NCA Final Report

December 2011

Nutritional Causal Analysis of the Refugee Camps of Nayapara and Kutupalong in Cox's Bazaar Distric of Bangladesh

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- The refugees for their collaboration during the data collection.

List of acronyms

ACF	Action Contre la Faim
BDRCS	Bangladesh Red Crescent Society
CI	Confidence Interval
CIC	Camp-in-charge
ENA	Emergency Nutrition Assessment
GAM	Global Acute Malnutrition
GoB	Government of Bangladesh
HH	Household
IFPRI	International Food Policy Research Institute
IPD	In-patient department
IYCF	Infant and young child feeding
KTP	Kutupalong camp
MFDM	Ministry for Food and Disaster Management
MAM	Moderate Acute Malnutrition
MoHFW	Ministry of health and family welfare
MUAC	Mid Upper Arm Circumference
NGO	Non Governmental Organization
NYP	Nayapara camp
OTP	Out-patient therapeutic program
PLW	Pregnant and Lactating women
RRRC	Refugee Relief and Repatriation Commissioner
SAM	Severe Acute Malnutrition
SFP	Supplementary feeding program
SMART	Standardized and Monitoring Assessment for Relief and Transition
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
WaSH	Water, Sanitation and Hygiene
WFP	World Food Program
WHO	World Health Organization

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Executive Summary

Background:

Within Bangladesh's already vulnerable socio-economic environment, Cox's Bazaar District suffers from some of the lowest social and economic indicators in the country. Moreover the district's geographical location makes its inhabitants particularly vulnerable to natural disasters. Particularly the two upazilas, Ukhia and Teknaf, demonstrate some of the most alarming development indicators, with over 50% being poor in Ukhia and over 50% of the population being ultra poor in Teknaf according to the latest World Food Programme (WFP) poverty maps.

In 1991, around 250,000 refugees from the northern Rakhine State of Myanmar sought asylum in Bangladesh. They were hosted in around 20 refugee camps administered by the Government of Bangladesh. Over the years, the camps were consolidated and today, there are two official refugee camps which are located in the south-eastern district of Cox's Bazaar, Bangladesh. As of October 2011, according to the UNHCR database, the Kutupalong camp (KTP) in Ukhia sub-district and the Nayapara camp (NYP) in Teknaf sub-district host 11,679 and 17,689 refugees respectively.

The recent Nutrition Survey (2011) indicates that malnutrition (under-nutrition) rates in the refugee camps remain close to the international thresholds indicating serious public health issues in the camps. The overall morbidity situation was also found to be underprivileged and is highly correlated with the living conditions in the camps. Thus, to understand the high rates of morbidity and malnutrition among children and adults in the refugee camps in Cox's Bazaar, Action Contre la Faim (ACF) has carried out a Nutrition Causal Analysis (NCA) in the two refugee camps of Kutupalong and Nayapara in September – October, 2011.

Objective & Methodology

The main objectives of this NCA were to understand the immediate and underlying causes of malnutrition (according to the conceptual framework developed by UNICEF) in the camps and to develop recommendations for future actions in terms of programming in order to improve nutrition situation in the camps.

The analysis is based on a survey carried out using both qualitative and quantitative research methods and on information available in secondary sources on food security, health and nutrition. Using a pre-structured questionnaire and with a team of 10 surveyors, group/individuals interviews were carried out in 2 camps with groups of men and/or women/caregivers of different socioeconomic wealth groups, along with key informant interviews (village people, local authorities) and direct observation. In-depth interviews with key individuals (from institutions and authorities) were used to confirm the results of these discussions and were an important factor in designing the methodology and identifying the potential causes of malnutrition which were investigates in this study.

Main Findings:

A total of 536 households have been surveyed, 288 in KTP and 248 in NYP. In both camps, the average household size is around 6 and the majority of the households are male headed. Nutrition data indicates that the overall prevalence of Global Acute Malnutrition (GAM), among children aged 6 – 59 months is 16% while over half of the children in this age group are chronically malnourished (stunted). Although the rate of GAM is more prevalent in KTP than in NYP, the prevalence of chronic malnutrition is found to be higher in NYP than in KTP. Multivariate regression analyses indicate inadequate food assistance, inappropriate complementary feeding practices, poor psychosocial care, high morbidity particularly diarrhoea, low household income and poor hygiene practices are associated with malnutrition among children aged 6-59 months.

Inadequate food assistance given the reality of food sharing in the camp found to be one of the major causes of malnutrition. Food aid is the main food source of the refugees' meal. However not all refugees have access to this food ration. As a result, families share their overall food assistance amongst the household which lower the Kcal intake per person. Mean Kcal was also found to be a significant indicator of malnutrition in the regression analysis and was supported by the Focus Group Discussion (FGD).

Quantitative data indicates that the mean complementary feeding scores in the camps are quite low which is revelled by the qualitative information. Lack of household income and inadequate initial food assistance are the major contributing factors why children have poor diversity in their diet.

Both quantitative and qualitative information show that due to the heavy workload in the camps, it is very difficult for the mothers to spend quality time and devote proper care to their children. This leads to the young child often being left alone with their younger siblings or elderly relatives. Mother's heavy workload affects the interaction between mother and child and hampers the psychosocial care of the child.

Poor hygiene practice is one of the major factors related to malnutrition in the camps. Latrines are not adequate in the camps and they are not cleaned frequently enough. Both quantitative and qualitative data indicate that latrines are also inappropriate for children and in some cases for the women as well, which leads to open defecation. The consequences of these hygiene practices contaminate water sources and environments, increase morbidity and influence nutritional status of the children.

More details about the large variety of causes and their prioritisation are presented in the main body of the report.

Recommendations:

Recommendations to improve the nutritional situation of the camp population are divided in 2 groups depending more on external or internal factors. External factors are related to the overall context, issues over which the refugees have no control, and to which the solution to the problem would have to be brought in from outside the refugee community. Internal factors are related to lifestyle choices and culture related to the refugees, and solutions are more linked to changes that could be addressed within and by the refugee themselves.

Recommendations for issues dependent on external factors
   − The current food assistance schemes need to be re-evaluated and adapted accordingly, including an increase in the overall food allowance going into the camps.
   − Options to provide additional income to the refugees (e.g. authorization to work, voucher systems, conditional or unconditional cash transfer, etc.) have to be examined.
   − Increase in number of latrines (ideally family latrines) and "child friendly" latrines and solar light to ensure more safety at night around latrine blocks to increase usage of latrines.
   − Access to water in Nayapara camp needs to be facilitated especially during the dry season.
   − Increase in fire wood or alternative cooking fuels/means and increase use of fuel efficient stoves could overcome this issue.
   − Reducing the crowded setting in the camps to support working on healthy behaviours and lifestyle which will otherwise be difficult to achieve.

Recommendations for issues dependent on internal factors
   − Change from IEC dominated community programming approaches to more appropriate behaviour change strategies (BCC) and psychosocial models to successfully change behaviours.
   − Focus of such approaches on:
       o Appropriate complementary feeding
       o Breast feeding practices

- o Appropriate psychosocial care of children
    - o Food habits limiting nutrient intake (for both women and children)
    - o Hygiene practices
    - o Practices around waste disposal.
- Information, Education and Communication (IEC) concerning the long-term repercussions of child malnutrition to the community.

1. Introduction

1.1.   Political and socio-economic context

Within Bangladesh's already vulnerable socio-economic environment, Cox's Bazaar District suffers from some of the lowest social and economic indicators in the country[1]. Moreover the district's geographical location makes its inhabitants particularly vulnerable to natural disasters.

The two upazilas Ukhia and Teknaf demonstrate some of the most alarming development indicators, with over 50% of the population being ultra poor in Teknaf and over 50% being poor in Ukhia according to the latest World Food Programme (WFP) poverty maps.

In 1991, around 250,000 refugees from the northern Rakhine State of Myanmar sought asylum in Bangladesh. They were hosted in around 20 refugee camps administered by the Government of Bangladesh. In particular, the Refugee Relief and Repatriation Commissioner (RRRC) under the Ministry of Food and Disaster Management (MFDM) were made responsible for the refugee operation. In the following years until 2005, over 230,000 refugees were repatriated to Myanmar.

Figure 1: Map of Bangladesh

Over the years, the camps were consolidated and today, there are two official refugee camps. They are located in Bangladesh's south-eastern district of Cox's Bazaar. As of October 2011, according to the UNHCR database, the Kutupalong camp (KTP) in Ukhia sub-district and the Nayapara camp (NYP) in Teknaf sub-district host 11,679 and 17,689 refugees respectively, all of whom are registered with the United Nations High Commissioner for Refugees (UNHCR). In addition, there are an estimated 200,000 – 400,000 undocumented Myanmar nationals living in villages and sites in the area. Out of this undocumented population, approximately 13,000 live in the Leda site near Nayapara camp and approximately 20,000 live in the Kutupalong makeshift site adjacent to Kutupalong camp.

The Government of Bangladesh (GoB) permits registered refugees living in the camps to receive international assistance however; they are not officially permitted to leave the camps or to engage in income generating activities outside the camps.

Organization of the Camps
The GoB through the RRRC office is responsible for refugee shelters, camp offices and law and order. The RRRC, through the appointed Camp-in Charges (CIC)[2], ensures the daily

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[1] UN assessment of Cox's Bazaar, UNDP, UNFPA, UNICEF and WFP, Sept. 2007
[2] There is one CIC in each camp

administration, coordination and delivery of services to both camps. The CIC oversees the sanitation activities in Nayapara camp, including the maintenance and repair of sanitation facilities[3].

UNHCR is present in both camps with a specific mandate for the protection of the refugee population including voluntary repatriation. UNHCR supports and coordinates the basic humanitarian assistance activities of partner agencies. UNHCR is also responsible for repatriation kits and cash grants for refugees returning to Myanmar[4].

Each camp is divided into seven blocks (sub-units) and each block consists of several sheds (from 39 to 90 sheds per block). Each shed consists of 6 -10 rooms. There are two different systems of registration in the camp. Refugees registered by UNHCR have a "yellow sheet" which gives them access to protection and humanitarian assistance. However to receive the general food distribution, the refugees need to be registered by the GoB too. Discrepancies exist between the UNHCR and GoB lists and 17% of refugees in KTP and 21.5% in NYP[5] are not receiving the general food distribution as of June 2011. Some refugees can also host family members who are not registered either by the UNHCR or the GoB.

1.2.   Health situation

Health facilities and activities
Health services for refugees in Kutupalong and Nayapara camps are provided under the overall coordination of the Civil Surgeon of the Ministry of Health and Family Welfare (MoHFW). The various health services in the camps include the Out-Patient Department (OPD), In-Patient Department (IPD), antenatal, delivery and postnatal care, laboratory services and immunisation. The healthcare units in the camps provide primary healthcare and are linked through referral services to the MoHFW hospitals in Cox's Bazar and Chittagong for secondary and tertiary healthcare services respectively.

Morbidity
UNHCR with the support of partners, maintain a Health Information System (HIS) in order to collect and track all health related data in the camps and monitor morbidity and mortality on a weekly basis. Overall, the morbidity is highly correlated with the living conditions in the camps and seasonality. In the pre-raining season the population is generally suffering from respiratory tracts infections, skin infection and fever. Action Contre la Faim (ACF) field monitoring reports show that upper respiratory tract infection remains the major cause of admission in the IPD but mortality is low.

Immunization
The MoHFW in partnership with UNHCR is very active and run 100% immunization coverage for children. In February 2011, 100% of the children were immunized against Measles, Tetanus, Polio and Diphtheria[6]. However, according to reports from last year[7], 98.2% of the children were fully immunized (all 8 vaccines); so even though it had not reached 100%, it is high. The coverage for the post partum vitamin A distribution also reached 100%[8].

Malnutrition rates and anaemia
An annual health and nutrition survey has in principle been conducted every year. Malnutrition rates remain throughout the years close to international thresholds indicating serious or emergency situations, with some reduction for acute malnutrition in 2008 and for anaemia in 2009. The 2011 survey showed that acute malnutrition rates increased again while anaemia rates reduced considerably and chronic malnutrition continued to decrease[9]. Nonetheless rates, other than for anaemia, are above thresholds indicating serious public health issues.

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[3] WFP/UNHCR (2008): Joint Assessment Mission, Bangladesh. Final report
[4] WFP/UNHCR (2008): Joint Assessment Mission, Bangladesh. Final report
[5] UNHCR database, Ocotober 2011
[6] HIS, April 2011
[7] ACF Nutrition and Health Survey, Kutupalong and Nayapara camps, April 2010
[8] HIS, April 2011
[9] ACF Nutrition and Health Survey report, Kutupalong and Nayapara camps, July 2011

Figure 2: Nutrition and health survey results 2006 – 2011, children 6 – 59 months

Nutrition and health survey results 2006 - 2011

* The figures presented for 2010 are indicative as results were statistically valid at camp level only and not weighed to account for difference in camp population when joined.

- ◆ Global Actute Malnutrition
- ■ Stunting
- ▲ Anaemia
- —— Treshold for GAM
- —— Treshold for Anaemia & Stunting
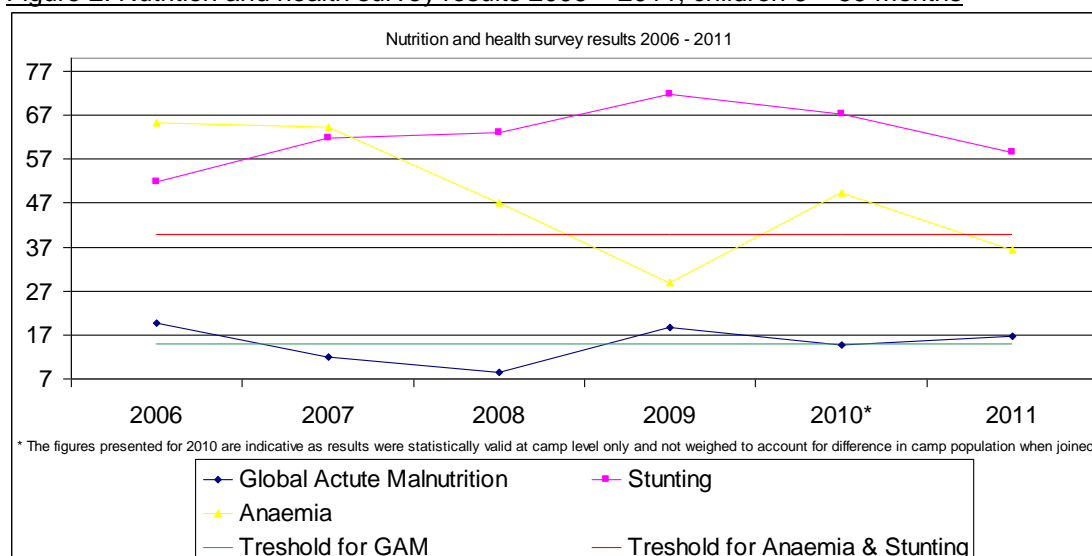
Following the recommendations of the WFP/UNHCR/GoB Joint Assessment Mission (JAM)[10], a blanket feeding programme was launched in December 2010 for all children between 6 and 23 month old. During the same year the distribution of wet rations on a daily basis through the Supplementary Feeding Programme (SFP) was switched to a weekly dry ration distribution. As specifically acute malnutrition rates for children 6-23 months had lower rates in the 2011 survey compared to 2010, the blanket feeding seemingly played a protective role for these children.

ACF is in charge of the nutrition programme in the refugee camps and runs a full nutrition package with therapeutic feeding (TFP), supplementary feeding (SFP) and community awareness. Sprinkles (micronutrients supplementation) are distributed through the programme to all vulnerable groups (children below 5, adolescent, pregnant and lactating women). These activities are completed by a care practise and mental health component aimed to improve family and caretaker ressources to provide proper care to child and promote its health and development.

1.3.   Food security

In general, refugees have been settled in the camps for around 20 years. Food aid is the main source of food and rice is the main element of the refugees' meals. Access to vegetables is limited, especially during the lean seasons[11].

Food distributions are organised by WFP via the Bangladesh Red Crescent Society (BRCS) in both camps on a fortnightly basis. The food ration (2190 kcal/person/day) provided by WFP is comprised of rice, blended food, oil, salt, sugar and pulses. About 17% of refugees in KTP and 21.5% in NYP[12] living in the camps are not receiving this food ration as they are registered by UNHCR but are not registered with the Government of Bangladesh.

In addition to the general food distribution additional food is provided to vulnerable groups such as pregnant and lactating women (PLW) and children between 6 and 23 months through the supplementary feeding programme. Finally, in order to promote the education of children, a fortified snack of high energy biscuits is provided to primary school children and adolescent literacy learners.

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[10] Joint Assessment Mission, WFP, UNHCR, GoB, May – June 2010
[11] Two recognized lean periods : one between September and December and one between February and May
[12] UNHCR database, October 2011

In order to improve their food security, some refugees are involved in kitchen gardening activities, poultry rearing and some small activities such as tea shops and daily labour.

1.4.   Water, Sanitation and Hygiene (WaSH)

Basic water and sanitation infrastructure in Kutupalong camp consist of approximately 82 water points, 128 blocks of latrines and 56 washrooms. The water points are tube-wells fitted with hand pumps and drainage aprons and the superstructure of each latrine block is made up of 5 individual, squat toilets each draining into a vault style tank that is emptied on average every 1-2 months. These tube-wells provide approximately 53 liters of clean water per person per day, while the latrine blocks provide a sanitary facility at approximately 17 people per toilet.

Nayapara pumps surface water from ponds to 3 different treatment facilities serving clean water at 16 liters per person per day. They also use communal latrine blocks similar to Kutupalong which provide a sanitary toilet for roughly every 22 persons. Water scarcity is a known problem in Nyapara during the dry season linked to specifc geographic and geological settings.

2. NCA technical background

2.1.   Introduction

A nutrition causal analysis (NCA) investigates and presents a 'multi-sectoral' overview of the contributing factors affecting nutritional status within a given community.

Though there is now an agreed upon 'essential package' of nutrition actions, implementation of this package without an analysis of the context may not achieve necessary changes in factors that are not only contributing to the problem but that can limit the reach, coverage and impact of these essential actions. The main objective of such NCA is for improved programming at a community level, not to have an overall understanding of causes at national level.

To achieve this the NCA is necessarily multi-sectoral and specific to a local context as causes and pathways will often vary from one livelihood or from one population to another. ACF together with scientific partners (Tuft's University, IRD4) invested during 2010 and 2011 to develop a new standardized method for NCA that can incorporate the elements described above and applied across various contexts. The draft methodology (version May 2011) was used for the NCA in the refugee camps in Cox's Bazaar while the full methodology is being finalized.

2.2.   Conceptual framework of malnutrition

The NCA is based upon UNICEF framework[13] of malnutrition which is a causal framework (see appendix 1). While this framework is still valuable, there are some constraints / limits inherent to the framework that needs to be addressed when undertaking an NCA:

2.2.1. Specify the framework outcome "malnutrition and death"

"Malnutrition" includes overnutrition and undernutrition. As we focus only on undernutrition, we will refer specifically to undernutrition. Undernutrition includes underweight, stunting and acute undernutrition. While causes may differ depending on which type of undernutrition we refer to as an outcome, the framework remains valid.

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[13] http://www.ceecis.org/iodine/01_global/01_pl/01_01_other_1992_unicef.pdf

It is important also to specify factors leading to undernutrition and/or death. Death can occur after undernutrition but not necessarily, as it can be a direct consequence of insufficient health.

2.2.2. Undernutrition is an outcome but also an input

Undernutrition episodes on children have short-term (mortality; morbidity; disability) and long-term consequences (adult size; intellectual ability, economic productivity, reproductive performance, metabolic and cardiovascular disease)[14]. Some of these consequences can increase the risks of facing new undernutrition episode leading to vicious cycles.

- nutrition life cycle
It refers to intergeneration links. For example, it is well known that women who have an episode of undernutrition have more risks to deliver a low birth weight child who in turn has more risk to face undernutrition episodes. Also, children facing undernutrition will have less economic opportunities in the future which can also be a risk factor for its future descendants. Malnourished children usually come from families who suffer from many disadvantages. They also tend to have unstable family units, with large numbers of closely spaced children[15]. And finally the reduced psychological status of malnourished mothers has impacts on care practices which again lead to child malnutrition.

- Infectious cycle
It is partly mentioned in the UNICEF framework narrative: « Disease, in particular infectious disease, affects dietary intake and nutrient utilization. In most cases, malnutrition is the combined result of inadequate dietary intake and disease ». It is materialised by the arrow between dietary intake and Disease.
However undernutrition itself is also reducing immunity, increasing health risks and inadequate food intake. Therefore, from a methodological perspective, it needs very careful analyse to determine from undernutrition, health and food intake, which one is the "cause" of the other.

2.2.3. Envisage the framework in temporal dynamics

The conceptual framework remains valid at all time but for methodological purpose, it is important to emphasize that each risk factor can dramatically evolve over time at all levels (community / household / individual).

We can differentiate 3 useful time patterns:

- Seasonality: refers to seasonal predictable variations (hunger gap period; malaria season…)
- Shocks: refers to crisis situations having a large impact (drought; malaria outbreak…)
- Trends: refers to medium-term and long-term changes (climate change; health services development…)

To overcome those constraints many organisations have tried to adapt the framework to their specific needs. Several adaptations of the framework exist. ACF is currently developing its technical strategy which includes the revision of the framework (see below). It is not finalised and adopted officially by ACF but is providing better insight than the UNICEF generic framework.

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[14] Black RE and Al, 2008. "Maternal and child undernutrition: Global and regional exposures and health consequences"
[15] A Review of Studies of the Effect of Severe Malnutrition on Mental Development, Grantham-McGregor, 1984

Figure 3: ACF adopted Nutrition Framework based on the UNICEF model
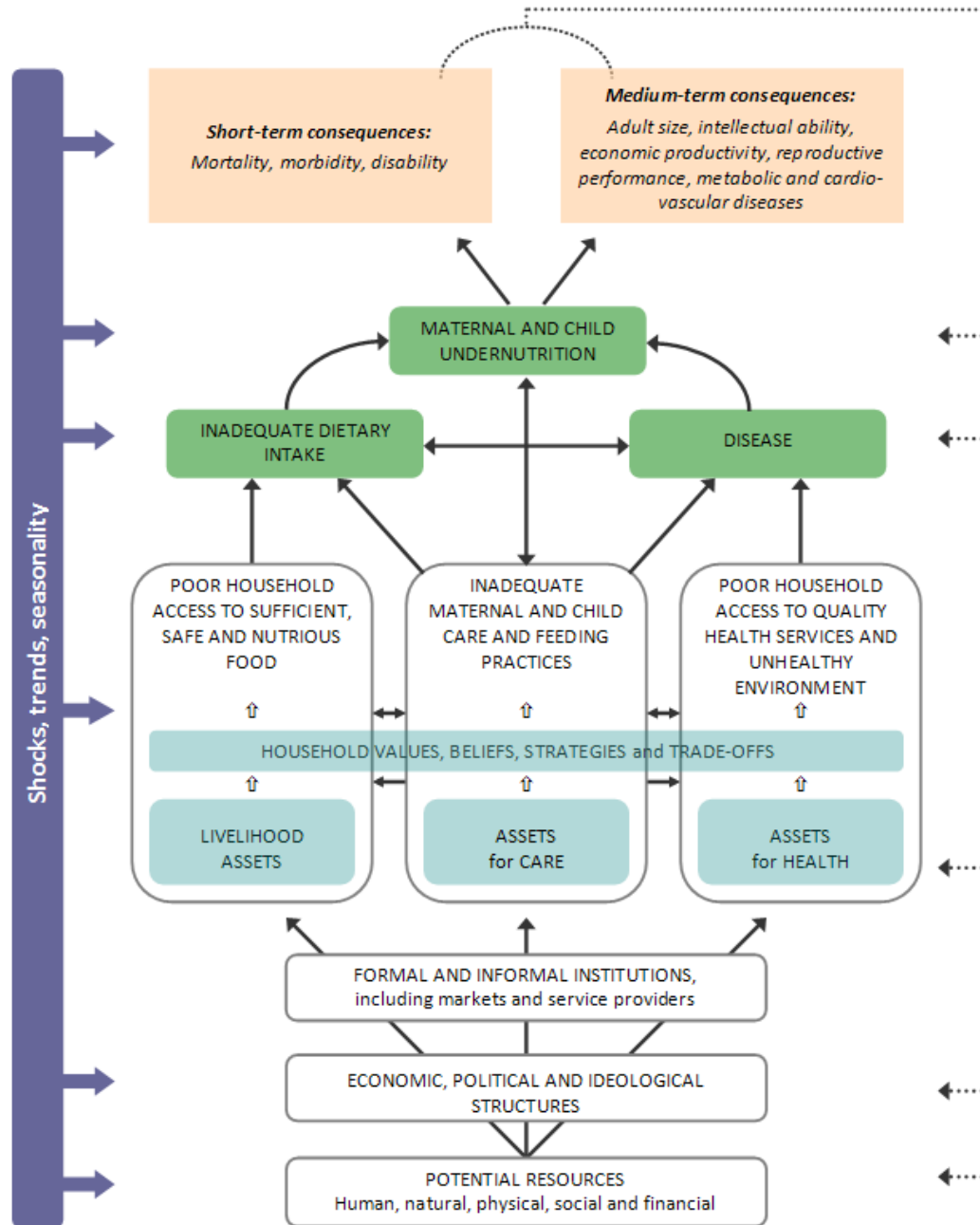
2.2.4. General objectives of a NCA

Based on above details a Nutrition Causal Analysis (NCA) is designed to attempt to answer the following questions:

1. What are the factors that are significantly associated with stunting or wasting among children in this population?
2. What are the causal 'pathways of undernourishment' by which certain children in this population have become stunted and/or wasted?
3. Are there clusters of factors and pathways associated with wasting and stunting that can be expressed as malnutrition syndromes, or profiles? What household or community characteristics are associated with these clusters that can be used for targeting?
4. What are the dynamics (seasonality, shocks and trends) of malnutrition in this population?

5. Which factors, clusters of factors and pathways explain most of the malnutrition observed in this population?
6. Which sets of factors and pathways are likely to be the most modifiable by ACF and other stakeholders within a given context?

3. Objectives

For this specific NCA the overall and specific objectives agreed by ACF, UNHCR and WFP were:

Overall objective
- To better understand the causes of undernutrition in the refugee camps of Kutupalong and Nayapara.

Specific objectives
- Define an appropriate detailed methodology geared to understand the likely causes of undernutrition in the camps based on available information
- Have a detailed understanding of immediate and underlying causes of undernutrition in the camps at the end of the survey
- Establish a prioritization of identified causes as to be able to define recommendations for programming to improve the nutrition situation in the camps based on the NCA findings

4. Methodology

The NCA uses complementary *qualitative and quantitative approaches to data collection and analysis.* The quantitative approaches were selected to provide a statistically representative picture of risk factors and their relationship to different types of malnutrition, while the qualitative approaches enable an in-depth exploration of the dynamic processes and aid in establishing evidence of causality. Though some of the steps are iterative, generally speaking, the NCA followed a process that included the following steps:

1. **Developing hypothesis**
   a. Analyzing secondary data to inform preliminary understanding of causality, seasonality of malnutrition and underlying causes, and long-term trends (locally and regionally)
   b. Undertaking exploratory qualitative investigations to review and characterize each of the underlying causes of malnutrition.
   c. Holding expert stakeholder meetings to generate a pool of candidate hypotheses that require further testing.
2. **Gathering evidence**
   a. Conducting a cross-sectional household survey for assessing and estimation of prevalence of malnutrition within the population and magnitude and severity of risk factors and their association with malnutrition.
   b. Carrying out qualitative exploration of survey results, to assess risk factors within dynamic causal pathways
3. **Weighing and understanding the evidence**
4. **Determining the highest priority causes**
   a. Triangulating evidence from different data sources
   b. Ruling out hypotheses not well-supported by evidence
   c. Ranking risk factors and pathways based on statistical results and community perceptions of modifiability
   d. Reviewing findings with stakeholders and determine highest priority and potentially most modifiable causes.

In the context of the NCA in the Kutupalong and Nayapara refugee camps this translated into the following methodological details.

4.1.　　Development of candidate hypothesis

Selected secondary data on nutrition and related situation was reviewed. Key stakeholder interviews were carried out with local authorities (RRRC) and international and national partners[16] in Cox's Bazaar involved in the refugee operations. Both activities were planned and carried out during the first two weeks of July 2011.

From the information gathered through this exercise the following main hypothesis of causes of malnutrition were established for Nayapara and Kutupalong as a basis for the data collection and analysis:

Hypotheses

Hypothesis 1: Inadequate food assistance

Hypothesis 2: Limited access to food

Hypothesis 3: Inadequate nutrient intake

Hypothesis 4: Unequal intra HH food distribution

Hypothesis 5: Non-exclusive breastfeeding practices

Hypothesis 6: Inappropriate complementary feeding practises

Hypothesis 7: Inadequate psychosocial care practices

Hypothesis 8: Poor mental health of primary caregiver

Hypothesis 9: Poor health seeking behaviour

Hypothesis 10: Low birth weight

Hypothesis 11: Unhygienic cooking practices

Hypothesis 12: Poor access to water

Hypothesis 13: Inappropriate usage of latrines

Hypothesis 14: Poor waste disposal

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[16] UNHCR, WFP, RTMI, staff from MoHFW, RTI, THAI

In the form of a causal pathway tree they can be presented as below:

Figure 4: Tree of main hypothesis for causes of malnutrition in Kutupalong and Nayapara refugee camps based on UNICEF framework.
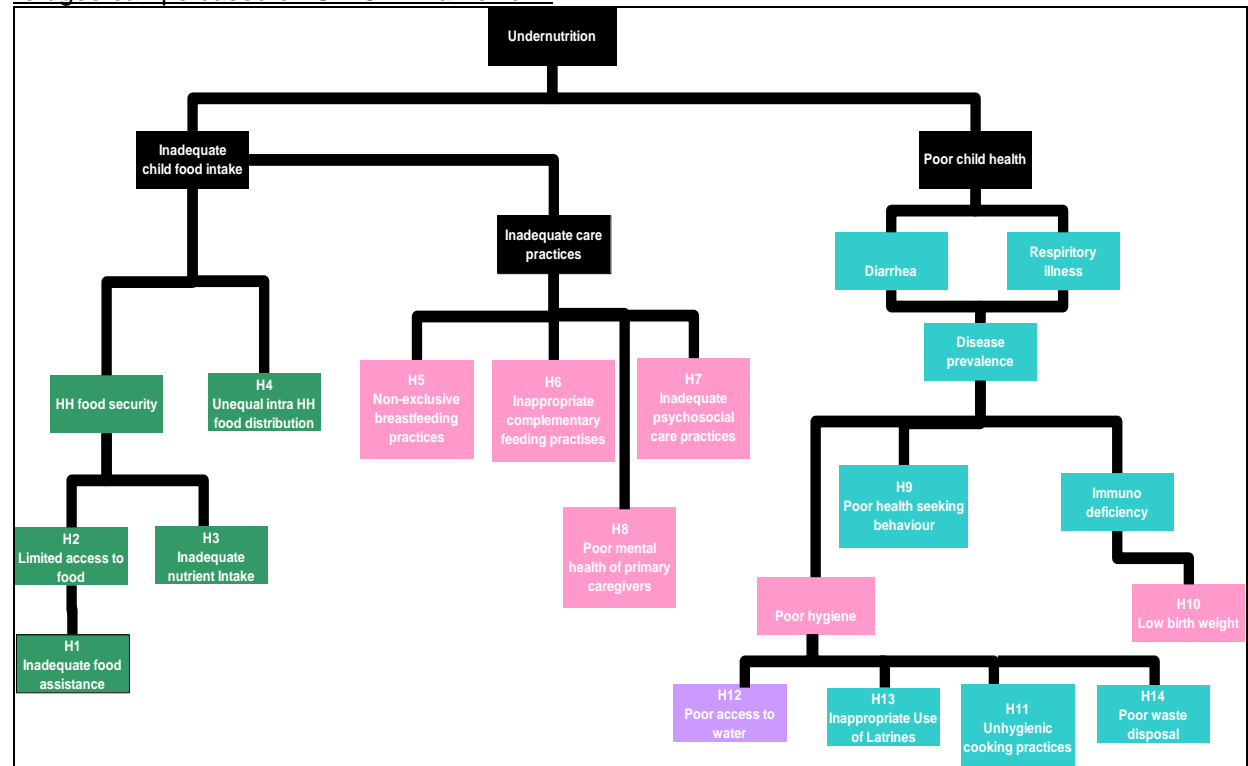
4.2. Data collection methodology

Data collection took place:
- From the 27th September until 08th of October 2011 for Kutupalong camp,
- From the 09th until the 18th of October 2011 for Nayapara camp.

The quantitative surveys were conducted following SMART[17] methodology, a standardized and simplified survey method. This method ensures that each household/individual in the camps will have the same chance to be chosen.
The qualitative data collection was done through Focus Group Discussions and observation at household level and in the camps.

4.2.1. Sample size and selection for quantitative data collection

The target population was UNHCR registered refugees and verification of their registration was based on GoB family book and UNHCR yellow sheet. Apart from the household questionnaire the target population for the individual questionnaire was:
- Children aged 6-59 months

No fully updated population list was available and therefore it was not possible to perform simple or systematic random samplings for 2011. Thus, these surveys were carried out using a two-stage cluster sampling method.
- Cluster assignment was done using the ENA[18] delta software according to camp population data per block,
- Household selection (the sampling unit) was done at field level using the systematic random sampling method.

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[17] Standardized Monitoring and Assessment of Relief and Transitions
[18] Emergency Nutrition Assessment

536 Official Refugee Households were surveyed, 248 HH's over 41 clusters in Nayapara and 288 over 48 clusters in Kutupalong respectively with each cluster representing 6 households only due to the amount of time needed in each household. These clusters were selected randomly following the SMART methodology and cluster distribution can be found in appendix 2.

4.2.1.1. Household and individual selection

Household selection

In statistical terms, all sampling methods are equivalent, as long as they result in a representative sample. The sampling scheme that should be chosen is determined mainly by the size of the population and the physical area and organization of the households.

