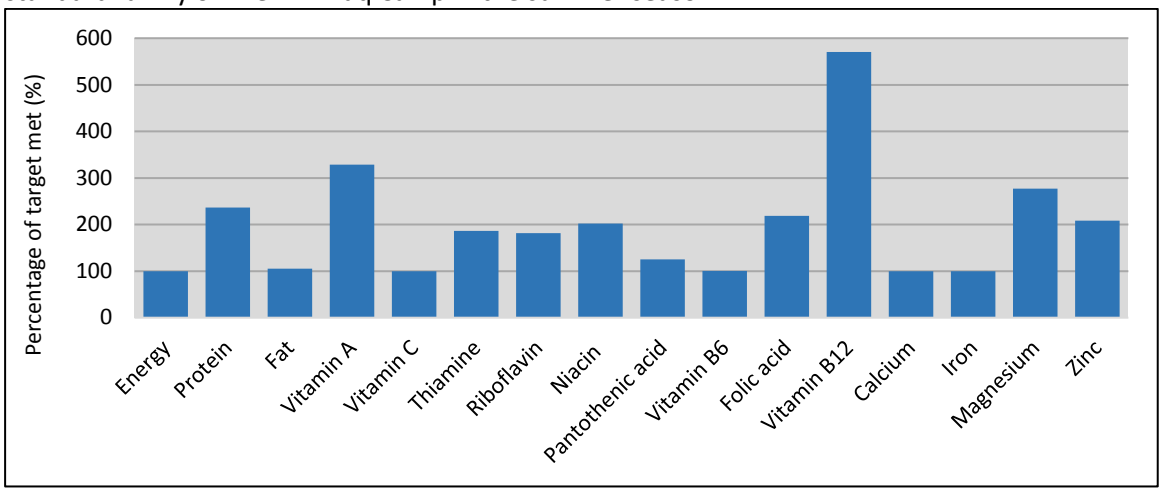
Individuals	**Total cost per day (JOD) in summer**	**Monthly cost (JOD)**
Child, 12-23 months	0.24	7.44
Child, 4-5 years	0.40	12.40
Child 9-10 years	0.54	16.74
Woman, 30-59yrs, moderately active, lactating	1.04	32.24
Man 30-59yrs, moderately active	0.80	24.80
Total	3.03	93.62

Annex V shows the absolute weight and cost of the foods selected for the family every day for the nutritious diet with the percentage contributed by each food in terms of weight, cost, energy, protein and fat, along with the percentage contribution of each food for vitamins and minerals and the percentage of the total requirements met for each nutrient.

Figure 3.1 shows the percentage of the recommended requirements met for the essential macro- and micronutrients by the nutritious diet for the standard family of five in the summer season. The figure shows that the RNI is exactly 100% for vitamin C, calcium and iron, and just 100.1% for vitamin B6. Although the software has been able to meet the recommended intakes of these nutrients using the locally available foods, this analysis identifies that the software has found these micronutrients the most difficult to obtain from the camp markets in a nutritious diet that is not constrained by typical dietary patterns. These nutrients are therefore driving up the cost of the diet, because the software has to include large quantities of expensive foods such as powdered milk, navy beans and guava juice to meet these requirements.

Due to the need to include these large quantities of certain foods in order to meet all nutrient requirements, the amount of other nutrients has increased well above 100%; the amount of vitamin A included in the nutritious diet is over 300% of what is recommended (328.4%), and vitamin B12 is even 570.2% of what is recommended. This is still well below the upper limits embedded in the software for specific nutrients known to be toxic above a certain level, such as vitamin A, which assures that the software does not select a diet which would reach these toxic levels.

Figure 3.1 – The percentage (%) of each nutrient target provided in the nutritious diet for the standard family of five in Azraq Camp in the summer season



3.3.3 Food habits nutritious diet

The nutritious diet discussed in the previous paragraph, was the cheapest way to meet energy and nutrient requirements, but this diet did not reflect the preferences or food consumption habits of the people in Azraq Camp. Based on the interviews conducted with women from the camp, minimum and maximum constraints are entered in the CotD software in order to calculate a diet that meets the energy and nutrient requirements and reflects food consumption habits: the food habits nutrition diet, or simply the food habits diet, which is described here.

Table 3.4 shows the breakdown of costs by family members for a nutritious 'food habits' (or culturally appropriate) diet in the summer season. The estimated minimum amount of cash that the standard family of five, including a child aged 12-23 months, would need to be able to purchase this diet from the market is 3.56 JOD per day, or 110.36 JOD per month, and includes 18 of the 108 foods available in the camp supermarket. The total monthly cost for this diet is above the 100 JOD a standard family of five would receive in food vouchers and thus unaffordable.

Table 3.4 – The lowest cost diet for the standard family of five in Azraq Camp that meets needs for energy and micronutrients and is adjusted to account for usual dietary habits.

Individuals	**Total cost per day (JOD)**	**Monthly cost (JOD)**
Child, 12-23 months	0.31	9.61
Child, 4-5 years	0.50	15.50
Child 9-10 years	0.59	18.29
Woman, 30-59yrs, moderately active, lactating	1.28	39.68
Man 30-59yrs, moderately active	0.88	27.28
Total	3.56	110.36

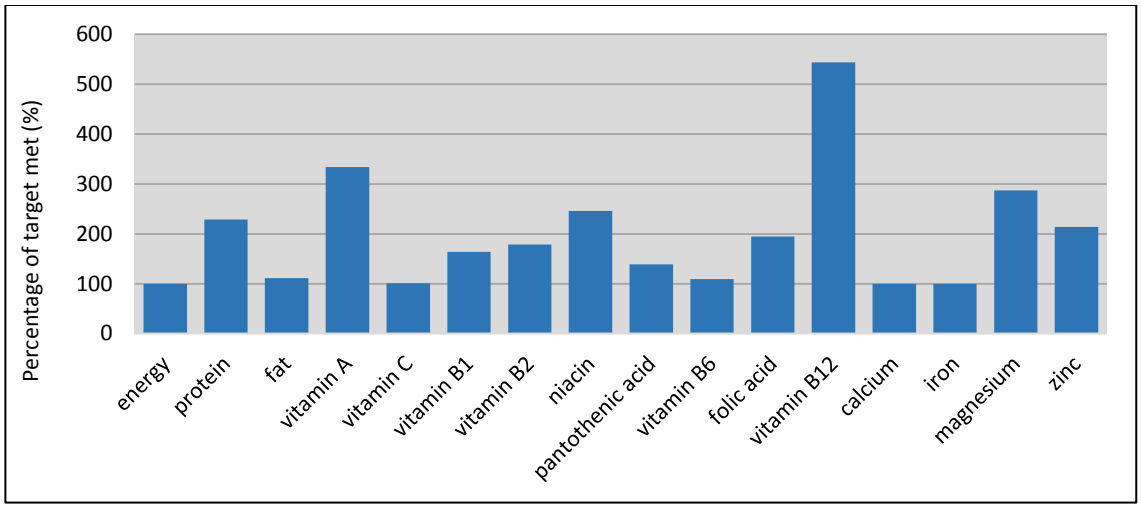
The foods selected by the software for the food habits diet for the whole family are: bulgur, freekeh (roasted, green durum wheat), Arabic flat bread, vermicelli, lentils (peeled and whole), navy beans, luncheon meat (canned meat), chicken liver, minced beef, sardines in oil, powdered full cream cow's milk, yoghurt, green sweet peppers, cabbage, jew's mallow leaves ('molokhiyya' in Arabic), sunflower oil, parsley and breastmilk for the youngest child. Note that the diet for each individual is slightly different due to the different needs at a certain age or in a certain situation (such as lactation), and for each individual the cheapest way to meet energy and all nutrient needs is calculated. For each individual in the family 8-13 foods from six to eight different food groups are included in the diet; overall 19 foods from nine food groups are included in the family's food habits nutritious diet; one food (and 'food group') is breastmilk, which is only selected for the youngest child.

The tables in Annex VI show the absolute weight and cost of the foods with the percentage contributed by each food in terms of weight, cost, energy, protein and fat, and the percentage contribution of each food for key vitamins and minerals for the standard family of five in the summer season in Azraq Camp.

The food habits diet for the 12-23 month old child emphasizes the important contribution that breastmilk makes to nutrient requirements in Azraq Camp, as it provides the greatest total percentage of energy, fat, protein, vitamin C, vitamin B2, niacin, pantothenic acid and calcium, and contributes significantly for most other nutrients as well. Breastmilk contains little iron however, so it is important that iron-rich complementary foods are given to the child. Table VI.5 in Annex VI shows that luncheon meat and chicken liver have been selected by the software as important sources of iron.

Figure 3.2 shows that the recommended daily intake (RDI) is exactly 100% for calcium and iron, and hardly more for vitamin C (101.2%) for the standard family of five in the summer season. This analysis identifies these nutrients as the most difficult to obtain using foods found in the supermarket and using the food habits constraints included for analysis in the software. The foods that have been selected to meet the requirements of these nutrients also provide other nutrients, even if these were already obtained from other (cheaper) sources, which means that a much larger amount than the recommended daily nutrient intake for some other nutrients is provided with the food habits diet. However, the amounts provided for these nutrients are not above the upper limits set in the software, so this is not an issue.

Figure 3.2 – The percentage (%) of energy and the recommended nutrient intakes for micronutrients met by the food habits diet for the standard family of five in Azraq Camp in the summer season



3.4 The contribution of food groups to the cost of the food habits diet

Figure 3.3 shows that for the food habits diet milk and milk products and grain and grain products are the food groups that contribute most to the total cost of the food habits diet, as full cream powdered milk, yoghurt, bulgur, freekeh, bread and vermicelli have been included in the lowest cost food habits nutritious diet. This is mainly due to the high costs involved in order to meet iron and calcium requirements of the family; as can be seen in figure 3.2 for these nutrients exactly 100% of the requirements are met, while for most other nutrients the requirements are met more easily, and thus show that more than 100% of the requirements are met.

Figure 3.3 - The average monthly cost per food group selected by the cost of the diet software for a food habits nutritious diet for the standard family of five in Azraq Camp in the summer season

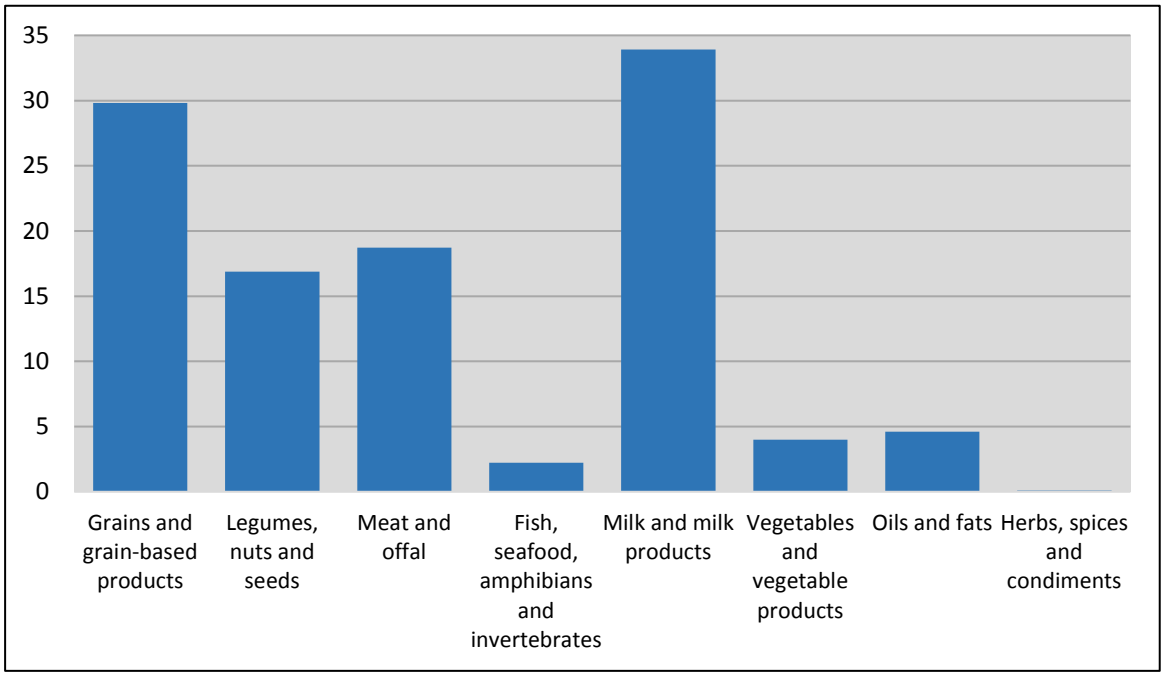


Table 3.5 – The average monthly cost per food group select by the CotD software for the lowest cost food habits nutritious diet for the standard family of five in Azraq Camp during the summer season