Counting household

Usually, if the cluster has to be taken from a large population (more than 250 HH), the population has to be subdivided into segments. However, as the camps are relatively small, clusters were done in areas with an average of 35 households. Therefore, no division was required.

Each team leader was in charge of counting all the households present in the selected area chosen for the cluster. For each house, the team leader enquired about how many households were living in the shed and if they were registered. Once this information was obtained, a number was written on the door according to the number of households (e.g. 1 for one household, 1, 2, and 3 for 3 households). If the door was closed, a neighbor was asked about the number of households living in the room and their whereabouts.

Selecting households for the cluster

Systematic sampling

After counting and assigning a number to each house,

- the survey team divided the total number of HH by the number of HH needed per cluster (6 HH for each camp) to find the sample interval of the cluster.
- they then randomly selected a number between 1 and the rounded number of the sample interval. This number was the 1st HH to be surveyed.
- the number of the 2nd HH is the number of the first HH + the sample interval, the total being rounded.
- the same procedure was followed to determine the number of selected HH.

Individual selection

One child from 6 to 59 months old in the selected households was included in the survey for the anthropometric measurements and additional data. In case of more than one child in a household the child was randomly selected from within the household. The Head of household or another household representative was asked the questions from the household questionnaire.

4.2.2. Sample size and selection for qualitative data collection

The qualitative data collection was done through observation at household and camp level and Focus Group Discussions. Participants for the FGD were selected from the camp population. A total of 16 FGD were held (8 in each camp) with a total of about 280 participants (200 female and 80 male) participated in the groups. The number is not exact as the FGD were certainly fully voluntarily and participants sometimes left and joined or returned during the discussions which lasted between 2 and 4 hours for each FGD.

4.2.3. Questionnaires and forms

The household questionnaire and the nutrition status and observation form were the main tools to collect standardized quantitative information. They were created in such a way to ensure that quantitative information was collected on issues related to the main hypothesis.

4.2.3.1. Household questionnaire

Household: For the purposes of the NCA a household was defined as a group of people who live together and routinely eat out of same pot.

Information collected in the household questionnaire was grouped in five main areas, household demographics, food security, care practices, WaSH and health. Details collected in theses sections were:
- composition of the family
- registration and employment status
- household income and expenditure
- information concerning Food Aid and food production
- information concerning food diversity (HDDS, IDDS)
- information around food utilization(cooking and storage)
- information concerning care practices including IYCF practices
- information related to water, sanitation and hygiene
- information related to health status and health seeking behaviour

The complete questionnaire can be found in appendix 7.

4.2.3.2. Nutrition status and observations

The nutrition status and observation from combined the nutritional assessment of the selected child as detailed below with observation related to living conditions in and around the house.

Nutritional status

The factors collected that enabled us to establish the nutrition status of the child were: age[19], sex, weight, height/length and Mid Upper Arm Circumference (MUAC).

Observation

The observation from was made up to gather additional information related to the areas of general living conditions of the household, care practices, water & hygiene and sanitation and cooking hygiene.
The complete form can be seen in appendix 7.

4.2.3.3. Focus Group Discussion guides

Specific topics were chosen for each FGD to gather information on all hypothesis and the topics were grouped into 6 main categories which were covered in each camp:
- 2 groups focused on information related to nutrition, malnutrition and food security (perception and knowledge about nutrition and malnutrition, food ration, income, food production), mixed male and female
- 2 groups focused on food use and utilization (cooking practicers and intra household food distribution), women only
- 1 group focused on care practices (breastfeeding, complementary Feeding and general care practices), women only
- 1 group focused on psychological health, women only
- 1 group focused on water and sanitation, mixed male and fermale
- 1 group focused on health and hygiene, mixed male and fermale

For each group a discussion guide was drawn up and followed. The groups were carried out by the expatriate NCA expert, the deputy and the help of female psychosocial workers.

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[19] The age information was collected by checking official registration documents (birth certificate, yellow card, etc.). In case no document was available or a doubt about the age existed a local event calendar was used to estimate the age in months. The calendar is attached in appendix 5

4.3. Data analysis

Data analysis was a process of combining statistical analysis of the quantitative data with the qualitative data collected through the observations and FGD through as method of "process tracing". Process tracing is a 'loose' method that is typically accomplished by amassing evidence from various sources (e.g. interviews, content analysis, participant observation) that, when reviewed together, can be used to assess the plausibility of various elements in a causal chain. Where evidence is weak for one or more links in the chain, the hypothesis is called into question and may be rejected. The process of compiling evidence to test the hypothesized causal pathway is iterative and can not only result in one or more hypotheses being rejected, but can also produce evidence of alternative, and more plausible, causal relationships." For this process to take place the following steps of data analysis were established.

Table 1: Steps in data analysis

STEPS	JUSTIFICATION
Database Cleaning	Re-verification of quality of data entry and marking/changing data found wrongly entered into electronic data base. Exclusion of incomplete or inconsistent data from analysis.
Creating Variables	Including nutrition outcomes and standardised indicators into variables for statistical analysis
Descriptive Analysis	Including nutrition anthropometric usual measurements (wasting rates; by age groups; clusters; sex)
Classify variables and critically review by levels	Classify into basic / underlying / immediate levels
Link qualitative and quantitative data	Process tracing
Regression Analysis	Identify priority causes
Cluster Analysis	Identification and characterisation of groups at highest risk of malnutrition
Path Analysis	Testing the causal sub model

Data analysis was implemented using SPSS software and the AMOS extension was used for path analysis. Malnutrition rates were assessed by entering the data in the software ENA (version May 2011).

4.4. Principle of path analysis

This modelling methodology is particularly adapted for causal analysis. As mentioned in all documentation available on this analysis[20] it will not be able to prove for causality but will be able to provide further evidence on the model built. The most important part of this analysis is to start with a very well defined causal pathway drawn from the qualitative work.

The Path Analysis is a series of regression analysis that will identify the significant variables determining an outcome and through which path. This type of analysis is particularly adapted to an NCA but is quite complex and time consuming. Therefore only the most important hypotheses are detailed with this type of analysis. It is important to remind the importance of the qualitative work before undertaking a path analysis.

4.5. Presentation of results of hypothesis

The hypothesis will be presented as a problem tree. The problem tree is constructed following three steps as detailed below:

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[20] For further details: See http://www.ats.ucla.edu/stat/seminars/,
http://people.exeter.ac.uk/SEGLea/multvar2/pathanal.html,
http://psych.unl.edu/psycrs/350/unit4/path.pdf

Step 1: Modelling factors affecting one output
Step 2: Ranking factors based on qualitative work
Step 3: Quantifying relative importance between factors through correlations
Step 4: Quantifying relative importance of factors affecting one output using path analysis

Figure 5: How to read a problem tree

4.6.   Training and supervision

4.6.1. Training

A total of 12 people (a deputy PM, a data entry officer, 5 team leader and 5 surveyors) were recruited and trained to work on the NCA by the expert expatriate. Assistance to the NCA and the training was equally provided by the ACF deputy nutrition coordinator and various senior field staff from the ACF cox's Bazaar office. A theoretical training on survey methodology (household selection, target population…) anthropometric measurement, nutritional indicator (weight per height), questionnaires and other survey tools (event calendar, random number table…) was followed by standardization tests and a field test
All five teams were composed of one surveyor and one team leader.
One surveyor guideline with instructions and a materiel kit was provided to each team.

4.6.2. Supervision

During the two data collection periods, teams were supervised by the ACF expatriate in charge of the NCA and the deputy. Feedback (results, organization, and management) was provided to the teams on a daily basis.
Data collected were transferred every evening to the ENA software delta version. This allowed daily checking of the work and its quality. A meeting was held every morning between the team and the supervisors to comment on results and making readjustments if/when necessary.

5. Results

5.1.   Household results

A total of 536 household have been surveyed, 288 in Kutupalong and 248 in Nayapara. The average (mean±SD) household size is equal in both camps with 6.5±2.2. In Kutupalong 73.6% of head of household were male and this proportion similar with 71.4% is Nayapara. The years of formal education for the head of household (1.7 and 1.1) and for the primary caregiver (1 and 0.5) were very low in Kutupalong and Nyapara.

Table 2: Household Demographic Characteristics

	KTP		NYP	
	Mean	**Std. Dev.**	**Mean**	**Std. Dev.**
Mean Household Size	**6.5**	**2.2**	**6.5**	**2.2**
Male Headed Households	73.6%		71.4%	
Female Headed Households	26.4%		28.6%	
Mean Years of Education HH Head	1.7	2.9	1.1	2.6
Mean Years of Education Primary Care Giver	1	1.9	0.5	1.3

5.1.1. Wealth Ranking

Although across the camps, the situation for the official refugees are relatively homogenous in so much as they have equal access to facilities, they are equally not supposed to work, and most have equal access to the food ration, there still exist some discrepancies in the ability to meet their food needs, therefore it is appropriate to analyse the data across these relative wealth rankings adapted to the ability to meet food needs. We use the WFP (2007) Food Access and Utilization Wealth Ranking, derived from proportional piling during focus groups within their block, based on perceptions of who found it easier and more difficult to manage their food needs. The four identified groups and results are presented in the table below.

Table 3: Wealth ranking of the population in Kutupalong and Nayapara

Group	Description	All	KTP	NYP
1	Volunteers and their relatives	4.9% (N=26)	5.6% (N=16)	4% (N=10)
2	HH with men earning income	37.9% (N=203)	35.8% (N=103)	40.3% (N=100)
3	HH with men who do not work	32.6% (N= 175)	35.4% (N=102)	29.4% (N=73)
4	Female headed HH	24.6% (N=132)	23.3% (N=67)	26.2% (N=65)
Total		536	288	248

5.1.2. Nutrition results

It is important to reiterate at this stage that this is <u>not</u> a nutrition survey, rates are indicated as descriptive information, but should not be interpreted as exact nutritional prevalence as the methodology and sampling used in an NCA are somewhat different from those of a standard nutrition survey.

Only nutrition results directly related to the analysis of the NCA are here presented, i.e. wasting and stunting results for children 6-59 months in W/H z-scores and MUAC.

5.1.2.1.   Age and sex distribution

The sex ratio of the overall sample is 1.0 and is within the normal range of 0.9 – 1.1 showing that there is no sex bias in the sample. In the age groups of 30 – 41 and 54 – 59 months girls seem however underrepresented and overrepresented in the 6 – 17 months group. The distribution per age group indicates also that there is no strong age bias as this distribution is similar to the demographic distribution for children between 6 – 59 months in developing countries[21] even though the proportion of children 6 – 17 and 54 – 59 months is slightly lower while the 18 – 53 months age groups is slightly higher. The age ratio of 6 – 29 months to 30 – 59 months is 0.9 and is also around the expected value of 1.0.

Table 4: Distribution of age and sex of sample both camps

	Boys		Girls		Total		Ratio
AGE (mo)	No.	%	no.	%	no.	%	Boy:girl
6-17	42	43.3	55	56.7	97	18.6	0.8
18-29	78	53.1	69	46.9	147	28.2	1.1
30-41	70	55.1	57	44.9	127	24.3	1.2
42-53	60	48.8	63	51.2	123	23.6	1.0
54-59	15	53.6	13	46.4	28	5.4	1.2
Total	265	50.8	257	49.2	522	100.0	1.0

Table 5: Distribution of age and sex of sample KTP

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	23	44.2	29	55.8	52	18.1	0.8
18-29	42	54.5	35	45.5	77	26.8	1.2
30-41	43	55.1	35	44.9	78	27.2	1.2
42-53	26	41.3	37	58.7	63	22.0	0.7
54-59	11	64.7	6	35.3	17	5.9	1.8
Total	145	50.5	142	49.5	287	100.0	1.0

Table 6: Distribution of age and sex of sample NYP

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	19	42.2	26	57.8	45	19.2	0.7
18-29	36	51.4	34	48.6	70	29.9	1.1
30-41	27	56.3	21	43.8	48	20.5	1.3
42-53	34	56.7	26	43.3	60	25.6	1.3
54-59	4	36.4	7	63.6	11	4.7	0.6
Total	120	51.3	114	48.7	234	100.0	1.1

5.1.2.2.   Malnutrition in both camps

Acute malnutrition
The prevalence of GAM, MAM and SAM are respectively 16.1%, 14% and 2.1% for the whole sample of children 6 – 59 months. The prevalence of oedema was 0.2% (1 case).
The design effect for the GAM is 1.0 which indicates that the global acute malnutrition was not cluster located and is randomly distributed among the clusters.

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21 The normal expected proportions are respectively 23.9%, 25.5%, 22.4%, 19.2% and 9.0% for the different age groups.

Table 7: Estimated prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in 6-59 months, Kutupalong and Nayapara Camp, October 2011, Based on WHO standards.

	All n = 522		Boys n = 264		Girls n = 257	
	N	%	N	%	N	%
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	84	16.1 %	45	17.0 %	39	15.2 %
95% Confidence Interval		13.2 - 19.5		13.0 - 22.0		11.3 – 20.1
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score, no oedema)	73	14.0 %	39	14.8 %	34	13.2 %
95% Confidence Interval		11.3 - 17.2		11.0 - 19.6		9.6 - 17.9
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	11	2.1 %	6	2.3 %	5	1.9 %
95% Confidence Interval		1.2 - 3.7		1.0 - 4.9		0.8 – 4.5

The WHZ distribution curve of the sample is overall shifted to the left of the equivalent curve from the WHO standards. The shift of the entire curve indicates that all the children and not only those below a given cut-off are affected.

Figure 6: Weight for height Z-score distribution curve, Children aged 6 to 59 months, WHO standards, Kutupalong and Nayapara camp
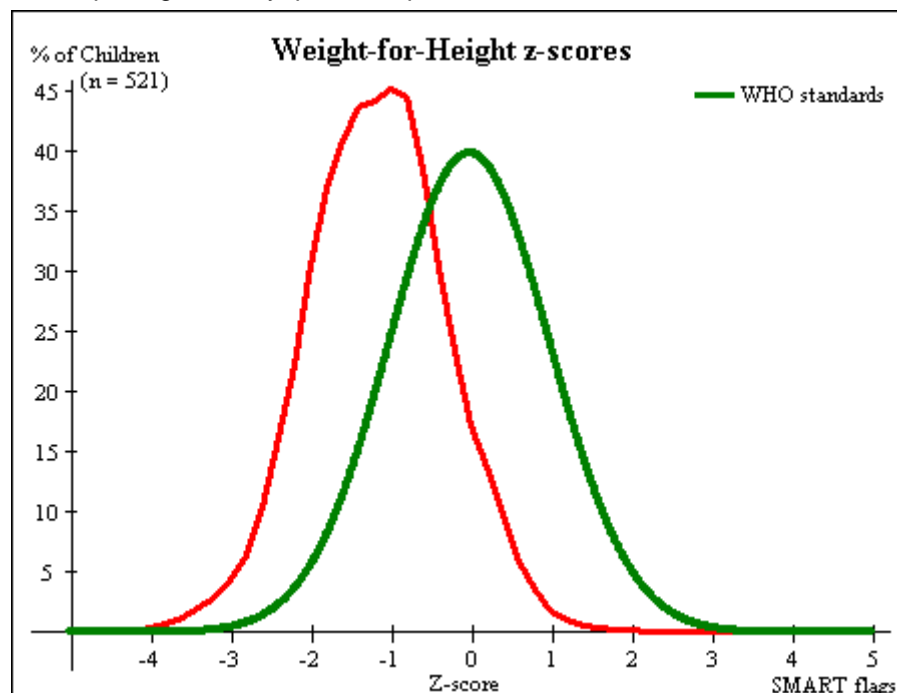
According to the MUAC analysis, 1% of children were severely malnourished, 8% moderaltey malnourished and 9% at risk of malnutrition. Overall 18% of children are malnourished or at risk of malnutrition.

Table 8: Estimated prevalence of acute malnutrition based on MUAC (and/or oedema) and by sex in 6-59 months, Kutupalong and Nayapara Camp, October 2011, Based on WHO standards.

	All n = 523		Boys n = 265		Girls n = 257	
	N	%	N	%	N	%
Prevalence of global acute malnutrition (< 125 mm and/or oedema)	47	9.0 %	13	4.9 %	34	13.2 %
95% Confidence Interval		6.8 - 11.7		2.9 - 8.2		9.6 – 17.9
Prevalence of moderate acute malnutrition (< 125 mm and >= 115 mm, no oedema)	42	8.0 %	13	4.9 %	29	11.3 %
95% Confidence Interval		6.0 – 10.7		2.9 - 8.2		8.0 - 15.7
Prevalence of severe acute malnutrition (< 115 mm and/or oedema)	5	1.0 %	0	0.0 %	5	1.9 %
95% Confidence Interval		0.4 - 2.2		0.0 – 1.4		0.8 – 4.5

Chronic malnutrition

Over half of the children (51.7%) in the age group of 6 – 59 months are stunted and 16.1% are severe stunted. The prevalence by sex indicates that girls are more affected by moderate stunting and boys are more affected by severe stunting.

Table 9: Estimated prevalence of stunting based on height-for-age z-scores and by sex in 6-59 months, Kutupalong and Nayapara Camp, October 2011, Based on WHO standards.

	All n = 515		Boys n = 260		Girls n = 254	
	N	%	N	%	N	%
Prevalence of global stunting (<-2 z-score)	266	51.7 %	133	51.2 %	133	52.4 %
95% Confidence Interval		47.3 - 55.9		45.1 - 57.2		46.2 – 58.4
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	183	35.5 %	79	30.4 %	104	40.9 %
95% Confidence Interval		31.5 - 39.8		25.1 - 36.2		35.1 - 47.1
Prevalence of severe stunting (<-3 z-score)	83	16.1 %	54	20.8 %	29	11.4 %
95% Confidence Interval		13.2 - 19.5		16.3 – 26.1		8.1 – 15.9

The WHZ distribution curve of the sample is overall shifted to the left of the equivalent curve from the WHO standards. The shift of the entire curve indicates that all the children and not only those below a given cut-off are affected.

Figure 7: Height for age Z-score distribution curve, Children aged 6 to 59 months, WHO standards, Kutupalong and Nayapara camp
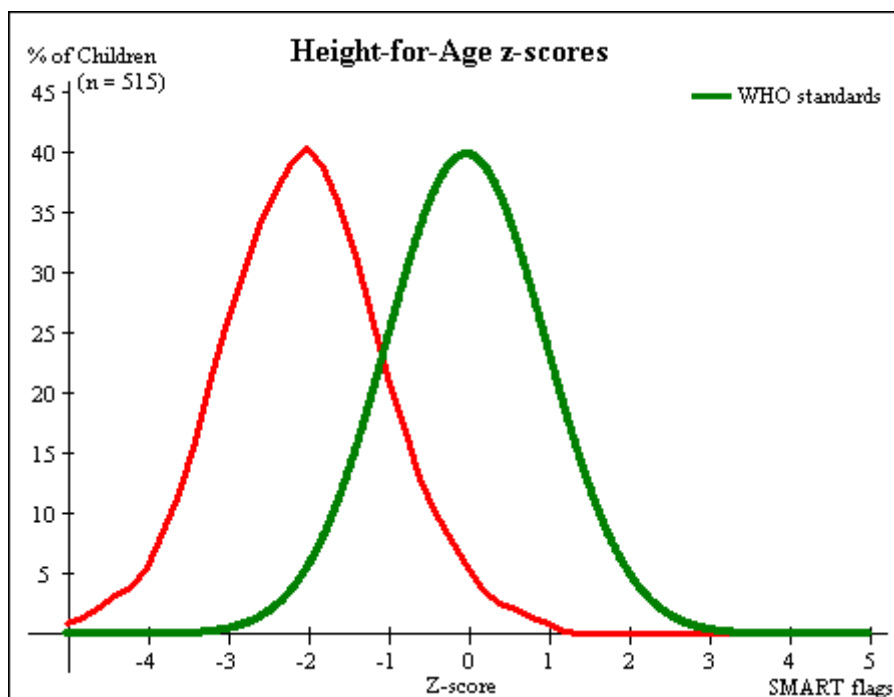
5.1.2.3. Malnutrition KTP

Acute malnutrition

The prevalence of GAM, MAM and SAM are respectively 16.7%, 13.9% and 2.8% for the children 6 – 59 months. No case of oedema was identified in KTP.

The design effect for the GAM is 1.0 which indicates that the global acute malnutrition was not cluster located and is randomly distributed among the clusters.

Table 10: Estimated prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in 6-59 months, Kutupalong Camp, October 2011, Based on WHO standards.

	All n = 287		Boys n = 145		Girls n = 142	
	N	%	N	%	N	%
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	48	16.7 %	28	19.3 %	20	14.1 %
95% Confidence Interval		12.9 – 21.5		13.7 - 26.5		9.3 – 20.8
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score, no oedema)	40	13.9 %	22	15.2 %	18	12.7 %
95% Confidence Interval		10.4 - 18.4		10.2 - 21.9		8.2 - 17.9
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	8	2.8 %	6	4.1 %	2	1.4 %
95% Confidence Interval		1.4 - 5.4		1.9 - 8.7		0.4 – 5.0

The WHZ distribution curve of the sample is overall shifted to the left of the equivalent curve from the WHO standards. The shift of the entire curve indicates that all the children and not only those below a given cut-off are affected.

Figure 8: Weight for height Z-score distribution curve, Children aged 6 to 59 months, WHO standards, Kutupalong camp
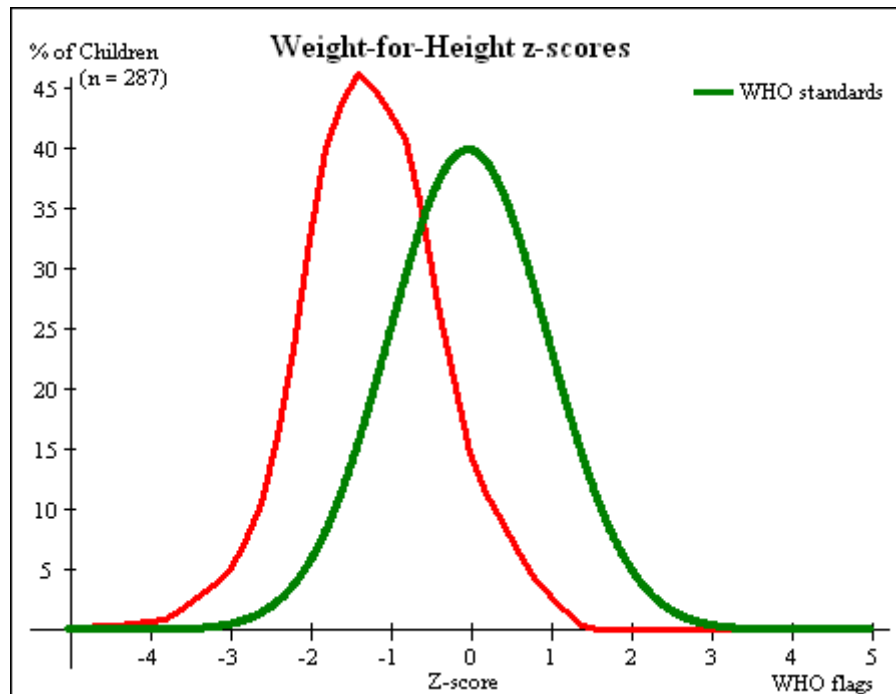
According to the MUAC analysis, 1% of children were severely malnourished, 5.6% moderaltey malnourished and 6.6% at risk of malnutrition. Overall 13.2% of children are malnourished or at risk of malnutrition.

Table 11: Estimated prevalence of acute malnutrition based on MUAC (and/or oedema) and by sex in 6-59 months, Kutupalong Camp, October 2011, Based on WHO standards.

	All n = 287		Boys n = 145		Girls n = 142	
	N	%	N	%	N	%
Prevalence of global acute malnutrition (< 125 mm and/or oedema)	19	6.6 %	6	4.1 %	13	9.2 %
95% Confidence Interval		4.3 - 10.1		1.9 - 8.7		5.4 – 15.0
Prevalence of moderate acute malnutrition (< 125 mm and >= 115 mm, no oedema)	16	5.6 %	6	4.1 %	10	7.0 %
95% Confidence Interval		3.5 – 8.9		1.9 - 8.7		3.9 - 12.5
Prevalence of severe acute malnutrition (< 115 mm and/or oedema)	3	1.0 %	0	0.0 %	3	2.1 %
95% Confidence Interval		0.4 – 3.0		0.0 – 2.6		0.7 – 6.0

Chronic malnutrition
Nearly half of the children (48.8%) in the age group of 6 – 59 months are stunted and 14.6% are severe stunted. The prevalence by sex indicates that girls seem more affected by moderate stunting and boys are more affected by severe stunting.

Table 12: Estimated prevalence of stunting based on height-for-age z-scores and by sex in 6-59 months, Kutupalong Camp, October 2011, Based on WHO standards.

	All n = 287		Boys n = 145		Girls n = 142	
	N	%	N	%	N	%
Prevalence of global stunting (<-2 z-score)	140	48.8 %	72	49.7 %	68	47.9 %
95% Confidence Interval		43.1 - 54.5		41.6 - 57.7		39.8 – 56.1
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	98	34.1 %	45	31.0 %	53	37.3 %
95% Confidence Interval		28.9 - 39.8		24.1 - 39.0		29.8 - 45.5
Prevalence of severe stunting (<-3 z-score)	42	14.6 %	27	18.6 %	15	10.6 %
95% Confidence Interval		11.0 - 19.2		13.1 – 25.7		6.5 – 16.7

The WHZ distribution curve of the sample is overall shifted to the left of the equivalent curve from the WHO standards. The shift of the entire curve indicates that all the children and not only those below a given cut-off are affected.

Figure 9: Height for age Z-score distribution curve, Children aged 6 to 59 months, WHO standards, Kutupalong camp

5.1.2.4.   Malnutrition NYP

Acute malnutrition
The prevalence of GAM, MAM and SAM are respectively 15.7%, 14% and 1.7% for the children 6 – 59 months. The prevalence of oedema was 0.4% (1 case).
The design effect for the GAM is 1.0 which indicates that the global acute malnutrition was not cluster located and is randomly distributed among the clusters.

Table 13: Estimated prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in 6-59 months, Nayapara Camp, October 2011, Based on WHO standards.

	All n = 235		Boys n = 120		Girls n = 114	
	N	%	N	%	N	%
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	37	15.7 %	18	15.0 %	19	16.7 %
95% Confidence Interval		11.6 – 20.9		9.7 – 22.5		10.9 – 24.6
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score, no oedema)	33	14.0 %	17	14.2 %	16	14.0 %
95% Confidence Interval		10.2 - 19.1		9.0 - 21.5		8.8 - 21.6
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	4	1.7 %	1	0.8 %	3	2.6 %
95% Confidence Interval		0.7 - 4.3		0.1 - 4.6		0.9 – 7.5

The WHZ distribution curve of the sample is overall shifted to the left of the equivalent curve from the WHO standards. The shift of the entire curve indicates that all the children and not only those below a given cut-off are affected.

Figure 10: Weight for height Z-score distribution curve, Children aged 6 to 59 months, WHO standards, Nayapara camp
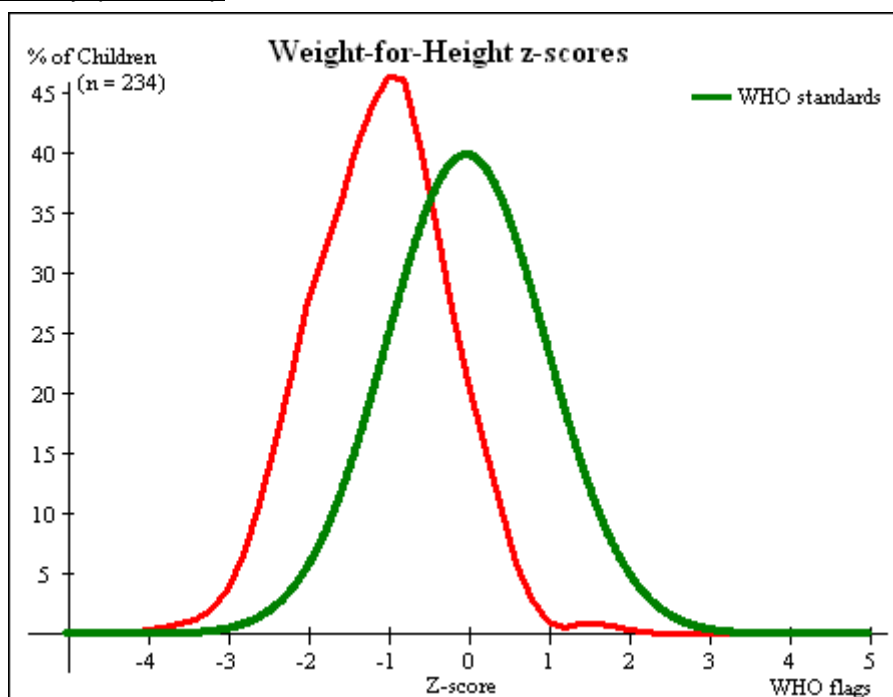
According to the MUAC analysis, 0.9% of children were severely malnourished, 11.1% moderaltey malnourished and 11.9% at risk of malnutrition. Overall 23.9% of children are malnourished or at risk of malnutrition.

Table 14: Estimated prevalence of acute malnutrition based on MUAC (and/or oedema) and by sex in 6-59 months, Nayapara Camp, October 2011, Based on WHO standards.

	All n = 235		Boys n = 120		Girls n = 114	
	N	%	N	%	N	%
Prevalence of global acute malnutrition (< 125 mm and/or oedema)	28	11.9 %	7	5.8 %	21	18.4 %
95% Confidence Interval		8.4 - 16.7		2.9 – 11.6		12.4 – 26.5
Prevalence of moderate acute malnutrition (< 125 mm and >= 115 mm, no oedema)	26	11.1 %	7	5.8 %	19	16.7 %
95% Confidence Interval		7.7 – 15.7		2.9 – 11.6		10.9 - 24.6
Prevalence of severe acute malnutrition (< 115 mm and/or oedema)	2	0.9 %	0	0.0 %	2	1.8 %
95% Confidence Interval		0.2 – 3.0		0.0 – 3.1		0.5 – 6.2

Chronic malnutrition

Over half of the children (53.6%) in the age group of 6 – 59 months are stunted and 17.6% are severe stunted. The prevalence by sex indicates that girls seem more affected by moderate stunting and boys are more affected by severe stunting.

Table 15: Estimated prevalence of stunting based on height-for-age z-scores and by sex in 6-59 months, Nayapara Camp, October 2011, Based on WHO standards.

	All n = 233		Boys n = 119		Girls n = 113	
	N	%	N	%	N	%
Prevalence of global stunting (<-2 z-score)	125	53.6 %	61	51.3 %	64	56.5 %
95% Confidence Interval		47.2 - 59.9		42.4 – 60.1		47.4 – 65.4
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	84	36.1 %	34	28.6 %	50	44.2 %
95% Confidence Interval		30.2 - 42.4		21.2 - 37.3		35.4 - 53.4
Prevalence of severe stunting (<-3 z-score)	41	17.6 %	27	22.7 %	14	12.4 %
95% Confidence Interval		13.2 – 23.0		16.1 – 31.0		7.5 – 19.7

The WHZ distribution curve of the sample is overall shifted to the left of the equivalent curve from the WHO standards. The shift of the entire curve indicates that all the children and not only those below a given cut-off are affected.

Figure 11: Height for age Z-score distribution curve, Children aged 6 to 59 months, WHO standards, Kutupalong camp
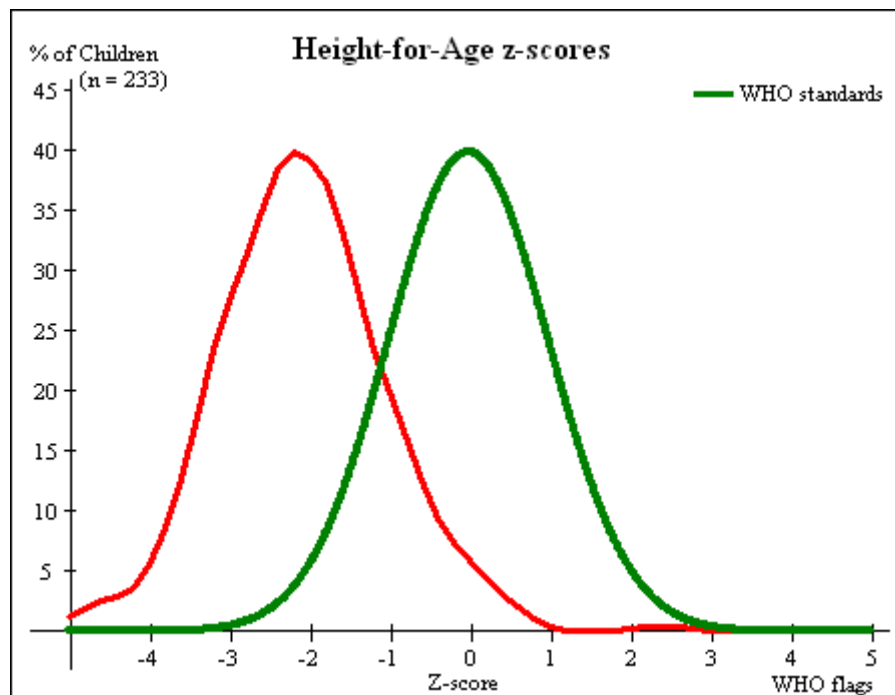
5.2.   Presentation of results of hypothesis

During the statistical analysis phase and the process tracing it became evident that the first two working hypothesis "Inadequate food assistance" and "Limited access to food" have such a direct relationship that they could be merged into one hypothesis identified as "Inadequate quantity of food"

5.2.1. Hypothesis 1 and 2: Inadequate quantity of food

'Inadequate quantity of food in the household, mainly due to;

1. The sharing of the initial food ration that goes on in the camps between the official refugees who receive food rations, and i) the official refugees who don't receive food rations, and to a much lesser extent ii) the non-official refugees in Leda, the Makeshift and the surrounding area.

2. The Rohingya refugees are not authorised to work, and are consequently unable to officially find work in the surrounding areas. Many still go to find work, but the wages are low and they face the risk of having to pay small amounts to get jobs, and of being discriminated against in the host communities in the forms of beatings, or unfair treatment in terms of payment.

3. There is very minimal opportunity to produce food within the households on any meaningful scale. Some households are able to grow a few vegetables, others raise poultry and some are able to go fishing. However the impact of these activities is negligible on their overall food intake.

5.2.1.1.   Overall Description

The most part of the refugee food baskets are accounted for through 3 sources; (i) Food assistance, (ii) Food Purchases, (iii) Food Production.

Proportional Piling exercises, designed to indicate the relative importance of food sources in the overall food basket identified the following.

Figure 12: Proportional piling results of importance of food sources in Kutupalong and Nayapara camps, in % of total
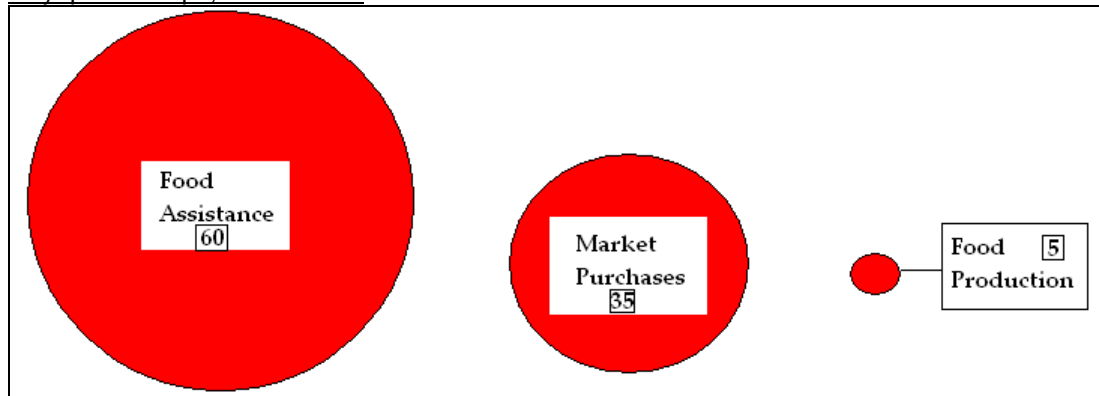
5.2.1.2. Hypothesis Tree

The hypothesis tree for hypothesis 1 and 2 is shown below.

Figure 13: Hypothesis 1 and 2 tree
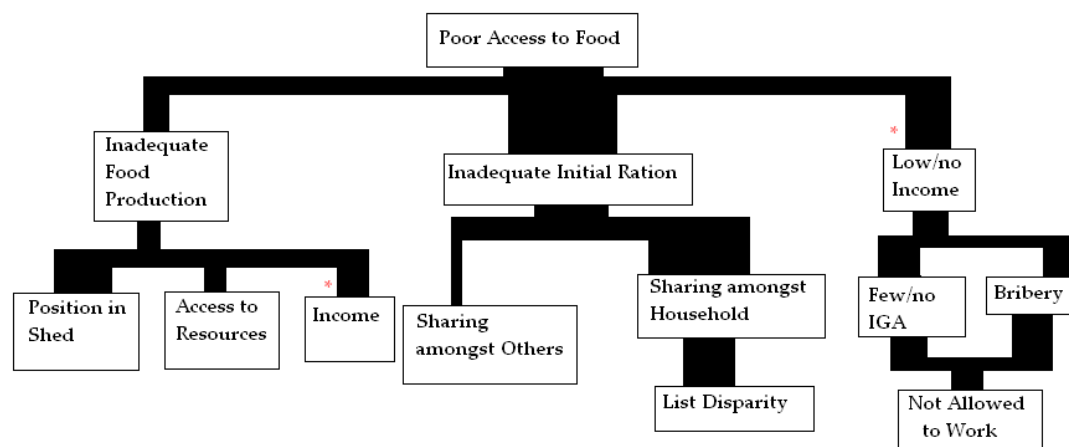
1. Inadequate Food Assistance:

Food is a component of cultural identity and plays a significant social role. However, given the lack of options available to the Rohingyas, the food assistance they are entitled to is the main food source and the bulk of their diet. A critical issue regarding the access to food for the Rohingyas is that the Government and UNHCR do not work off the same list of registered refugees in the camps. There are some 20% of the refugees identified as registered with UNHCR but not with the GoB. A total of 29,368 refugees are registered on the UNHCR database and out of this number 5,784 representing 19.7% of the refugee population in the camps, do not appear on the GoB records and are therefore not eligible to receive food assistance[22].

37.8% of households in Kutupalong and 34.3% in Nayapara reported at least one member of the household not receiving a ration and 11.8% and 9.7% households respectively reported to not receive any ration at all. These figures are likely to be higher in reality as the number of

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[22] UNHCR database, October 2011

people unregistered was probably underreported due to apprehension amongst some refugees about the consequences of admitting to sharing the ration.

Table 16: Percentage of households not receiving any or full food ration

	All	KTP	NYP
HH not Receiving Food Rations	10.8% (N=58)	11.8% (N=34)	9.7% (N=24)
Households with at least 1 member not receiving Food Ration	36.2% (N=194)	37.8% (N=109)	34.3% (N=85)

Table 17: General food basket for registered refugees in the camps

Commodities	Amount per person per day (gm)
Par Boiled Rice	450
Lentils/Pulses	40
Vegetable Oil(Enriched with Vitamin A)	20
Fortified Wheat Flour/Wheat Soy Blend	50
Sugar	10
Iodised Salt	10

Table 18: Supplementary blanket feeding ration (premix) for PLW and children 6 – 23 months in the camps

Commodities	Amount per person per day (gm)
Fortified Wheat Flour/Wheat Soy Blend	180
Vegetable Oil(Enriched with Vitamin A)	40
Sugar	40
DSM	20

Indicator: Inadequate Food Assistance

{(Number of Rations received within Household/Household Size) * 2190}
➔If HH child under 2 years **+ 1300**
➔If HH contains Pregnant or Lactating women with child <6months **+ 1300**

= Mean Kcal per person per household

Table 19: Mean Kcal per Day by Camp based on Food Assistance

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	Kcal received per person per day including PLW and U2	288	0	2810	1820.7	770.4
NYP	Kcal received per person per day including PLW and U2	248	0	3026.7	1855.7	731.6

After taking into account the total food amounts in terms of food distribution and blanket feeding programmes for pregnant and lactating women (PLW)[23] and children 6 – 23 months an average of around 1840Kcal is available at household level per family member in the camps. The food amounts related to targeted feeding for moderate and severe acute malnutrition were not included as they are for treating malnutrition and therefore can't be related to causes of malnutrition.

2. Low or No Income
There are very few income generating activities available within the camp, and limited job opportunities for Rohingya outside the camp, where they are not legally allowed to work. For those who do illegally work outside the camp, they face risk of having to pay small amounts to

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[23] Pregnant women are eligible as soon as they are registered as being pregnant and lactating women from delivery until the child reaches 6 months of age.

get jobs and the risk of not being paid at all by employer. Work opportunities are especially restricted during the rainy season as the demand for the types of jobs available to the Rohingya decrease.

Indicator: Inadequate Income Generating Opportunities

Income
Total Income of HH members in last month/ HH size
Food Expenditure
Non-food Expenditure
Total Expenditure

Table 20: Mean Income per Person per Household per Month

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	IncomePP 'HH Income/HH size'	241	11.1	5000	439.9	548
NYP	IncomePP 'HH Income/HH size'	212	21.4	1600	394.5	281.7

The mean income per person per month is around 420 Taka[24] and as such lower than previous estimates e.g. WFP 2007. However the survey started at the end of the rainy season, and as such this is likely a reflection of the lower availability of jobs encountered in the rainy season.

In the Focus group discussions across both camps, it was strongly agreed that the most important source of income is sale of food ration, something that is reiterated in the secondary literature.

Figure 14: 2007 results from WFP survey on level of income sources
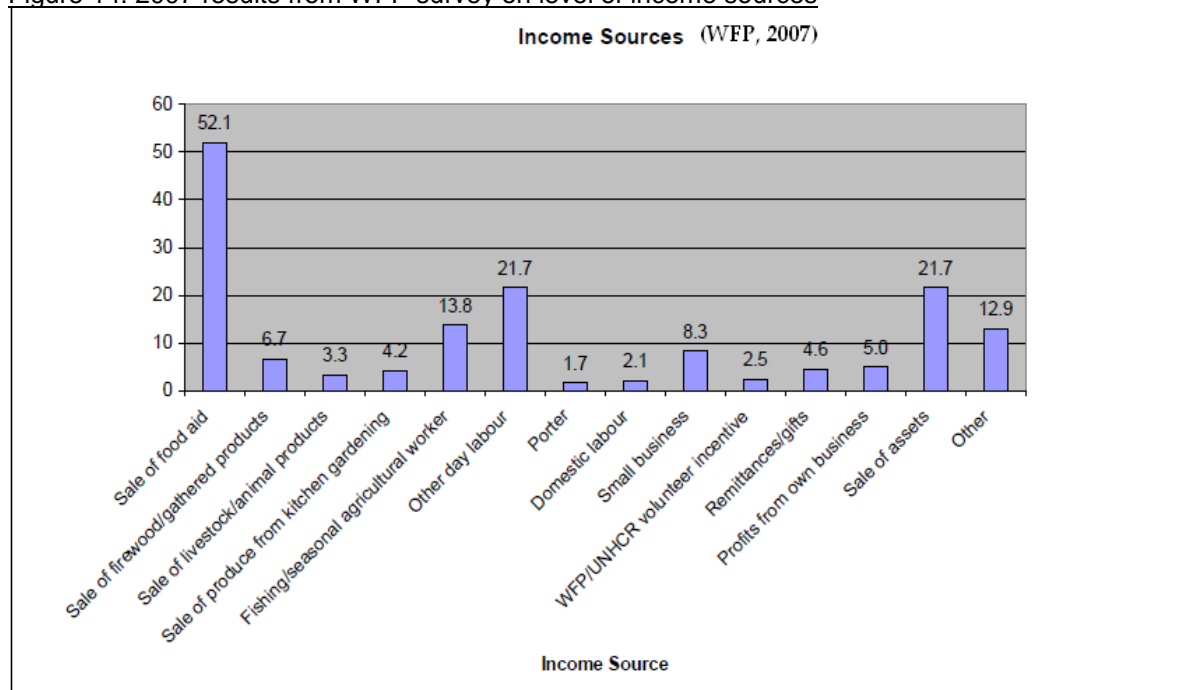
The analysis of the focus group discussions indicate that the most commonly sold items are the blended foods, as they are not popular amongst the refugees in terms of taste and the pulses, as they think these are 'bitter, too hard and take too long to boil'.

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[24] 1 US dollar was about 74 Taka during the months of September/October

Table 21: Food Vulnerable: % of Expenditure spent on Food Items[25]

Vulnerability Cut Off			Camp code		All
			KTP	NYP	
% of expenditure spent on food	Low (<50%)	Count	70	28	98
		%	24.5%	11.4%	18.4%
	Medium (50-65%)	Count	68	61	129
		%	23.8%	24.8%	24.2%
	High (65-75%)	Count	46	56	102
		%	16.1%	22.8%	19.2%
	Very high (>75%)	Count	102	101	203
		%	35.7%	41.1%	38.2%
Total		Count	286	246	532
		%	100.0%	100.0%	100.0%

Food vulnerability in terms of household expenditure on food is high and very high with over 50% of households spending more than 65% of their available resources on food. This is higher in Nayapara than in Kutupalong.

Work opportunities are limited especially for women and the majority of primary caregivers do domestic work or linked activites and don't add to the family income.

Table 22: Frequency and percentage of employment opportunities for the primary caregiver in both camps

Camp code			Freq.	%	Valid %
KTP	Valid	Unemployed	34	11.8	12.1
		Paid work	43	14.9	15.2
		Domestic Work/Gathering Firewood	205	71.2	72.7
		Total	282	97.9	100.0
	Missing		6	2.1	
	Total		288	100.0	
NYP	Valid	Unemployed	46	18.5	18.6
		Paid work	27	10.9	10.9
		Domestic Work/Gathering Firewood	174	70.2	70.4
		Total	247	99.6	100.0
	Missing		1	.4	
	Total		248	100.0	

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[25] Smith Lisa C. and Ali Subandoro (2007): Measuring food security using household expenditure surveys. Food Security in Practice technical guide series. Washington, D.C.: International Food Policy Research Institute

3. Household Food Production:
Household food production refers to any productive inputs to the household food basket which are gathered by the Households themselves. The main three inputs identified were: Vegetable gardens; Poultry Raising; Fishing.

> **Indicators**
> (i) Household grew vegetables in the last year (yes:no)
> (ii) Household currently owns Poultry (yes:no)
> (iii) Household went fishing in last month (yes:no)

(i) The conditions in the camps are extremely cramped, with limited land available or appropriate for growing food. There is also a paucity of productive assets, most people dig with their hands and use ash as fertiliser. These crops (again due to the cramped conditions) often get trampled on by people walking between houses, and children playing, they think with some bamboo they could better protect their crops. Every family we spoke to in the focus groups want to produce vegetables, but not everyone is able to. The primary reason identified during these discussions was lack of space. The ability to grow vegetables is largely dependent on the shed structure and the positioning of the households within the sheds. It is the first and last HH's in a shed that have a comparative advantage and are able to produce, as they have more space to use than the other HH's.

However even those with the space and means to produce are not able to produce all that much, and are in no way able to meet the demands of family (see proportional piling exercise).

Figure 15: Growing vegetables in the homestead
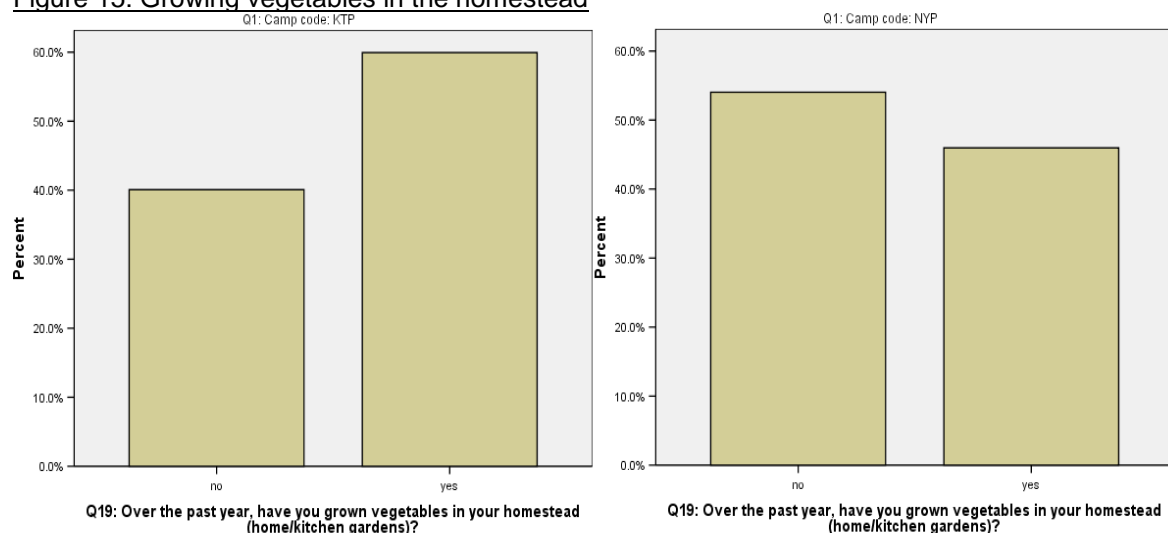
(ii) The story is very similar regarding poultry, everyone would like to raise and benefit from poultry, but there is very little space to raise them. The sheds are too small and already very cramped. Those that do have poultry mentioned that they keep the poultry in amongst them in the shed, or make a small house at the side of the shed (these are very small); more people would be able to do this if the refugees had access to some bamboo. Some are reluctant to raise poultry however as there is always a bad odour in the houses with poultry.

Figure 16: Owning poultry
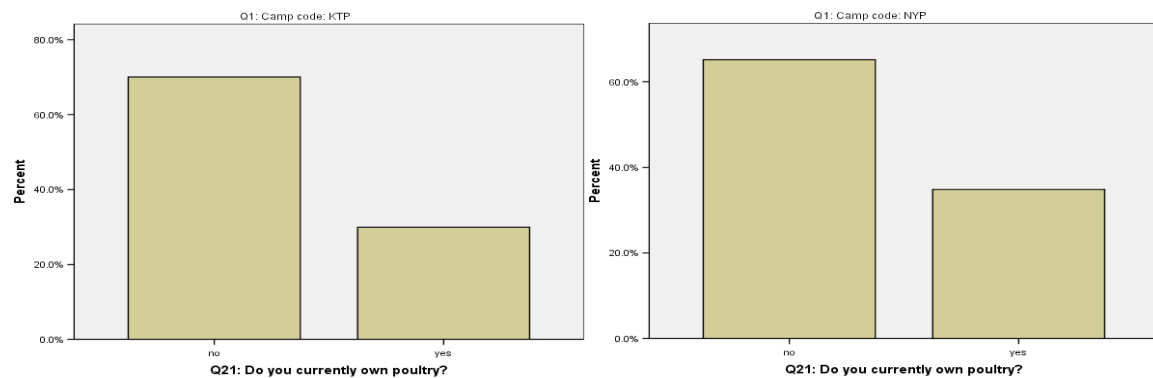
(iii) Some Households are able to supplement their overall food basket by fishing around the local area. However, the overall catch is never enough for it to be a sustainable activity.

Figure 17: Fishing during last month
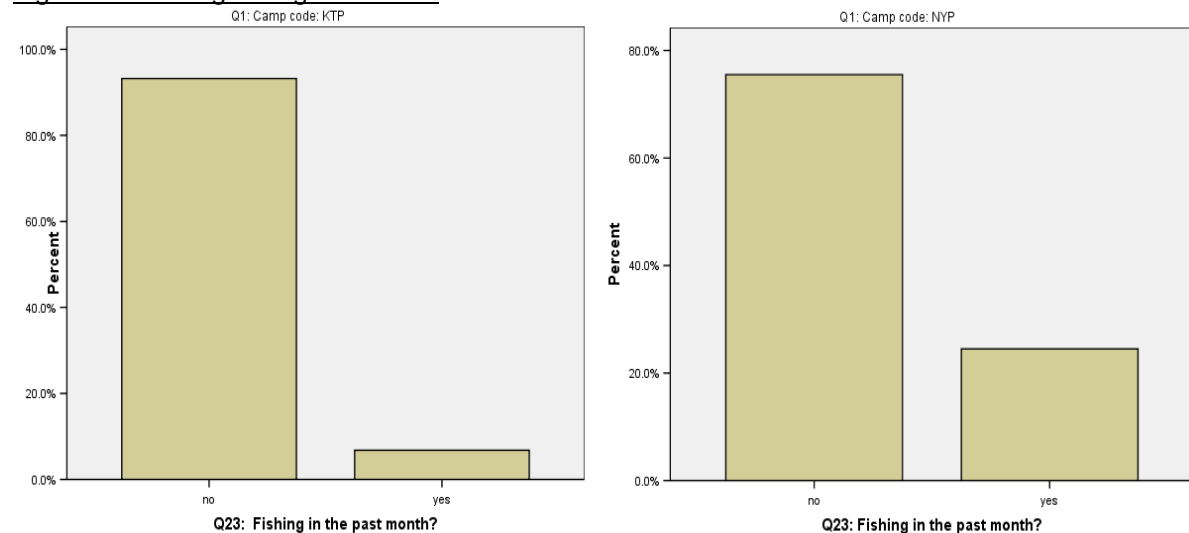
5.2.2. Hypothesis 3: Inadequate nutrient intake

'Inadequate Nutrient Intake due to; inadequate nutrient makeup of initial ration, poor dietary diversity, poor food preparation and food habits'

5.2.2.1. Overall Description

Billions of people around the world suffer from 'hidden hunger' or micronutrient malnutrition. They do not get enough micronutrients required to lead healthy productive lives from the foods that they eat. Micronutrients are vitamins and minerals (such as vitamin A, zinc, and iron) and are absolutely essential to good health. The adverse effects of micronutrient deficiencies are profound. Micronutrients deficiencies may lead to increased risk of death, morbidity and susceptibility to infection, blindness, adverse birth outcomes growth stunting, low work capacity, decreased cognitive capacity and mental retardation. For vulnerable infants and young children, the problem is particularly critical because they need energy- and nutrient-dense foods to grow and develop both physically and mentally and to live a healthy

life. Micronutrient malnutrition can lower IQ, cause stunting and blindness in children, lower resistance to disease in both children and adults, and increase risks for both mothers and infants during childbirth (HarvestPlus. 2011).

Table 23: Anaemia results for children 6-59 months in the camps from 2011 nutrition survey

Anaemia in Children 6-59 months		All	KTP	NYP
		n = 1132	n = 603	n = 529
Total Anemia (Hb<11.0 g/dL)	n	413	226	187
	%	36.5	37.5	35.3
	95% CI	30.8 - 42.6	30.0 - 45.6	29.4 - 41.7

Source ACF, 2011

From the Nutrition Survey of 2011 (ACF), we know that the anaemia status amongst children 6 – 59 months is at the level of a moderate public health problem, though it was even higher (serious problem) in previous years.

5.2.2.2. Hypothesis Tree

The main part of the Rohingya food income is derived from the food ration distributed to them (refer to figure 12), which is inadequate in itself in terms of animal source proteins, vegetables and micronutrients, all of which are essential in providing key micronutrients which prevent wasting, and aid health and growth.

Additionally the ration does not take into account the cultural food preferences of the Rohingya, for whom the most important parts of their diet are Rice and Spices. Rice is included in the ration (although not enough in quantity for the cultural norm of 3 meals a day according to the focus groups) but spices are not. Therefore in order to obtain the foods they prefer, they have to trade some of the nutritionally superior foods (blended foods and pulses are traded first), in exchange for inferior foods. This is exacerbated by a lack of income and resources with which to obtain extra nutritious food, resulting in low average IDDS and HDDS (see results below).

Figure 18: Hypothesis 3 tree
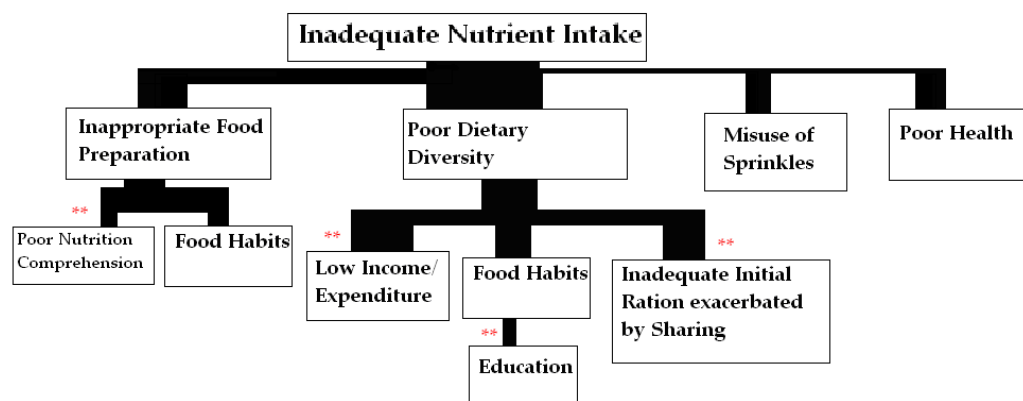
1. Poor Dietary Diversity

Indicator
IDDS- Individual Dietary Diversity Score
HDDS- Household Dietary Diversity Score

Dietary Diversity in the Camps

Table 24: IDDS & HDDS descriptive results

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	IDDS score between 0 and 8	276	0	8	5	1.4
	HDDS score 0 to 12	288	1	12	8.5	1.6
NYP	IDDS score between 0 and 8	244	0	8	4.9	1.3
	HDDS score 0 to 12	248	3	12	8.3	1.3

IDDS

IDDS represents the dietary diversity of the selected child, a proxy of the nutrient (mainly micronutrient) adequacy of the diet of an individual. It has been shown to be associated with the mean micronutrient adequacy of the diet of both breastfed and non-breastfed children. IDDS has also been shown to be associated with the nutritional status of individuals (children under 5, women) after controlling for confounding socio-economic factors.

Table 25: IDDS Scores grouped into Tertiles

IDDS Score (Max 8)			Camps		Total N=520
			KTP N=276	NYP N=244	
IDDS Cut Offs	Low (<4.5)	Count	58	60	118
		%	21%	24.6%	22.7%
	Medium (4.5-6)	Count	197	173	370
		%	71.4%	70.9%	71.2%
	High (>6)	Count	21	11	32
		%	7.6%	4.5%	6.2%

The results indicate that nearly a quarter of the children have a low IDDS score and over 90% have medium to low scores.

Table 26: Food Groups consumed by more than 50% of Households within Quintiles of HDDS

Dietary Profiles (FGs consumed by >50% Households within Quintile of HDDSs) - Score / n(%)				
HDDS Quintile 1 Sc.7-31 / 115 (21.5%)	**HDDS Quintile 2** Sc.32-36 / 100 (18.7%)	**HDDS Quintile 3** Sc.37-40 / 102 (19.0%)	**HDDS Quintile 4** Sc.41-45 / 115 (21.5)	**HDDS Quintile 5** Sc.46-69 / 104 (19.4)
Rice FBF Potatoes Pulses Vegetables Oils Fish Condiment Sugar	Rice FBF Potatoes Pulses Vegetables Oils Fish Condiment Sugar	Rice FBF Potatoes Pulses Vegetables Oils Fish Condiment Sugar	Rice FBF Potatoes Pulses Vegetables Oils Fish Condiment Sugar	Rice FBF Potatoes Pulses Vegetables Oils Fish Condiment Sugar
		Wheat Miscellaneous	Wheat Miscellaneous	Wheat Miscellaneous
				Eggs Fruits

The HDDS quintiles above represent the overall HDDS scores (from 84, 12 groups* 7 days of potential consumption) then ordered by rank, and then divided into HDDS score quintiles (20%). The percentage scores under the quintile subheadings represent the % of the population which fall into these quintiles. Under each heading it is possible to see how many food groups are consumed by more than 50% of households in that quintile. Note that for most households, even when animal protein is consumed it consists only of a small amount of dried fish. Fresh meat or fish is a luxury few can afford, therefore depriving most families of essential animal source proteins and fruits.

Table 27: Quintile HDDS (Q1,Q2,Q3,Q4,Q5)

Camp code			Freq.	%	Valid %
KTP	Valid	Q1	51	17.7	17.7
		Q2	57	19.8	19.8
		Q3	55	19.1	19.1
		Q4	66	22.9	22.9
		Q5	59	20.5	20.5
		Total	288	100	100
NYP	Valid	Q1	64	25.8	25.8
		Q2	43	17.3	17.3
		Q3	47	19	19
		Q4	49	19.8	19.8
		Q5	45	18.1	18.1
		Total	248	100	100

2. Food Preparation

Typically the Rohingya will cook once daily to conserve fuel. This practice can lead to overcooking many of the ingredients and therefore losing much of the foods nutrient contents (e.g. vegetables). As well eating food without reheating poses an increased risk for the food to become unsafe as bacteria which have potentially grown are not killed through the proper reheating process. Also, when preparing food, typically vegetables are cut and then washed. This practice can contribute to washing out many of the key nutrients. Loss of vitamins and minerals from vegetable is mainly because of extraction in the cooking liquid, rather than their destruction.

Indicator Cooking Index	
Variable	**Question**
Cooking Practise	
1. Preparation	When you prepare your vegetables, do you wash them before or after you cut them up? (Before; After; Both)
2. Overcooking	When do you add vegetables to your cooking?
3. Reheat	Do you reheat food when you need another meal ?
4. Storage	When you store foods do you cover it?
5. Knowledge	Can you name 3 foods that give pushti in the body?
Micronutrient Misuse	Do you add sprinkles to your food?

Table 28: Cooking Index Scores by Camp (Max. 12)

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	Cooking index based on adapted cooking practices	268	3	10	7	1.4
NYP	Cooking index based on adapted cooking practices	239	3	9	6.6	1. 3

The cooking index score, a computed score to reflect knowledge and good practices around food preparation, storage and handling indicates that the majority of families have medium level scores with an average score of 7 in both camps.
One example is the preparation and washing of vegetables where the practice is in a majority of cases (70% in KTP and 85% in NYP) to wash the vegetables after cutting (percentage of after and both in below figures). Given that the water used for this is often from unsafe sources it clearly poses a potential problem.

Figure 19: Percentage of timing of washing of cut vegetables before cooking
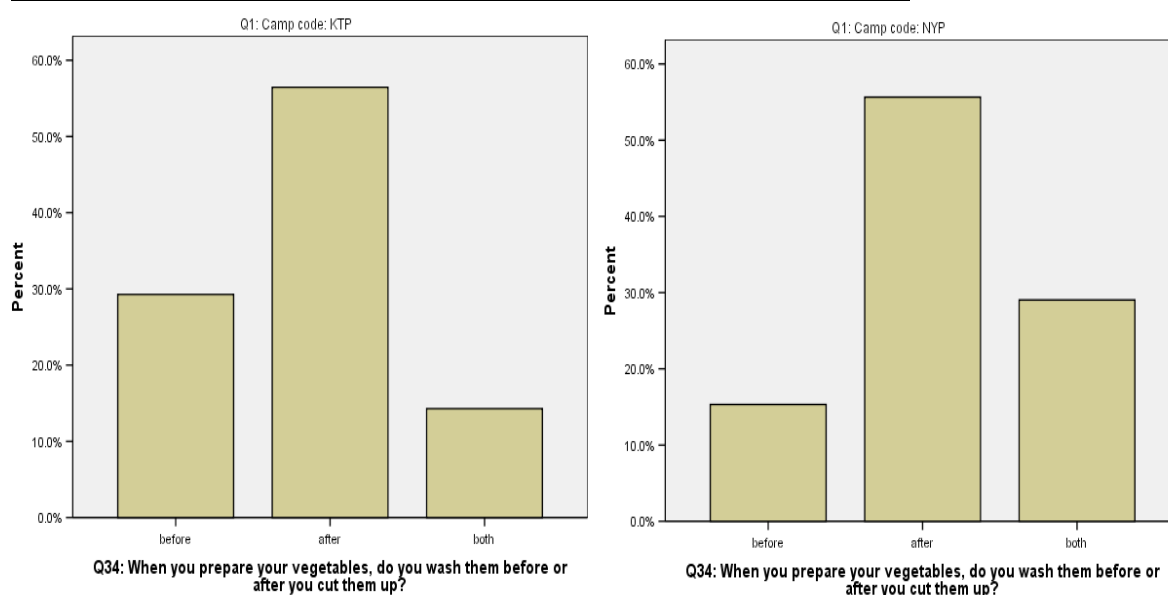
The focus group discussions on appropriate cooking practises indicate that these scores may even be underestimated. Knowledge on appropriate cooking practises is very high, but when asked about the practises they see in the camp, participants were quick to point out that there are still many bad practises.

3. Use of sprinkles
Additionally it has been observed that there is gross misuse of the blanket hand out of sprinkles; a micronutrient supplement. It has been known for the Sprinkles to be used instead as fertilizer or as chickenfeed. When asked about sprinkles there was a general consensus in the focus groups that many people throw it away, or use it as fertilizer or chicken feed, rather than use it, as it has a strange flavour, and makes the colour of the rice less appealing. These findings are reflected in the quantitative analysis where only 35% of recipients claimed they used it.

Figure 20: Use of sprinkes
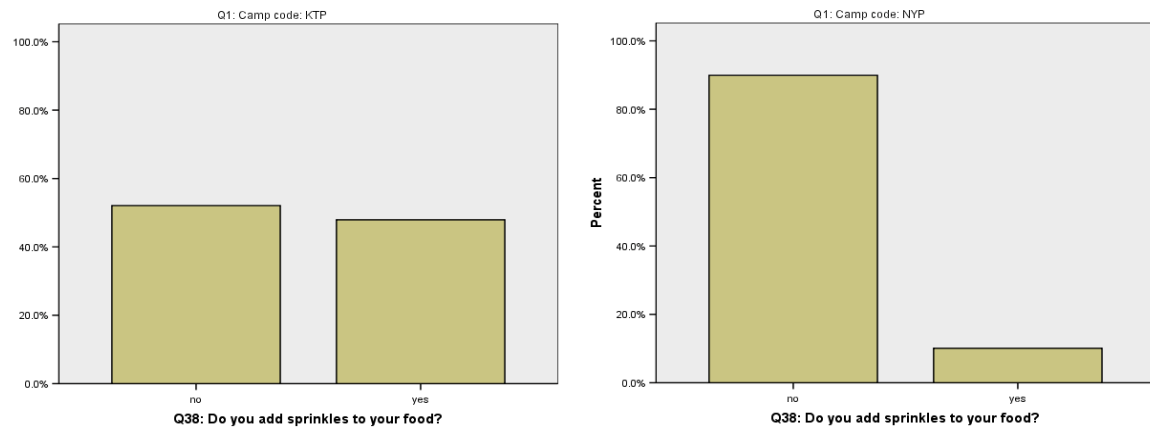
4. Health
Health is a pathway on its own and not described in detail here.

5.2.3. Hypothesis 4: Unequal intra HH food distribution

5.2.3.1. Overall Description

There is little research that exists on the intra household dynamics of food distribution within the households of the camps. Further knowledge on this dynamic could enrich existing knowledge on the high malnutrition rates observed in the camps. It is possible for a household to be food secure for example, while individual members such as mother and children remain insecure.

5.2.3.2. Hypothesis Tree

Figure 21: Hypothesis 4 tree
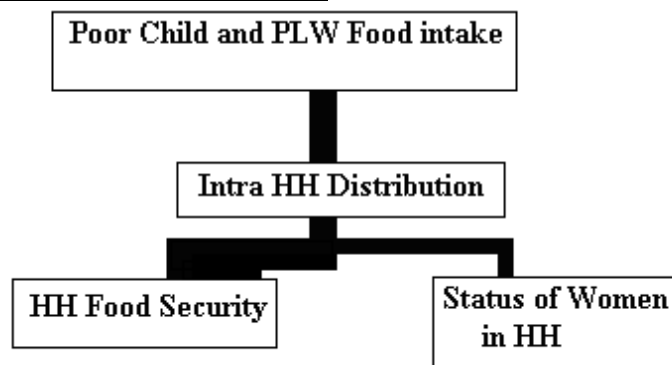
1. Intra Household Food Distribution
The qualitative work indicates that most families try to give equal amounts of food to all household members. However it was mentioned that some Household heads will eat first or take more food. Mothers and females in the household tend to be the first to lose out in food shortages. Most of the time children are prioritised, then HH Head, then others, then mother. There seems to be no difference in the prioritisation between boys and girls. Generally the mothers agreed that they are accustomed to this practise.
In 85% households the adult female made decisions about utilization of food aid, the main reason being that domestic matters were seen to be women's responsibility. 10% households

stated that men and women decided equally and 5% stated that adult males made decisions about food aid use.