Food Group	Monthly cost (JOD)
Grains and grain-based products	29.80
Legumes, nuts and seeds	16.87
Meat and offal	18.73
Fish, seafood, amphibians and invertebrates	2.21
Milk and milk products	33.92
Vegetables and vegetable products	3.99
Oils and fats	4.61
Herbs, spices and condiments	0.09
Total	110.23

The contribution of vegetables to the total cost of the food habits diet is nearly the smallest, and no fruits have been included in this diet. This is due to the fact that some foods that had to be included in the diet in order to meet certain nutrient requirements already provide sufficient micronutrients that are usually provided by vegetables and fruits, but due to the large amount

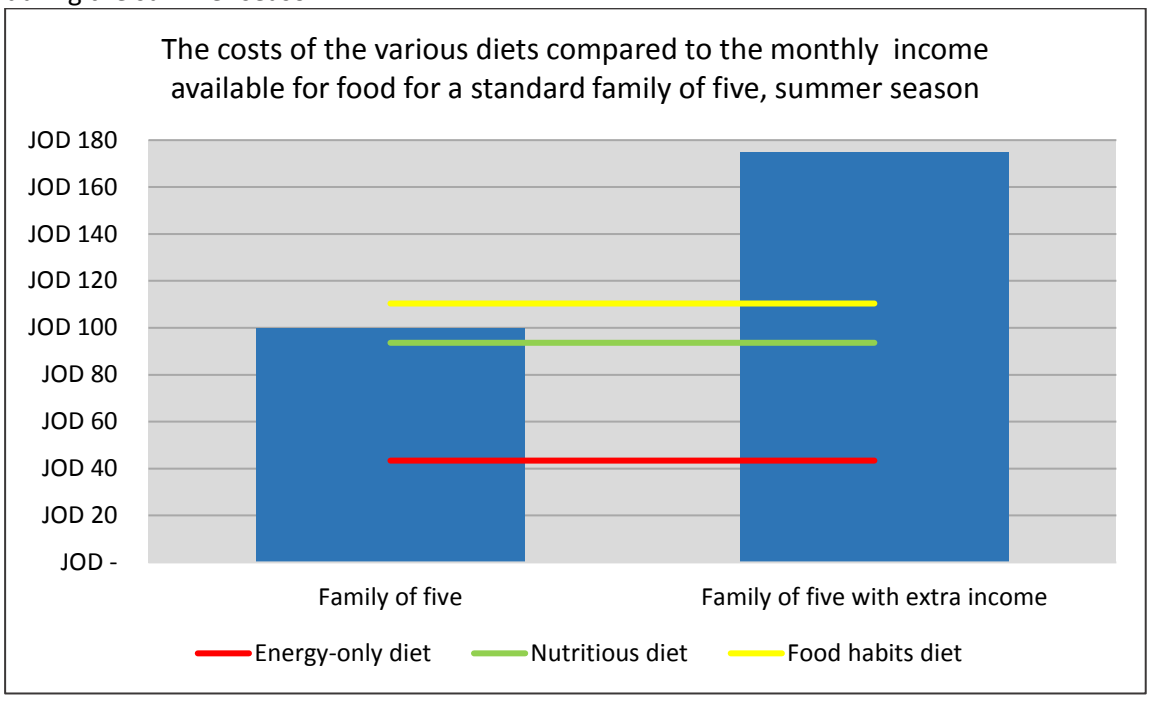
needed to meet iron and/or calcium requirements (the most difficult requirements to meet) this was sufficient to no longer require vegetables or fruits to provide the nutrients they usually provide, such as vitamin C and vitamin A.

3.5 Affordability of the diets

In order to know if the calculated diets are affordable for families in Azraq Camp, the costs can be compared with the value of the food vouchers. As only information about the summer season was collected, and the food vouchers are per month, the comparison has been done per month as well. This is different from a traditional CotD as most often information about annual income is available and used to investigate affordability, also taking into account the non-food expenditure. However, in a camp setting the situation is entirely different as most services are provided at no cost, such as education and health services, and the vouchers provided can only be exchanged for food items.

Figure 3.4 shows the comparison of the monthly food vouchers' value for a standard family of five (100 JOD) and standard family of five with extra income (175 JOD) with the monthly costs of the calculated diets (energy-only, nutritious, and food habits diets). The energy-only diet and the nutritious diet are affordable for a family of five, but the food habits diet is not affordable for a standard family of five without any additional income. If a family would have extra income the food habits diet would be affordable.

Figure 3.4 – The affordability of the calculated diets compared to the monthly food vouchers' value for a standard family of five and a standard family of five with extra income in Azraq Camp during the summer season



3.6 Modeling nutritional interventions

The Cost of the Diet software can be used to examine the effect of changing variables and assumptions on the cost and affordability of each diet and in particular the food habits diet. For example the effect of activities to generate income, the effect of changing the cost of foods and the effect of providing foods that have a higher nutrient content could all be examined in terms of their effect on the cost, quality and composition of the diet. Such models can illustrate the

potential for activities to improve the diet either through nutritional interventions or by poverty alleviation.

The models presented can help to generate ideas and test assumptions about the impact of activities on household nutrition, and to set targets and indicators. All the models described here are theoretical and, in reality, the situation will be influenced by numerous external factors that cannot be included in the model, so the actual effect on the cost of the diet may be different.

3.6.1 *What if bread is provided for free?*

In Azraq Camp beyond the food vouchers, families also receive 240 grams of bread per person per day. In order to see the impact of receiving free bread, a model has been run with the CotD software.

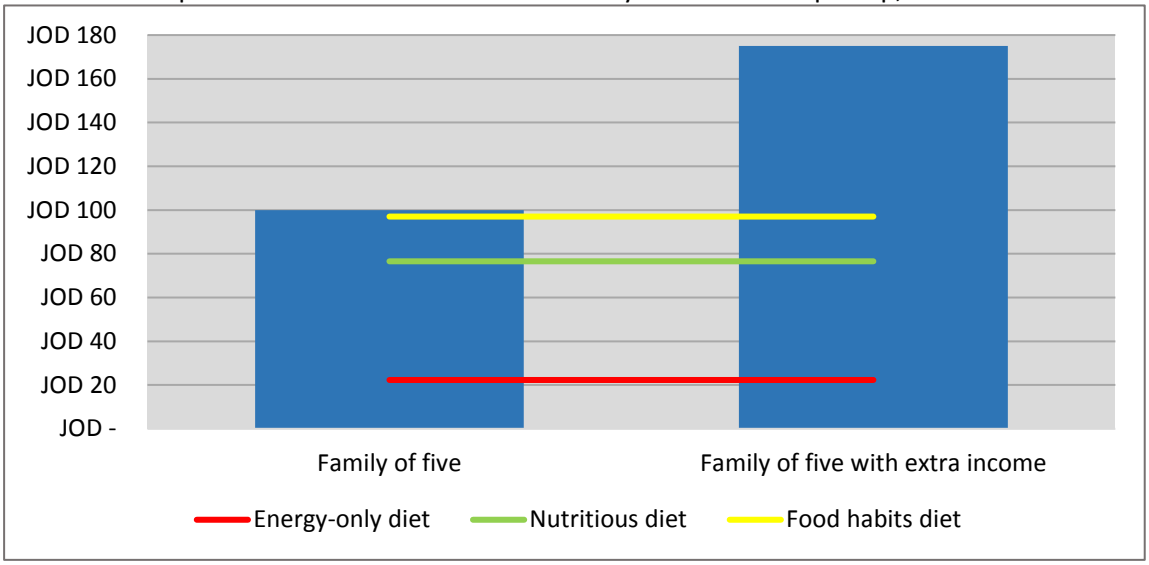
The cost of the food habits diet for the standard family of five reduces from 110.36 JOD to 97.03 JOD per month, which makes it affordable, see table 3.6 and figure 3.5. However, there is only about 3 JOD available for the family for any flexibility, such as replacing one food for another or adding herbs or condiments to the diet, which would not be enough for the entire month.

The food items selected by the software are exactly the same as for the standard diets, which was expected, as bread was included in the standard diets as well, so the only change is the cost of bread.

Table 3.6 – The differences in the costs of the nutritious and food habits diets when bread is free for the standard family of five in Azraq Camp in the summer season

Individuals	**Standard diets**		**Diets when bread for free**	
	Nutritious diet Total cost per month (JOD)	**Food habits diet** Total cost per month (JOD)	**Nutritious diet** Total cost per month (JOD)	**Food habits diet** Total cost per month (JOD)
Child, 12-23 months	7.44	9.61	7.13	8.99
Child, 4-5 years	12.40	15.50	10.23	13.95
Child 9-10 years	16.74	18.29	13.64	15.50
Woman, 30-59yrs, moderately active, lactating	32.24	39.68	27.90	35.96
Man 30-59yrs, moderately active	24.80	24.80	17.67	22.63
Total	93.93	110.36	76.57	97.03

Figure 3.5 – The costs of the various diets compared to the monthly income available for food when bread is provided for free for a standard family of five in Azraq Camp, summer season



3.6.2 What if foods from the cash-based markets are included in the analyses?

In order to investigate the impact of the newly opened markets, all diets were calculated using the price data from all markets (supermarket and two markets), to see if the costs for a standard family would be different, and if so, how. Table 3.7 shows the costs of the diets for the standard family of five, per individual and for the total family.

Table 3.7 – The monthly costs of the different diets for the standard family of five using foods from the supermarket and the two markets in Azraq Camp, for the summer season

Individuals	**Energy-only diet Total cost per month (JOD)**	**Nutritious diet Total cost per month (JOD)**	**Food habits diet Total cost per month (JOD)**
Child, 12-23 months	3.10	5.89	7.13
Child, 4-5 years	7.44	12.71	14.57
Child 9-10 years	11.16	16.74	18.91
Woman, 30-59yrs, moderately active, lactating	17.67	26.66	30.07
Man 30-59yrs, moderately active	18.31	26.04	28.52
Total	58.59	88.35	98.89

The energy-only diet calculated using data from all markets is more expensive than the energy-only diet for the supermarket data only (43.40 JOD vs. 58.59 JOD); this means that one or both of the foods included in this diet were available, but more expensive in one or both of the markets, thus increasing the price per 100 gram of that food item.

Both the nutritious diet and the food habits diet are considerably less expensive when food items from the markets are included in the analysis, showing that the prices in the markets were likely to be lower than in the supermarket, or offering different foods at lower prices, so that nutrient requirements were met at an overall lower cost.

The foods identified for the diets are not very different from the foods selected when only using the food items and prices of the supermarket, indicating that it is likely that the prices of the food items were indeed lower in the markets. However, it is known that only about 6.1% of the camp population has some extra income that can be used in the markets, as the food vouchers cannot be used here.

The main difference is in affordability of the food habits diet; this would be affordable for a standard family of five if the markets would accept the food vouchers, or if the prices in the supermarket were as low as in the markets. However, it should be noted that the supermarket provided a larger variety of different foods than the markets, and that the market kiosks also have smaller quantities of food items in stock, and although they can probably increase the available supplies if more people would have access to the markets, they are not likely to be able to provide everything required for the population of the camp.

3.6.3 What if the prices for all foods would be reduced by 10%?

In order to make a food habits diet affordable for families it is possible to increase the value of the food vouchers, but it is also possible to investigate a reduction in the prices of food items. One way for prices to go down, is competition between different traders, which is shown by the reduction in costs of the calculated diets when the cash-based markets are included in the analysis (see 3.6.2). In order to make the foods from the markets accessible for all people in the camp, it would be necessary for the markets to accept the food vouchers or a credit card, or all people in the camp would need to have access to cash. Another option would be to consider opening a second supermarket that would accept the current food vouchers. Due to the recent increase in the total number of people residing in the camp, it is possible to have a second supermarket opening in the camp; investigations and preparations for this have already started. The increased competition for customers could have an impact on the costs of foods available in the supermarket, and possibly on the food items (type, brand) available in the supermarkets. Based on the experience from WFP in other camps, an overall price reduction of 10% would be possible by opening a second supermarket[21]. The impact of an overall price reduction of 10% is analyzed here (see table 3.8).

Table 3.8 – The monthly costs of the different diets for the standard family of five when the prices of all foods available in the camp supermarket are reduced by 10% in Azraq Camp, for the summer season

Individuals	**Energy-only diet Total cost per month (JOD)**	**Nutritious diet Total cost per month (JOD)**	**Food habits diet Total cost per month (JOD)**
Child, 12-23 months	1.86	6.82	9.30
Child, 4-5 years	4.96	11.47	14.26
Child 9-10 years	7.44	15.19	16.43
Woman, 30-59yrs, moderately active, lactating	13.02	29.45	42.16
Man 30-59yrs, moderately active	13.02	22.94	24.80
Total	40.61	86.18	106.95

[21] Verbal communication with C. Turton, WFP on 17 July 2016

The total costs per family member and for the entire family are going down for all three calculated diets:

Energy-only diet: costs reduce from 43.40 JOD per month to 40.61 JOD per month
Nutritious diet: costs reduce from 93.62 JOD per month to 86.18 JOD per month
Food habits diet: costs reduce from 110.36 JOD to 106.95 JOD per month

For the energy-only and nutritious diet this impact is larger than the impact of the markets (larger cost reduction). It is also noted that the majority of the people in the camp have no income and therefore no access to the markets. The cost of the food habits diet is also reduced, and with this 10% price reduction this diet becomes affordable for a standard family of five.