In terms of control of the income from sale of food aid, 54.5% households stated that decisions were made by women, whereas 37.3% indicated that men decided and 8.2% said that the decision was taken by men and women together.

The majority of households (92.6%) indicated that money from the sale of food aid was used to benefit all household members equally. The main reason was that the money was spent on essential goods such as food, which was equally shared. (WFP, 2007)

The numbers of meals eaten by the different household members and the perception of the amount eaten does not vary largely between household members as shown in the figures below.

Figures 22: Illustration of meal frequency and perception of consumption for male adults
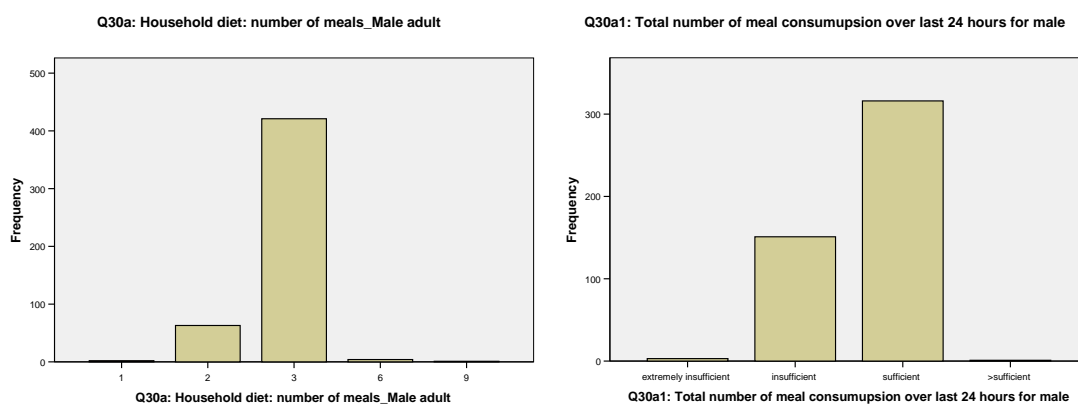
Figures 23: Illustration of meal frequency and perception of consumption for female adults
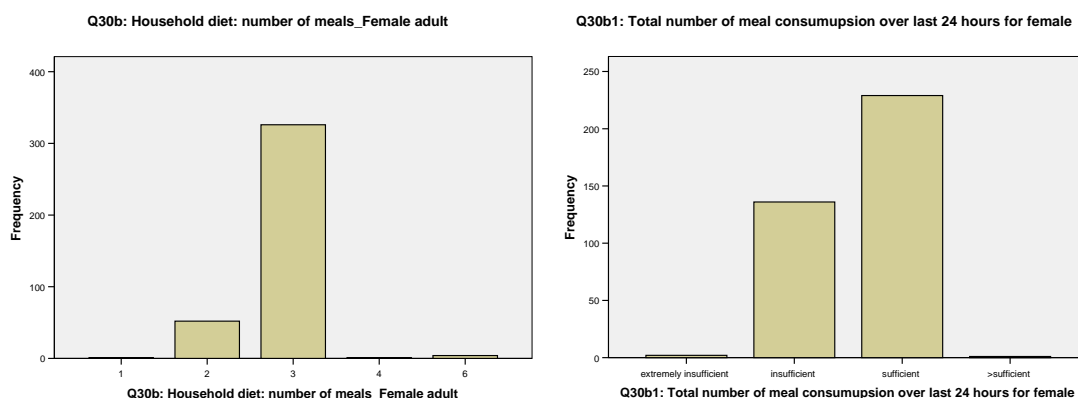
Figures 24: Illustration of meal frequency and perception of consumption for lactating women

Q30d: Household diet: number of meals_Lactating women

Q30d1: Total number of meal consumupsion over last 24 hours for lactating women
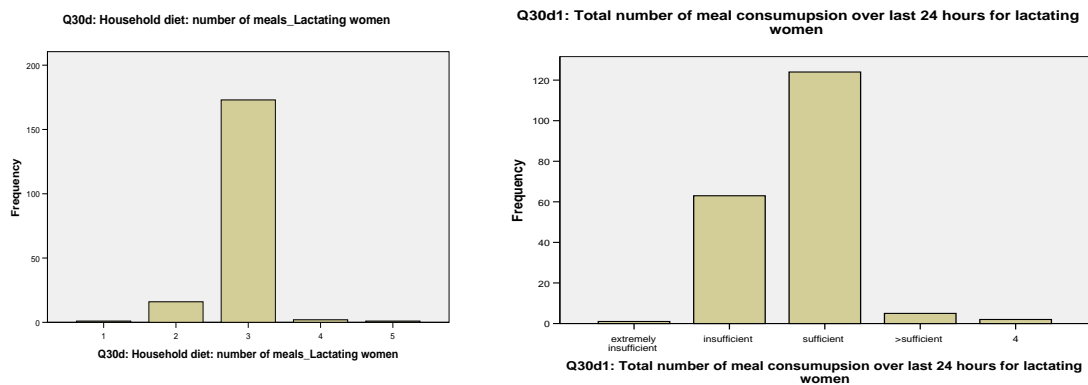
Figures 25: Illustration of meal frequency and perception of consumption for pregnant women

Q30c: Household diet: number of meals_Pregnant women

Q30c1: Total number of meal consumupsion over last 24 hours for pregnant women
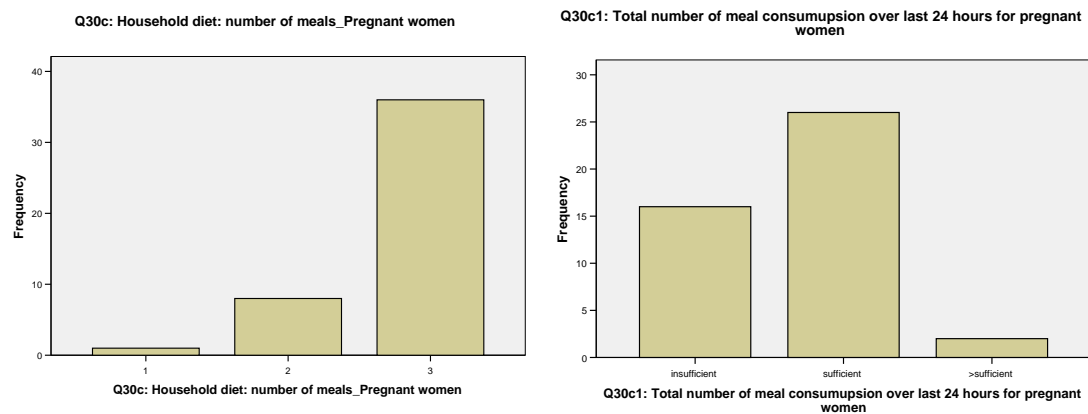
Figures 26: Illustration of meal frequency and perception of consumption for adolescent girls

Q30c: Household diet: number of meals_adolescent girls

Q30c1: Total number of meal consumupsion over last 24 hours for adolescent girl
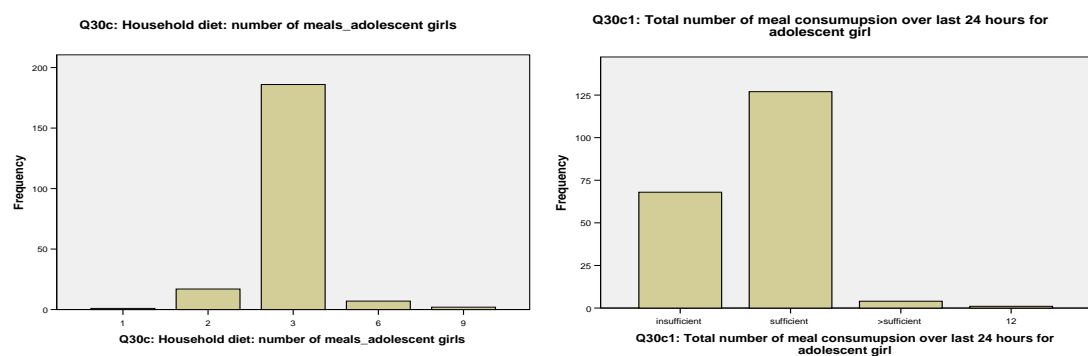
Figures 27: Illustration of meal frequency and perception of consumption for children 5 – 11 years

Q30c: Household diet: number of meals_children 5-11 years

Q30c1: Total number of meal consumupsion over last 24 hours for 5-11 yearsl
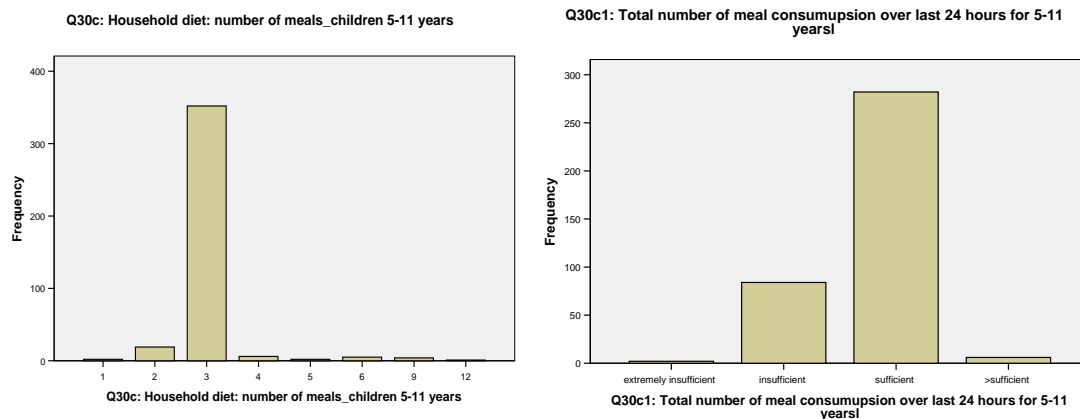
Figures 28: Illustration of meal frequency and perception of consumption for children 24 – 59 months

Q30e: Household diet: number of meals_Children 24-59 months

Q30e1: Total number of meal consumupsion over last 24 hours for child 24-59 months
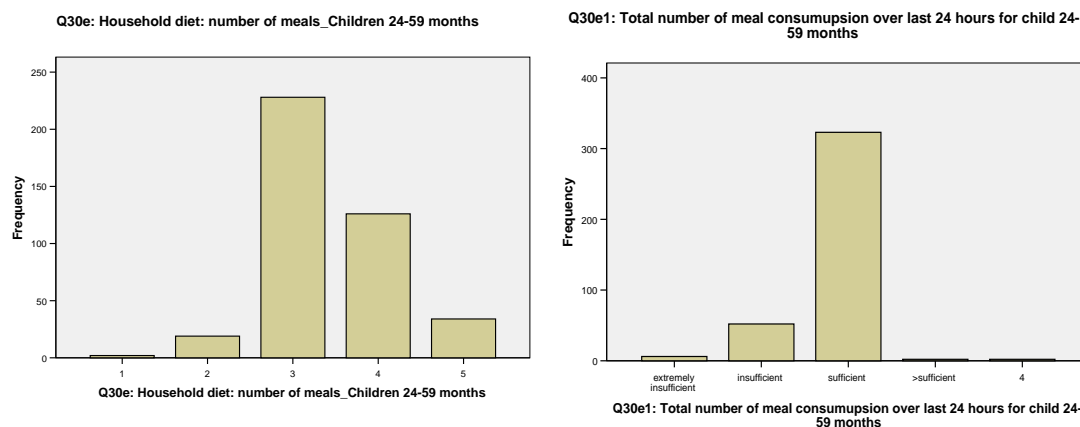
Figures 29: Illustration of meal frequency and perception of consumption for children 6 – 23 months

Q30f: Household diet: number of meals_Children 6-23 months

Q30f1: Total number of meal consumupsion over last 24 hours for child 6-23 months
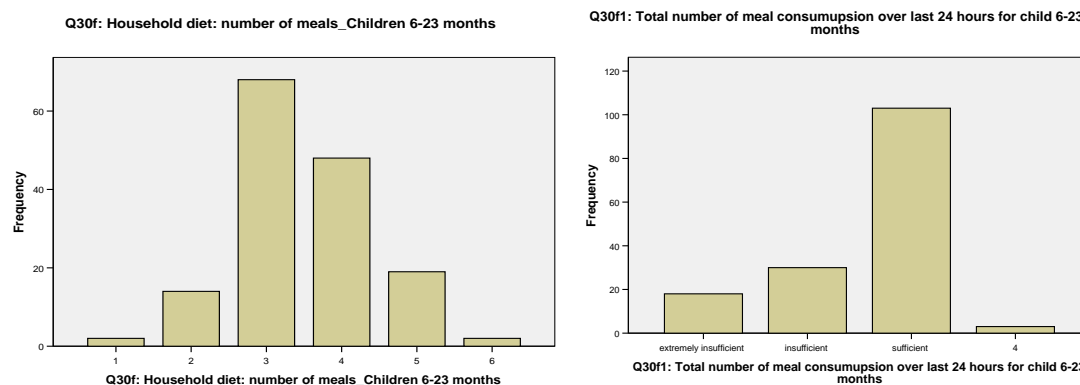
5.2.4. Hypothesis 5: Non-exclusive breastfeeding practices

5.2.4.1. Overall Description

'Lack of Exclusive Breastfeeding practices due to poor initiation, pre-lacteal feeding and inadequate feeding frequency.'

The international recommendation in term of breast feeding initiation recommends starting breastfeeding in the hour following the birth. Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it is also an integral part of the reproductive process with important implications for the health of mothers. Review of evidence has shown that, on a population basis, exclusive breastfeeding for 6 months is the optimal way of feeding infants expecially in developing countries. Thereafter infants should receive complementary foods with continued breastfeeding up to 2 years of age or beyond (WHO, 2001).

In both camps, Initiation rates have been reported as relatively high with more than 85% of children being breastfed in less than 1 hour after birth (ACF 2011). However some mothers said they didn't give colostrums to their children. Evidence from the key stakeholder interviews suggests that this happens for a number of reasons. Firstly, the birth clinics are not adequately staffed, and are consequently busy, there may be a lack of support on their behalf in terms of introducing the child to the breast of the mother. Secondly, the stressful experience of childbirth may leave mothers needing rest and not prioritizing the initiation. Lastly, many Rohingya act on the recommendation of their parents and mother in laws, with more traditional views, who have been known to believe that colostrum is not good for their health. During the focus groups conducted in both camps, it was generally agreed that initiation is almost always immediate, and occasionally within a few hours of childbirth.

Introduction of prelacteal before breast milk or colostrums appears to be quite a common practice in these camps. It appears the Rohingya do not consider additions such as sugar water and honey to be a problem in terms of maintaining 'exclusive practices'. It became quite clear during the focus groups that it is a quite common practise to give the children honey or sugar water (more prominently in Nayapara) before they initiate breastfeeding, as "it makes the child happy", they do not consider this to be breaking the rule of 'exclusive breastfeeding'.

Examples from Focus Groups with Mothers on Breastfeeding Practices
Are there any times when mothers don't breastfeed? Sick etc?
Some mothers stop breastfeeding due to breast engorgement. They believe that they might get affected by diarrhoea & fever. If they are sick, or they don't think they are producing enough milk, then they will give the child a paste consisting of water and suji. They do not consider this as breaking from an exclusive breastfeeding pattern. Consequently, between the Suji, and the sugar water and honey, it seems the exclusivity of breastfeeding may be over-represented in the quantitative analysis, due to a lack of understanding of the true meaning of exclusive, and the risks of pathogens from water and other sources at an early age.
Why do some women give water or other liquids/pastes to their infant child?
Many of the mothers give drops of water to the baby after 7 days of birth, because otherwise they feel thirsty & their lungs will be dry. After 40 days some mothers also feed powder milk, powder rice, porridge etc to their babies. Typically this is done when they believe that their babies are not getting enough breast milk, and they worry that the baby will be hungry.
Can women always Breastfeed their infants when they want to?
No, women are very busy in the camps, and the men rarely help. They have too much work and sometimes they must leave the child with a sibling or elder relative (to collect leaves, firewood), so when the child is hungry they will give them rice powder or water until the mother gets back.

Indicator
Breastfeeding_Index:- Based on the Continuum of Infant and Child Feeding

| 0 – 5 months | 6 – 8 months | 9 – 23 months |

Initiation of breast–feeding within one hour after birth

Avoid prelacteal feeds and give colostrum

Exclusive breastfeeding (no teas, water, other milk)

Avoid bottle feeding

Continue breastfeeding

Avoid bottle feeding

Feed CF 2 – 3 times/ day + snacks

Feed CF 3 – 4 times/ day + snacks

Increase frequency, amount, and variety of complementary foods, including animal foods, fruits and vegetables, legumes, and oils/fat

Gradually complete transition to family foods

Fig. 1. The Continuum of Infant and Child Feeding[18]

Table 29: Descriptive Analysis of Breast Feeding

	All (%)	KTP	NYP
Child was given Pre-lacteal	27.3	24.3	30.7
Child was given Colostrums	95.8	96.8	94.7
BF Initiated Immediately	62	66.8	56.4
BF Initiated Early (within same day)	95.6	95.8	95.5
Child is BF on Demand	76.5	78.5	74.3
Child is BF Night	94.8	93.5	96.1
Child uses Bottle or Pacifier	7.9	8.5	7.3
Non-Exclusive BF < 6 months	11.85	11.0	12.7

5.2.4.2. Hypothesis Tree

Figure 30: Hypothesis 5 tree
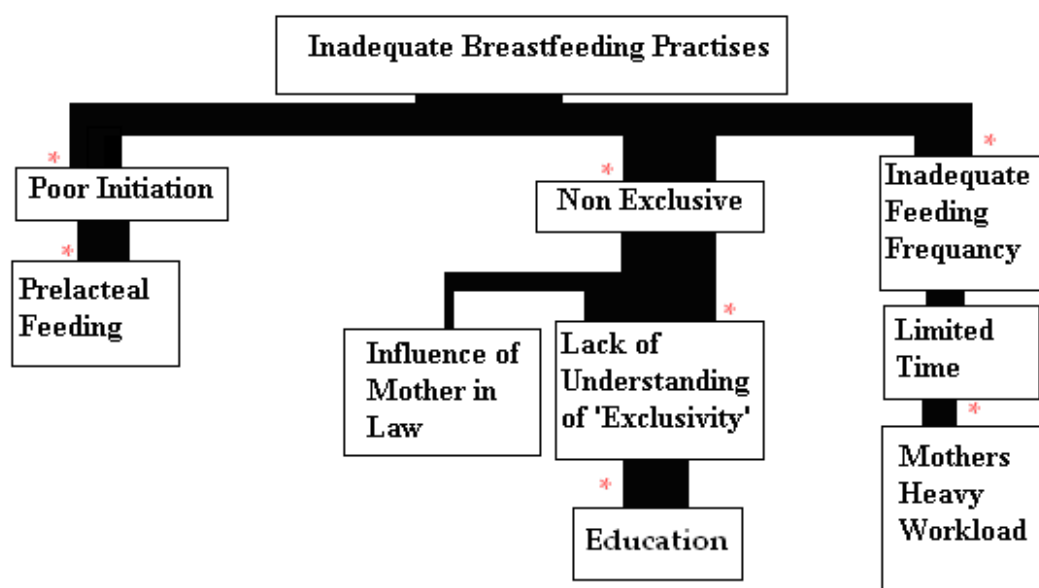
1. Poor Initiation of Breastfeeding

Initiation of Breastfeeding within the first hour has been proven to stabilize infant body temperature, respiratory rates and blood sugar levels due to the physiological effects of oxytocin as well as establishing a bond between mother and child.

Table 30: How long after the birth of 'Selected child' did you first put him/her to the breast?

Camp code			Freq.	%	Valid %
KTP	Valid	Immediately <1hour	189	65.6	66.8
		within the first day	82	28.5	29
		more than a day	7	2.4	2.5
		don't remember	5	1.7	1.8
		Total	283	98.3	100
	Missing	System	5	1.7	
	Total		288	100	
NYP	Valid	Immediately <1 hour	137	55.2	56.4
		within the first day	95	38.3	39.1
		more than a day	8	3.2	3.3
		don't remember	3	1.2	1.2
		Total	243	98	100
	Missing	System	5	2	
	Total		248	100	

In KTP 31.5% of mothers reported having left initiation more than one hour (some much more), while in NYP this number increases to 42.4%. It is likely that this is due to the common practise in the camp of administering sugar water or honey to the children after birth because 'this makes the child happy'.

Table 31: Did you give the child any other liquids or foods before you initiated breastfeeding?

Camp code			Freq.	%	Valid %
KTP	Valid	no	209	72.6	75.7
		yes	67	23.3	24.3
		Total	276	95.8	100
	Missing	System	12	4.2	
	Total		288	100	
NYP	Valid	no	169	68.1	69.3
		yes	75	30.2	30.7
		Total	244	98.4	100
	Missing	System	4	1.6	
	Total		248	100	

2. Non Exclusive Breastfeeding

From the household questionnaire's direct question on exclusive breastfeeding practices, it would seem that only 11% of mothers give their children Foods other than breast milk up to the age of 6 months. However, when we take into account the scores for Pre-lacteal feeding, and what we know from the Focus groups, this score is misleading, as they do not consider giving the infant water, or various watery pastes (usually rice powder) as a non-exclusive breastfeeding practice.

3. Inadequate feeding frequencies

Infants should be breastfed on demand, even during the night. Women's workloads are heavy in the camp, as it appears from both key stakeholders initial observations from the camps, and heavily emphasized by women in the women focus groups, they are responsible for everything, while the male head of household reportedly does very little to help. Their duties involve preparing and cooking meals, collecting leaves and firewood for cooking fuel, general everyday cleaning of the household, and some income generating activities.

Figure 31: Is the child breastfed on demand?
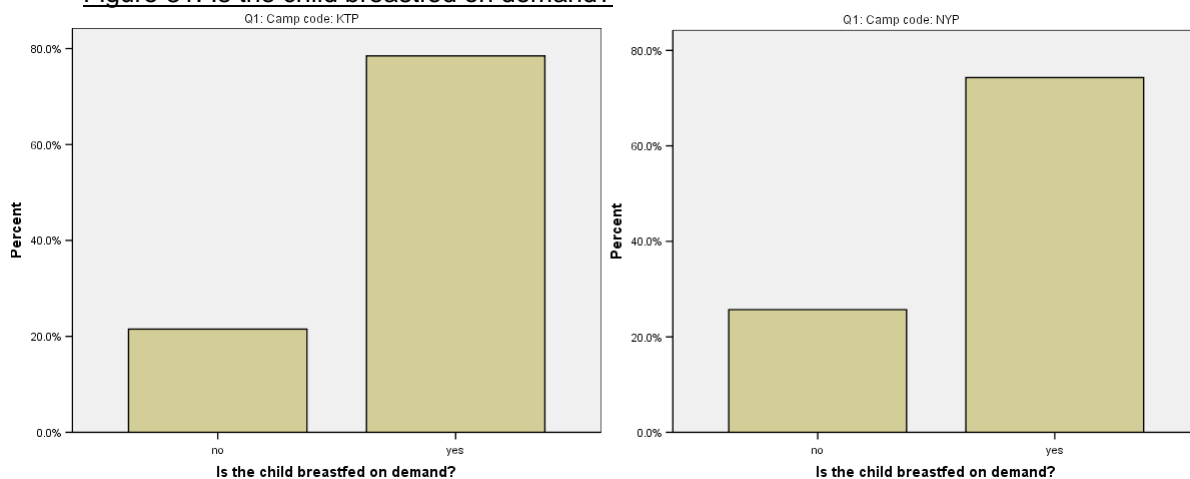
Table 32: Due to heavy workload do you face any difficulties to take care of your child?

Camp code			Freq.	%	Valid %
KTP	Valid	no	201	69.8	70
		yes	86	29.9	30
		Total	287	99.7	100
	Missing	System	1	0.3	
	Total		288	100	
NYP	Valid	no	177	71.4	71.7
		yes	70	28.2	28.3
		Total	247	99.6	100
	Missing	System	1	0.4	
	Total		248	100	

Almost 30% of women in both camps reported having trouble caring for their children, due to a heavy workload denying them adequate time to care for their children. This was confirmed by the qualitative section where mothers indicated that it is usual to have only 3 to 4 hours a day with their Infants. In their absence it is typically the elder siblings who are entrusted to care for the younger children. During the time they do have, they prioritize feeding.

5.2.5. Hypothesis 6: Inappropriate complementary feeding practises

5.2.5.1. Overall Description

'*Inappropriate complementary feeding due to poor timing of complementary feeding, inappropriate food types, and inadequate frequency of feeding.*'

Complementary feeding should be timely, meaning that all infants should start receiving foods in addition to breast milk from 6 months onwards. It should be adequate, meaning that the complementary foods should be given in amounts, frequency, and consistency while using a variety of foods to cover the nutritional needs of the growing child while maintaining breastfeeding. Foods should be prepared and given in a safe manner, meaning that measures are taken to minimize the risk of contamination with pathogens. And they should be given in a way that is appropriate, meaning that foods are of appropriate texture for the age of the child and applying responsive feeding following the principles of psycho-social care (WHO Standards).

The adequacy of complementary feeding (adequacy in short for timely, adequate, safe and appropriate) not only depends on the availability of a variety of foods in the household, but also on the feeding practices of caregivers. Feeding young infants requires active care and stimulation, where the caregiver is responsive to the child cues for hunger and also encourages the child to eat. This is also referred to as active or responsive feeding. Due to the heavy workload of mothers, the children are not fed in an active or responsive way. Evidence from key stakeholders and focus group discussions suggest that food is placed in front of the children and it is up to them to feed themselves. Otherwise sometimes it is the job of an elder sibling.

Due to limited alternatives, the family typically will give the child the same food from the family pot. The Rohingya food preference is for chilli and spices. They will cook the food and keep adding spices 'until the colour is red'. The infant child is then given this same extremely spicy food. Anecdotal evidence from key stakeholders coupled with focus group discussions suggest that it can take upwards of 1 1/2 months for the infant to get used to this level of spice (for example crying and refusing food).

Indicator: Complementary Feeding Index
The importance of child feeding practices for child nutrition is well recognized in the nutrition literature. It encompass a number of interrelated behaviors and good Child feeding practices in the first three years are also age specific within narrow age ranges, which adds to the complexity: (Exclusive breastfeeding (Popkin et al. 1990; Victora et al. 1989; Brown et al. 1989), timing of introduction of complementary foods (Cohen et al. 1994), and the importance of animal products in complementary feeding (Marquis et al. 1997)). To encompass the complexity of complementary feeding we used the 'child feeding index' (Ruel & Menon, 2002).

0-6 months	6-9 months	9-12 months	12-36 months
• Initiate BF soon after birth • Do not give prelacteal feeds • BF exclusively (no teas, water, other milks) • Do not use bottles	• Continued BF • Gradually introduce a variety of complementary foods, including some animal foods • Feed complementary foods 2-3 times a day • Do not use bottles	• Continue BF • Increase the amount, variety, and frequency of complementary foods, including some animal foods • Feed complementary foods 3+ times a day • Do not use bottles	• Continue BF • Continue to give a variety of foods • Gradually complete transition to family diet • Feed complementary foods 4+ times a day • Do not use bottles

Source: IFPRI 2002

Indicator for Complementary Feeding

Variables	6-9 mo	9-12 mo	12-59 mo
Breastfeeding	No = 0; Yes = +2	No = 0; Yes = +2	No = 0; Yes = +1
Uses bottle	No = 1; Yes = 0	No =1; Yes = 0	No = 1; Yes = 0
Dietary diversity (in past 24 hours)	**Sum of:** (grains + tubers + milk + egg/fish/poultry + meat + other): 0 = 0 1-3 = 1 4+ = 2	**Sum of:** (grains + tubers + milk + eggs/fish/poultry + meat + other): 0 = 0 1-3 = 1 4+ = 2	**Sum of:** (grains + tubers + milk + eggs/fish/poultry + meat + other): 0 = 0 1-3 = 1 4+ = 2
Food group frequency (past 7 days)	**For each of:** - **egg/fish/poultry** - **meat** 0 times in past 7 d = 0 1-3 times in past 7 d = 1 4+ times in past 7 d = 2 **For staples (grains or tubers)** 0-2 times = 0; 3+ times = 1 **Food group frequency** = sum of scores for staples + egg/fish/poultry +meat	**For each of:** - **egg/fish/poultry** - **meat** 0 times in past 7 d = 0 1-3 times in past 7 d = 1 4+ times in past 7 d = 2 **For staples (grains or tubers)** 0-3 times = 0; 4+ times = 1 **Food group frequency** = sum of scores for staples + egg/fish/poultry + meat	**For each of:** - **milk** - **eggs/fish/poultry** - **meat** 0 times in past 7 d = 0 1-3 times in past 7 d = 1 4+ times in past 7 d = 2 **Food group frequency** = sum of scores for milk + egg/fish/poultry + meat
Meal frequency (past 24 hours)	0 meals/d = 0 1 meal/d= 1 2 meals/d = 2	0 meals/d = 0 1-2 meals/d = 1 3+ meals/d = 2	0-1 meal/d = 0 2-3 meals/d = 1 4+ meals/d = 2
Total score	**12 points**	**12 points**	**12 points**

Table 33: Descriptive statistics of complementary feeding

CAM_id		N	Minimum	Maximum	Mean	Std. Deviation
KTP	Child Feeding Index Score	207	3.00	10.00	5.9662	1.31231
	Food Group Frequency	279	.00	5.00	1.3943	.87456
	Meal Frequency	261	1	7	3.57	.859
	IDDS	276	.00	8.00	5.0290	1.43434
	Valid N (listwise)	207				
NYP	Child Feeding Index Score	202	4.00	11.00	6.0842	1.12760
	Food Group Frequency	245	.00	4.00	1.4286	.81482
	Meal Frequency	237	1	6	3.48	.816
	IDDS	244	.00	8.00	4.9754	1.32381
	Valid N (listwise)	202				

5.2.5.2. Hypothesis Tree

Figure 32: Hypothesis 6 tree
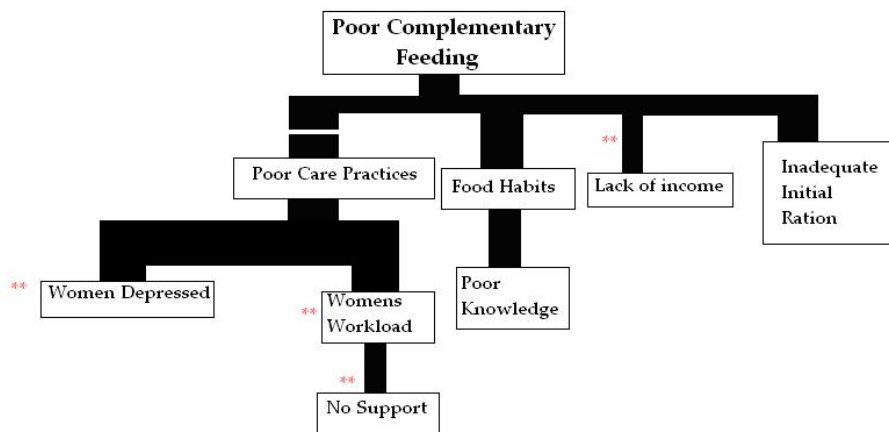
1. Poor Care practises
Although not significantly associated, care practises are a critical part of complementary feeding. A mother who coaxes and plays with her child to get him/her to eat will be more successful than a mother who just puts the bowl in front of the child.

Figure 33: Care practice index (question 2)
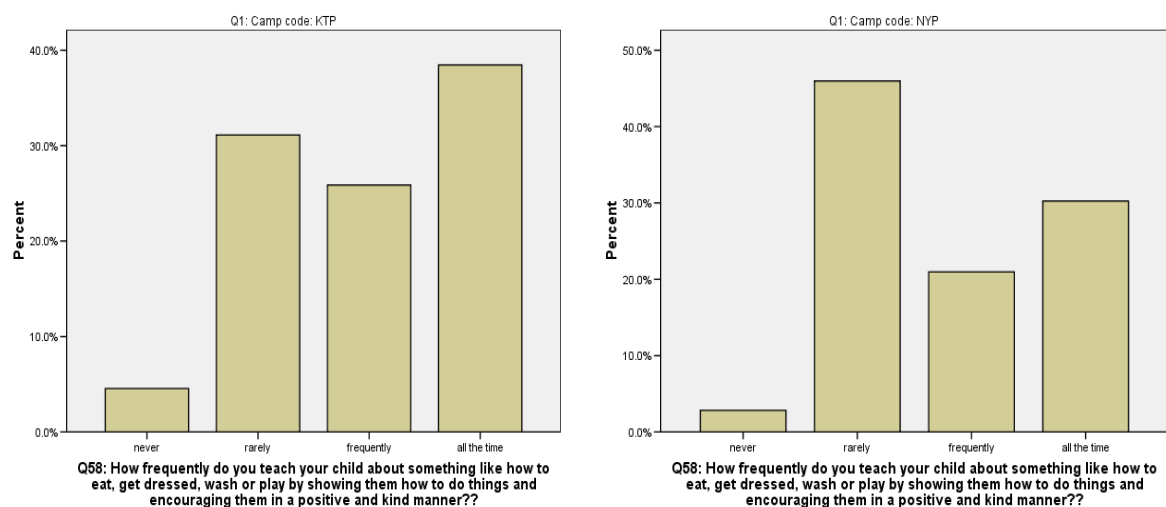
Focus group discussions indicate that at most women can play with their children for a few hours a day. The rest of the time they are very busy doing work, and cannot play, or afford the time to sit and actively help their child to eat. They want their children to eat, and try to help them, but usually they just put the food in front of the child. This is corroborated by the fact that 30% of women face difficulties in taking care of their child. In turn this appears to be associated with whether the man of the house is working or not. From the focus groups (with women) we know that the men do not support them at all with child care. However in households where the man is out working, there may be less for the woman to do, as she may not feel so pressured to work herself, allowing more time to focus on other things such as child care.

Psychological health can also play a big part in complementary feeding. If the mother is depressed, then she might be less likely to interact with her child in a way that encourages them to take their meals and provide proper care practice. This is detailed further under the next hypothesis.

2. Food Habits
The Rohingya food preference is for chilli and spices. They will cook the food and keep adding spices 'until the colour is red'. The infant child is then given this same extremely spicy food. Stakeholders and focus group alike suggest that it can take upwards of 1 1/2 months for the infant to get used to this level of spice (for example crying and refusing food). Coupling this with poor care practises, such as leaving the bowl in front of the child, means that it's extremely likely that the child won't eat as much as he should.
Statistics confirm this habit for about a quarter of the children whereas FGD indicated that it is a much more prevalent habit.

Figure 34: Food habits for children
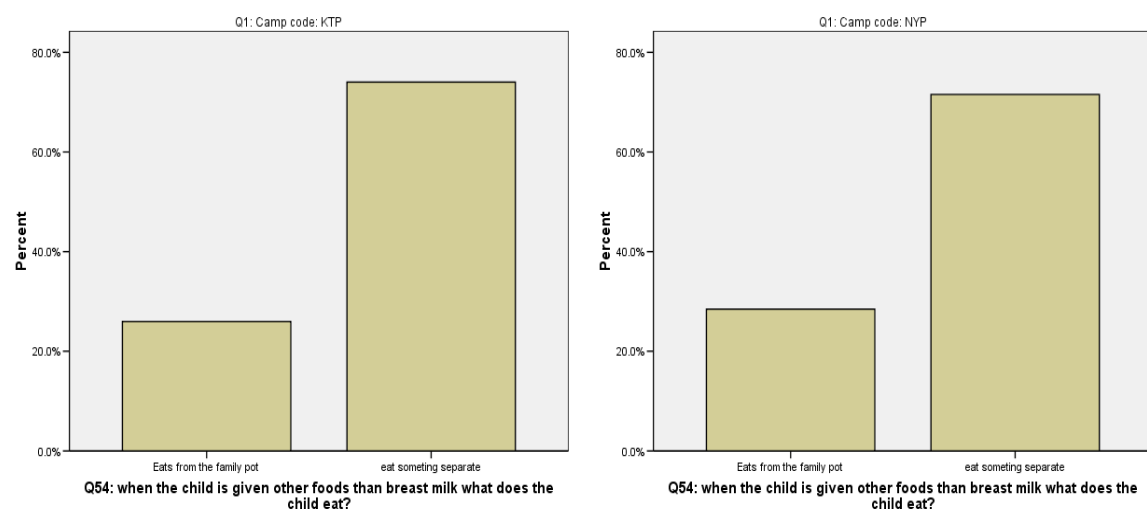
3. and 4. Lack of Income and Food Assistance
Lack of income is likely to be reflecting the ability to diversify the diet of a child and increase the quantity and quality of foods. This is also the case for inadequate food assistance. Both are in themselves individual pathways and have been described fully earlier on.

5.2.6. Hypothesis 7: Inadequate psychosocial care practices

5.2.6.1.   Overall Description

'Inadequate Psychosocial Care practices due to the heavy workload of mothers, miscomprehension of the severity of malnutrition and potentially a skewed incentive system in the camp regarding malnutrition.'

Care refers to the behaviors and practices of caregivers (mothers, siblings, fathers, and childcare providers) to provide the food, health care, stimulation, and emotional support necessary for children's healthy survival, growth, and development. These practices translate food security and health care resources into a child's well being. Not only the practices themselves, but also the ways they are performed —in terms of affection and responsiveness to the child—are critical to a child's nutrition, survival, growth and development (Engle, Lhotska, and Armstrong 1997).

An important aspect of care practices that influence survival, growth, and development of children are the social, emotional, and cognitive interactions between caregivers and children (Engle, Lhotska, and Armstrong 1997; Engle and Riccuiti 1995). These practices include responsiveness of the caregiver to the child, the attention, affection and involvement that the caregiver shows, and encouragement of autonomy, exploration, and learning.

In the camps, the mothers are frequently very busy, and according to the focus groups largely unaided by their husbands, outside of the house collecting firewood, cleaning, or involved in small domestic work. For this reason they are unable to spend as much time with their children as they would like to, care duties being most often passed on to the eldest sibling.

5.2.6.2.   Hypothesis Tree

Figure 35: Hypothesis 7 tree
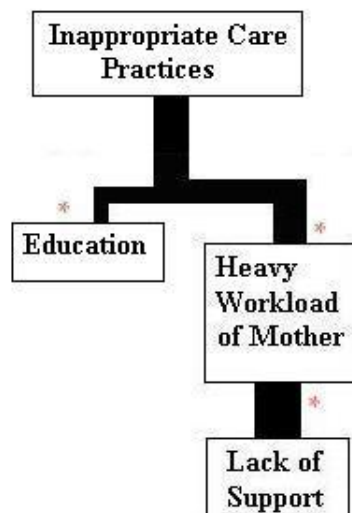
Indicator
CP_score_AMOS[26]

Care Practices Index

We used an adapted version of the Caregiver-Child Social/Emotional and Relationship Rating Scale (McCall et al, 2010) to test the adequacy of 'Care Practices'.

The scale tests the followings aspects of Psychosocial Care.

1. How frequently do you spend time listening attentively when your child speaks or play, with your children, or pay attention when they are eating?
2. How frequently do you teach your child about something like how to eat, get dressed, wash or play by showing them how to do things and encouraging them in a positive and kind manner?
3. How frequently do you give directions and "correct" your child's behavior?
4. How frequently do you correct your child by hitting or spanking, yelling or shouting?
5. How frequently do you praise, hug, kiss or smile at your child for his/her accomplishments?

Figure 36: Care practice index question 1
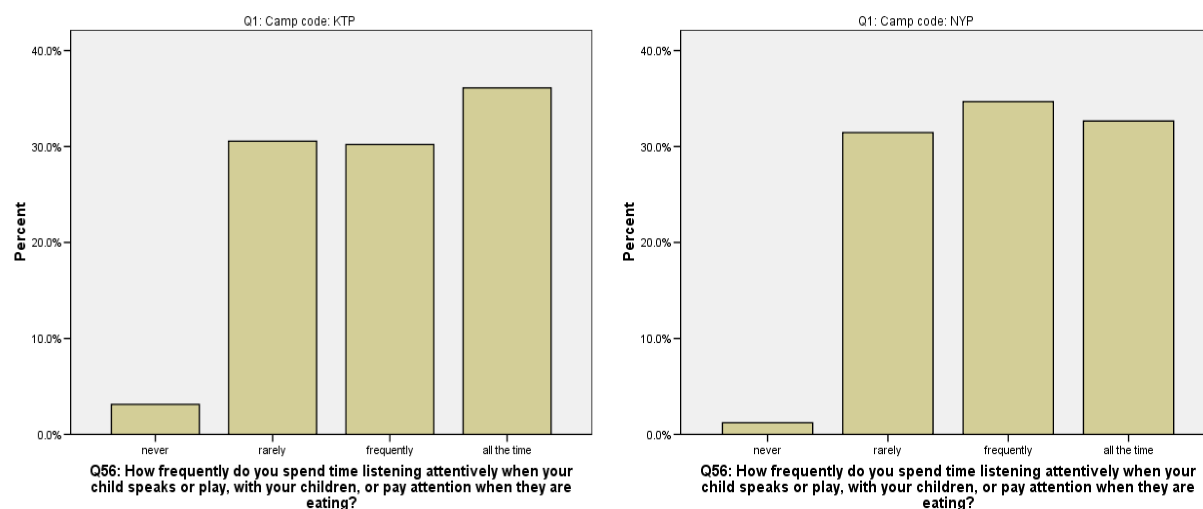
Table 34: Care Practice Index Score

Camp code		Mean*	Std. Deviation
KTP	Care Practices Score	1.6	0.7
NYP	Care Practices Score	1.5	0.7

*Higher is better, Max. 2.5

Incentives and Misunderstanding of Malnutrition culminating in Poor Care Practices

Additionally, the ongoing situation in the camp is one without any clear future. The refugees have very little hope of moving out and on with their lives. Day to day; living in extremely cramped conditions with little or no privacy for 20 years, unable to work, struggling to survive on an inadequate ration skews the worldview and incentives for the Rohingya. For many people in the camps this is the reality for them all they know.

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[26] A detailed example of how indexes and scores were created to use the AMOS score technique is provided in appendix 7

The malnutrition rates in the camp coupled with our knowledge of the food sharing and selling practices indicates that there is not enough food available to the Rohingya. As it stands currently, the only food they get is the WFP provided food ration, and this only to those with a ration card. However this is not the only source of 'free' food distribution available in the camps. There are a number of nutrition programmes which provide food to mothers whose children are suffering from malnutrition. This is where the issue of incentives becomes important.

It is not an easy suggestion that families monitor and adjust the malnutrition levels of their children in order to obtain an extra source of food/income; however this was a reoccurring theme in many of the key stakeholders interviews conducted over the course of the study. Evidence from interviews with key stakeholders working in the nutrition monitoring centres suggest that on occasions mothers are visibly disappointed when their child is not malnourished enough for them to be able to receive the additional food rations.

This practice suggests that families value their short term food security over the long term health and economic potential of their children, which in turn suggests there is a profound misunderstanding of the severity and long term consequences of malnutrition. It might be interesting to conduct test with mothers on the long-term consequences of malnutrition, to identify if this is really an area of misunderstanding.

5.2.7.   Hypothesis 8: Poor mental health of primary caregivers

5.2.7.1.   Overall Description

Mental Health: Pre-natal and postnatal psychological status of the mother has been proven to have a demonstrated impact on birth weight and child growth (Pattel, 2006; Rhaman 2004). Given the longstanding situation in the camps and the daily hardships which have been endured for the last 20 years, and with no clear end in sight, coupled with domestic violence and the low social standing of women in the camps, it maybe assumed that depression amongst mothers is not negligible, and this in turn may also have a detrimental effect on the consequent abilities to care for children.
The focus groups indicate that the women are often depressed. They worry that they will not get enough food to feed themselves and their family.

Example from FGD
"This is a constant worry, there never seems to be enough…. we are stressed because we have too much work and our husbands don't do anything, if we complain, we will get beaten. We will get beaten anyway, many women get beaten in the camps, and it's just how it is… Only if women get really badly beaten is it an issue."

They are also worried that there is no future for them or their children, and they wish they could be accepted into the Bangladeshi community. They are frightened that they will be pushed back to Myanmar where they will be tortured.

Indicator: PS_Score_AMOS

Mental Health Index
We used an adapted variation of the WHO Five Wellbeing index to assess the mental health of the primary caregivers. This model has already been used and validated in Bangladesh in a variety of studies and uses a Lichert scale style response.

Mental Health Questions
1. I have felt cheerful and in good spirits (I have been able to laugh and see funny side of things.)
2. I felt calm and relaxed. (No worries, anxiety, scared or panicky feeling).
3. I felt active and vigorous. (I feel energetic and I look forward to do things.)
4. I woke up feeling fresh and rested.
5. My daily life has been filled with things that interest me.

Table 35: Mental Health Scores

Camp code		Mean*	Std. Dev.
KTP	Mental Health Score	2.8	0.9
NYP	Mental Health Score	2.7	0.8

*Higher is better

These scores are fairly low, indicating a low level of wellbeing among the women in the camps.

5.2.7.2. Hypothesis Tree

Figure 37: Hypothesis 8 tree
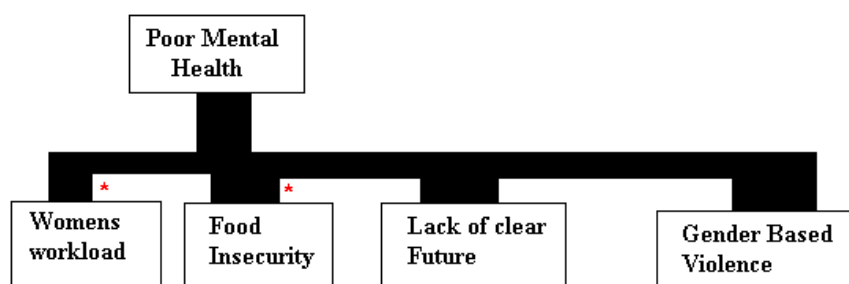
Workload of women is found to correlate strongly with the Psychological health score. This makes sense, as from the focus groups and our own observations; we know that they are constantly busy and unable to take time for themselves. It is also positively correlated with HDDS and IDDS, which could indicate that when there are not many foods in the household, women worry more about food security and because of these increased daily stressors consequently their health suffers.

5.2.8. Hypothesis 9: Poor health seeking behaviour

5.2.8.1. Overall Description

'Poor health seeking behaviour as a result of in adequate health facilities, a poor health environment and poor health behaviours and attitudes.'

Poor health is intrinsically linked with poor nutrition. Malnutrition can cause poor health through a deterioration of the immune system, and in turn poor health can lead to malnutrition, through a failure to absorb nutrients such as in the case of Diarrhoea or through the additional calories required to sustain a severe acute respiratory infection such as Pneumonia.

Indicators
Incidence of Diarrhoea in Previous 2 Weeks
Incidence of Cough in Previous 2 Weeks

Figure 38: Incidence of Diarrhoea in the previous 2 weeks
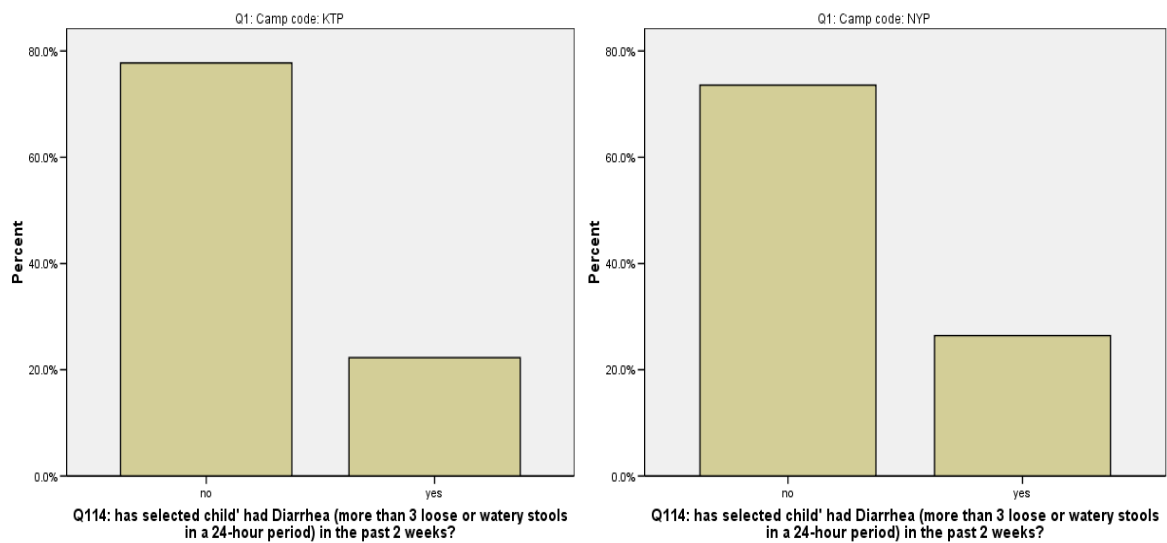
Figure 39: Incidence of Cough in the previous 2 weeks
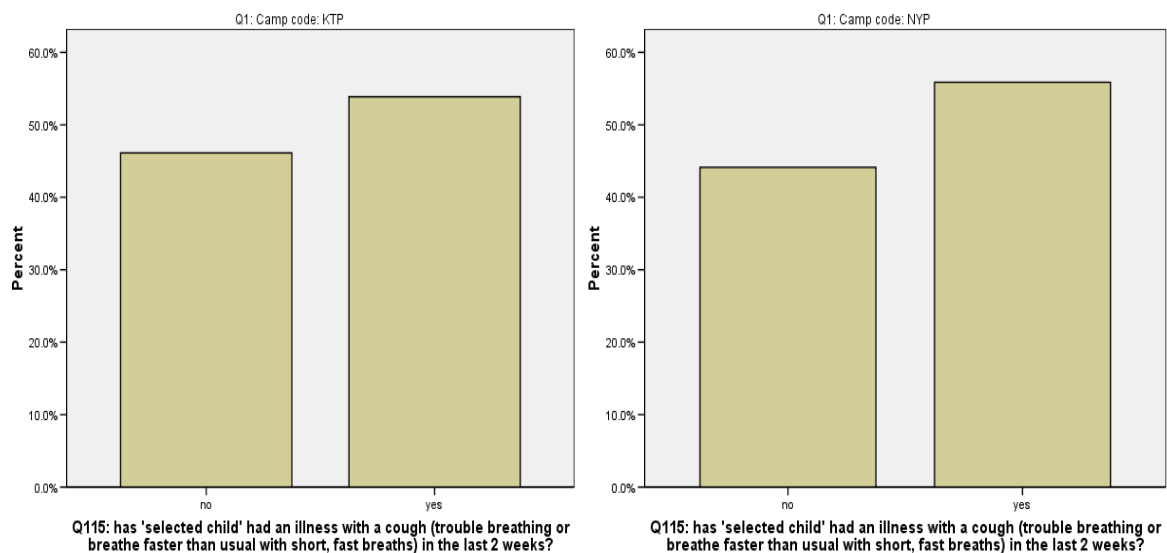
5.2.8.2.   Hypothesis Tree

Figure 40: Hypothesis 9 tree
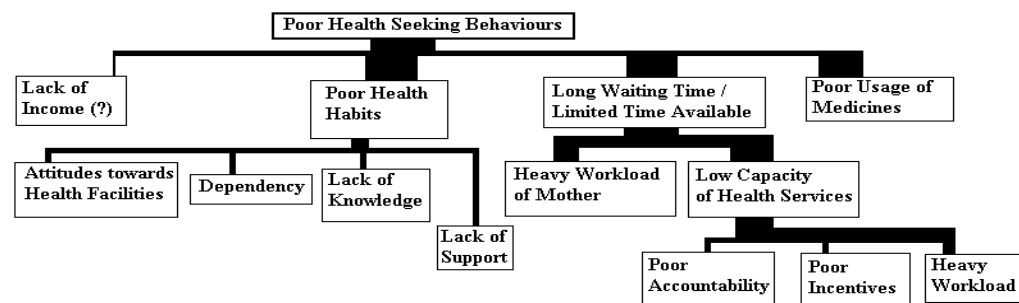
1) It was highlighted in the key stakeholder meetings of stage one, that the health facilities in the camp are at limited capacity, often running with minimal staff. This problem of capacity also extends to some inefficient organizational issues and the attitudes of the doctors, which in turn serve to further exacerbate waiting times and confidence in the health facilities. This unfortunately creates a number of issues that enable and sustain poor health seeking behaviours.

From the focus groups discussions it is clear that the refugees are not satisfied with the quality of treatment they receive. The most common complaint is that the waiting time is too long, preventing them from completing the work that they otherwise need to do. Official opening times are supposed to be from 8am until 2:30pm, but according to the Focus groups and various initial key stakeholder meetings the doctors are not there at these times, often they are absent for long periods of the morning, significantly shortening the available time for treatment. Another key complaint is that the doctors never take the time to explain the ailments and the appropriate ways to deal with them, including not always explaining how to use the medicines prescribed in a way the Rohingya can understand.

It has been suggested during the course of a number of key stakeholder meetings that the refugees don't tend to complete courses of medicines they receive in the health facilities. Instead when they start to feel better, they stop taking the medicine, and save it for another family member, or sell it. This practice is damaging on a number of levels. Firstly, there is the threat of misdiagnosis and inappropriate usage of drugs. Secondly, many of the drugs administered (antibiotics for example), once opened become poisonous after a short time. This means that the refugee's self administering medicines may in fact be self-administering poisons. This practice is in all likelihood down to a number of factors. With the heavy workload of the limited staff in the health facilities it is unlikely that much time is spent to ensure that the patients fully understand how to use the medicines. Given the extremely low literacy rates in the camps, and the time constraints faced by staff, it is unlikely that full comprehension is achieved. These claims were refuted quite adamantly during the focus group discussions; the only claims verified being the miscomprehension of instructions. The refugees claim they never sell their medicine, and they never save it as the doctors open it when they are prescribing it so it would go bad if they stored it.

2) The cramped conditions of the camp create a number of problems which are related to poor health, as communicable diseases are much more quickly spread. (See for instance hypothesis 13 on latrines). During the rainy season, the sheds become very muddy and wet, an environment in which illnesses are more prevalent. Also of concern is the cooking practices, the stoves used by the Rohingya are very smokey and could be responsible for many of the respiratory illnesses found in the camp. Thus far attempts to integrate cleaner burning stoves have been unsuccessful, as typically the Rohingya will uninstall and sell the materials to boost their income. The focus groups indicate that the change of the seasons (cold to hot, hot to rainy and rainy to cold) are the worst periods for illnesses. It is during these periods that they are under the most stress in terms of health problems, and consequently money problems as they have to buy more medicines and nutritious foods in a bid to keep their children healthy.

3) Health Habits in the camp undoubtedly have an effect on the malnutrition rates in the camps. Many of the children around the camps are naked or barefoot. This can make them very susceptible to worms and diarrhoea. (Coverage for deworming however is close to 100% in the camps in terms of distribution.)

4). Lack of Support in Outreach Programs. The Rohingya appear to have excellent knowledge on a number of issues related to malnutrition. This is potentially down to 20 years of having been subject to numerous outreach programs from numerous different stakeholders. However when it comes to practices of what they apparently 'know' many of their behaviours are somewhat contradictory. This could be a failure in the second part of the process of outreach programs, support and monitoring processes and this observation extends to more than just healthy seeking behaviours, but also to food preparation, hygiene practises and care practises.

5.2.9. Hypothesis 10: Low birth weight

5.2.9.1. Overall Description

'Low birth weight due to early pregnancy, traditional beliefs and influence of mother in law.'

Low birth-weight is a significant contributor to infant mortality. Moreover, low birth-weight babies who survive are likely to suffer growth retardation and illness throughout their childhood, adolescence and into adulthood. The causes and effects of low birthweight are complex and best considered within the lifecycle conceptual framework. Poor nutrition often begins in the intrauterine environment and extends throughout the lifecycle. Low birthweight is an intergenerational problem where low birthweight infants grow up to be undernourished and stunted children and adolescents and, ultimately, undernourished women of childbearing age, and undernourished pregnant women who deliver low birthweight infants. This amplifies risks to the individual's health and perpetuates the cycle of poverty, undernutrition and disease. This is especially so when adolescents become pregnant before their own growth is completed, leaving little to fulfil their own or their infant's nutritional requirements. (UNSCN, 2000)

According to the HIS October 2011, the level of LBW in the camps was 15% in September and 13% in October (Nayapara 14% and 9%, Kutupalong 17% and 19% respectively).

Early pregnancy of mothers: The literature on child malnutrition identifies the age of a mother as a significant risk factor in her children's nutritional status. Delivery complications resulting in low birth weight are more likely among babies born to women in their teens or their late 30s and 40s. In the Camps more than half of the mothers (54.8%) have become pregnant before reaching 18 years of age (Rashid, 2010). From the stakeholder interviews there appears to be some doubts over the acceptance of family planning activities.

Tradition: There is a well documented behavior in Bangladesh with regards to pregnant women and their eating habits whereby they believe that it is better to eat less when pregnant, to avoid having a large baby and therefore potentially having problems during childbirth. This coupled with the already minimal initial endowment of foods available to families generally, and their subsequent sharing and selling practices, it is not unreasonable to assume that food consumption of the mother plays a key role in low birth weight.

There also exist some traditional beliefs during pregnancy that affect the health of mother and child.

Examples taken from a focus group in the camps are as follows
'It is not good to consume porridge with iron tablet it makes the child big in womb'
'Elders say that taking vitamin tablets makes the baby big'

5.2.9.2. Hypothesis Tree

Figure 41: Hypothesis 10 tree
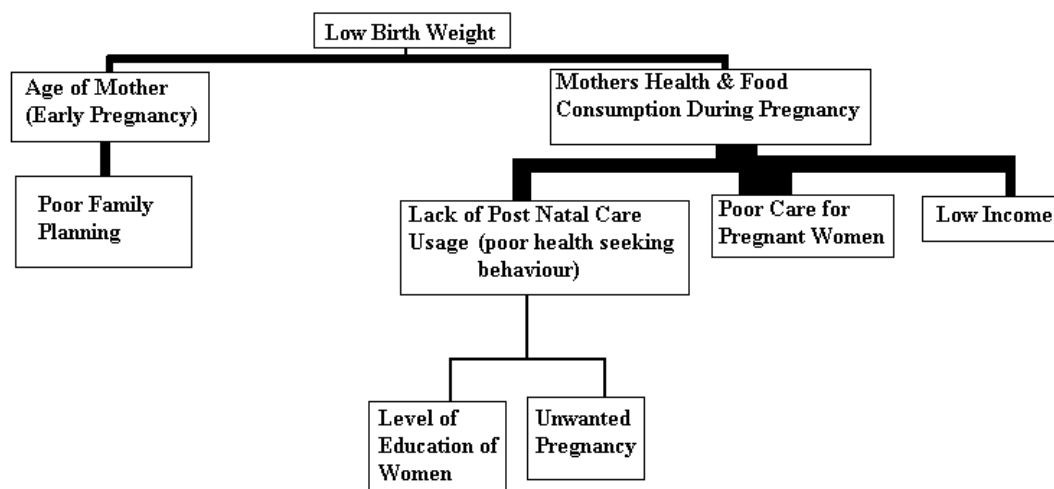
Table 36: Low birth weight data

Camp code			Freq.	%	Valid %
KTP	Valid	Birth Weight >2.5Kg	92	31.9	68.1
		Birth Weight <2.5Kg	43	14.9	31.9
		Total	135	46.9	100
	Missing	System	153	53.1	
	Total		288	100	
NYP	Valid	Birth Weight >2.5Kg	85	34.3	73.3
		Birth Weight <2.5Kg	31	12.5	26.7
		Total	116	46.8	100
	Missing	System	132	53.2	
	Total		248	100	
BOTH	Valid	Birth Weight >2.5Kg	177	33	70.5
		Birth Weight <2.5Kg	74	13.8	29.5
		Total	251	46.7	100
	Missing	System	286	53.3	
	Total		537	100	

Indicators
Age of first Pregnancy
ANC usage
Health and Nutrition during Pregnancy

Table 37: Age of 1st Pregnancy

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	Q39: How old were you when you gave birth to your first child?	279	11	27	17.6	2.7
NYP	Q39: How old were you when you gave birth to your first child?	241	12	26	17.7	2.7

Figure 42: Food habits during pregnancy
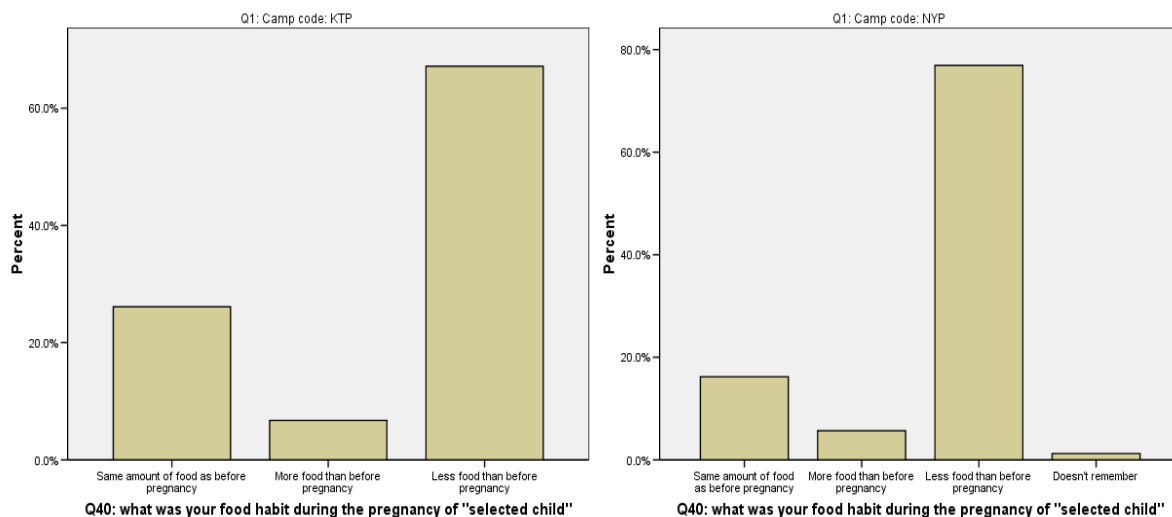
Table 38: During your pregnancy with "selected child", did you see anyone for antenatal care?

Camp code			Freq.	%	Valid %
KTP	Valid	no	10	3.5	3.5
		yes	274	95.1	96.5
		Total	284	98.6	100
	Missing	System	4	1.4	
	Total		288	100	
NYP	Valid	no	10	4	4.1
		yes	235	94.8	95.9
		Total	245	98.8	100
	Missing	System	3	1.2	
	Total		248	100	

Table 39: During your pregnancy with "selected child", did you consume any additional vitamins/micronutrients?

Camp code			Freq.	%	Valid %
KTP	Valid	no	42	14.6	14.9
		yes	240	83.3	85.1
		Total	282	97.9	100
	Missing	System	6	2.1	
	Total		288	100	
NYP	Valid	no	14	5.6	5.7
		yes	232	93.5	94.3
		Total	246	99.2	100
	Missing	System	2	0.8	
	Total		248	100	

5.2.10. Hypothesis 11: Unhygienic cooking practices

5.2.10.1. Overall Description

'Unhygienic cooking practices due to condition of the living space, lack of fuel/knowledge, and access to water in Nayapara'

It was mentioned in a number of the key stakeholder meetings that the environment in which the cooking typically takes place is very unhygienic. The general humidity exacerbates the rate of food spoilage and attracts many flies etc. which further spread bacteria.

Food is cooked once daily, and is not typically reheated for later use, due to the lack of fuel available. Due to the high humidity of the environment and the poor storage practices, it is likely that the growth of microbes is accelerated. Therefore this lack of reheating food to kill harmful bacteria is likely to be one of the factors responsible for poor health and malnutrition amongst children.

Lack of knowledge on how to properly clean and store utensils may also be a factor contributing to bacteria and poor health.

Access to clean water is likely to be an issue in the Nayapara camp, where water is only available at certain times of the day, and somewhat limited in quantity (17 litres per person per day). When water is limited, bad habits concerning hygiene are more likely to arise, in terms of washing hands before cooking, washing utensils and water used for cooking. Due to the scarcity of fuel, it is unlikely that it is boiled prior to use for cooking.

5.2.10.2.   Hypothesis Tree

Figure 43: Hypothesis 11 tree
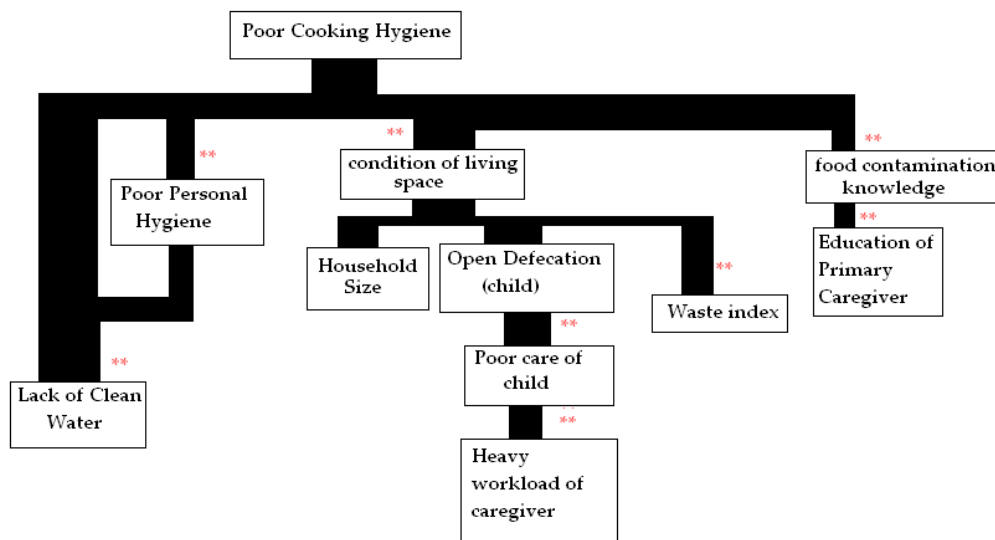
Cooking Hygiene refers to the generally unhygienic conditions under which cooking occurs, and therefore the myriad opportunity for food to become contaminated.

This mainly occurs through a lack of clean water, and the poor conditions of the living space.

1. Lack of Clean Water
In Nayapara, the FGD came across strongly that it is common practise to clean utensils, and foods in water from other sources than the tube well, due to scarcity of clean water available to them. In Kutupalong during the rainy season, they will use the rainwater for all purposes other than drinking. Lack of access to clean water is likely to affect the vigilance of personal hygiene practises, as when there is a scarcity of water, they are more likely to use -untreated water or not wash their hands or child at all.

> **Indicator**
> **Enough water**
> Q: Was the overall amount of clean/safe water available to you in the last 7 days sufficient? (Sufficiency Scale)
>
> **Poor Personal Hygiene**
> Personal Hygiene Index

2. Condition of the Living Space
This refers to the fact the houses are cramped and dirty, and such present a hazard for food contamination through various sources of bacteria.

In the focus groups, it was very clear that women struggle to take time to clean the house properly as they have many other jobs to do during the day like collecting leaves, washing clothes, making fish nets, etc. The presence of faeces in the house is partially down to animals (cats, chickens, ducks) roaming freely around the houses, and partially due to open defecation of the children. The children can't use the toilets as they are too high, and they are scared of them. Consequently, they urinate and defecate around the house, and it will stay there until someone finds it.