3.6.4 What if the household composition is different?

From the beginning of the training, participants indicated that it was more difficult for small households to purchase enough food to achieve an appropriate diet, so this has been tested by running the CotD analysis for families with a different composition than the standard family of five. Technically, the software can calculate the different diets for any family; there are 237 different individuals included in the database, and any combination of people can be selected and the diets calculated. Here, a few different family compositions are presented, based on some common family compositions noted in Azraq Camp:

- A family of two: a woman aged 30-59 years, 65kg, moderately active, 7-12 months lactating; with a child (either sex) aged 12-23 months;
- A family of three: a woman aged 18-29 years, 65kg, moderately active, 7-12 months lactating; with an adolescent boy aged 13-14 years; and a child (either sex) aged 12-23 months;
- A family of five with three adolescents: a woman aged 3-59 years, 65kg, moderately active; a man aged 30-59 years, 75kg, moderately active; an adolescent (either sex) aged 13-14 years; an adolescent girl aged 12-13 years; and a child (either sex) aged 9-10 years.

Family of two: a woman with a young child

The different diets have been calculated for a family of two: an adult woman, 30-59 years old, moderately active and lactating, with a 12-23 months old child (either sex); see table 3.9.

A family of two would have 40 JOD available for food each month. This would be enough to be able to afford the energy-only and nutritious diet. However, the food habits diet is not affordable. During the FGDs the women clearly indicated that the foods included in the nutritious diet would not be sufficient to prepare proper meals, as too many ingredients were considered missing in the list of food items. However, for a family of two, there is no space in the food voucher allowance to include more ingredients as the nutritious diet would cost nearly 40 JOD already. The foods included in the diets are mostly similar to the foods included in the diets of the standard family of five.

Table 3.9 – The monthly costs of the diets for a family of a 30-59 year-old lactating woman with a 12-23 months old baby in Azraq Camp during the summer season

Individuals	**Energy-only diet Total cost per month (JOD)**	**Nutritious diet Total cost per month (JOD)**	**Food habits diet Total cost per month (JOD)**
Child, 12-23 months	1.86	7.44	9.61
Woman, 30-59yrs, moderately active, lactating	13.95	32.24	39.68
Total	15.81	39.68	49.29

Modeling for a younger mother, aged 18-29 years, in this family of two was done and the impact is not very large, with the cost of two of the three diets increasing slightly:
Energy-only diet: costs increase from 15.81 JOD to 16.43 JOD per month
Nutritious diet: costs increase from 39.68 JOD to 39.99 JOD per month;
Food habits diet: costs remain the same at 49.29 JOD per month.

Family of three: a young mother with an adolescent boy and a young child
The costs of the diets have been calculated for a family of three, including a mother aged 18-29 years, 65kg, moderately active, and lactating; an adolescent boy aged 13-14 years; and a child (either sex) aged 12-23 months, see table 3.10.

A family of three would receive 60 JOD in food vouchers, but this is not enough to even purchase a nutritious diet (67.58 JOD), and a food habits diet is even further beyond reach. The only way this family will be able to obtain a nutritious diet is to get a job in the camp, as this would allow them to afford a nutritious diet, and even a food habits nutritious diet. However, if the woman would get a job, someone would have to take care of the baby, especially if the adolescent boy would be attending secondary school in the camp.

Table 3.10 – The monthly costs of the diets for a family of a 30-59 year-old lactating woman with an adolescent boy, and a 12-23 months old baby in Azraq Camp during the summer season

Individuals	**Energy-only diet Total cost per month (JOD)**	**Nutritious diet Total cost per month (JOD)**	**Food habits diet Total cost per month (JOD)**
Child, 12-23 months	1.86	7.44	9.61
Woman, 18-29yrs, 65 kg, moderately active, lactating	14.57	32.55	39.68
Boy, 13-14 years	11.47	27.59	34.72
Total	27.90	67.58	84.32

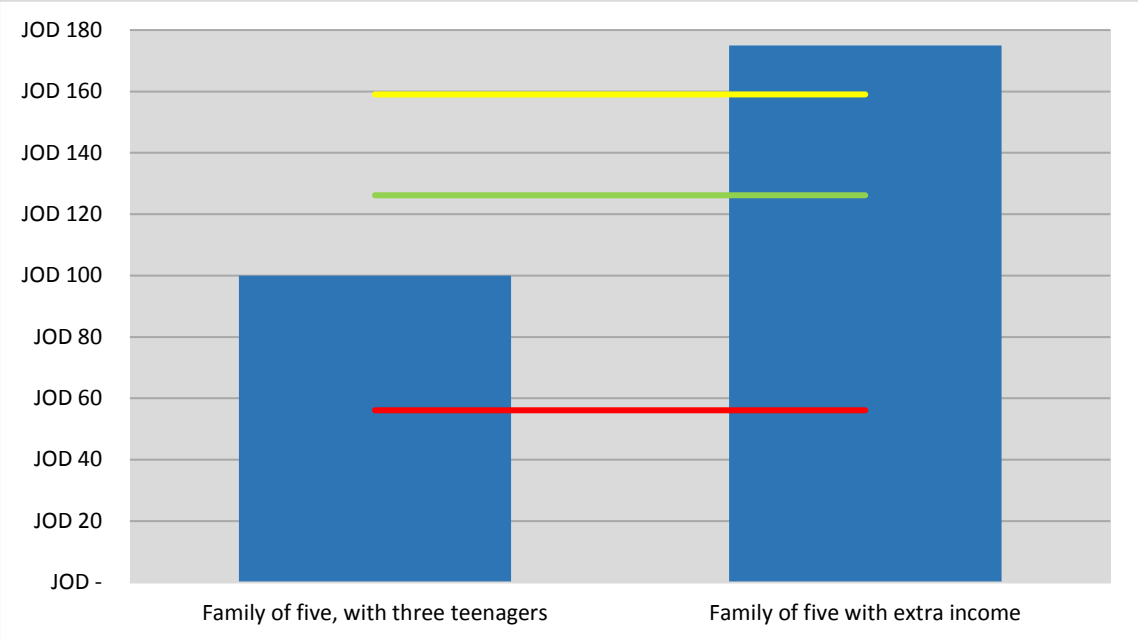
Family of five with three adolescents
The allowance provided for each person in the camp is irrespective of age or sex, so for a family of five with three teenagers, the monthly food vouchers would be the same as for the standard family of five with the oldest child aged 9-10 years: 20 JOD per person per month, so 100 JOD. The monthly costs of the diets are shown in Table 3.9 below.

For a family of five with all three children older than 9 years, the food vouchers provided are not sufficient to afford the food habits diet or even the nutritious diet (see table 3.11 and figure 3.6 below).

Table 3.11 – The monthly costs of the different diets for a family of five with all three children older than 9 years in Azraq Camp in the summer season

Individuals	Energy-only diet Total cost per month (JOD)	Nutritious diet Total cost per month (JOD)	Food habits diet Total cost per month (JOD)
Child, 9-10 years	8.06	16.74	18.29
Girl, 12-13 years	9.61	25.73	38.13
Child, 13-14 years	10.85	26.66	35.96
Woman, 30-59yrs, moderately active, lactating	13.95	32.24	39.68
Man 30-59yrs, moderately active	13.95	24.80	27.28
Total	56.11	126.17	159.03

Figure 3.6 – The affordability of the calculated diets compared to the monthly food vouchers' value for a family of five with three teenagers and a family of five with three teenagers with extra income in Azraq Camp during the summer season

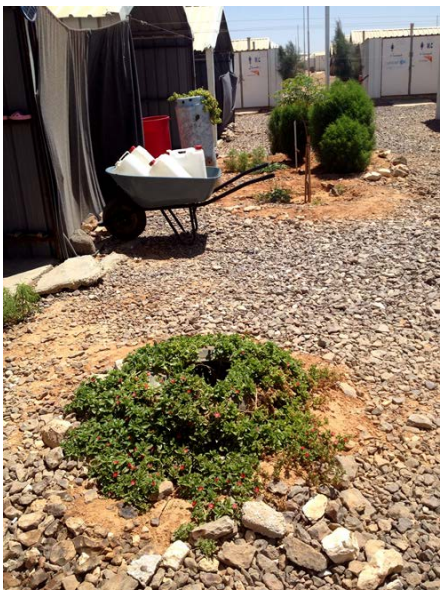


3.6.5 What if people in the camp could do micro- gardening?

Focus group discussions and direct observation revealed that many refugees in Azraq Camp are already practicing small-scale gardening outside their caravans. Some said that soil quality is fine for agriculture if they dig down deep enough, but that the biggest challenge is water, as they need to carry it from the central tap to water their plants. Most caravans have containers and access to a wheelbarrow, but for some families (particularly single-parent households) this can prove a difficult task.

The following items are already being grown in Azraq Camp, as reported by respondents and by direct observation of community volunteers:

- tomato
- onion
- garlic
- eggplant
- pepper
- corn
- arugula (also known as rucola or rocket salad)
- watermelon
- beans
- mint
- lemon balm
- sage
- coriander
- 'molokhiyya' or jew's mallow



Micro-gardening, or the growing of food crops in very limited spaces, offers an innovative, practical solution to address dietary diversity through household or community food production without access to farmlands, with a longer-term goal of preventing micronutrient deficiencies. Micro-gardening makes vertical production of crops, and production of crops in small spaces with raised beds or containers possible and thus obviates the need for large open spaces. Micro-gardening has a real potential to help increase dietary diversity in the Azraq camp setting – addressing key micronutrients possibly missing from the family's diet. Additionally, micro-gardening has been shown to have other benefits such as providing some relief for stress/anxiety and serving to improve mental health.[22] This is an activity that women and children can also be engaged in, and can be an educational opportunity to teach families about key nutrients necessary for a healthy diet.

It is recommended that this activity be explored further as a holistic intervention targeting dietary diversity and food security, while including agriculture and nutrition education components.

In order to model the impact of micro-gardening, the vegetables that are observed to be grown in the camp already (as mentioned above), have been assumed to be available at no costs. In order to avoid herbs being included for free and thus replacing vegetables, these have not been included for free in the model. When growing watermelon, the seeds would be available for free as well, and have been included in the model.

[22] Orsini, F., Michelon, N., Scocozza, F. and Gianquinto, G. (2009). FARMERS-TO-CONSUMERS: AN EXAMPLE OF SUSTAINABLE SOILLESS HORTICULTURE IN URBAN AND PERI-URBAN AREAS. Acta Hortic. 809, 209-220 DOI: 10.17660/ActaHortic.2009.809.21 http://dx.doi.org/10.17660/ActaHortic.2009.809.21

Table 3.12 – The differences in the costs of the nutritious and food habits diets when vegetables are for free for the standard family of five in Azraq Camp in the summer season

Individuals	Standard diets		Diets when vegetables for free	
	Nutritious diet	Food habits diet	Nutritious diet	Food habits diet
	Total cost per month (JOD)	Total cost per month (JOD)	Total cost per month (JOD)	Total cost per month (JOD)
Child, 12-23 months	7.44	9.61	1.24	4.34
Child, 4-5 years	12.40	15.50	3.10	7.13
Child 9-10 years	16.74	18.29	4.34	8.99
Woman, 30-59yrs, moderately active, lactating	32.24	39.68	12.09	25.73
Man 30-59yrs, moderately active	24.80	24.80	7.13	13.64
Total	93.93	110.36	27.59	59.83

The difference between the current diets and the diets when vegetables would be available for free through micro-gardening is enormous, as is shown in Table 3.12. The nutritious diet costs less than 30% of the 'normal' nutritious diet, and the food habits diet less than half than the 'normal' food habits diet, showing the enormous potential to reduce the costs of food consumption and improve the diets at the same time when providing vegetables for free, or providing seeds and tools so people can grow vegetables at no cost.