Figure 44: Place of children defecation
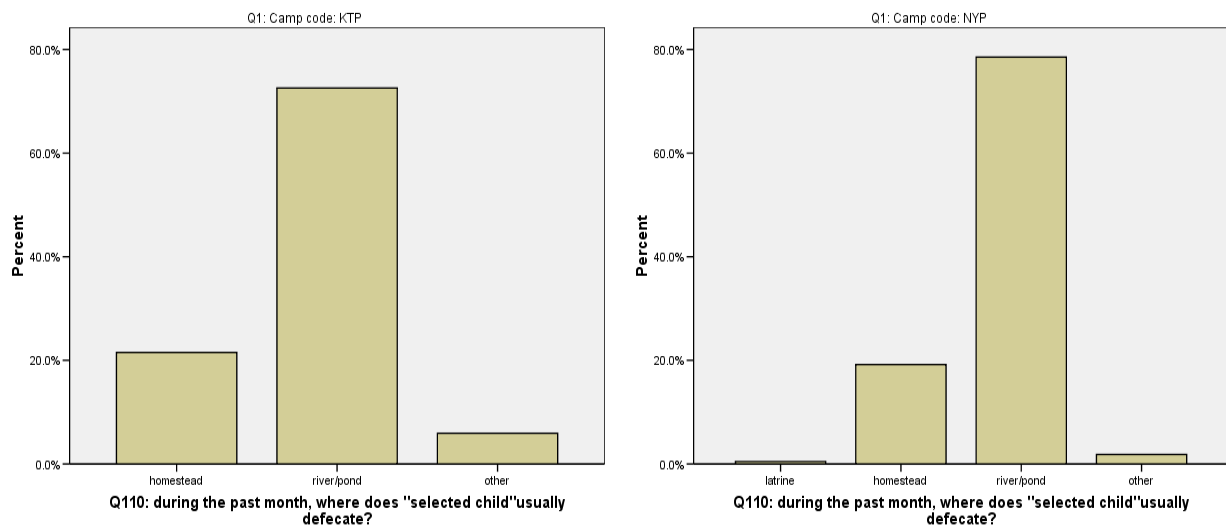
Figure 45: Observation of feaces in and around households
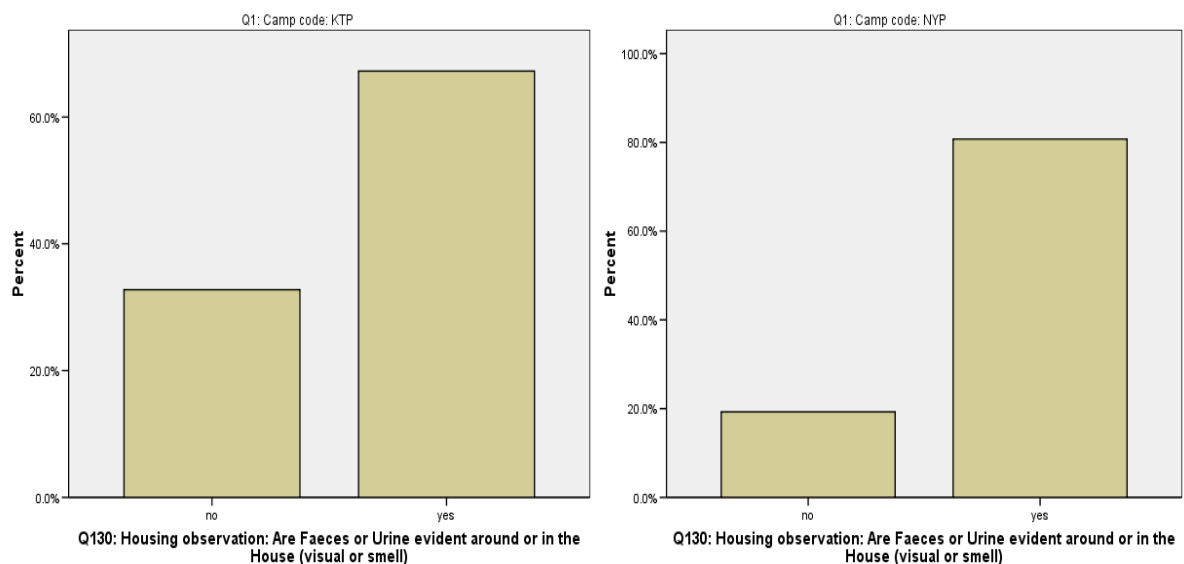
Waste Disposal: The focus groups emphasised the fact that people don't like to go to the waste disposal site, as it's too far away and it smells very bad. Instead they tend to just throw there rubbish in and around the house which attracts flies, which contributes to food spoilage and contamination. This is further discussed in a separate hypothesis below.

3. Food Contamination knowledge
This point has been discussed in more detail already in hypothesis 3 under food preparation.

5.2.11. Hypothesis 12: Poor access to water

5.2.11.1. Overall Description

'Poor hygiene practices as a result of poor access to clean water'

In Nayapara camp, there is limited access to clean/potable water. In the focus groups in Nayapara participants estimated an average availability of around 2 pots a day for the time of asking, (around 17-20 litres per person per day). Due to this access problem, they only use the available clean water for drinking and cooking. For all other activities requiring the use of water, they use alternative sources such as ponds, hand dug wells, and the reservoir. The use of this untreated water is year round but more pronounced during the hot season when there 's not enough potable water for even the most basic needs, and as such it was reported that people resort to drinking pond water, which is likely to be highly contaminated given the level of open defecation.

Unlike in Kutupalong, there is no groundwater source and therefore the only potable water available is surface water treated by the UNHCR water treatment plant. Water can then be obtained from the water distribution points however this water is only available 1 or 2 times daily, and this works on a 'first come first served' basis. This means that people have to wait to get the water, and some have to cover some distances carrying the water. It has been suggested in both the initial key stakeholder meetings and during the course of focus groups in Nayapara, that much of the water during transportation gets spilled and so actual household usage of water is less than the reported 17 litres per person per day. It was also suggested that the valve controlling the water supply is not always opened fully, which means that the total amount of water available from the taps may not be the full 17 litres. In the dry season, the situation is exacerbated by a further lack of water as the surface water supplies dry up.

This lack of clean water is likely to affect the vigilance of hygiene practices in the camp, as well as the temptation to use non-treated water from other sources. Evidence from the key stakeholder interviews suggests that it is the usual practice for example to wash utensils in untreated water, thus risking contamination. Also, buckets used to transport clean water from collection points to the household are also used to carry untreated water for cleaning purposes, thus contaminating the storage containers of water.

This lack of access to clean water is likely to affect malnutrition in the camps both directly, through the reported consumption of untreated water, and indirectly as an underlying cause of poor hygiene behaviours. This pathway focuses mainly on the direct link, the indirect link is considered in the underlying analysis of the other relevant pathways.

5.2.11.2. Hypothesis Tree

Figure 46: Hypothesis 12 tree
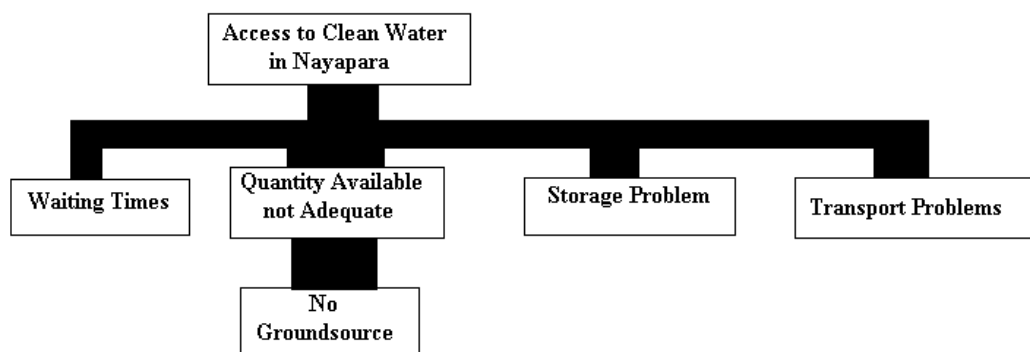
Indicator
Enough Water

Table 40: Was the overall amount of clean/safe water available to you in the last 7 days sufficient

Camp code			Freq.	%	Valid %
KTP	Valid	Sufficient	282	97.9	99.3
		> Sufficient	2	0.7	0.7
		Total	284	98.6	100
	Missing	System	4	1.4	
	Total		288	100	
NYP	Valid	Extremely insufficient	58	23.4	23.5
		Insufficient	164	66.1	66.4
		Sufficient	25	10.1	10.1
		Total	247	99.6	100
	Missing	System	1	0.4	
	Total		248	100	

Table 41: Do you use any other sources (other than water points provided) of water for drinking or washing etc.?

Camp code			Freq.	%	Valid %
KTP	Valid	No	275	95.5	97.2
		Yes	8	2.8	2.8
		Total	283	98.3	100
	Missing	System	5	1.7	
	Total		288	100	
NYP	Valid	No	142	57.3	58.2
		Yes	102	41.1	41.8
		Total	244	98.4	100
	Missing	System	4	1.6	
	Total		248	100	

Table 42: Source of other water

Camp code			Freq.	%	Valid %
KTP	Valid	Tubewell	5	1.7	83.3
		Pond	1	0.3	16.7
		Total	6	2.1	100
	Missing	System	282	97.9	
	Total		288	100	
NYP	Valid	Pond	64	25.8	59.8
		Hand dug well	40	16.1	37.4
		Other	3	1.2	2.8
		Total	107	43.1	100
	Missing	System	141	56.9	
	Total		248	100	

5.2.12. Hypothesis 13: Inappropriate use of latrines

5.2.12.1. Overall Description

'Inappropriate usage of latrines due to inappropriate design and inadequate safety environment, leading to open defecation and use of makeshift toilets inside the home.'

Human excreta always contain large numbers of germs, some of which may cause diarrhea. When people become infected with diseases such as cholera, typhoid and hepatitis A, their excreta will contain large amounts of the germs which cause the disease.

When people defecate in the open, flies will feed on the excreta and can carry small amounts of the excreta away on their bodies and legs. When they touch food, the excreta and the pathogens are passed onto the food, which may later be eaten by another person. Some germs can grow on food and in a few hours their numbers can increase exponentially. During the rainy season, excreta may be washed away by runoff and contaminates wells and streams and thus potentially, water used for drinking. Many common diseases that can give diarrhea can spread from one person to another when people defecate in the open. Disposing of excreta safely, isolating excreta from flies and other insects, and preventing faecal contamination of water supplies greatly reduce the spread of diseases.

It has been reported in a number of the key stakeholder meetings that the latrines available in the camps are not adequate in quantity given the long term situation of the Rohingya which should therefore be viewed in development terms as supposed to regular refugee camp standards.
First of all with respect to their appropriateness for children, the latrines are typically too large for the small children to use, and it is common for children to defecate in the open, or in the homestead. Linked to this is the poor maintenance of the latrines. Most of the time they are in very bad state, so that in the focus groups, many women admitted that particularly in the Hot season, when the latrines are at their worst, they prefer to defecate in the open. They are frequently blocked or in a bad condition, as few people are willing to clean or maintain them themselves, perpetuating the deterrent for using the latrines. During the workshops held with key stakeholders it was reported that the refugees don't clean the latrines as vigilantly as they should as they do not feel a sense of ownership or responsibility towards the latrines, instead believing that it is the job of the NGO's to clean the facilities.

Secondly, there is also the question of the safety of the latrines location for women especially after dark. According to UNHCR data, there has been an increase in the prevalence of SGBV (of 180% between 2009-2010). Of this increase, the incidences of rape and attempted rape typically happen in and around the toilet and sanitation facilities.

As a result of this and the strong religious conservatism, makeshift arrangements are established in the living quarters for women and children to use as a urinal. During our survey, we observed many incidences of young children playing and crawling in and around urine and faeces within the sheds themselves.

5.2.12.2. Hypothesis Tree

Figure 47: Hypothesis 13 tree
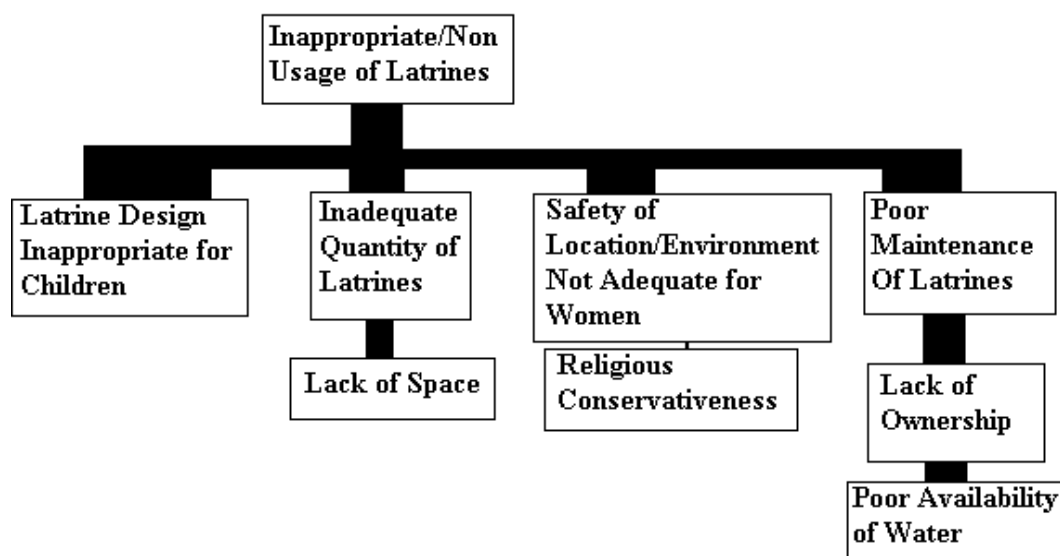
Indicator
(i) Latrine_score_AMOS- Condition of Latrines
(ii) Faecal_score_AMOS- Presence of Faeces in the Homestead

Table 43: Latrine_score

Camp code		N	Min.	Max.	Mean*	Std. Dev.
KTP	Latrine Hygiene computed score	232	0	0.4	0.3	0.2
NYP	Latrine Hygiene computed score	197	0	0.4	0.4	0.1

*The higher the score the lower the hygiene of the latrines

Table 44: Faecal Index

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	Presence of animal or human feaces score.	283	0	0.8	0.6	0.4
NYP	Presence of animal or human feaces score.	243	0	0.8	0.7	0.4

* The higher the score, the higher the presence of Faeces

Figure 48: Observation of feaces in and around households
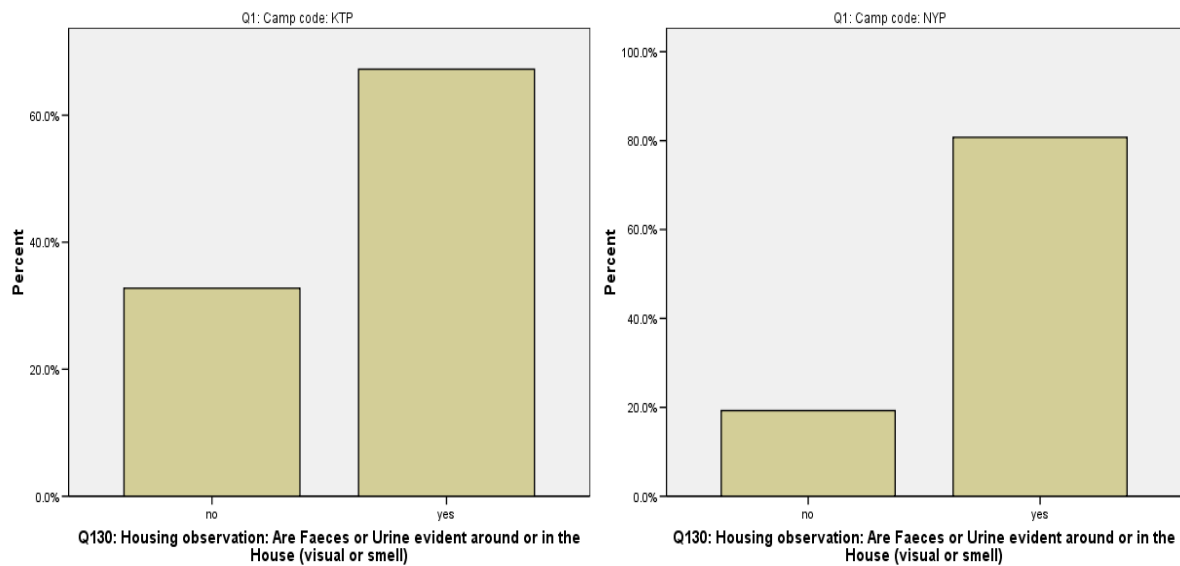
Figure 49: Place of children defecation
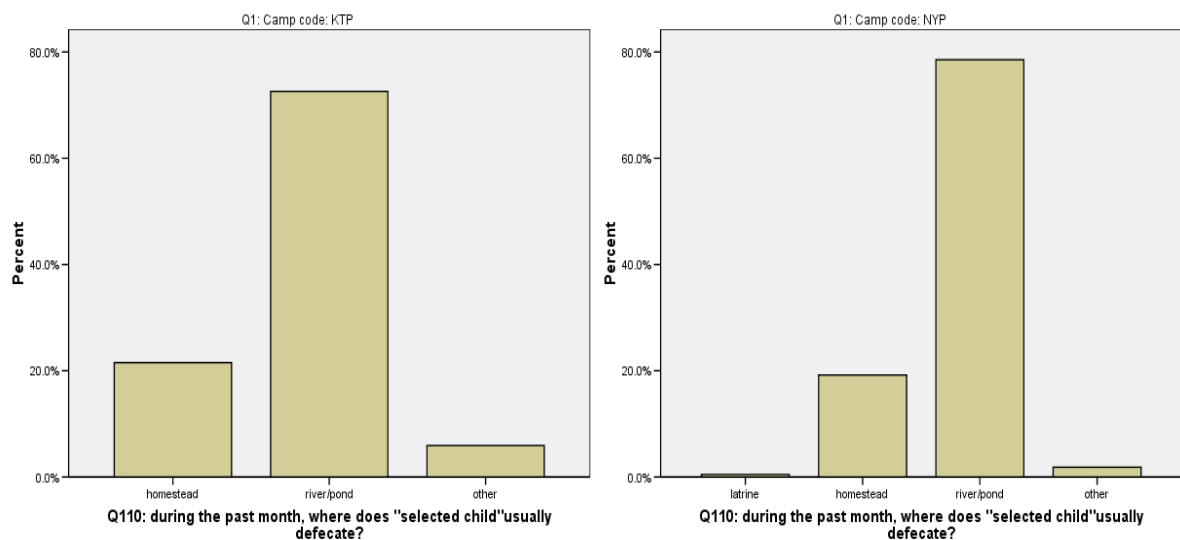
5.2.13.   Hypothesis 14: Poor waste disposal

5.2.13.1.   Overall Description

'*Poor waste disposal practices leading to an unhygienic environment and increased morbidity*'

The disposal of refuse can have a significant effect on the health of communities. Where refuse is not disposed of properly, it can lead to pollution of surface water, as rain washes refuse into rivers and streams. There may also be a significant risk of groundwater contamination. Refuse disposed of in storm drains may cause blockages and encourage fly and mosquito breeding as well as attract rats and other animals. It is therefore very important that household waste is disposed of properly. (WHO)
Currently for both camps, there are 'enough' waste disposal points according to the emergency standards, however it has been 20 years since the refugee camps were created and so for this situation the refugees feel there are an inadequate amount of waste disposal areas.

There is also poor usage of these facilities, whereby it is common practice to just throw the waste outside the house, or if it is close by, to put it in the latrines, further exacerbating the problems associated with latrine use. In the FGD, the refugees mention that the waste disposal site is very unpleasant, and has very bad smells, so they don't like to go there or use it. Instead they tend to throw their waste in and around the sheds. Many times waste disposal is a job given to children, who are less likely to understand the negative connotations of an unhygienic environment, and more prone than others to throwing it away, not necessarily in the waste disposal sites.

There is also the question of maintenance of the sites. It is reported that the refugee's believe that it is not up to them to maintain the functionality of the sites, and rather that it is the job of the NGO's to provide the labour and money to fix problems.

5.2.13.2. Hypothesis Tree

Figure 50: Hypothesis 14 tree
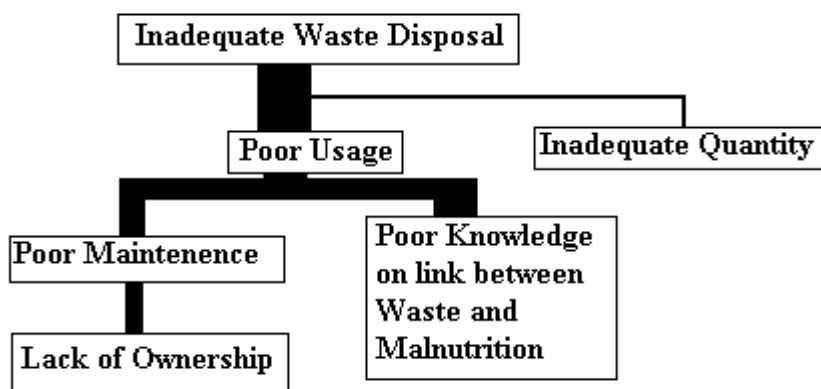
Indicator Waste Disposal Index						

Table 45: Waste Disposal Index

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	Recoded for index	288	0	20	1.2	0.8
NYP	Recoded for index	248	0	2	1	0.9

* the higher the score, the better the practice

Figure 51: Waste disposal practices
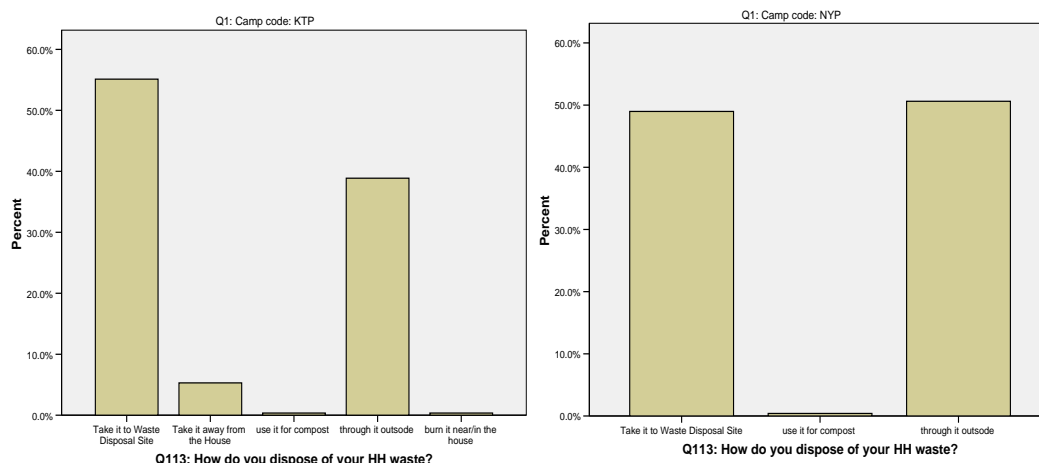
5.3.   Multivariate Regression Results

To understand the relation between factors in the different hypotheses and malnutrition outcomes itself multivariate regression analysis was carried out on the indicators deemed to be representative of the Hypotheses outlined through this document. These Indicators were then split into two groups before performing the regressions, representing immediate and underlying causes. This method is justified by the causal approach outlined in the introduction, whereby we assume that the immediate causes of malnutrition are the results of underlying causes, therefore the impact of the underlying causes should be reflected already in the immediate causes, and consequently mixing both sets of variables into one model would not make sense and in fact bias the results.

As it is also interesting to understand the differences in the way each indicator affects different clusters of people within an environment, the data has also been disaggregated by: Camp, child age groups, wealth groups, and malnutrition indicators.

The detailed results tables of the multivariate regression are presented in Appendix 6. The Indicators that were found to be statistically related to malnutrition as measured by weight for height (wasting), height for age (stunting), weight for age (underweight) and MUAC (mid upper arm circumference) are: individual diet diversity score (IDDS), the complementary feeding score (representing complementary feeding), psychosocial care practices, diarrhoea, mean kcal intake from food assistance, HH Income and expenditure, cooking index (part of inadequate nutrient intake hypothesis), HDDS, the latrines score and the waste disposal index (See Appendix 6).

Based on the results from the multivariate analysis and with the understanding of the causal pathways as has been outlined in the previous chapters, we are able to present a prioritization of the factors which affect malnutrition in the camps. This ranking is based on the findings from both the qualitative and quantitative sections, this is further outlined in the next section.

5.4.   Prioritisation of causes

The prioritization of causes is based on the three main factors:

(i) Strength of Regression: Weighted most heavily on this, as it is the strongest analysis we have for strength of effects. There are a few things to consider with regards to these scores however. (a) The scores only reflect the responses of the refugees, which as has been

mentioned before isn't necessarily a true reflection of the reality. This is the case in all surveys, but seems especially relevent here, as a number of things they told us in the questionnaire are direct contradictions of what has been seen and observed, or even discussed in some of the more progressive FGD's. This was likely due to them telling the 'right' answers that they know when they hear the key words in the questions. At other times (i.e. food sharing) it is a question of comfort and fear, i.e. the FGD participants were not comfortable speaking the truth over politically sensitive issues, and fearful of consequences that may or may not be a reality (losing the ration was mentioned and it seems there is even a committee amongst refugees that coaches the refugee community). (b) The scores also reflect the strength of the indicator itself. It was tried to use internationally recognized indicators as much as possible, but the scope of the NCA, and the somewhat extraordinary context of the camp means looking at a number of things that simply don't have recommended indicators, or have them but are not appropriate in this context (everyone has access to Health, water, latrines, etc.). In these cases it is entirely possible that the strength of the relationship is underestimated. One example is the indicator for Access to water, 'enough water'. This is not internationally recognized, and it was difficult to come up with a quantifiable indicator appropriate for the camp. From the qualitative and secondary data sources, it is convincing though that "Access to water" is a high priority in the Nayapara camp, however this is not picked up in the regression. Equally this could be because the survey was done at the end of/just after the rainy season when access to water in the camps is less of an issue and the quantitaive section is time specific.

(ii) Strength of Qualitative information. If the qualitative information is picking up something extremely strongly, then this can't be fully ignored from the priority ranking, even if it's not backed up by regression.

(iii) The path analysis provides additional information, as it shows a little more clearly if the strength of one of the indicators is being picked up through another indicator e.g. water access might be affecting malnutrition through hygiene practises, as opposed to the more direct link of cooking with and drinking untreated water, which would affect health directly.

High Priority
Hypotheses were ranked as high priority if they are:
- Statistically significant after regression AND strongly supported through FGD results AND sensible analysis of descriptive quantitative measures[27].

  OR

- Statistically significant after regression AND sensible analysis of descriptive quantitative measures BUT not strongly supported through FGD results.

  OR

- Strongly supported through FGD results AND sensible analysis of descriptive quantitative measures, but indicator not strong in regression analysis.

Medium Priority
Hypotheses were ranked as medium priority if they met the following Criteria:
- Some significant indicators AND qualitative information supporting the direct pathways through which the indicators are thought to work AND sensible analysis of descriptive quantitative measures.

Low Priority
Hypotheses were ranked as low priority if they are
- Some qualitative indication of causal pathway though not well backed up by regression AND sensible analysis of descriptive quantitative measures.

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[27] This means interpretation of correlations and descriptive statistics in the way they are linked and based on understanding of causality of malnutrition (UNICEF framework)

Rejected
- Not significant after regression AND not strongly supported through FGD results AND no results in analysis of descriptive quantitative measures.

Untested
- Means that the regression analysis was not possible because of limiting factors in either the data or the composition of the indicators. It doesn't mean that the untested hypothesis is not potentially important but that the used methodology was not able to assign a priority group to the cause.

Honourable Mention: The Health Indicator is currently ranked as a medium priority, however this is due to the way the priority system is created to interpret the importance of variables across season change. Health through the most part of each season is only a medium priority in terms of its effects on malnutrition, however we know from the seasonal calendars, that diarrhea and ARI's tend to spike during the season change, then stabilise soon afterwards. This means that as the priority ranking stands, this effect is not captured currently for this short time period during the year.

Table 46: Prioritization Ranking: Based on Upper Level Multivariate Regression & Qualitative Inputs

	All	KTP	NYP
High	– Inadequate Food Assistance – Income – Complementary Feeding – Psychosocial Care Practices – Latrines	– Inadequate Food Assistance – Income – Complementary Feeding – Psychosocial Care Practices – Latrines	– Inadequate Food Assistance – Income – Complementary Feeding – Psychosocial Care Practices – Latrines – Access to Water
Medium	– Inadequate Nutrient Intake – Food Hygiene – Breast Feeding Score – Health – Waste Disposal – LBW	– Inadequate Nutrient Intake – Food Hygiene – Breast Feeding Score – Health – Waste Disposal – LBW	– Inadequate Nutrient Intake – Food Hygiene – Breast Feeding Score – Health – Waste Disposal – LBW
Low	– Mental Health	– Mental Health	– Mental Health
Rejected	– Access to water		
Untested	– Intra Household Food Distribution		

5.5. High Priority

5.5.1. High Priority – Both Camps

Justification of Inadequate Food Assistance Ranking

Inadequate Food Assistance due to sharing of rations with those not on the GoB List; The main bulk of the refugee diet comes from the food assistance the households receive through the main rations, and supplements to this ration dependent on the status of the family. However not all refugees have access to this food ration, and consequently typically families

will share their overall food assistance amongst the household, lowering the Kcal intake per person.

The recommended Kcal per person is 2190kcal per day. The ration is built around this recommendation, but does not factor in the sharing that goes on amongst families.

The mean ration in the camps is much lower than this recommended daily calorie intake.

Table 47: Mean Kcal per Day by Camp based on Food Assistance

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	Kcal received per person per day including PLW and under 2 SFP	288	0	2810	1820.7	770.4
NYP	Kcal received per person per day including PLW and under 2 SFP	248	0	3026.7	1855.7	731.6

Lack of food was the strongest outcome of the focus group discussions. Every session identified the ration as being inadequate to feed their families. Mean Kcal was found to be a significant indicator of malnutrition in the regression analysis, therefore triangulating the sources of information on the inadequacy of food assistance, given the reality of food sharing in the camp, this was identified as a high priority cause.

Justification of Income Ranking
The Rohingya are not officially allowed to work, although it is known that they do leave the camps and engage in some petty trade and services in order to buy more food and non-food items.

Table 48: Mean income per person per household per month

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	Income PP 'HH Income/HH size'	241	11.1	5000	439.9	548
NYP	Income PP 'HH Income/HH size'	212	21.4	1600	394.5	281.7

The mean income is extremely low, although the survey took place at the end of the rainy season, through which it is difficult for the Rohingya to find employment. During the FGD, it was confirmed that job opportunities are quite restricted and the Rohingya are faced with discrimination outside the camps, sometimes resulting in no payment for work, or being robbed and beaten. The income is important to buy some meats/fish and spices, diversifying the diets, and allowing the refugees to eat more culturally appropriate food, something the rations don't take into consideration. Income was also found to be statistically relevant in the regression analysis; therefore this was identified to be a high priority cause.

Justification of Complementary Feeding Ranking
The complementary feeding scores in the camps were quite low averaging around 6 out of a maximum of 12 for both camps.

Table 49: Descriptive statistics of complementary feeding

CAM_id		N	Minimum	Maximum	Mean	Std. Deviation
KTP	Child Feeding Index Score	207	3.00	10.00	5.9662	1.31231
	Food Group Frequency	279	.00	5.00	1.3943	.87456
	Meal Frequency	261	1	7	3.57	.859
	IDDS	276	.00	8.00	5.0290	1.43434
	Valid N (listwise)	207				
NYP	Child Feeding Index Score	202	4.00	11.00	6.0842	1.12760
	Food Group Frequency	245	.00	4.00	1.4286	.81482
	Meal Frequency	237	1	6	3.48	.816
	IDDS	244	.00	8.00	4.9754	1.32381
	Valid N (listwise)	202				

These scores were found to be significant in the multivariate regression. The reasons for these poor scores are most likely due to poor dietary diversity, meaning that children are

typically not receiving the right foods at the right times. This is most strongly represented perhaps in the Food Group frequency scores (maximum score of 5) where each missing point represents an essential age dependent food group missing from the child's diet. This absence of diversity is likely due as a result of a lack of income and inadequate initial food assistance (see pathway). In terms of the perception of meal frequency and appropriate foods, the Focus Groups revealed that overall they don't have enough food; however most say they are satisfied that usually they can give a sufficient number of meals to their children which is reflected in the findings from the quantitative analysis.

Figure 52: Meal consumption of children
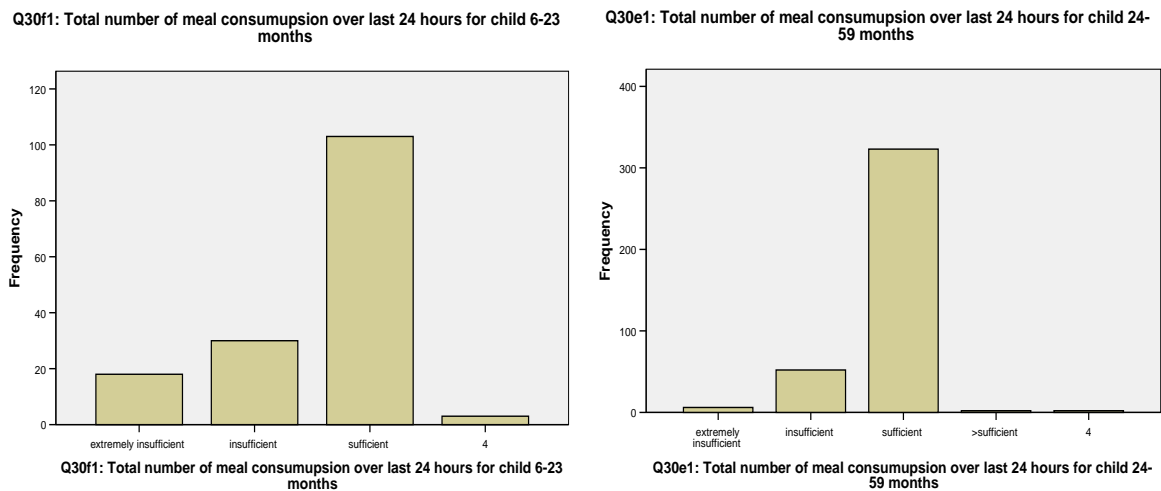
This poor score in the descriptive analysis and significance in the regression analysis means that poor complementary feeding practises in the camps can be considered a high priority.