Table 3.13 – The difference foods included in the original nutritious and food habits diets and the nutritious and food habits diet when vegetables would be available for free for a standard family of five in Azraq Camp in the summer season

Standard diets		Free vegetables model	
Nutritious diet	Food habits diet	Nutritious diet	Food habits diet
Bulgur	Bulgur	Bulgur	Bulgur
Bread	Freekeh	Bread	Bread
Navy beans	Bread	Watermelon seeds	Watermelon seeds
Chicken liver	Vermicelli	Chicken liver	Lentils whole
Sausage	Lentils whole	Sausage	Lentils peeled
Powdered milk	Lentils peeled	Onion	Navy beans
Guava juice	Navy beans	Eggplant	Luncheon meat
Sunflower oil	Luncheon meat	Green, sweet pepper	Chicken liver
Fenugreek seeds	Chicken liver	Jew's mallow	Powdered cow's milk
Breastmilk	Minced beef	Tomato	Onion
	Sardines in oil, canned	Watermelon	Eggplant
	Powdered milk	Sunflower oil	Green sweet pepper
	Yoghurt	Fenugreek seeds	Jew's mallow
	Green sweet pepper	Garlic	Tomato
	Cabbage	Breastmilk	Watermelon
	Jew's mallow		Sunflower oil
	Sunflower oil		Garlic
	Parsley		Breastmilk
	Breastmilk		

3.6.6 What if multi-micronutrient supplementation is provided?

As meeting the requirements of the micronutrients increases the cost of the diets, a different way to meet these requirements has been modeled into the CotD software.

The recommended micronutrient powder formulation includes 15 micronutrients in powder form in small, 1-gram sachets. The exact composition is provided in Annex VII. Sachets should be made available throughout the year for the target groups, and should be no less than 60/6 months and no more than 180/6 months (no more than 1 sachet per day). A target of 90 sachets per six months (equivalent to 15 per month, or 3-4 per week), which thus provides an additional intake of 50% RNI per day for each micronutrient, is likely to be reasonable for most situations[23]. For this model the recommended MNP was entered into the software, the minimum constraint was set at 4 and the maximum constraint as 7, so the MNP has to be included in the diet for 4 to 7 times each week.

In order to enter the MNP supplement into the CotD database, the contents of a 1-gram sachet, as described in Annex VII needed to be converted to the contents per 100g. As MNP supplementation is often an activity implemented by an NGO or UN agency, the product was entered at no cost.

Multi-micronutrient powders (MNPs) have originally been developed for children aged 6-23 months, but are nowadays considered appropriate for distribution to children aged 6 to 59 months[24]. This would mean that the youngest two children in the standard family of five would be eligible for MNP supplementation. The effect on the cost of the diets to have the two youngest children receiving MNPs is shown in Table 3.14.

In addition, an MNP recommended for pregnant and lactating women (PLW) has been included into the CotD database to run a model where the lactating mother in the standard family of five is also receiving MNP supplementation. The composition of this MNP for PLW is given in annex VII. The results for MNP supplementation for both the two youngest children and the mother is shown in Table 3.15.

Table 3.14 – The differences in the costs of the nutritious and food habits diets when the youngest two children receive MNP supplementation for the standard family of five in Azraq Camp in the summer season

Individuals	Standard diets		Diets with MNPs	
	Nutritious diet Total cost per month (JOD)	Food habits diet Total cost per month (JOD)	Nutritious diet Total cost per month (JOD)	Food habits diet Total cost per month (JOD)
Child, 12-23 months	7.44	9.61	5.27	6.51
Child, 4-5 years	12.40	15.50	10.85	15.19
Child 9-10 years	16.74	18.29	16.74	18.29
Woman, 30-59yrs, moderately active, lactating	32.24	39.68	32.24	39.68
Man 30-59yrs, moderately active	24.80	27.28	24.80	27.28
Total	93.93	110.36	89.90	106.95

[23] HF-TAG (2011). Programmatic Guidance Brief on use of micronutrient powders MNP) for home fortification (http://www.hftag.org/assets/downloads/hftag/HF-TAG_Program%20Brief%20Dec%202011.pdf

[24] Home Fortification Technical Advisory Group (HF-TAG)(2013). Manual on Micronutrient Powder (MNP) composition. Geneva: HF-TAG. http://www.hftag.org/assets/downloads/hftag/HF-TAG%20MNP%20Composition%20Manual.pdf

Table 3.15 – The differences in the costs of the nutritious and food habits diets when the youngest two children and the lactating mother receive MNP supplementation for the standard family of five in Azraq Camp in the summer season

Individuals	Standard diets		Diets with MNPs	
	Nutritious diet Total cost per month (JOD)	Food habits diet Total cost per month (JOD)	Nutritious diet Total cost per month (JOD)	Food habits diet Total cost per month (JOD)
Child, 12-23 months	7.44	9.61	5.27	6.51
Child, 4-5 years	12.40	15.50	10.85	15.19
Child 9-10 years	16.74	18.29	16.74	18.29
Woman, 30-59yrs, moderately active, lactating	32.24	39.68	29.45	35.34
Man 30-59yrs, moderately active	24.80	27.28	24.80	27.28
Total	93.93	110.36	87.11	102.61

Despite a reduction in the total costs, a food habits nutritious diet remains unaffordable for the family. The nutritious diet still includes all the same foods compared to the 'standard' nutritious diet. The food habits diet does no longer contain freekeh, minced beef and sardines in oil, which were included for the woman or the children in the 'standard' food habits diet.

3.6.7 What if a family member is suffering from diabetes mellitus?

One issue that was repeatedly mentioned by the training participants, staff of agencies working in the camp, and people participating in the interviews and FGDs, was the issue of people with diabetes mellitus (DM) Type II. This suggest that there could be a significant number of adults with DM Type II in the camp, but statistics are not available.

Although a direct link between DM type II and nutrition is well-documented in the literature, there is not one single recommended diet for patients, although there are some common 'guidelines'; some to help prevent DM Type II, some to help in the treatment – this depends on a country's protocols or guidelines and can differ from doctor to doctor.
However, soft drinks and juices containing sugar, red meat, and processed meat have been associated with an increase in the risk of DM Type II, and wholegrain products, green leafy vegetables, fruit, coffee, and yoghurt decrease the risk of DM Type II. One of the most important recommendations for people with DM Type II is to maintain a healthy weight, or reduce overweight. Reduction of the glycemic index (GI) of foods consumed, could help in preventing DM Type II, as well as help in treating patients with DM Type II.

In order to come up with specific nutritional advice for a patient with DM Type II, the consumption pattern and specific living circumstances of this person need to be analyzed to help coming up with recommendations, and these recommendations would be specific for this patient only.

The CotD software is not set up to formulate diets for specific food-related diseases or conditions, and could only look into more general recommendations and costs, for example the impact on the cost of the diet when a person would no longer include any foods with a high GI in his or her diet.

So, this was run as a possible model, but has to be used with caution as it is not providing a diet that should be recommended to all people trying to prevent diabetes, or help in treatment of all patients, but it is more to show the possible impact of having specific dietary requirements.

In order to see the impact of reducing the glycemic index of foods consumed, foods with a high glycemic index (GI of 70+)[25] were removed from the diet, and the cost of the food habits nutritious diet was calculated.

The analysis considered the probability that only one person in a household would have diabetes and the diet was calculated for one adult of the standard family only, and for the rest of the family the foods and costs of the standard analysis were used (see paragraph 3.3). The person assumed to have diabetes in this model is the adult man of the family. The results are shown in table 3.16.

Thirteen foods with a high glycemic index were removed from the analysis:

- Bread, white, Arabic, 70% extraction
- Bread, bun or roll
- Rice, white, short grain, raw unenriched
- Wheat, flour, white, all purpose, unenriched
- Wheat flour, wholegrain
- Maize, cornstarch
- Maize, yellow, dried (dried maize is consumed as popcorn, and this has a GI>70)
- Potato, white
- Bean, fava, immature
- Squash
- Pumpkin
- Watermelon
- Date, black or red, dried

Table 3.16 – The differences in the costs of the food habits nutritious diet if one person (adult man) of the standard family of five should not consume high GI foods due to diabetes in Azraq Camp in the summer season

Individuals	Standard food habits diet		Food habits diet with no high GI foods for the man	
	Total cost per day (JOD)	Monthly cost (JOD)	Total cost per day (JOD)	Monthly cost (JOD)
Child, 12-23 months	0.31	9.61	0.31	9.61
Child, 4-5 years	0.50	15.50	0.50	15.50
Child 9-10 years	0.59	18.29	0.59	18.29
Woman, 30-59yrs, moderately active, lactating	1.28	39.68	1.28	39.68
Man 30-59yrs, moderately active	0.88	24.80	1.04	32.24
Total	3.56	110.36	3.72	115.32

The daily costs of the diet for the family would increase from 3.56 JOD to 3.72 JOD, an increase of 4.5%. The monthly costs would increase from 110.36 JOD to 115.32 JOD, even further away from the 100 JOD in vouchers that the family would receive each month.

The diversity of the diet is decreasing, as only eight foods are included in the low/medium GI diet for the man: bulgur, vermicelli, navy beans, chicken liver, powdered cow's milk, yoghurt, green sweet pepper, and sunflower oil. The main difference with the standard food habits nutritious

[25] K Foster-Powell, SHA Holt, JC Brand-Miller (2002). International table of glycemic index and glycemic load values: 2002. *American Journal of Clinical Nutrition* 2002;76:5-56.

diet for the man is that high GI bread has been replaced by two servings of low/medium GI vermicelli per day, which is not a very likely option. However, bread is traditionally part of every meal, so it will be hard, and very unlikely that a person will try to eat a low/medium GI diet without bread, especially when it is clear that this is actually not affordable with the food vouchers provided, and the distribution of free bread (240 gram per person per day).

4 Key findings / Discussion

The costs and affordability of the different diets

A standard family of five would have 100 JOD in food vouchers available each month, and they would receive 1200g of bread per day. For a standard family of five people, the costs of the energy-only diet, the nutritious diet and the food habits nutritious diet are 43.40 JOD, 93.93 JOD and 110.36 JOD respectively, which would make an energy-only and a nutritious diet affordable, but a nutritious diet adjusted for food habits would not be attained.

People clearly stated that they will continue to include certain foods such as rice and tomatoes into their diets no matter the costs, which shows that certain food habits will be difficult, if not impossible, to change in order to have more money or vouchers available for other, sometimes more nutritious foods. It is important to take this into account when determining the value of the food vouchers required to obtain a nutritious diet while also taking into account certain food habits that people are not willing to change.

Calculating the costs of the diets for families with a different household composition has shown that for certain families not only a food habits nutritious diet is unaffordable, but even the nutritious diet is beyond their reach with the current vouchers provided. Increasing the monthly vouchers' value is essential to make sure all families can ensure at least the nutritious diet, and preferably the food habits diet as well in order to make sure people will purchase the food items that are nutritious and accepted. Increasing the value of the food vouchers to 24 JOD per person per month will assure that most, but not all households can afford the nutritious diet, and more households can afford the food habits diet. However, a family of five with three adolescents will still not be able to afford a nutritious diet, and the family of two (mother with young child), the family of three (young mother with adolescent boy and young child), and the family of five with three adolescents are all still unable to afford a food habits diet.

Another option to consider, would be to give age-based vouchers, for example vouchers worth 20 JOD for all persons younger than 10 years, and vouchers worth 30 JOD for all persons aged 10 years and older. Even with this option the family of five with three adolescents and the family of three with a young mother and an adolescent boy are unable to afford the food habits diet. Both proposed options to increase the value of the vouchers will have large budget implications, as there are currently nearly 40,000 people living in Azraq Camp (37,659 people on 18 July 2016, 54,679 people registered in the camp[26]). This means that the monthly costs for vouchers will need to increase from 753,180 JOD to 903,816 JOD to provide all people with 24 JOD worth food vouchers (counting only those actually living in the camp). For the second option, to have a different voucher value for people younger than 10 years and those of ten years and older, some assumptions have to be made: from the 54,783 people registered in Azraq Camp, 45.1% are children aged 0-11 years, so the number of children younger than 10 years old will be slightly smaller, but no more detailed data are available. However, using this same percentage of 45.1% children under 11, the costs for the monthly vouchers would go up from 753,180 JOD to 959,930 JOD. If costs for all 54,679 people registered are taken into account, the total costs will increase to about 1.3 million JOD per month. With this option, all families can afford a nutritious diet, and most families can afford the food habits diet. Exceptions are the family of three including a young, lactating mother (18-29 years) with an adolescent boy (13-14 years) and a young child (12-23 months), and a family of five with three adolescents, who cannot afford the food habits diet. This is mainly due to the fact that they do not have younger children in the family, which prevents them from using part of the young child's 20 JOD voucher to cover the costs for their own diet to be nutritious. Young children do not require a full 20 JOD per month to meet their

[26] UNHCR Jordan. Azraq Camp Fact Sheet July 2016. http://data2.unhcr.org/en/documents/details/50810

nutritional requirements, so having young children essentially provides extra income for the family, compensating for the additional costs of the mother or adolescent siblings. In the case of the family of three and the family of five with three adolescents this 'compensating' is not possible and thus the food habits diet is not affordable. This could be solved by considering an extra voucher for pregnant and lactating women of about 10 JOD, as the cost for a food habits nutritious diet for them costs about 39.68 JOD. This extra voucher could be conditional, and only be provided for PLW that are attending ANC and PNC visits, and demonstrate good IYCF practices.

For these first two options to be made possible, essentially increasing the monthly food voucher, donors must agree to increase their contribution or agencies must find a way to re-allocate funds toward this change. A third option, which does not involve increasing the voucher, but may address this gap between food voucher resources and nutritional requirements, would be to increase work opportunities for families living within Azraq Camp. With the assurance of some additional income, this food voucher gap can be met.

If Azraq Camp residents continue to purchase food items they consider an essential part of their diet, but the CotD software does not select these foods as part of the lowest cost nutritious diet, it means the costs for meeting all nutrient requirements will increase as will the risk of not meeting all nutrient requirements. This results in an increased risk for micronutrient deficiencies. The nutrient requirements that were most difficult or expensive to meet were iron and calcium, so there is an increased risk for anemia and inadequate calcium intake for optimal growth during the 1,000 day period (from conception to a child's second birthday) if families are not able to purchase a nutritious diet as well as the traditionally more important food items (the 'food habits diet').

Challenges and limitations

The standard family of five used in this CotD analysis was decided based on the experience of the training participants in Azraq Camp, but this is an arbitrary decision and the real 'average' family might be slightly different in composition. However, the main reason for determining what is a typical family in the target area is for comparison reasons. The energy and nutrient requirements of 237 different individuals are specified in the CotD software, and all could be selected as a member of the standard or typical family, which is not realistic when doing the analysis. Running the analysis for a typical or standard family makes it easier to compare the standard diets with diet models to see impact of possible changes in the situation or the impact of certain project activities, such as micro-gardening or MNP supplementation.

No price and availability data for the winter season were collected, mainly due to time constraints, as asking for retrospective food availability and price data requires time and triangulation of the information to assure the information collected is reliable, would cost even more time, while this assessment was done in an emergency situation and the training participants could not be available for a longer period, as they needed to resume their normal work in the camp.

Food availability

A large variety of different foods from all food groups was available in the camp, but participants in the FGDs complained that although food items they traditionally consumed in Syria, such as fresh dairy products, fresh fruits and vegetables, fresh meat, as well as nuts and seeds, are available, they cannot afford to purchase these food items. It is important to note that all participants in the FGDs agreed that the voucher was not enough for them and their families as they were only able to buy (through the voucher) sugar, powdered milk, oil and sometimes legumes, rice, tomatoes and potatoes. The vouchers stretched until the 15th-20th of each month,

which made the last 10 days of the month very challenging for almost everyone interviewed. If most families claim to be only able to purchase these foods from their vouchers, an additional study could be considered to establish if this is indeed the case, and if so why. If people know how to consume a nutritious diet, but it is simply out of their reach, an education campaign about the importance of eating a varied, nutritious diet will not achieve anything, while reducing prices of the most nutritious food items will not achieve the desired impact if people are not aware of the nutrient value of these food items. Social and behavior change (SBC) activities must go hand-in-hand with concrete policy and programming changes in this case.

Typical dietary habits and taboos

Upon arrival in Azraq Camp, the diets shifted from the regularly and traditionally consumed meals eaten in Syria to adapting to what was available, and more importantly, affordable to them and their families in Azraq Camp. The voucher does not seem to stretch enough for Azraq Camp residents to consume foods they used to previously consume: fresh dairy products (*laban*, *labneh*, cheeses, etc.), fresh fruits and vegetables, fresh meats, as well as nuts and seeds, which were not very commonly consumed, though desired and part of the normal diet in Syria. This necessity to purchase what is available for the vouchers they receive instead of purchasing the foods they traditionally consumed in Syria also has an impact on food habits and taboos usually in place for specific members of the household, such as very young children and pregnant and lactating women.

If the financial conditions of the family allows it, **pregnant women** are to be provided with foods rich in iron (especially liver) as well as eggs, fresh fruits and milk. However, in the camp a pregnant woman usually eats the same foods as everyone else, i.e. that which is available and affordable. Foods that FGD participants specified that pregnant women should not eat were all foods that are not part of the usual diet in Azraq Camp: parsley, cinnamon, fenugreek and any hot spices or spicy foods.

There are no specific foods targeted for young children (aged 6-23 months). Currently, **children** are consuming the same food items as their families, with an extra snack or two per day and a small boost in powdered milk consumption for those above the age of 1. Some forbidden foods mentioned were honey and egg whites for those under 1. Most FGD participants indicated that they do purchase a preferred commercial milk powder if there were young children in the family; and they insisted on purchasing this brand despite it being more expensive than the other brands sold, as it is perceived as 'better' than the other brands.

Based on the condition/illness, food offered to **sick people** may vary. In general, soups, yogurt, boiled potatoes, meat (if available, especially chicken liver), herbs and honey are offered. Additionally, some expressed concerns about the unavailability of brown/whole wheat bread and flour for people with diabetes, while others mentioned celiac disease and the unavailability of corn flour.

Several participants in the CotD expressed their concern for people with chronic illnesses such as diabetes mellitus and celiac disease, as the foods these patients should consume instead of the regular foods were not available for them in the camp. These concerns were repeated in the FGDs. It would be useful to investigate how many chronically ill people with specific food requirements are present in Azraq Camp in order to see what would be possible to help these patients. Various options should be compared in order to select one that would be most suitable for the context in Azraq Camp. Some of these options could be: to distribute specific foods for these patients as 'medicine' by the medical staff in the health facility that support and treat these patients, assuring the specific foods reach patients suffering from the disease. Another option could be to make sure the specific food items required for certain illnesses, such as low Glycemic

Index foods for DM patients, are available in the supermarket in Azraq. However, it is likely that these foods would not be affordable for a family with a chronically ill person, so a solution would need to be found to make sure these foods will be affordable, but not bought up by other families that do no. One option could be to provide patients with a special voucher, which could only be spend on the specific food items needed due to the illness.

Modeling

The Cost of the Diet software has been used to examine the effect of changing some of the variables and assumptions on the cost and affordability of each diet (usually the food habits diet). Some perceived issues, such as the difficulty for certain families to obtain a proper diet, and the impact of a chronically ill person in the family on the costs of the diet were modeled. The models presented are by no means all the possible models that can be run for Azraq Camp; the models run were chosen based on the experiences of the CotD training participants, the outcomes of the FGDs with camp residents, the idea that the food vouchers provided are insufficient to provide a nutritious and culturally desirable diet for all families, and activities proposed by the CotD participants to help improve food consumption for families in Azraq.

Some of the models presented showed less impact on the costs of the diets than expected, but some other models gave much clearer results to be used for advocacy or program design.
After running all analyses one thing is clear: a food habits nutritious diet is not affordable for the residents of Azraq Camp, even though these food habits have already been modified from the traditional food habits observed and practiced while in Syria before coming to Azraq Camp.

A nutritious diet and a nutritious diet adapted for food habits are both available for everyone, but they are not affordable for certain households, for example for a family of five with three adolescents even a nutritious diet is not affordable with the current value of the food vouchers received.

The free bread that all people in the camp receive has a positive impact, as it reduces the costs of the calculated diets, and a food habits diet becomes possible for some of the households, but not for all.

Micronutrient supplementation for children aged 6-59 months and/or for pregnant and lactating women also reduces the costs of the diets, but even if the youngest two children and the mother in the standard family of five receive free MNPs the food habits diet remains unaffordable, so on its own, this activity will not have sufficient impact.

Micro-gardening could have a potentially large impact on the costs of the diets as vegetables would be available to families at no cost. However, it is important to note that although the costs for food will reduce, other costs will increase unless agencies working in the camp would be covering these costs, which could include seeds and tools, and an increased need for watering the crops.

One model tried to look into the impact on the costs of the diets if one of the family members would be ill, for example suffering from DM Type II. However, diets for such patients are not generic diets, but will be adjusted for the personal circumstances of the patient, and can thus vary from person to person. The CotD software is not a tool meant for designing meal plans for chronically ill patients, but it can be used to model the possible impact of dietary advice on the costs of a diet for that individual or for the family as a whole. The tool can also look into the possible impact on the costs of the diets for more general dietary recommendations, such as reducing the intake of high GI foods, or only consuming wholegrain cereal products instead of the normal products.

5 Recommendations

The recommendations below can be used as advocacy messages, or to inform program design and development.

- To re-evaluate the value of the food vouchers, as the calculated costs for the nutritious diet and the food habits nutritious diet in comparison with the provided vouchers clearly demonstrate that the households in the camp cannot afford a food habits nutritious diet (that has already been modified since arrival in the camp). In addition, certain families (based on household composition) cannot even afford a nutritious diet, so they are not able to meet all nutrient requirements and are at increased risk for micronutrient deficiencies and malnutrition. This message can be used for advocacy towards WFP, its partners, and its donors to increase the value of the provided food vouchers.

- An alternative for increasing the value of the food vouchers, could be a reduction of the food prices. This could be achieved by negotiations with the supermarket owner, but possibly also by increasing competition between different traders, for example by opening a second supermarket in the camp, or by enabling to use the food vouchers on the markets in the camp.

- To investigate the use of the food vouchers or a credit card in the kiosks in the markets, and not only in the supermarket. If there is more competition, people will purchase their foods where it is cheaper, so this would enable competition between the markets and the supermarket with a possible price reduction a consequence.

- To work with the supermarket in order to ensure the availability of (fresh) fruits, vegetables and meats at affordable prices. A discussion on the packaging of certain food items is also needed, as some foods are only available in relatively large quantities and therefore unaffordable for smaller families. For example, eggs are only available in a tray with 30 eggs, which is too many for a family of two, as there is no way to keep these eggs fresh for a longer period as there are no refrigerators in the caravans in the camp.

- To provide support to families that would like to do micro-gardening so they will be able to grow free vegetables as an addition to their diet. People would need access to seeds and tools, and the available water supply should be adequate to allow people to water the crops.

- To support people in gaining an income. People working for one of the agencies in the camp allow their families to afford a food habits nutritious diet. However, the number of people in the camp with a job is low: only about 6.1% of the families have additional income through jobs (see also paragraph 2.1). It is important that agencies working in the camp recruit people from the camp whenever possible for the jobs they have open. Agencies should consider creating jobs or income-generating activities in the camp, such as pickling of vegetables, or clothes making, but also to look for a market for products made by refugees, in order to sell these items. As smaller families and families with only adolescents and/or adults have more problems in affording a food habits or even a nutritious diet, there should be preference to recruit people from these families for jobs. Arrangements should be made to allow single parents to get a job, for example by arranging child care.

- To make sure nutrition education is not only focusing on the importance of appropriate complementary feeding for young infants, but also focuses on the importance of a nutritious, diversified diet for the entire family.

- Any concrete policy and program changes should be accompanied by social and behavior change activities in order to be effective.

- To do a study on diabetes Type II in the camp. There seems to be a considerable number of people with diabetes in the camp, as both the training participants and the people participating in the FGDs mention this spontaneously as an issue. However, more study is needed to determine how many people in the camp are actually suffering from DM Type II, to determine if insulin and other drugs are available for these people, and if there is someone to give dietary advice. In case dietary advice is part of the treatment, it is critical that the recommended foods, such as for example low/medium GI foods, are available so people can follow the guidance they are given. As dietary advice will very likely increase the costs of the diet, measures will need to be taken to assure people have access to the recommended food items – either through 'medical distribution' by the treating medical staff, or by making them available in the supermarket and provide extra support to families with a chronically ill person so they are able to afford these special food items, for example by providing a special food voucher that is only exchangeable for the special food items needed.

- To do the CotD market survey, and interviews again during the winter season to get a clear idea of the food items available and prices in this season, and to make sure people have access to an acceptable, nutritious diet all year round.

6 Lessons learned from adapting the CotD tool to a camp setting

Lessons learned from adapting the CotD to a camp setting include:

1. It is essential to get buy-in and participation from all partners active in the refugee camp response to ensure all resources available to camp residents are accounted for in the modeling, and to ensure uptake of recommendations post-research;
2. It is critical to properly plan and prepare the CotD study, especially when the time available for training and data collection is limited; there needs to be sufficient time to practice and do exercises to prepare the data collectors, sufficient time to enter all price data before doing the FGDs (so the nutritious diet can be discussed in the FGDs) and sufficient time for running models;
3. Questionnaires should be adapted to the camp setting (e.g. it is preferable to ask about 'current' vs. 'preferred/former' diets to avoid any confusion between general food preferences vs. adapted preferences under camp conditions;
4. Seasonality may be less important than aid distribution schedules for the CotD modeling in a camp setting;
5. Wealth status considerations should take into account both wealth status coming into the camp, and adapted wealth status given camp conditions;
6. Further modeling should be considered based on individual-specific conditions (e.g. diabetes).

7 Annexes

Annex I - A detailed description of the Cost of the Diet tool

The Cost of the Diet method and software

The Cost of the Diet is a method developed by Save the Children UK to calculate the minimum amount of money a typical household would need to purchase their recommended intakes of energy, protein, fat and micronutrients, using locally available foods. The cost of food grown and consumed at home is included in the calculation by applying market prices. Menu-driven software developed that applies linear optimization routines in Microsoft Excel 2010 is used to select locally available foods to meet these nutrient requirements at the lowest possible cost.