Justification of Psychosocial Care Practices Ranking
The indicator for psychosocial care practises is significant in the regression analysis. We know also that mothers find it very difficult to spend enough time with their children, due to the heavy workload they face in the camps. This typically leads to the child being left with siblings or elderly relatives, where it is likely psychosocial care is less well administered. These points were verified in the focus groups, where it was revealed that frequently they are only able to spend a few hours with the children where they are prioritising feeding and bathing.

Figure 53: Care practice index question 1
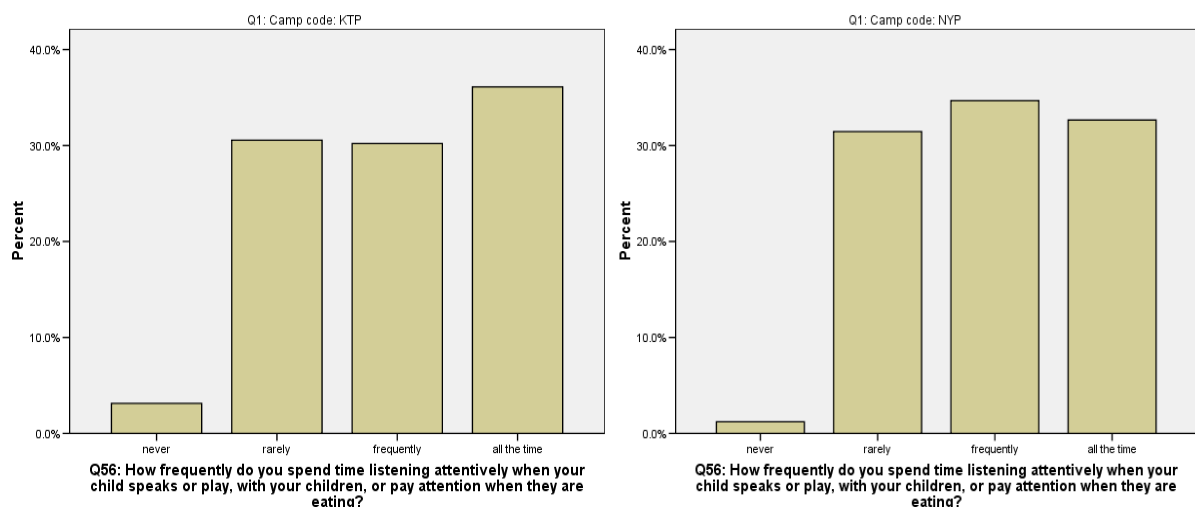
Justification of Latrines Ranking
From the quantitative and qualitative analysis, it would appear that the latrines are inappropriate for children, and sometimes for women, depending on their condition. This leads to open defecation, potentially contaminating water sources and environments. The main problem seems to be that the state the latrines are frequently off-putting for women. They are not cleaned frequently enough, and they are used by everyone. The cleaners come at around 10am, and this is when everyone wants to use them, hence the long queues. As the day progresses the latrines get dirtier and dirtier. In the evening when the women want to defecate, they can't as the latrines are in a too dirty condition by this point, and consequently they are "forced" to openly defecate.

Table 50: Faecal Index

Camp code		N	Min.	Max.	Mean	Std. Dev.
KTP	Presence of animal or human feaces score.	283	0	0.8	0.6	0.4
NYP	Presence of animal or human feaces score.	243	0	0.8	0.7	0.4

* The higher the score, the higher the presence of Faeces

Also the presence of faeces in the household was found to be significant in the regression analysis. Triangulating our evidence, we find that the inadequate latrines and resulting poor sanitary behaviour makes this a high priority cause.

5.5.2. High Priority – Kutupalong or Nayapara specific

Kutupalong specific
No cause was identified specifically different for Kutupalong.

Nayapara specific

Justification of Access to Water Ranking
Access to water in Nayapara is a critical issue most of the year round, that manifests itself as malnutrition directly when poor access to potable water leads to the drinking of dirty water by the refugees (hot season), and indirectly when used to wash cooking utensils and foods (year round). This is partly due to technical difficulties with the water distribution, long queues, limited access (twice a day), and mostly due to the physical lack of water which again changes depending on the season, but is usually not sufficient for the needs of the Rohingya's.

Table 51: Was the clean water available to you in the last 7 days sufficient?

Camp code			Freq.	%	Valid %
KTP	Valid	Sufficient	282	97.9	99.3
		> Sufficient	2	0.7	0.7
		Total	284	98.6	100
	Missing	System	4	1.4	
	Total		288	100	
NYP	Valid	Extremely insufficient	58	23.4	23.5
		Insufficient	164	66.1	66.4
		Sufficient	25	10.1	10.1
		Total	247	99.6	100
	Missing	System	1	0.4	
	Total		248	100	

The indicator for Water Access was not found to be significant in the regression analysis; however, this is probably down to the poor strength of the indicator. Given the strength of the Focus Group sessions and the descriptive quantitative analysis, we maintain that in Nayapara water access is a high priority cause.

5.6. Medium Priority Causes

5.6.1. Medium Priority – Both Camps

Justification of Inadequate Nutrient Intake Ranking
The overall adequacy of nutrient intake is down to a number of factors, overall dietary diversity, overall absorption of nutrients (refers to health status), and cooking practises. As health status is its own hypothesis here we focus on Diet diversity and food habits.

Overall IDDS indicates that dietary diversity is not optimal. 22.7% of surveyed children have a low dietary diversity score, while 71.2% have a medium score, accounting for 93.9% of the total sample (see table 24). The score for IDDS was found to be positively significant during the regression analysis.
Poor IDDS scores are more likely due to inadequate access to food as opposed to any issues concerning knowledge on nutrition, whereby the Rohingya appear to have an extraordinarily high knowledge on nutritious food (see table 51 below). However their food habits may limit what they eventually end up eating, as the importance of spices in the diet means ultimately sacrificing parts of the food allowance for nutritionally inferior foods.

Table 52: Knowledge score for Pushti

		Freq.	%
Valid	0	2	0.4
	2	9	1.7
	3	525	97.9
	Total	536	100

* Score from 0 to 3

The cooking index, which shows up as a significant indicator in the regression analysis, seems to reflect a fairly good understanding of cooking techniques to retain nutrients. The average score across both camp being almost 7 out of 10 with a fairly low standard deviation suggesting that this knowledge on cooking practises is widespread and inclusive of all strata's of population.

Table 53: Cooking Index

Camp code		Min.	Max.	Mean	Std. Dev.
KTP	Cooking index based on adapted cooking practices	3	10	7	1.4
NYP	Cooking index based on adapted cooking practices	3	9	6.6	1. 3

* Score from 0 to 10

These relatively good scores were reinforced by the level of knowledge displayed in the focus group discussions on cooking practises. Two women's groups, one in each camp were both able to identify and explain each aspect of the cooking process in terms of both risk of loss of nutrients and risks of contamination (explored in separate hypothesis). However, this could be down to the level of training they have received on these types of issues over the 20 years they have been settled in the camp. Observations while conducting the field work, and more

progressive questioning (the refugees where more inclined to admit mistakes when talking not directly about their own practises, but what they see in the camps) the focus groups revealed that some actions are known but not regularly followed, such as washing vegetables after having cut them (refer to figure 20), and boiling vegetables for too long.

As these two key indicators are both statistically valid, and there is some indication from the focus groups that there are some non-optimal practises going on with regards to cooking practises, "Inadequate nutrient intake" is a medium priority concern.

Justification of Food Hygiene Ranking

The environment in the camps is cramped and dirty; there are a number of reasons why food may get contaminated along the cooking process. Lack of clean water in Nayapara especially means it is difficult to clean utensils appropriately. Food is prepared on the floor, and is for the most part stored on the floor, which given the environment in which it is prepared, is not hygienic. The qualitative sessions indicate that although the women know all the right answers for keeping food preparation hygienic, in reality many of the steps are overlooked, or ignored. Lack of time, resources and water were cited as reasons for negligence. The food hygiene index was found to be significant in the regression analysis. Together this brought the indicator in the medium range as a cause.

Justification of Breastfeeding Ranking

The Breastfeeding Index indicates a fairly strong showing of knowledge for breastfeeding, and most practices seem to be quite good, scoring highly on the index. However there are a number of concerns. Almost a quarter of the women in both camps responded that they gave their children Pre-lacteal feeds; (sugar water, honey or rice powder mix). Initiation of breastfeeding is not always immediate, only 62% of women stated that they start breastfeeding within the first hour of birth. The qualitative information suggests that women will often deviate from exclusive breastfeeding when they are feeling ill, or when they think they are not producing enough milk, supplementing their breast milk with rice powder paste. The Breastfeeding Index was also found to be significant in the regression analysis. We therefore find the breastfeeding practises in the camp to be a medium priority.

Justification of Health Ranking

Both indicators for health are significant, strangely however the indicator for cough is significant but with the association to malnutrition going the opposite direction that we would assume (increase in cough with decrease in malnutrition). This could be down to better/faster identification of respiratory diseases and consequently rapid and effective treatment, however this is something that should be researched further (This is the same finding as a recent NCA done in the north of Bangladesh (ACF, 2011)).

In the focus groups health issues were discussed in some depth, and Diarrhea and ARI are quite common throughout the year, however there is good knowledge on how to treat both and when to seek formal healthcare. Health problems tend to spike during the transition of the seasons, where they can be a burden financially for families, as they need to buy medicines and extra food.

Justification of Waste Disposal Ranking

There are technically enough waste disposal points in the camps according to emergency standards, however the perceptions of the Rohingya is somewhat different. Consequently the usage of the waste disposal areas is quite poor. In the FGD's, the refugees mention that the waste disposal site is very unpleasant, and has very bad smells, so they don't like to go there or use it. Instead they tend to make their own bins that they cover, or throw their waste in and around the sheds.

Table 54: How do you dispose of your HH waste?

Camp code			Freq.	Valid %
KTP	Valid	Take it to Waste Disposal Site	156	55.1
		Take it away from the House	15	5.3
		Use it as compost	1	0.4
		Throw it Outside	110	38.9
		Burn it near/in the house	1	0.4
		Total	283	100
	Missing	System	5	
	Total		288	
NYP	Valid	Take it to Waste Disposal Site	120	49
		Use it as compost	1	0.4
		Throw it Outside	124	50.6
		Total	245	100
	Missing	System	3	
	Total		248	

The waste disposal index we created does show some significance in the regression analysis, while the descriptive analysis and the focus groups show that the refugees are not always vigilant in using the allocated waste disposal. This poor practise is likely to contribute to the overall degradation of the environment, the presence of flies and the increase in the prevalence of pathogens. For these reasons poor waste disposal is considered a Medium priority.

Justification of Low Birth Weight (LBW) Ranking
Birth weight data was difficult to collect for several reasons and only 47% of children were found to have data on their weight at birth. This data had to be collected not only from the birth certificates and PNC cards but equally from registry books from the MoH managed health centres to ensure availability of a minimum amount of data.
Nontheles the fact that less than half of the children have birth weight data available impacts on the validity of the result as regresion analysis is only possible when data is available for all examined factors. Therefore over half the HH have to be excluded when doing regression analysis for birth weight.
The results of this analysis are significant for stunting which is in line with the international concepts/knowledge about effects of malnutrition throughout the lifecycle.

Figure 54: The nutrition life cycle28

The rate of 29.5% of low birth weight children in the sample goes together with the high rates of teenage pregnancy and the cultural habits of eating fewer foods during pregnancy because of fear of "big babies".

With more data available LBW might have become even a high priority cause for stunting but with the limitations in the analysis due to the lack of sufficient data we group it as a medium cause.

5.6.2. Medium Priority – Kutupalong or Nayapara specific

No cause was identified specifically different for Kutupalong or Nayapara.

5.7.   Low Priority Causes

5.7.1. Low Priority – Both Camps

Justification of Mental Health Ranking
The mental health status of mothers showed a very weak significance in the regression analysis. We know from the context that life in the camps is difficult and unpleasant. Likewise we know from both the descriptive analysis and the focus groups that the wellbeing of mothers is not optimal probably as a result of these prevailing conditions. However it is likely that "Mental health" is working as a driver through other hypotheses, rather than having a direct impact on malnutrition in this context. For these reasons we find it to be a low priority factor.

5.7.2. Low Priority – Kutupalong or Nayapara specific

No cause was identified specifically different for Kutupalong or Nayapara.

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28 Commission on the Nutrition Challenges of the 21st Century (2000) Final report to the ACC/SCN

5.8. Rejected or untested Causes

5.8.1. Rejected

Justification of Access to Water Rejection (Kutupalong Only)
As mentioned before, the access to water problems are really specific to Nayapara. For Kutupalong there is no significance in the regression, the descriptive analysis rejects any water issues, and the focus groups were in agreement. For this reason we reject this hypothesis for Kutupalong.

5.8.2. Untested

Justification of Intra Household Food Distribution Rejection
It is extremely difficult to identify any adequate testable measures of Intra-household Food Distribution, as all individuals require and consume different amounts of nutrients depending on their age, gender, physiology, activity pattern, taste preferences and knowledge of their nutritional requirements.

If all these variables were constant, it would be possible to determine the favoritism within a household of a particular food or nutrient. However due to the fact that this is not the case, we use instead a 'satisfaction ratio', which shows the ratio of the Household Head meal satisfaction against the meal quantity satisfaction of the selected child. Although this is interesting to know in terms of understanding something of allocation, it is not robust enough to use as an indicator representative of IHHFD in the regression analysis. Instead we use the descriptive analysis from the dataset and the qualitative findings to outline whether there are any unusual findings (See hypothesis 4).

Given that it was not possible to do the regression analysis it is therefore not possible to assign IHHFD into any of the priority groups and therefore we have to consider the hypothesis "untested" within our methodology.

5.9. Limitations

The NCA methodology used for this survey is providing an analysis framework that gathers evidence from different sources of information in order to reach a consensus on main causes of undernutrition.

One could argue that the only reliable source of information would be to statistically prove the link between undernutrition and causal factors. This would be satisfying but looking a bit more into the UNICEF framework will acknowledge the limitations of a pure 'statistical' approach:

- Some causes are very difficult or impossible to capture with a quantitative cross-sectional approach. For example, there is no existing tool to estimate Birth Weight of children a posteriori. Currently, the only reliable measure of Low Birth Weight is to actually measure it at birth. This would require a longitudinal research tracking children from birth to 5 years old which is not within the scope of an NCA. Other examples are micronutrient deficiencies which require laboratory measures and chronic diseases which need a longitudinal follow up of children.
- Other factors might also be difficult to measure in some contexts. In the context of this study for example, refugees are very much used to questionnaires and can answer some questions based on what they think is the expected answer. This is challenging the reliability of the information gathered.
- The accuracy of the causal factors measured is depending on the accuracy of the indicators available. For example, measuring quality of child food intake is very commonly done by using IDDS. It is an internationally recognised indicator. Nevertheless, this indicator is a proxy indicator and does not measure directly the actual food intake of children. Some biases exist. For example, it can depend of how

precise the respondent remember what has been given to the child and how truthfully the respondent would answer. This is inherent to any study using such indicator but one has to keep in mind that therefore the results are measuring the link between IDDS and undernutrition and not the link between exact food intake and undernutrition.

Given the scope of an NCA study, which is not a 5 years longitudinal study, one has to acknowledge these limitations of the pure statistical approach. A good example of this limitation is given by the analysis of some DHS surveys which are using large national samples of children across the country and well defined indicators. Typically, causal analysis of undernutrition using DHS database, is able to explain 15 to 20% of undernutrition. One of the major constraints of DHS surveys is the limited numbers of indicators available which are often looking at only some parts of the UNICEF framework.
This is why the cross sectional survey used in the NCA is looking at a broad base of causes that can be measured although the sample size is relatively much smaller.

Understanding these limitations, the NCA methodology is using a more comprehensive approach to reach its goal:
- Although the statistical approach is limiting, it is an important and reliable source of information to explore some causal factors. Having a statistical analysis using well defined indicators (when they exist AND when they are adapted to the context) is an important source of information.
- Having a good understanding of the context provides some guidance of what can be explored through the statistical approach and what cannot.
- Knowing what cannot be explored through the statistical approach is used to elaborate a more comprehensive panel of sources of information like (data collection strategy stage of the method):
  - Secondary data review especially looking at the pathways and the severity of some causal factors. To keep the example of micronutrient deficiencies, some studies might show high prevalence of iodine deficiencies which is a good source of information to advocate for including it as an important causal factor.
  - Gathering existing knowledge of experts
  - Looking at seasonal and medium terms trends: when is the peak of undernutrition? What are the causal factors related to this peak?
  - FGD (with ranking exercise) within community to understand the relative importance of some pathways.
  - The questionnaire analysed provides useful evidence if some pathways are actually tested and reliable. It indicates the prevalence of some causal factors (ex: prevalence of indicator on diarrhoea). It also provides useful information on the linkages between factors which confirm or not the understanding of the pathways.

The NCA methodology is therefore capturing these different sources of information which have their own limitations:
- The hypotheses developed are based on existing knowledge (academics, experts, review, and community) and therefore some undernutrition causes might not be captured as knowledge about them was limited. In the Cox's Bazaar context this is less likely as programmes have been going on for several years and some involved key stakeholders have accrued extensive knowledge about the situation in the camps. Nonetheless this might be the case and some factor might have been overlooked.

- A NCA is a snapshot and conclusions are really only valid for the time / month the survey has been done. The NCA includes some qualitative tools to understand the seasonality and trends but this remains qualitative.

- Qualitiative information is not easy to gather and specifically in a context where the population has learned the "right answers" over years, some justified doubts remain about the corrections of some of the qualitative information collected.

Therefore this NCA is not providing statistically exact relative importance of causes but rather classifies causes between categories (priority causes / important causes / low priority causes / un-tested causes/rejected causes) based on evidence gathered from multiple sources of information.

6. Recommendations

Based on the above presented results the following recommendations to improve the nutritional situation of the camp population can be presented. As there will be different approaches needed the recommendations are divided in 2 groups depending more on external or internal factors. External factors here are related more to the overall context, issues over which the refugees have no control, and that the solution to the problem would more come from outside the refugee community. Whereas internal factors are related to lifestyle choices and culture related to the refugees, and solutions are more linked to changes that could be addressed within and by the refugee themselves.

Dependent on external factors
The current food assistance doesn't seem to be sufficient and appropriate to allow the refugees to have a diverse and nourishing diet. Because a sizable part of the camp population does not receive any food ration, leading to sharing of rations, coupled with the fact that food rations are sold and bartered to provide some financial means to allow diversification of the daily meals, the Kcal per day per person is not sufficient and well below international norms. Therefore, the current food assistance schemes need to be re-evaluated and adapted accordingly, including an increase in the overall food allowance going into the camps.

Linked to this is the importance for the refugees to have sufficient income to cover other essential needs and diversify their food basket. With more financial resources available to the refugees, the need to sell part of the expensive food assistance would be reduced. Therefore options to provide additional income (e.g. authorisation to work, voucher systems, conditional or unconditional cash transfer, etc.) to the refugees would be beneficial for the nutrition situation in the camps, as refugees would be less likely to sell their food rations and therefore more likely to eat the required number of Kcal. As well, it would be cost effective in terms of assistance provided, as a more healthy and less malnourished population would have less need for therapeutic feeding programs to treat malnutrition. In addition more resources for refugees could also have a beneficial impact on local markets where refugees would buy what they need and therewith support the local economy.

The poor usage and maintenance of communal latrines is an acknowledged problem. It is therefore recommended under international standards to move from communal to individual latrines as soon as possible. These same problems are seen around the use of latrines in Nayapara and Kutupalong camps, leading to open defecation and the resultant potential health and nutrition impacts. Communal latrines pose a big challenge in both camps. Therefore, means to provide more family latrines, or latrines for smaller groups of related families/neighbours, would increase the correct use and maintenance of latrines, and reduce the risk of related problems.
Increase of "child friendly" latrines and solar lights to ensure more safety at night around latrine blocks could be favourable factors to increase usage of latrines.

Access to water is problem in Nayapara refugee camp. Technically this might be difficult to address. But systems should be put in place to provide more water, especially during the dry season, and therefore reduce the use of untreated water with all its potential negative health and nutrition consequences.

Refugees don't have the means to cook several times a day, which would be especially important for small children to allow appropriate complementary foods for their age group

rather than starting them early on the often too spicy and inappropriate family foods. Lack of firewood came out as one factor limiting the number of times per day families can cook and/or reheat. Therefore an increase in fire wood or possibly in the long run alternative cooking fuels/means and increase use of fuel efficient stoves could overcome this issue.

The camp environment is cramped with the number of refugees present in a relatively limited space. In addition animals roam around often as well inside the refugee houses. Cooking space is limited and leads to unhygienic practices which again come up as a factor for malnutrition. Therefore reducing the crowded setting in the camps will support working on healthy behaviours and lifestyle which will otherwise be difficult to achieve.

Dependent on internal factors
A number of behavioural issues prevail in the camps that have negative impact on the nutrition situation of the refugees. These should be addressed through interaction with the refugee community on some of the important factors. To keep in mind though is the fact that in several examples throughout the NCA it was shown that the level of knowledge of the refugees on a number of factors (e.g. importance of exclusive breast-feeding, complementary feeding, hygiene issues, etc.) is high, but that this does not lead automatically to changed behaviour.
Therefore continuing with information, education and communication (IEC) without looking into more appropriate behaviour change strategies (BCC) and psychosocial models will likely not be successful.

Lack of appropriate complementary feeding is one of the high priority causes as is lack of appropriate psychosocial care of the children. Though complementary feeding is as well linked to external factors (food availability as explained above) there are certainly a number of behaviours and beliefs within the refugee community that should be addressed to improve these behaviours and ensure that negative tendencies are less practiced.

This is equally the case for psychosocial care practices, use of latrines, food habits limiting nutrient intake, hygiene practices, breast feeding practices and practices around waste disposal. All of these factors need to be addressed in specific ways but all through improving behaviour around the factors taking into account existing limitations in the camps.

One important factor though where knowledge seems to be lacking is on the long-term repercussions of malnutrition. Clearly the refugees have excellent knowledge on a wide range of areas concerning the ways they should behave to stay healthy and nourished. However the reports concerning the individual (mis)management of malnutrition are shocking and should be addressed. It seems that the long-term ramifications of nutrition are not fully appreciated by the refugee's and this could feasibly be improved with outreach programs tailored to the results.

7. Appendixes

7.1. Appendix 1, UNICEF conceptual framework of causes of malnutrition (1990)
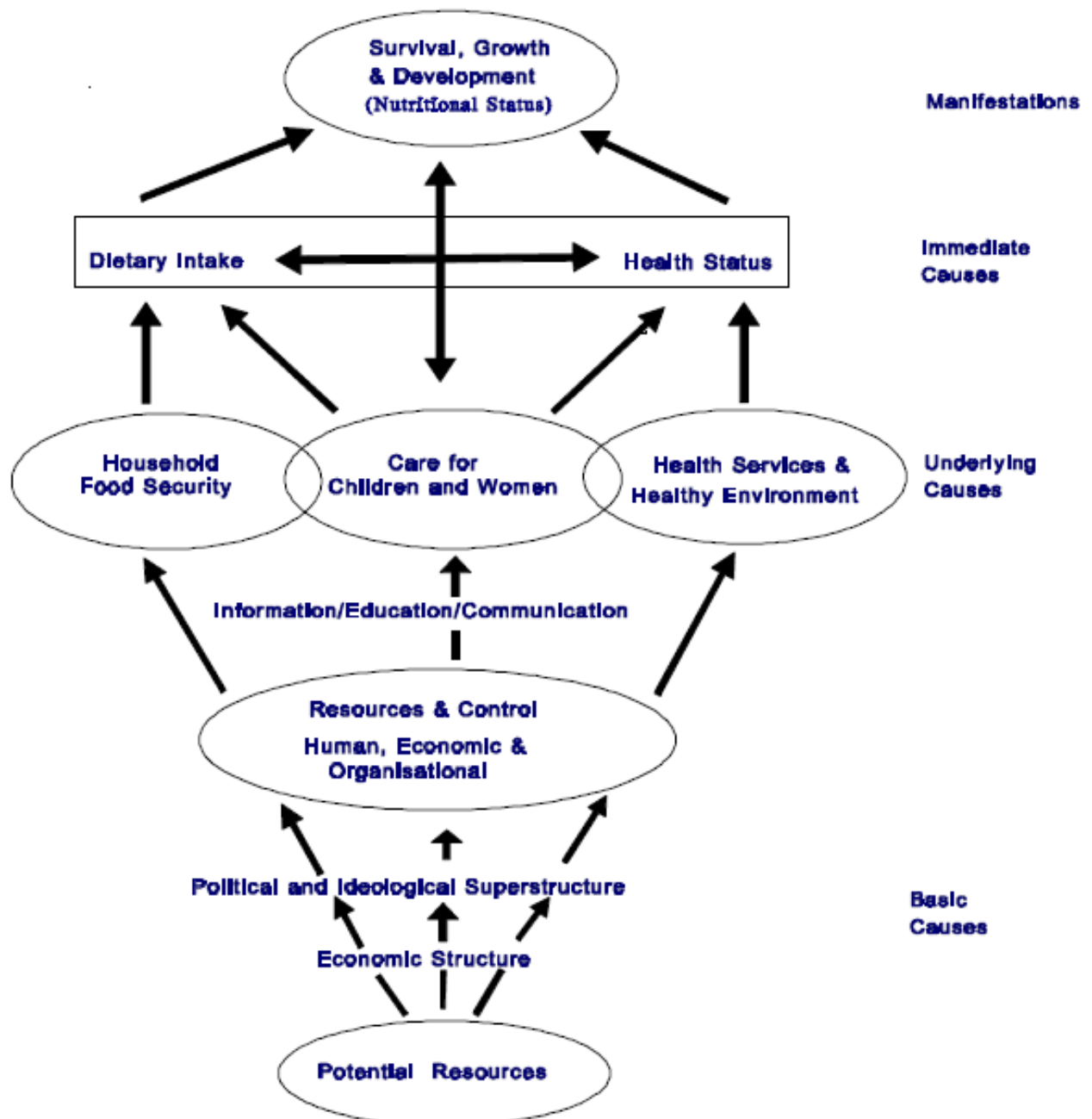
7.2.   Appendix 2, Cluster distribution

Nayapara Camp

Geographical Unit	Population size	Assigned Cluster (ENA)
Block B	2819	1,2,3,4,5,6,7
Block C	2596	8,9,10,11,12,13
Block D	2111	14,15,16,17,18
Block E	2715	19,20,21,22,23,24
Block H	4206	25,26,27,28,29,30,31,32,33,34
Block I	1645	35,36,37,38
Block P	1517	39,40,41
Total	**17609**	

Kutupalong Camp

Geographical Unit	Population size	Clusters Assigned
Block A	1651	1,2,3,4,5,6,7
Block B	1495	8,9,10,11,12,13
Block C	2338	14,15,16,17,18,19,20,21,22,23
Block D	1282	24,25,26,27,28
Block E	1778	29,30,31,32,33,34,35,36
Block F	1816	37,38,39,40,41,42,43
Block G	1200	44,45,46,47,48
Total	**11560**	

7.3. Appendix 3, Event Calendar

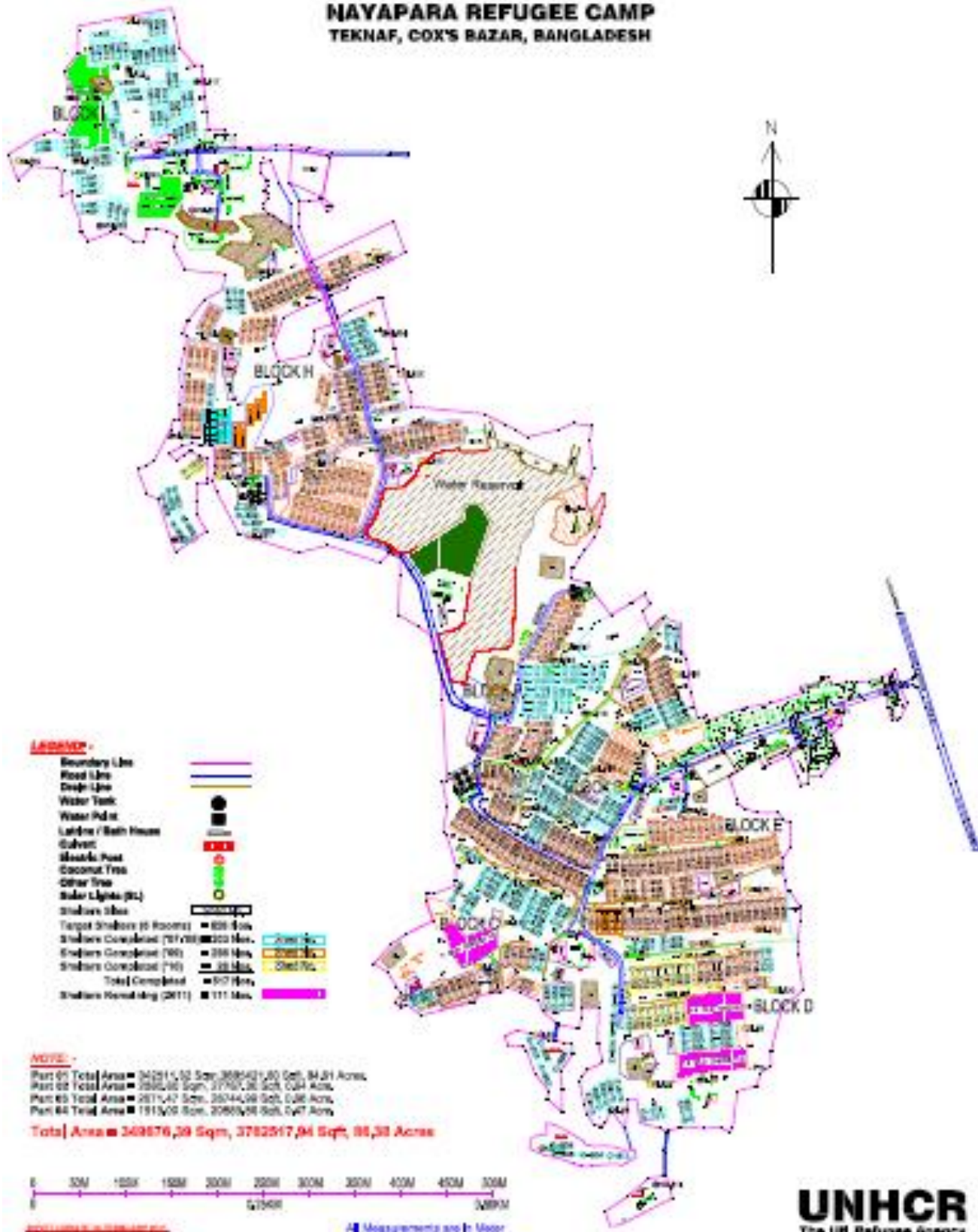| Seasons	Religious Events	Other Events	Local Events	Months / Years	Age (months)
					0
	Ramadan			Aug-11	**1**
	Shab-e-Barat			Jul-11	**2**
			World Refugee Day	Jun-11	**3**
		World Labor Day		May-11	**4**
		World Health day	**Bangladesh New Year**	Apr-11	**5**
			Local Election		
		National Independence Day		Mar-11	**6**
	Eid E Miladunnabi	**Internation Mother Language Day**	**Poura Sheva Elections**	Feb-11	**7**
				Jan-11	**8**
	Ashura (1st)		**National Victory Day**	Dec-10	**9**
	Eid ul Adha			Nov-10	**10**
			Elections in Myanmar, Giri Cyclone	Oct-10	**11**
	Eid ul Fitr ,			Sep-10	**12**
	Sab A Meraj				
	Beginning of Ramadan			Aug-10	**13**
	Sab A Kadare			Jul-10	**14**
			World Refugee Day	Jun-10	**15**
			Landslides		

		World Labor Day		May-10	**16**
		World Health day	Bolikhela	Apr-10	**17**
			National independence Day	Mar-10	**18**
Start Spring (14th)	Eid E Miladunnabi			Feb-10	**19**
	Ashura (1st)			Jan-10	**20**
Start winter (14th)		Victory Day World Hand Wash Day		Dec-09	**21**
	Eid ul Adha			Nov-09	**22**
Start late autome (14th)		World Food day World Child day		Oct-09	**23**
	Eid ul Fitr ,			Sep-09	**24**
Start automne (14th)	Beginning of Ramadan Shab e Barat	National Condolence Day		Août 2009	**25**
			Upazila 2nd Elections in Ukhia	Jul-09	**26**
Start raining season (14th)		Refugee day		Jun-09	**27**
		Labor Day Cyclone AYLA	Bolikhela	May-09	**28**
Starting of Summer (14th)		Pahela Baishakh World Health day	Bolikhela	Apr-09	**29**
		Independence Day		Mar-09	**30**
		International Mother language day		Feb-09	**31**
			Upazila Elections in Teknaf	Jan-09	**32**
	Eid ul Adha	National Elections (Vote)	M.P vote	Dec-08	**33**

		Victory Day World Hand Wash Day			
				Nov-08	**34**
	Eid ul Fitr (Ramadan), Burga	World Food day World Child day		Oct-08	**35**
	Shab e Barat			Sep-08	**36**
	Janma Asthami	National Condolence Day		Aug-08	**37**
				Jul-08	**38**
		Refugee day		Jun-08	**39**
	Budha Purnima	Labor Day	Bolikhela	May-08	**40**
		Pahela Baishakh World Health day	Bolikhela	Apr-08	**41**
		Independence Day		Mar-08	**42**
		International Mother language day		Feb-08	**43**
				Jan-08	**44**
	Eid ul Adha	Victory Day World Hand Wash Day		Dec-07	**45**
		Cyclone SIDRE		Nov-07	**46**
	Eid ul Fitr (Ramadan) Janma Asthami	Flood Government Change World Food day World Child day		Oct-07	**47**
				Sep-07	**48**
		National Condolence Day		Aug-07	**49**
				Jul-07	**50**
	Budha Purnima	Refugee day		Jun-07	**51**
		Labor Day	Bolikhela	May-07	**52**
		Pahela Baishakh	Bolikhela	Apr-07	**53**

		World Health day			
		Independence Day		Mar-07	**54**
		International Mother language day		Feb-07	**55**
	Eid ul Adha			Jan-07	**56**
		Victory Day World Hand Wash Day		Dec-06	**57**
	Eid ul Fitr (Ramadan)			Nov-06	**58**
		World Food day World Child day		Oct-06	**59**
				Sep-06	**60**

7.4. Appendix 4, Maps of Kutupalong and Nayapara

Kutupalong Refugee Camp

KUTUPALONG REFUGEE CAMP
UKHIYA, COX'S BAZAR, BANGLADESH

Nayapara Refugee Camp

NAYAPARA REFUGEE CAMP
TEKNAF, COX'S BAZAR, BANGLADESH

7.5.   Appendix 5, AMOS score

Overview:
We are often confronted with the difficulty to evaluate some factors that are not directly measurable. For example "intelligence"; "hygiene"; "care practices" are example of factors we want to include in our analysis but are measured through indirect or proxy-indicators. It is often the case for the NCA.