The Cost of the Diet software selects a mixture of foods that will enable a family to meet their energy and nutrient requirements as recommended by the WHO and the FAO[27] at the lowest possible cost. As mentioned, this is defined as a 'nutritious' diet. As the software can select amounts of foods that are not realistic in terms of the frequency with which foods are eaten, for example by specifying that a particular food is eaten three times a day every day, the frequency with which each food is consumed can be adjusted to reflect typical dietary patterns.

Energy-only diet

When estimating an energy-only diet, the software calculates a lowest cost diet that meets only the average energy requirements of the family. The analysis is not used to promote an energy-only diet because it is very unlikely to meet all micronutrient requirements, but it is useful to illustrate:

- The potential for micronutrient deficiencies in a diet that provides energy
- The additional cost of meeting all nutrient requirements, including micronutrients, in addition to energy

Micronutrient RNI diet

When estimating a micronutrient RNI diet, the software calculates the lowest cost combination of foods which meets the average energy requirements and the recommended micronutrient intake of the typical family. This diet does not reflect people's typical dietary patterns but it is useful to illustrate:

- The differences in diet composition and its cost when compared with a diet that takes into account typical dietary patterns.
- The extra cost of micronutrients when compared with the energy only diet
- The relatively small number of foods that can provide a nutritious diet but often in unrealistic quantities

Food habits diet

When creating a food habits diet, the software calculates the lowest cost combination of foods which meet the average energy requirements and the recommended micronutrient requirements, whilst adhering to the minimum and maximum constraints which set the number of times a week specific food items can be included in the diet. This diet therefore does reflect people's typical dietary patterns and is useful to illustrate:

[27] World Health Organization (2004) *Vitamin and mineral requirements in human nutrition*. Second edition. Geneva: World Health Organization; WHO/FAO (2001). *Human energy requirements*. Geneva: World Health Organization; WHO/FAO (2007). *Protein and amino acid requirements in human nutrition*. Geneva: World Health Organization; WHO/FAO (2008). *Fats and Fatty Acids in Human Nutrition*. Geneva: World Health Organization

- The extra cost of meeting average energy and recommended nutrient intakes when typical dietary habits such as the main staple, foods commonly consumed and food taboos are taken into account

Table I.1 below summarizes the characteristics of each diet.

Table I.1 – A summary of the diets analyzed using the Cost of the Diet software

Diet name	Definition	Energy needs met	Protein needs met	Fat needs met	Micro nutrient needs met	Reflects a typical diet
Energy-only diet	A lowest cost diet that meets only the average energy requirements of the household members	X				
Macronutrient diet	A lowest cost diet that meets only the average energy and the recommended protein and fat requirements of the household members	X	X	X		
Nutritious diet	A lowest cost diet that meets specifications for energy, protein, fat and micronutrients, but does not take into account typical dietary habits	X	X	X	X	
Food habits nutritious diet	A lowest cost diet that meets specifications for energy, protein, fat and micronutrients, and takes into account typical dietary habits	X	X	X	X	X

The Cost of the Diet software can also be used:

- To estimate the minimum cost of a diet for specified households of multiple individuals;
- To take into account seasonal variations in food prices when costing the diet;
- To identify seasonal shortfalls in nutrient intake;
- To develop models of the impact of potential interventions that might enable households to meet their nutrient requirements.

A Cost of the Diet assessment is most useful when chronic malnutrition and micronutrient deficiencies have been identified as a nutritional problem and the availability or affordability of nutritious foods are likely to be among the underlying causes.

The limitations of the Cost of the Diet software and method

It is useful to understand the limitations of the cost of the diet method before applying any analysis.

The software can identify a 'diet' that provides the recommended amounts of energy and micronutrients from a relatively small number of foods, but they would need to be eaten every day at every meal, which is unrealistic.

Because the actual requirements for micronutrients of any given individual cannot be known, the RNIs are set at two standard deviations above the average, to minimize the risk of deficiency. This means that when the mixture of foods selected by the Cost of the Diet software meets the RNIs of a family by 100%, the nutritional needs of 97% of all individuals will be exceeded. The result is that greater quantities of food are selected and at a higher cost than is necessary to meet the actual nutritional requirements of most individuals.

The needs for a number of nutrients are not taken into account by the software including iodine, vitamin D, essential amino acids and essential fatty acids. Iodine is not included because the amount in foods depends on the soil on which plants are grown or animals are reared, so no data are provided in food tables. Vitamin D is not included because requirements can be met by making vitamin D in skin exposed to ultra-violet light. And most food tables do not provide data on essential amino acids or fatty acids.

The cost of the diet method calculates amounts of food for a family based on the sum of recommended nutrient intakes, but food may not be distributed within a household based on nutrient needs.

The method does not take into account the additional energy, protein and nutrients needed by someone who is sick or convalescing as there are insufficient data for the calculations.

Annex II – Map of Azraq Refugee Camp in Jordan

Annex III – Guidance for interviews and focus group discussions

Interview with the vendor of the market – Market Survey

You can introduce yourself and your colleagues to the vendor/trader of the market using the below script:

Scripted Introduction:

Hello my name is _____, and these are my colleagues: _____ and _____. We are from _____ (name of agency) and we are working with other NGOs on a study about all the foods that are available in this area. Therefore, we would like to ask you about the prices of the foods you are selling today and weigh some samples of these foods using our scale. Would you allow us to do that?

❑ *Yes, I agree. [If not, thank them for their time.]*

Step-by-step for the interviews and focus group discussion:

Step 1: Clear and concise introduction
Step 2: Conducting the interviews
Step 3: Consolidating the interview results
Step 4: Highlighting foods that were 'usually' or 'never' eaten
Step 5: Conducting the focus group discussion

Introduction

1. Introduce yourself and the team
2. Explain who International Medical Corps/your agency is, and the <u>purpose of the study</u> you are conducting:
   ➔ To estimate how much it would cost a household to buy a nutritious diet using foods in the market
3. Explain that the session will be split into 2 sections: an interview and a group discussion
4. Explain the purpose of the interview: to assess what foods households eat from the supermarket, from the new kiosks and how often they eat them*
5. Explain that the results will be used to calculate the cheapest combination of foods that meets a households recommended intake of nutrients
6. Briefly describe the <u>purpose of the focus group discussion</u>:
   ➔ To understand the reasons why foods are or are not eaten and to talk more about eating habits in their home town and in the camp, and food given as gifts (including food basket for refugees/IDPs!), or in exchange for work**
7. Explain that the session will take roughly 2 – 2.5 hours
8. ! Never make promises about assistance coming to the camp/village. Explain that you are not personally the decision-maker. We are interested in understanding local diets in general to understand the types of interventions that could improve people's diets in different places.

You can introduce yourself using the below script:

Scripted Introduction:

Hi, my name is_____; and I am part of a study team looking into the foods available in this area in order to estimate how much it would cost a household to buy a nutritious diet using foods in the market. The session will be split into 2 sections: An interview and a group discussion which will take a maximum of 2-2.5 hours. The purpose of the interview is to assess what foods you and your household is eating from the supermarket and from the new kiosks and how often you and your household eat them. The results will be used to calculate the

cheapest combination of foods that meets a household recommended intake of nutrients. As for the focus group discussion, it will be needed to understand the reasons why foods are or are not eaten and to talk more about eating habits in their home town and in the camp, and food given as gifts or in exchange for work.
I would like to hear your views on this topic. You are not obliged to participate in the study and no services will be withheld if you decide not to. Likewise, if you chose to be interviewed you will not be compensated or receive any gifts or special services. Everything we discuss will be held in strict confidence and will not be shared with anyone else. We will be taking notes of the answers that you are giving us. Would you like to participate in the study? [If not, thank them for their time.]
❑ Yes, I agree. [If not, thank them for their time.]

** NB: Normally the purpose of the interview is to assess what foods households eat from the market, from their own production or collected from the wild*
*** NB: Normally the main topics in the focus group discussion would be: to understand the reasons why foods are or are not eaten and to talk more about wild foods, foods grown in kitchen gardens and food given as gifts (including food basket for refugees/IDPs!), or in exchange for work*

Interviews with participants

1. Explain to each participant the purpose of the interview:
   - To determine how often households eat each of the foods in the food list.
2. Explain that you are going to ask how many times a week they eat foods that you know to be available in the camp supermarket or in the new kiosks. The interviewee will need to respond with 'never', 'rarely', 'often' or 'usually'.
   - "never" means never eating the food
   - "rarely" means eating 1 time per month
   - "often" means eating the food 1-4 times a week
   - "usually" means eating the food more than 5 times a week
3. Interviewees should answer the questions on their consumption, not purchase. This should include consumption as part of a recipe. (Take notes of each participant's answer on a separate questionnaire sheet)

Question to ask: 'When it is available, how many times a week does your family eat …?'

Break:

Team leader should quickly tally the results from the participants' interviews (in a separate sheet) and identify which foods have 6-8 'usually' or 'rarely + never' responses (→ this will guide the focus group discussion after the break). The participating women will get a drink and a snack during this break, which is a way to thank them for their participation.

Focus Group Discussion:

The aim of the FGD is to collect qualitative data on the reasons for the current dietary habits.

1. Clarifying the interview results
2. Discuss typical dietary habits
3. Present the nutritious diet
4. Discuss the typical household size and composition
5. Discuss foods that are consumed but not purchased with the WFP voucher of 20 JOD

<u>Section 1: Clarifying the interview results</u>

The FGD should begin by going through the interview results and asking:

1- Why the marked foods (*) are 'usually' or 'rarely + never' eaten by households
2- The staple foods

3- If the staple food differs by season
    a. If so, between what seasons does the staple food change?
    b. How does the staple food change i.e. from what to what?
4- Taboo foods and the reasons for these taboos
5- Whether these typical dietary habits are the same for the rest of the community?
    a. If not, what is different and why?
6- Whether these typical dietary habits differ by wealth group? (wealth groups: very poor, poor, middle income, better-off)
    a. If so, how do they differ and for which wealth groups?

Section 2: Discuss typical dietary habits

In this section, the team should ask the following questions:

1- How many times per day do people consume a meal?
2- Does this vary by season?
    - If so, what is the meal frequency during the different seasons?
3- Are there foods used to be eaten but are no longer available?
    - If so, what foods?
    - Why?
4- Are there foods that pregnant women are specifically given?
    - If so, what foods?
    - Why?
5- Are there foods that breastfeeding women are specifically given?
    - If so, what foods?
    - Why?
6- Are there foods that pregnant women are not given?
    - If so, what foods?
    - Why?
7- Are there foods that breastfeeding women are not given?
    - If so, what foods?
    - Why?
8- Does daily meal frequency differ for particular individuals (i.e. a young child)?
    - If so, how?
9- Are there foods that children aged 6-23 months are specifically given?
    - If so, what foods?
    - Why?
10- Are there foods that children aged 6-23 months are not given?
    - If so, what foods?
    - Why?
11- Are there any foods that sick people are given?
    - If so, what foods?
    - Why?

Section 3: Present the nutritious diet

The initial nutritious diet results generated using data from the market surveys should be presented to the women/men. This exercise is used as another way to capture what foods should be included in or excluded from the food habits diet.

The discussion leader should read out the list of foods and the number of meals per day or week they should be eaten to the women, and ask them the following questions:

- Is this a diet that they would eat?

- If not, why not?

Section 4: Discuss the typical household size and composition
This section is only needed if no HEA has been done
The following questions could be asked:

- How many people are normally in a household?
- Does this differ by wealth group?
    - If so, what is the normal household size for the different wealth groups?
- What is the normal composition of the household?
- Does this differ by wealth group?
    - If so, what is the normal household composition for the different wealth groups?

Section 5: Discuss foods that are consumed but not purchased with the WFP vouchers
Questions to be asked:

- Are there any foods that you consume but don't purchase with the vouchers?
- If so, what foods?
- How do you purchase them (i.e. savings, money received for working in the camp, etc.)?
- How many days per week does your household eat these foods?

Make sure to properly thank the men and women for their time and participation!!

Remember:

- Make sure that everyone is talking
    - E.g. Ask if others in the group agree
- Do not take sides
- If there is a disagreement, that is fine but make sure you write it down

Annex IV – The energy-only diet

Table IV.1 – The daily quantities in grams (g) of the foods selected by the software for the energy-only diet for the standard family of five in the summer season

	Arabic flat bread	Wheat flower, white	Sunflower oil	Breastmilk	Total food weight
Child 12-23 months	204	-	0	532	736
Child 4-5 years	293	18	49	-	360
Child 9-10 years	432	27	72	-	530
Woman, 30-59y, lactating	586	163	98	-	846
Man 30-59 y moderately active	744	46	124	-	913
Total edible weight	**2259**	**253**	**342**	**532**	**3386**
Total weight	**2259**	**253**	**342**	**532**	**3386**

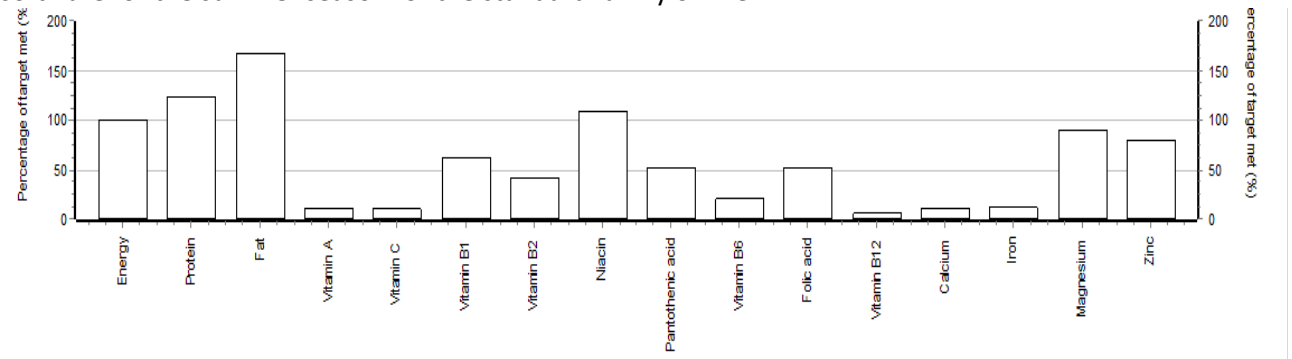
Table IV.2 – The cost contribution by each of the foods in the diet and total cost of the diet per person for the standard family of five, selected by the software

	Arabic flat bread	Wheat flower, white	Sunflower oil	Breastmilk	Total costs per person (JOD)
Child 12-23 months	0.06	-	0.00	0.00	0.06
Child 4-5 years	0.09	0.01	0.07	-	0.18
Child 9-10 years	0.13	0.02	0.11	-	0.26
Woman, 30-59y, lactating	0.18	0.13	0.15	-	0.45
Man 30-59 y moderately active	0.22	0.04	0.19	-	0.45
Total cost of the energy-only diet	**0.68**	**0.20**	**0.51**	**0.00**	**1.39**

Table IV.3 – The percentage (%) of each nutrient target provided by the edible portion of foods for the standard family of five in Azraq Camp in the summer season selected by the software

	Energy (kcal)	Protein (g)	Fat (g)	Vitamin A (µg RE)	Vitamin C (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg NE)	Pantothenic acid (mg)	Vitamin B6 (mg)	Folic acid (µg DFE)	Vitamin B12 (µg)	Calcium (mg)	Iron (mg)	Magnesium (mg)	Zinc (mg)
Grains and grain products																
Arabic flat bread	59.0	106.8	26.0	0.0	0.0	52.9	36.9	99.5	41.9	16.7	45.2	0.0	5.9	8.8	79.6	70.8
Wheat flour	8.8	1401	1.0	0.0	0.0	6.5	2.1	5.4	5.3	2.1	4.2	0.0	1.0	2.3	7.3	6.2
Oils and fats																
Sunflower oil	28.9	0.0	131.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Breastmilk																
Breastmilk	3.3	3.0	8.0	9.5	10.1	2.4	3.8	3.9	4.6	0.9	2.9	5.7	3.9	0.0	2.4	2.2
Total	**100.0**	**123.8**	**166.1**	**9.5**	**10.1**	**61.7**	**42.7**	**108.8**	**51.8**	**19.7**	**52.3**	**5.7**	**10.9**	**11.2**	**89.3**	**79.2**

Figure IV.1 – The percentage (%) of each nutrient target provided by the foods selected by the software for the summer season for the standard family of five



Annex V – The nutritious diet

Table V.1 – The daily quantities in grams (g) of the foods selected by the software for the nutritious diet for the standard family of five in the summer season

	Bulgur	Arabic flat bread	Navy beans, mature, raw	Chicken, liver	Sausage	Milk, cow, powdered, full cream	Guava, juice	Oil, sunflower	Fenugreek, seeds	Breastmilk	Total food weight
Child 12-23 months	-	45	68	8	11	24	1	-	3	532	692
Child 4-5 years	-	236	74	11	4	46	11	12	5	-	399
Child 9-10 years	24	301	144	13	-	44	14	28	7	-	575
Woman, 30-59y, lactating	86	450	195	38	77	60	17	-	10	-	933
Man 30-59 y moderately active	50	744	122	30	-	72	16	26	12	-	1071
Total edible weight	**160**	**1775**	**603**	**100**	**93**	**246**	**59**	**65**	**37**	**532**	**3671**
Total weight	**160**	**1775**	**603**	**100**	**93**	**246**	**59**	**65**	**37**	**532**	**3671**

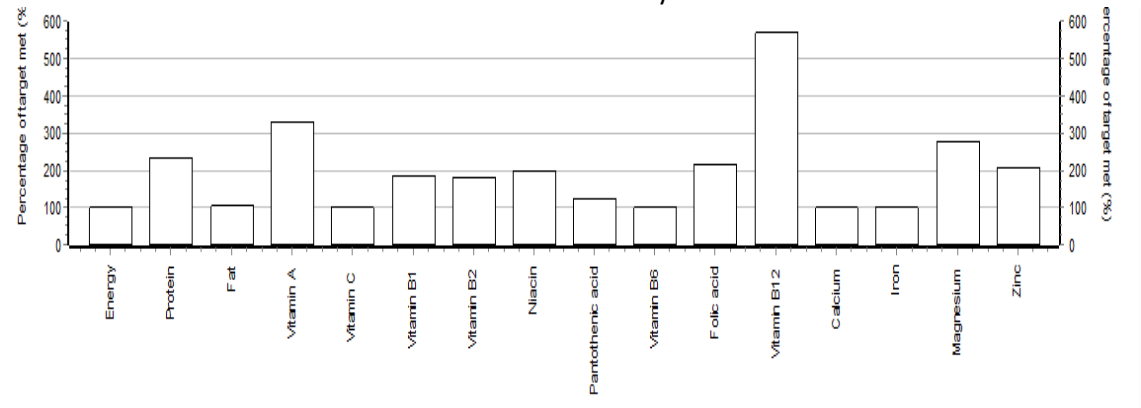
Table V.2 – The cost contribution by each of the foods in the diet and total cost of the diet per person for the standard family of five, selected by the software

	Bulgur	Arabic flat bread	Navy beans, mature, raw	Chicken, liver	Sausage	Milk, cow, powdered, full cream	Guava, juice	Oil, sunflower	Fenugreek, seeds	Breastmilk	Total cost
Child 12-23 months	-	0.01	0.08	0.01	0.04	0.09	0.00	-	0.01	0.00	0.24
Child 4-5 years	-	0.07	0.09	0.01	0.02	0.18	0.01	0.02	0.01	-	0.40
Child 9-10 years	0.02	0.09	0.17	0.02	-	0.17	0.01	0.04	0.01	-	0.54
Woman, 30-59y, lactating	0.07	0.13	0.23	0.05	0.29	0.23	0.02	-	0.02	-	1.04
Man 30-59 y moderately active	0.04	0.22	0.15	0.04	-	0.27	0.02	0.04	0.02	-	0.80
Total Cost of the Diet	**0.13**	**0.53**	**0.72**	**0.13**	**0.35**	**0.94**	**0.06**	**0.10**	**0.07**	**0.00**	**3.03**

Table V.3 – The percentage (%) of each nutrient target provided by the edible portion of foods for the standard family of five in Azraq Camp in the summer season selected by the software

	Energy	Protein	Fat	Vitamin A	Vitamin C	Thiamine	Riboflavin	Niacin	Pantothenic acid	Vitamin B6	Folic acid	Vitamin B12	Calcium	Iron	Magnesium	Zinc
Grains and grain products																
Bulgur, wheat	5.2	11.8	1.2	0.0	0.0	12.3	6.2	25.1	6.9	9.2	3.2	0.0	1.4	4.9	28.9	16.2
Arabic flat bread	46.4	83.9	20.4	0.0	0.0	41.5	29.0	78.2	33.0	13.1	35.5	0.0	4.7	6.9	62.6	55.7
Legumes, nuts and seeds																
Navy bean, mature, raw	19.4	72.3	3.5	0.0	0.0	99.4	20.2	22.4	21.4	47.8	141.6	0.0	23.3	25.8	137.7	76.7
Meat and offal																
Chicken, liver	1.1	9.7	1.6	300.1	8.1	5.8	40.9	19.9	21.5	5.6	28.3	456.5	0.3	24.6	2.1	11.2
Sausage	5.5	17.1	17.6	0.0	13.2	11.6	17.8	21.3	9.3	8.9	0.3	91.7	0.8	24.2	4.5	16.8
Milk and milk products																
Milk, cow, full cream, powdered	11.8	33.8	27.0	17.8	9.4	9.9	60.3	28.4	28.2	8.7	4.8	16.2	63.5	3.6	28.9	25.7
Fruit and fruit products																
Guava, juice	0.7	0.3	0.2	0.9	58.6	0.8	0.7	1.5	0.5	1.7	0.6	0.0	0.3	0.1	0.8	0.4
Oils and fats																
Oil, sunflower	5.5	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Herbs, spices and condiments																
Fenugreek, seeds	1.2	4.6	0.9	0.0	0.5	2.6	2.8	1.0	0.0	4.2	1.4	0.0	1.7	9.8	9.4	3.3
Breastmilk																
Breastmilk	3.3	3.0	8.0	9.5	10.1	2.4	3.8	3.9	4.6	0.9	2.9	5.7	3.9	0.0	2.4	2.2
Total	**100.0**	**236.6**	**105.2**	**328.4**	**100.0**	**186.3**	**181.6**	**201.8**	**125.3**	**100.1**	**218.5**	**570.2**	**100.0**	**100.0**	**277.3**	**208.1**

Figure V.1 - The percentage (%) of each nutrient target provided by the foods selected by the software for the summer season for the standard family of five



Annex VI – The food habits nutritious diet

Table VI.1 – The cost of the foods and the daily quantities in grams (g) selected by the software

	Bulgur, wheat	Freekeh	Bread, white, Arabic,	Vermicelli	Lentil, whole	Lentil, peeled	Bean, navy, mature, raw	Luncheon meat, canned	Poultry, liver	Beef, mince, raw	Fish, sardines in oil	Milk, cow, powdered, full cream	yoghurt	Pepper, green, sweet	Cabbage, raw	Leaf, jew's mallow	Oil, sunflower	Parsley, leaf, raw	breastmilk	Total Food Weight
Child (either sex) 12-23 months			68		17	16	17	13	8	17		15	51			6		1	532	761
1 x Child (either sex) 4-5 years	84		190				33		11		12	21	73		106	9	15	2		555
1 x Child (either sex) 9-10 years	132		244		36	3	48		14			31	86	27			27			647
1 x Woman, 30-59y, 65 kg, moderately	179	23	391	17	49	49	65	116	38			42	103	22			2			1 096
1 x Man, 30-59y, 75 kg, moderately	227		496				83		32			54	81	35			55			1 062
Total edible weight	**622**	**23**	**1 388**	**17**	**102**	**67**	**245**	**129**	**101**	**17**	**12**	**163**	**395**	**84**	**106**	**15**	**99**	**3**	**532**	**4 121**
Total weight	**622**	**23**	**1 388**	**17**	**102**	**67**	**245**	**129**	**101**	**17**	**12**	**163**	**395**	**101**	**126**	**20**	**99**	**3**	**532**	**4**

	Bulgur, wheat	Freekeh	Bread, white, Arabic,	Vermicelli	Lentil, whole	Lentil, peeled	Bean, navy, mature, raw	Luncheon meat, canned	Poultry, liver	Beef, mince, raw	Fish, sardines in oil	Milk, cow, powdered, full	yoghurt	Pepper, green, sweet	Cabbage, raw	Leaf, jew's mallow	Oil, sunflower	Parsley, leaf, raw	Breastmilk	**Total**
Table VI.2 – The daily number of servings of the foods selected by the software																				
1 x Child (either sex) 12-23 months			1		1	1	1	1	1	1		1	1			1		1	1	
1 x Child (either sex) 4-5 years	1		2		0	0	1	0	1		1	1	1		1	1	1	1		
1 x Child (either sex) 9-10 years	1		2		1	1	1	0	1			1	1	1			2			
1 x Woman, 30-59y, 65 kg, moderately active (1	1	1	2	1	1	1	1	2	1			1	1	1			1			
1 x Man, 30-59y, 75 kg, moderately active	1		2		0	0	1	0	1			1	1	1			2			
Total	**4**	**1**	**9**	**1**	**3**	**3**	**5**	**3**	**5**	**1**	**1**	**5**	**5**	**3**	**1**	**2**	**6**	**2**	1	
Table VI.3 – Cost of the Diet (JOD):																				
1 x Child (either sex) 12-23 months	0		0.02		0.02	0.03	0.02	0.04	0.01	0.03		0.06	0.06			0.02		0.00	**0.00**	**0.31**
1 x Child (either sex) 4-5 years	0.07		0.06				0.04		0.01		0.07	0.08	0.09		0.04	0.02	0.02	0.00		**0.50**
1 x Child (either sex) 9-10 years	0.11		0.07		0.05	0.00	0.06		0.02			0.12	0.10	0.02			0.04			**0.59**
1 x Woman, 30-59y, 65 kg, moderately active (1	0.14	0.03	0.12	0.02	0.07	0.08	0.08	0.39	0.05			0.16	0.12	0.01			0.00			**1.28**
1 x Man, 30-59y, 75 kg, moderately active	0.18		0.15				0.10		0.04			0.20	0.10	0.02			0.08			**0.88**
Total Cost of the Diet	**0.50**	**0.03**	**0.42**	**0.02**	**0.14**	**0.11**	**0.29**	**0.44**	**0.13**	**0.03**	**0.07**	**0.62**	**0.47**	**0.05**	**0.04**	**0.04**	**0.15**	**0.00**	**0.00**	**3.56**

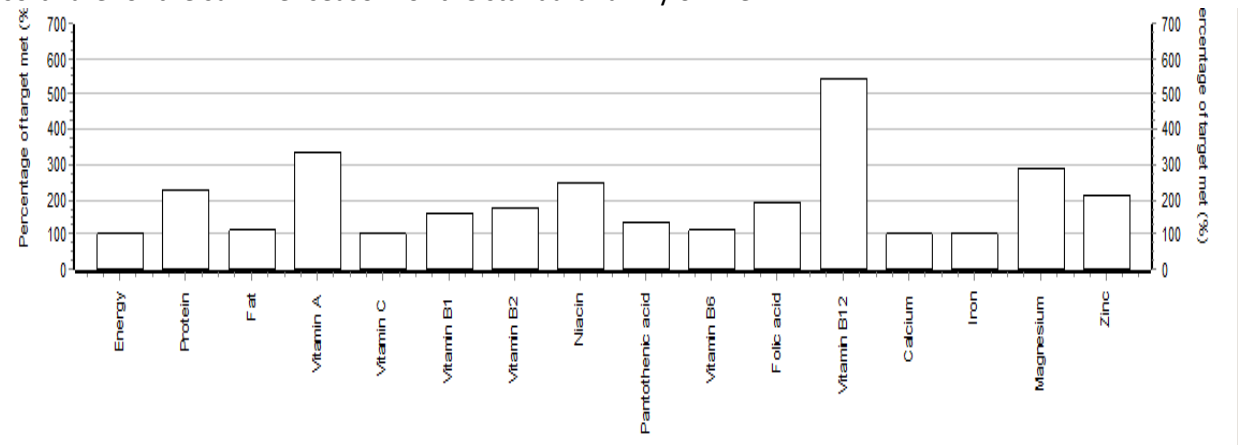
Table VI.4 – The daily quantity of each nutrient provided by the edible portion of foods selected by the software

Food Name	Energy (kcal)	Protein (g)	Fat (g)	Vitamin A (µg RE)	Vitamin C (mg)	Vitamin B1 (mg)	Vitamin B2 (mg)	Niacin (mg NE)	Pantothenic acid (mg)	Vitamin B6 (mg)	Folic acid (µg DFE)	Vitamin B12 (µg)	Calcium (mg)	Iron (mg)	Magnesium (mg)	Zinc (mg)
Grains and grain-based products																
Wheat, bulgur	2 108.5	85.2	11.8	0.0	0.0	2.2	1.2	57.4	5.7	1.9	192.8	0.0	211.5	1.2	858.3	18.0
Freekeh	77.4	3.1	0.6	0.0	0.0	0.1	0.0	1.5	0.2	0.1	9.8	0.0	7.8	0.0	32.9	0.9
Bread, white, Arabic	3 803.6	122.2	41.6	0.0	0.0	1.5	1.1	36.1	5.4	0.6	430.3	0.0	138.8	0.3	374.8	12.5
Vermicelli	57.9	1.5	0.1	0.0	0.0	0.0	0.0	0.6	0.1	0.0	3.0	0.0	3.7	0.0	7.0	0.2
Legumes, nuts and seeds																
Lentil, whole	316.6	24.5	1.1	1.5	5.1	0.5	0.2	6.6	1.8	0.5	493.7	0.0	51.9	0.4	97.7	3.6
Lentil, peeled	209.8	16.3	0.7	1.0	3.4	0.3	0.1	4.4	1.2	0.3	327.1	0.0	34.4	0.3	64.8	2.4
Bean, navy, mature,	826.0	54.7	3.7	0.0	0.0	1.9	0.4	5.4	1.8	1.0	892.2	0.0	360.3	0.7	428.9	8.9
Meat and offal																
Luncheon meat,	360.0	16.6	30.7	0.0	34.8	0.1	0.2	0.0	0.0	0.1	16.8	1.3	50.3	1.3	12.9	0.0
Poultry, liver	117.6	18.4	4.2	8 497.4	17.2	0.3	2.0	11.9	4.6	0.3	443.1	42.0	10.1	1.6	16.2	3.2
Beef, mince, raw	32.6	3.3	2.2	0.0	0.0	0.0	0.0	0.8	0.1	0.1	1.0	0.3	2.0	0.1	3.2	0.8
Fish, seafood, amphibians and invertebrates																
Fish, sardines in oil	27.3	3.1	1.7	4.0	0.0	0.0	0.0	0.6	0.1	0.0	1.2	1.1	47.4	0.1	4.8	0.2
Milk and milk products																
Milk, cow, powdered	822.5	41.8	46.7	331.3	13.1	0.3	2.0	11.1	3.9	0.3	49.0	1.0	1 601.0	0.2	146.9	4.9
Yogurt	462.4	27.7	25.7	193.6	11.9	0.3	1.2	5.2	3.2	0.3	55.3	3.2	1 059.1	0.1	102.7	4.7
Vegetables and vegetable products																
Pepper, green, sweet	15.9	0.8	0.3	14.2	79.5	0.0	0.0	0.6	0.1	0.2	15.9	0.0	8.4	0.0	8.4	0.2
Cabbage, raw	16.9	1.0	0.2	4.2	21.2	0.0	0.0	0.4	0.1	0.1	28.6	0.0	31.7	0.0	9.5	0.1
(Leaf, jew's mallow	5.0	0.5	0.0	35.3	4.5	0.0	0.0	0.2	0.0	0.1	14.2	0.0	28.8	0.0	8.5	0.1
Oils and fats																
Oil, sunflower	876.5	0.0	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Herbs, spices and condiments																
baqdoons akhdar	0.7	0.1	0.0	4.8	0.6	0.0	0.0	0.0	0.0	0.0	1.9	0.0	3.9	0.0	1.1	0.0
Breast Milk																
Breast milk	345.8	5.6	20.7	266.0	21.3	0.1	0.2	2.3	1.0	0.0	45.2	0.5	149.0	0.0	18.6	0.6
Total	**10**	**426.2**	**291.1**	**9**	**212.**	**7.7**	**8.7**	**145.2**	**29.1**	**5.9**	**3**	**49.5**	**3 800.0**	**6.4**	**2**	**61.4**
Target amount for	10	186.1	260.9	2 800.0	210.0	4.7	4.9	59.0	21.0	5.4	1	9.1	3 800.0	6.4	766.0	28.7

Table VI.5 – The percentage (%) of each nutrient target provided by the edible portion of foods selected by the software

Food Name	Energy (kcal)	Protein (g)	Fat (g)	Vitamin A (µg RE)	Vitamin C (mg)	Vitamin B1 (mg)	Vitamin B2 (mg)	Niacin (mg NE)	Pantothenic acid (mg)	Vitamin B6 (mg)	Folic acid (µg DFE)	Vitamin B12 (µg)	Calcium (mg)	Iron (mg)	Magnesium (mg)	Zinc (mg)
Grains and grain-based products																
borghol (Wheat,	20.1	45.8	4.5	0.0	0.0	47.6	24.1	97.3	27.0	35.7	12.4	0.0	5.6	18.9	112.1	62.8
freekeh (Wheat,	0.7	1.7	0.2	0.0	0.0	2.0	0.6	2.6	1.0	1.8	0.6	0.0	0.2	0.6	4.3	3.3
khobez arabi (Bread,	36.3	65.6	16.0	0.0	0.0	32.5	22.7	61.2	25.8	10.3	27.8	0.0	3.7	5.4	48.9	43.5
shaireyeh	0.6	0.8	0.0	0.0	0.0	0.7	0.2	1.0	0.3	0.4	0.2	0.0	0.1	0.3	0.9	0.8
Legumes, nuts and seeds																
adas hab (Lentil,	3.0	13.2	0.4	0.1	2.4	10.0	3.9	11.2	8.3	9.0	31.9	0.0	1.4	7.0	12.8	12.4
adas majroosh	2.0	8.7	0.3	0.0	1.6	6.6	2.6	7.5	5.5	6.0	21.1	0.0	0.9	4.6	8.5	8.2
fasolyaa baidah, nay	7.9	29.4	1.4	0.0	0.0	40.4	8.2	9.1	8.7	19.4	57.6	0.0	9.5	10.5	56.0	31.2
Meat and offal																
(Luncheon meat,	3.4	8.9	11.8	0.0	16.6	1.6	4.0	0.0	0.0	2.4	1.1	14.2	1.3	20.1	1.7	0.0
kebdet djaj (Poultry,	1.1	9.9	1.6	303.5	8.2	5.8	41.4	20.2	21.8	5.6	28.6	461.7	0.3	24.9	2.1	11.3
lahmet bakari,	0.3	1.8	0.8	0.0	0.0	0.2	0.5	1.4	0.5	1.1	0.1	3.7	0.1	1.3	0.4	2.7
Fish, seafood, amphibians and invertebrates																
sardine bzeit,	0.3	1.6	0.6	0.1	0.0	0.2	0.6	1.1	0.4	0.4	0.1	12.1	1.2	1.4	0.6	0.6
Milk and milk products																
haleeb bakari bodrah	7.8	22.4	17.9	11.8	6.2	6.6	40.0	18.9	18.7	5.7	3.2	10.8	42.1	2.4	19.2	17.1
laban/ shanina	4.4	14.9	9.8	6.9	5.6	5.9	24.2	8.8	15.4	5.1	3.6	35.6	27.9	1.4	13.4	16.5
Vegetables and vegetable products																
flefleh khadra	0.2	0.4	0.1	0.5	37.8	0.7	0.5	1.1	0.2	2.8	1.0	0.0	0.2	0.3	1.1	0.6
malfoof (Cabbage,	0.2	0.5	0.1	0.2	10.1	0.7	0.6	0.6	0.5	1.2	1.8	0.0	0.8	0.3	1.2	0.4
mlokheyeh (Leaf,	0.0	0.3	0.0	1.3	2.2	0.3	0.5	0.3	0.2	1.4	0.9	0.0	0.8	0.3	1.1	0.2
Oils and fats																
zait abbad alshams	8.4	0.0	38.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Herbs, spices and condiments																
baqdoons akhdar	0.0	0.0	0.0	0.2	0.3	0.0	0.1	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.1	0.0
Breast Milk																
Breast milk	3.3	3.0	8.0	9.5	10.1	2.4	3.8	3.9	4.6	0.9	2.9	5.7	3.9	0.0	2.4	2.2
Total	**100.0**	**229.0**	**111.6**	**334.1**	**101.2**	**164.2**	**178.5**	**246.1**	**138.8**	**109.5**	**194.9**	**543.7**	**100.0**	**100.0**	**286.9**	**213.9**

Figure VI.1 - The percentage (%) of each nutrient target provided by the foods selected by the software for the summer season for the standard family of five



Annex VII – The recommended micronutrient powder formulations per target group[28]

Micronutrient	Children aged 12-23 months (and 24-59 months)	Pregnant and lactating women
Iron (mg)	10	30-60
Vitamin A (µg RAE)	400	800
Zinc (mg)	4.1	15
Vitamin C (mg)	30	70
Folic acid (µg)	90	400
Vitamin D3 (µg)	5.0	5.0
Vitamin E (mg)	5.0	10
Vitamin B1 (mg)	0.5	1.4
Vitamin B2 (mg)	0.5	1.4
Vitamin B6 (mg)	0.5	1.9
Vitamin B12 (µg)	0.9	2.6
Niacin (mg)	6.0	18.0
Copper (mg)	0.56	2.0
Iodine (µg)	90	150
Selenium (µg)	17	65

[28] Home Fortification Technical Advisory Group (HF-TAG)(2013). Manual on Micronutrient Powder (MNP) composition. Geneva: HF-TAG. http://www.hftag.org/assets/downloads/hftag/HF-TAG%20MNP%20Composition%20Manual.pdf