To overcome this issue, a multivariate analysis can help us. PCA is a potential tool usually used but using AMOS software and structural equation modelling is simplifying the analysis.

Example Care Practices Index:

Outputs expected:
From 5 specific questions looking at state of mother, we will build an index related to the psychological status of mothers.

Steps to follow:

Ex of Psychological Score based on 5 questions:

Over the last two weeks (14 days)	5 - All the time (I was able to experience all the 12 to 14 days)	4 - Most of the time (I experienced it between 7 to 11 days)	3 - Less than half of the time (I experienced it between 4 to 6 days only)	2 - Some of the time (I experienced it between 1 to 3 days only)	1 - At no time (I never experienced it)
1.I have felt cheerful and in good spirits (I have been able to laugh and see funny side of things.)					
2.I felt calm and relaxed. (No worries, anxiety, scared or panicky feeling).					
3.I felt active and vigorous. (I feel energetic and I look forward to do things.)					
4.I woke up feeling fresh and rested.					
5.My daily life has been filled with things that interest me.					

### a. Test correlations between variables: Alpha of Cronbach

It provides a score, the alpha of cronbach that varies between 0 and 1. 1 represents variables that are extremely well correlated together: they represent the same "concept" and can be reduced to one indicator. If the Alpha of Cronbach is less than 0.7; it means that the indicators are not very well correlated and represent different "dimension" that needs to be analysed separately.

In our sample the alpha of Cronbach was 0.819 which is a good score

Alpha of Cronbach	Number of elements
,854	5

The five questions are well correlated which confirms that they are representing one concept. Reducing the 5 questions into one indicator makes sense. We can proceed to calculate the index based on these 5 variables that we will call PS_score_AMOS.

b. Using Structural Equation Modelling (AMOS software):
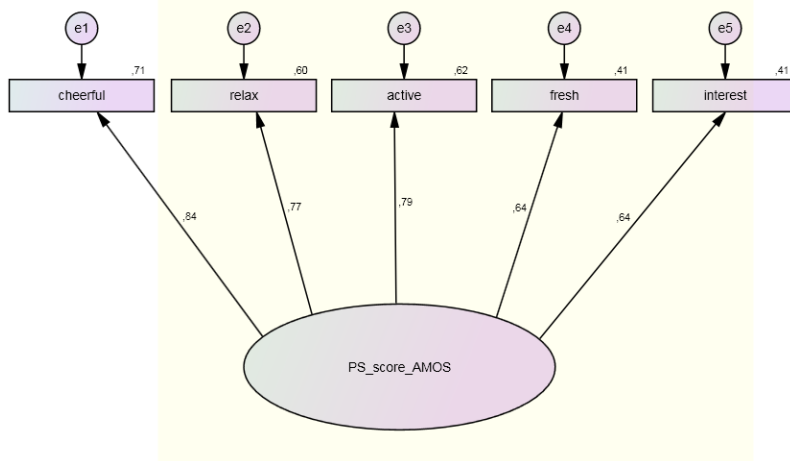
AMOS is calculating the PS score by itself using maximum fitness of variance/covariance matrix.

AMOS is calculating the optimal indicator to optimally represent the 5 indicators included in the model above. In this model, the PS_score_AMOS is able to explain 71% of the variance of "cheerful" (the number indicated just on top end right corner of the cheerful box) AND 60% of the variance of "relax" and 62% of the variance of "active"…

We could have just built a score that would be the sum of the 5 questions, but it would be less representative than our PS_score_AMOS that is the optimal score.

To actually calculate the PS_score_AMOS, we have to look at the regression weights provided by AMOS:

	cheerful	relax	active	Fresh	interest
PS_score_AMOS	0,305	0,214	0,275	0,125	0,157

So:
PS_score_AMOS = 0.305*cheerful + 0.214*relax + 0.275*active + 0.125*fresh + 0.157*interest

We have now a new index, based on five related questions that represent one concept.

Looking at the distribution of the Psychological Care Score:
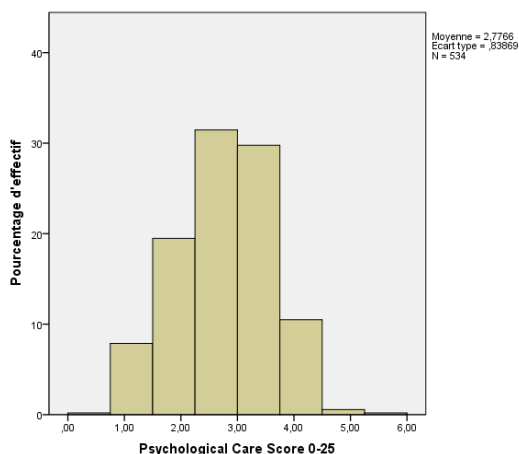
It follows a normal distribution.

7.6. Appendix 6, Multivariate Regression Results

The Boxes shaded in light green are significant to 0.10% level (acceptable). Dark green indicates significant to a 0.05% level. The Boxes in grey represent results that are not significant. The boxes in red represent results that are significant but in which the association between the variables seems to go the wrong way given our understanding of how the pathway should work.

Results of Regression Level: Immediate Causes of Malnutrition

Immediate Causes		R^2	significance of the model	IDDS	Breast Feeding Index	Complementary feeding Index	Mental Health	Psychosocial Care Practises	Personal Hygiene	Food Hygiene Index	Access to water	Diarrhoea	Cough
WHZ	All sample	0.082	0.012			0.07		0.084		0.058		0.01	0.005
	6-29 months	0.109	0.138					0.032				0.076	0.007
	30-59 months	0.09	0.255			0.084							
	Wealth groups 1 and 2 (better off)	0.079	0.524										
	Wealth groups 3 and (worse off)	0.16	0.004			0.056			0.063	0.008	0.068	0.036	0.048
	KTP	0.128	0.091					0.04				0.03	0.091
	NYP	0.071	0.404										
HAZ	All sample	0.056	0.108			0.037							
	6-29 months	0.302	0.086										
	30-59 months	0.602	0.059										
	Wealth groups 1 and 2 (better off)	0.083	0.463										
	Wealth groups 3 and (worse off)	0.077	0.278			0.02							
	KTP	0.114	0.14					0.088			0.023		
	NYP	0.053	0.647										
WAZ	All sample		0.299										
	6-29 months	0.135	0.046		0.073			0.03					0.009
	30-59 months	0.048	0.76										
	Wealth groups 1 and 2 (better off)	0.078	0.519										
	Wealth groups 3 and (worse off)	0.053	0.599										
	KTP	0.065	0.601										
	NYP	0.068	0.441										
MUAC	All sample	0.182	0	0		0.001		0.003				0.001	
	6-29 months	0.147	0.024					0.001					0.09
	30-59 months	0.154	0.011	0.01				0.097				0.088	
	Wealth groups 1 and 2 (better off)	0.221	0.002	0		0.054						0.043	
	Wealth groups 3 and (worse off)	0.191	0	0.079		0.037	0.06	0.009				0.004	
	KTP	0.192	0.003	0.028		0.003		0.016				0.002	
	NYP	0.225	0	0						0.073		0.002	

Results of Regression Level: Underlying causes of Malnutrition

Underlying Causes		R^2	significance of the model	Ration received	Hoh incomes	Total Expenditure	Cooking Index	HDDS	Intra Hoh food distribution	access to water	Latrine Hygiene Score	Presence of Faeces	Waste Disposal
WHZ	All sample	0.042	0.293									0.038	0.033
	6-29 months	0.058	0.674										
	30-59 months	0.124	0.036	0.007			0.093					0.004	
	Better off		0.101										
	Worse off		0.102										
	KTP	0.121	0.033	0.006							0.067	0.064	
	NYP	0.048	0.782										
HAZ	All sample	0.031	0.571										
	6-29 months	0.084	0.336										
	30-59 months	0.067	0.443			0.033							
	Better off		0.463										
	Worse off	0.123	0.006	0.003			0.022						
	KTP	0.045	0.719										
	NYP	0.058	0.655										
WAZ	All sample	0.069	0.026			0.077		0.05				0.005	
	6-29 months	0.07	0.514										0.03
	30-59 months	0.142	0.011		0.078	0.04		0.009				0.007	
	Better off		0.463										
	Worse off	0.123	0.006	0.003			0.022						
	KTP	0.119	0.032					0.043				0.014	
	NYP	0.051	0.75								0.069		
MUAC	All sample	0.076	0.012				0.008					0.047	0.084
	6-29 months	0.122	0.071	0.028		0.02			0.073			0.05	
	30-59 months	0.181	0.001	0.002			0.063	0.035				0.009	
	Better off	0.332	0	0								0.003	0.023
	Worse off	0.227	0	0									0.093
	KTP	0.134	0.013				0.001			0.071		0.017	
	NYP	0.113	0.094										0.032

7.7. Appendix 7, Questionnaires and observation forms

Action Contre la Faim, Bangladesh
Nutrition Causal Analysis of the Rohingya refugees in the Kutupalong and Nayapara Refugee camps of Bangladesh.
HOUSEHOLD QUESTIONNAIRE

hw` 6 †_‡K 5 eQi eqmx wkï bv _v‡K, Zvn‡j cieZ©x cwiev‡i hvb|

hw` 6 †_‡K 5 eQi eqmx GKvwaK wkï _v‡K, †m‡¶‡Î i¨vbWgwj GKRb‡K wba©vib Ki‡Z n‡e|

1| wbe©vwPZ wkïwUi cÖv_wgK †mev`vbKvix wK Dcw¯'Z?   n¨vu   bv

2| wbe©vwPZ wkïwUi gv wK Dcw¯'Z?   nu¨v   bv

(hw` 1I 2 ÕbvÕ nq, Zvn‡j evwoi bv¤^vi wbb Ges c‡ii w`b/ wbav©wiZ †Kvb mg‡q Avm‡Z n‡e hLb DËi cÖ`vbKvix Dcw¯'_Z _v‡K)

Avwg Avcbv‡K Avcbvi Ges Avcbvi cwiev†ii cywó m¤^ú‡K© wKQz cÖkœ Kie, wVK Av‡Q?   nu¨v   bv

bv n‡j cieZ©x cwiev‡i hvb, Avi hw` n¨uv nq m¤§wZcÎwU ejyb Ges Avcbvi mv¶i w`b

Complete before Interview

1.CAM Camp code…... |__| **2**.BLOC Block code……………|__|
K¨v¤ú †KvW   e–K †KvW

3.SHED **NO**…. |__||__||__||__| **4**. MRC Household code |__||__||__||__||__||__|
†kW bs   evoxi ‡KvW

5.CLUST **NO** |__||__| **6**. HHN Household number……… |__||__|
 K¬v÷vi bs   evoxi b¤^i

7.Team number……………..|__|
wUg b¤^i

8.DOV Date of interview (DD-MM-YYYY)….. |__||__|-|__||__|-|__||__||__||__|
mv¶vrKv‡ii ZvwiL:

Consent statement

(Read this statement to the interviewee and receive his/her consent before you start any interview or assessment)

My name is _____ and I work with ACF. We would like to invite your household to participate in a Nutrition Causal Analysis that is looking at the nutrition and health status of people living in this camp. The United Nations High Commission for Refugees (UNHCR) is sponsoring this Project. Taking part in this survey is entirely your choice. You can decide Not to participate, or if you choose to participate you are entitled to stop taking part in this survey at any time for any reason. If you do Not participate in this survey, it will Not have any negative effects on how you or your household is treated within this camp. If you do agree to participate, I will ask you some questions about your family and I will also measure the weight and height of all the children in the household who are younger than 5 years.

However, before we proceed to ask you any questions or take any measurements, we will ask you to declare your consent on this form. Please be assured that any information that you will provide will be kept strictly confidential and will Not be shown to other people. Feel free to ask me any questions that you may have about this questionnaire or any terms or words that you need me to clarify before you decide to participate or Not. Do Not declare your consent on this form unless you understand the information in it and have had your questions answered to your satisfaction. Thank you.

YES...................................   **NO**................................

Signature of Team Leader asserting that consent form has been read and understood by participant:

Name: Signature: _____

No	Question	Response	Code
9.	**Name of Selected Child** wbev©wPZ wkïi bvg: **(Try to refer to childs name when asking questions about child)**	_____ _____	n/a
10.	**Age of 'selected child'** wbev©wPZ wkïi eqm *(use a source from table below to verify, copy it down exactly as it appears in source)*	_____ _____	
	Prioritization of Sources for Obtaining '"selected child's" Age wkïi eqm MÖn‡Yi Dr‡mi AMÖvwaKvi		
1	*ANC card; Birth Certificate; Yellow sheet; EPI Card* **(Any of these are 1st priority)** GGbwm KvW©, Rb¥ wbeÜb, njy` kxU, BwcAvB KvW© (G¸‡jvi g‡a¨ †h †Kvb cÖ_g AMÖvwaKvi)		
2	*Family book* **(This is 2nd Priority, only use if all above can't be found)** cvwievwiK eB (GwU wØZxq AMÖvwaKvi, Dc‡ii †KvbwU cvIqv bv †M‡j GwU e¨envi Ki"b)		
3	*Use Event calendar* **(If none of the above are available use event calendar)** NUbv mswk-÷ K¨v‡jÛvi e¨envi Ki"b (hw` Dc‡ii †KvbwU cvIqv bv hvq Zvn‡j GwU e¨envi Ki"b)		
11.	Is the Head of the Household Present? M„‡n evoxi KZv© / cÖavb wK Dcw¯'Z Av‡Qb?	0= **YES** 0=n¨vu 1= **NO** 1=bv	_____
12.	If Not part of household, what is the care giver relationship with head of household? hw` cwiPh©vKvix H cwiev‡ii m`m¨ bv nq Zvn‡j cwievi cÖav‡bi mv‡_ Zuvi m¤úK© wK	0=□ Help (paid- in food or money) mvnvh¨ (A_© A_ev Lv`¨ w`‡q cwi‡kvaK…Z) 1=□ Neighbour cÖwZ‡ekx 2=□ Other: _____ Ab¨vb¨	_____
13.	If Not part of household, then number of years of completed education of caregiver? hw` cwiPh©vKvix H cwiev‡ii m`m¨ bv nq Zvn‡j cwiPh©vKvixi wk¶vMZ †hvM¨Zv KZUzKz?	_____years(eQi)	n/a
14.	Is anyone in the HH a Mahjees or a volunteer? cwiev‡i wK gvwS A_ev ‡¯^^"Qv‡meK Av‡Qb?	0= □**YES** 0=n¨v 1= □ **NO** 1=bv	_____

A. Household Demographic Information

15. **HOUSEHOLD COMPOSITION (These questions should be asked to the head of household or adult member of the house.)** I will start by asking you some questions about you and all the people in your household (family).

| ID Nb AvBwW bv¤^vi | Name bvg | Sex (M/F) cyyi"l / gwnjv | Received food ration on last occasion MZev‡i Lv‡`¨i †ikb MÖnY K‡i‡Q wKbv YES= 1 NO= 0 nvu=1 bv =0 | Listed in Family Book YES= 1 NO= 0 cvwievwiK eB‡q wjwce× nvu=1 bv =0 | Listed in Yellow Sheet YES= 1 NO= 0 B‡qj‡jv eB‡q wjwce× nvu=1 bv =0 | Age eqm (tick appropriate box) mwVK e‡·wPý `vI | | | | | | Years of Completed Education KZ eQi wk¶v MÖnY K‡i‡Q | If>12 years, Main Occupation (Use Codes Attached) hw` 12 eQ‡ii †ewk nq Zvn‡j cÖavb †ckv ‡KvW b¤^iwU wjLyb |
						< 6 months 6 gv‡mi bx‡P	6 to 59 months 6 gvm n‡Z 59 gvm	5 - 11 years 5 †_‡K 11 eQi	12-17 years 12 †_‡K 17 eQi	18-49 years 18 †_‡K 49 eQi	>50 years 50 eQ‡ii D‡aŸ©		
1. Head of Household cwievi cÖav‡bi bvg													
2.PrimaryCaregier cÖv_wgK cwiPh©vKvix													
3.Selected Child (6-59mths) wbe©vwPZ wkïwU (6-59 gvm)						✕	✕	✕	✕	✕	✕		
4													
5													
6													
7													
8													
9													
10													

CODE: Main Activity ‡KvW: cÖavb KvR			
1	Unemployed †eKvi	6	Volunteer ‡¯^"Qv‡meK
2	Micro projects/Petty trade ∂y``¨ D‡`¨vM/∂y``¨ evwYR¨	7	Mahjee gvwS
3	Daily labour w`b gRyi	8	Student QvÎ
4	Rickshaw wi·Iqvjv	9	Domestic Work/Gathering Firewood evwoi KvR / evMv‡bi Kgx©
5	Fishing gvQ aiv	10	Other (Specify) Ab¨vb¨ wbw`©ó Ki"b

Surveyor Makes Anthropometric Measurements

IRb, D"PZv I MUAC cwigvc Ki"b

The Head of Household (Identified by Q16 Id 1) should ideally be consulted for this section; if he is not available another adult Household member should be consulted.

16| me©‡kl ‡h Lv`` †ikb msMªn K‡iwQ‡jb Zvi KZ kZvsk cÖ‡Z¨‡Ki D‡Ï¨k¨ e¨eüZ n‡qwQj?

% Food Aid Commodity Consumption by Household Members			
msM„nxZ Lv‡¨i KZ kZvsk cwiev‡ii m`m¨iv †L‡qwQj?			
	Consumed †L‡qwQj		Consumed †L‡qwQj
Rice Pvj	□ All or most me ev AwaKvsk □ More than half A‡a©‡Ki PvB‡Z †ewk □ Half A‡a©K □ Less than half A‡a©‡Ki PvB‡Z Kg	**Sugar** wPwb	□ All or most me ev AwaKvsk □ More than half A‡a©‡Ki PvB‡Z †ewk □ Half A‡a©K □ Less than half A‡a©‡Ki PvB‡Z Kg
Pulses Wvj RvZxq	□ All or most me ev AwaKvsk □ More than half A‡a©‡Ki PvB‡Z †ewk □ Half A‡a©K □ Less than half A‡a©‡Ki PvB‡Z Kg	**Salt** jeb	□ All or most me ev AwaKvsk □ More than half A‡a©‡Ki PvB‡Z †ewk □ Half A‡a©K □ Less than half A‡a©‡Ki PvB‡Z Kg
Oil ‡Zj	□ All or most me ev AwaKvsk □ More than half A‡a©‡Ki PvB‡Z †ewk □ Half A‡a©K □ Less than half A‡a©‡Ki PvB‡Z Kg	**Blended Foods** wgwkªZ Lv`¨	□ All or most me ev AwaKvsk □ More than half A‡a©‡Ki PvB‡Z †ewk □ Half A‡a©K □ Less than half A‡a©‡Ki PvB‡Z Kg

No	Question	Response	Code
16.	Over the past year, have you grown vegetables in your homestead (home/kitchen gardens)? MZ eQ‡i, Avcwb wK emZevo‡Z mewR Pvl K‡iwQ‡jb?	0 = **NO** (skip to Q17) 0=bv (bv n‡j 17 bs G hvb) 1= **YES** 1=n¨v	
17.	How much did you consume within your Household? Drcvw`Z mewRi KZUzKz Avcbviv ‡L‡q‡Qb?	0= □ Most (AwaKvsk) 1= □ More than half (A‡a©‡Ki PvB‡Z †ewk) 2= □ About half (A‡a©‡Ki gZ) 3= □ Less than half (A‡a©‡Ki PvB‡Z Kg) 4= □ None (wKQzB bv)	
18.	Do you currently own poultry? Avcbvi wK eZ©gv‡b wbR¯^ †cvwë Av‡Q?	0 = **NO** (skip to 19) 0=bv (bv n‡j 19 bs G hvb) 1= **YES** 1=n¨v	
19.	Does the household consume most of the Poultry products (eggs, meat etc)? †cvwëªi Drcv`‡bi AwaKvskB wK Avcbviv ‡L‡q‡Qb?	0 = **NO** 0=bv 1= **YES** 1=n¨v	
20.	Did you fishing in the past month? Avcwb wK MZ gv‡m gvQ a‡iwQ‡jb	0 = **NO** (skip to 22) 0=bv (bv n‡j 22 bs G hvb) 1= **YES** 1=n¨v	
21.	Did the Household consume most of the fish that you caught? gv‡Qi AwaKvskB wK Avcbviv ‡L‡q‡Qb?	0 = **NO** 0=bv 1= **YES** 1=n¨v	
22.	How much money did your HH earn in the last month? MZ gv‡m Avcbvi cwiev‡ii m`m¨iv KZ Avq K‡iwQ‡jb? _____ Taka		**n/a**

23. Household expenditure cvwievwiK LiP			
24.A	**Food expenditure** Lv‡¨ LiP In the past month 30 days, how much did your household spend on each of the following food items? *(Record the amount in Bangladeshi Taka)* *Record 0000 if "None".* LiP nqwb= 0000 *Record 9999 if "don't know"* Rvwbbv=9999 **(If the respondent is unsure of what a category means, explain to them using some examples)**	A1. Rice/Paddy Pvj/avb	|_||_||_||_| Tk.
		A2. Wheat Mg	|_||_||_||_| Tk.
		A3. Roots/Tubers g~j/K` (g~jv,MvRi,KPz,Avjy)	|_||_||_||_| Tk.
		A4. Dahl Wvj	|_||_||_||_| Tk.
		A5. Vegetables kvKmewR	|_||_||_||_| Tk.
		A6. Fruit dj	|_||_||_||_| Tk.
		A7. Meat gvsm	|_||_||_||_| Tk.
		A8. Fish(dry/fresh) gvQ(ïUwK/ZvRv)	|_||_||_||_| Tk.
		A9. Milk or other Dairy Products `ya Ges `y»RvZ `ªe¨	|_||_||_||_| Tk.
		A10. Eggs wWg	|_||_||_||_| Tk.
		A11. Oil/Fat ‡Zj/Pwe© RvZxq	|_||_||_||_| Tk.
		A12. Spices gmjv	|_||_||_||_| Tk.
		A13. Other Foods Ab¨ †h †Kvb Lvevi	|_||_||_||_| Tk.
24.B	**Non food expenditure** In the past month (30 days), how much did your household spend on each of the following Non food items? *(Record the amount in Bangladeshi Taka)* *Record 0000 if "None".* LiP nqwb= 0000 *Record 9999 if "don't know"* Rvwbbv=9999	B1. Medical care wPwKrmv Lv‡Z	|_||_||_||_| Tk.
		B2. Education wk¶v	|_||_||_||_| Tk.
		B3. Housing evm¯´vb	|_||_||_||_| Tk.
		B4. Firewood/Fuel R¡vjvbx KvV/ R¡vjvbx	|_||_||_||_| Tk.
		B5. Clothing and shoes ‡cvkvK cwi"Q` Ges RyZv	|_||_||_||_| Tk
		B6. Soap and hygiene items mvevb Ges cwi¯vi cwi"QbœZv mvgMÖx	|_||_||_||_| Tk
		B7. Reimbursement of debt FY cwi‡kva	|_||_||_||_| Tk
		B8. Other Ab¨vb¨	|_||_||_||_| Tk.

24. Over the last 24hours how many meals per day did you and your family eat?

Avcwb Ges Avcbvi cwiev‡ii m`m¨iv **MZKvj‡K Kq‡ejv** †L‡qwQj?

(If category not relevant mark in N/A)

Household diet cvwievwiK Lv`¨mvgMÖx	No of Meals	Was total Consumption over last 24 Hrs Sufficient?
Male adult mvevjK	_____ meals ‡ejv	□ >sufficient chv†©ßi ‡P‡q †ewk □ sufficient chv©ß □ insufficient Achv©ß □ extremely insufficient LyeB Achv©ß
Female adult mvevwjKv	_____ meals ‡ejv	□ >sufficient chv†©ßi ‡P‡q †ewk □ sufficient chv©ß □ insufficient Achv©ß □ extremely insufficient LyeB Achv©ß
Adolescent girl (12-17 years) eq:mwÜ Kvjxb evwjKv (12-17 eQi)	_____ meals ‡ejv	□ >sufficient chv†©ßi ‡P‡q †ewk □ sufficient chv©ß □ insufficient Achv©ß □ extremely insufficient LyeB Achv©ß
Children (5-11 years) wkï (5-11 eQi)	_____ meals ‡ejv	□ >sufficient chv†©ßi ‡P‡q †ewk □ sufficient chv©ß □ insufficient Achv©ß □ extremely insufficient LyeB Achv©ß
Pregnant women Mf©eZx gwnjv	_____ meals	□ >sufficient chv†©ßi ‡P‡q †ewk □ sufficient chv©ß □ insufficient Achv©ß □ extremely insufficient LyeB Achv©ß
Lactating women ¯—b¨vbKvix gwnjv	_____ meals ‡ejv	□ >sufficient chv†©ßi ‡P‡q †ewk □ sufficient chv©ß □ insufficient Achv©ß □ extremely insufficient LyeB Achv©ß
Children from 24-59 months 24-59 gvm eqmx wkï *not including Breastfeeds * ¯—b¨cvb e¨vZxZ	_____ meals ‡ejv	□ >sufficient chv†©ßi ‡P‡q †ewk □ sufficient chv©ß □ insufficient Achv©ß □ extremely insufficient LyeB Achv©ß
Children from 6-23 months 6-23 gvm eqmx wkï *not including Breastfeeds * ¯—b¨cvb e¨vZxZ	_____ meals ‡ejv	□ >sufficient chv†©ßi ‡P‡q †ewk □ sufficient chv©ß □ insufficient Achv©ß □ extremely insufficient LyeB Achv©ß

25. Over the last 24hours how many meals did **'selected child'** eat? _____

MZ 24 N›Uvq wba©vwiZ wkïwU KZ evi Lvevi †L‡qwQj? _____ times evi

(¯—b¨cvb e¨vZxZ)

26. Now I would like to ask you about the **food groups consumed by all household members** in the home, or prepared in the home for consumption by household members outside of the home in **the last 7 days**.

GLb Avwg Avcbvi Kv‡Q Rvb‡Z PvBe, MZ mvZ w`‡b Avcbvi cwiev‡ii m`m¨iv evwo‡Z A_ev evB‡ii KZ cÖKvi Lvevi †L‡qwQj

(These questions should be asked of the person who is responsible for food preparation) (G cÖKœwU Ki‡Z n‡e whwb Lvevi ‰Zwii ms‡M RwoZ / `vwqZ¡cÖvß)

HDDS cvwievwiK Lv`¨mvgMÖx	Food type Lv‡`¨i aib	Score ‡¯‹vi
	38.1 Rice fvZ	
	38.2 Wheat/Atta , bread…. Mg/AvUv, i"wU ….	
	Blended food wgwk^Z Lv`¨	
	38.3 Other cereals (corn…) Ab¨vb¨ Lv`¨km¨ (f~Æv …)	
Do NOT count small quantities	**38.4** Potatoes Avjy	
Aí cwigvb‡K MYbv Ki‡eb bv	**38.5** Vegetables kvKmewR	
(less than 1 tea spoon)	**38.6** Pulses (Split peas, Masur, Kesari etc) Wvj (gmyi, †Lmvwi,gyM)	
(1 Pv Pvg‡Pi Kg cwigvb)		
0 = Not eaten	**38.7** Edible oil ‡fvR¨ †Zj	
0=Lvqwb	**38.8** Meat, poultry gvsm, nuvm-gyiMx	
1= 1 day	**38.9** Egg wWg	
1=1 w`b		
2= 2 days	**38.10** Milk & milk product `ya Ges `y»RvZ `ªe¨	
2=2 w`b		
3= 3 days	**38.11** Fish gvQ	
3=3 w`b		
4= 4 days	**38.12** Condi & spices Lv`¨‡K my¯^v`y Kivi `ªe¨vw` Ges gjv	
4=4 w`b		
5= 5 days	**38.13** Fruits dj	
5=5 w`b		
6= 6 days	**38.14** Sugar, molasses (gur) wPwb, ¸o	
6=6 w`b		
7= 7 days	**38.15** Tea Pv	
7=7 w`b		
	38.16 Miscellaneous (soft drinks, biscuit, betel nut, betel leaf) wewea (†Kvgj cvbxq, wew¯‹U, cvb, mycvwi)	

27. **IDDS:** Now I'd like you rank the types of foods that '**selected child**' ate during the **past 7 days** and **frequency**

Avcwb wK wba©vwiZ wkïwUi MZ 7 w`‡bi Lv‡`¨i †kªYx web¨vm Ges MÖn‡bi nvi †ei Ki‡Z cvi‡eb

□YES □NO	Grains	□YES □NO	Roots or Tubers
nu¨v bv	(fvZ, i"wU)		g~j/K›` (g~jv,MvRi,KPz,Avjy)
	If YES, Number of days (max 7): _____		If **YES**, Number of days (max 7): _____
	hw` n¨uv nq, KZ w`b (m‡e©v"P 7)		hw` n¨uv nq, KZ w`b (m‡e©v"P 7)
□YES □NO	Vitamin A-rich plant foods	□YES □NO	Pulses/legumes/nuts
nu¨v bv	wfUvwgb G mg„× Dw™¢‡R¨ Lv`¨		Wvj (gmyi, †Lmvwi,gyM)/wjwMDg/ev`vg
	If YES, Number of days (max 7): _____		If **YES**, Number of days (max 7): _____
	hw` n¨uv nq, KZ w`b (m‡e©v"P 7)		hw` n¨uv nq, KZ w`b (m‡e©v"P 7)
□YES □NO	Other fruits or vegetables	□YES □NO	Milk and milk products
nu¨v bv	Ab¨vb¨ dj A_ev kvKmewR		`ya Ges `y»RvZ `ªe¨
	If YES, Number of days (max 7): _____		If **YES**, Number of days (max 7): _____
	hw` n¨uv nq, KZ w`b (m‡e©v"P 7)		hw` n¨uv nq, KZ w`b (m‡e©v"P 7)
□YES □NO	Fish, seafood	□YES □NO	Foods cooked in oil/fat
nu¨v bv	gvQ, mvgyw`ªK Lvevi		‡Z‡j ivbœvewK…Z Lv`¨
	If YES, Number of days (max 7): _____		If **YES**, Number of days (max 7): _____
	hw` n¨uv nq, KZ w`b (m‡e©v"P 7)		hw` n¨uv nq, KZ w`b (m‡e©v"P 7)
□YES □NO	Meat	□YES □NO	Poultry
nu¨v bv	gvsm		nuvm-gyiMx
	If YES, Number of days (max 7): _____		If **YES**, Number of days (max 7): _____
	hw` n¨uv nq, KZ w`b (m‡e©v"P 7)		hw` n¨uv nq, KZ w`b (m‡e©v"P 7)
□YES □NO	Egg	□YES □NO	
nu¨v bv	wWg		
	If YES, Number of days (max 7): _____		
	hw` n¨uv nq, KZ w`b (m‡e©v"P 7)		

No	Question	Response	Code
28.	When you prepare your vegetables, do you wash them before or after you cut them up? mewR cÖ¯´Z Kivi mgq Avcwb KvUvi Av‡M bv c‡i mewR ay‡q _v‡Kb?	0= □ **Before** Av‡M 1= □**After** c‡i 2= □ **Both** DfqwUB	_____
29.	When do you add vegetables to your cooking? ivbœvi ‡Kvb ch©v‡q Avcwb †mLv‡b mewR hy³ K‡ib?	0= □ At the Beginning (same as with all other ingredients) ïi“‡ZB (Ab¨vb¨ DcKi‡bi mv‡_ GKB mv‡_) 1= □ Other Time Ab¨ mg‡q 2= □ I cook the Vegetables Separately Avwg mewR Avjv`vfv‡e ivbœv Kwi	_____
30.	Do you reheat already prepared food for the next meal? Lvevi Av‡M cÖ¯ZK…Z Lv`¨ wK cybivq Mig K‡ib?	0= □**YES** 0=n¨v 1= □ **NO** 1=bv	_____
31.	When you store cooked foods do you cover it? gRyZK…Z Lvevi¸jv wK †X‡K iv‡Lb?	0= □**YES** 0=n¨v 1= □ **NO** 1=bv	_____
32.	Can you name **3 foods** that give **pushti** in the body? Avcwb wK 3 wU Lvev‡ii bvg ej‡Z cvi‡eb, hv kixi‡K cywó ‡hvMvq? If 0 foods named correctly code = 0 1=1 ; 2=2 ; 3=3	**1** **2** **3**	_____
33.	Do you add sprinkles to your food? Avcwb wK Lvev‡i w¯cÖsKj hy³ K‡ib?	0= □**YES** 0=n¨v 1= □ **NO** 1=bv	_____

Care Practices Section (To Primary Caregiver Identified in question 13)

(In the occasion that the primary caregiver is not the mother, the mother should answer questions *34 to 39*, and then revert back to primary caregiver identified)

wbev©wPZ wkï†K cÖv_wgK †mev`vbKvix hw` gv bv nq Zvn‡j wbev©wPZ wkïï gv‡K 34 †_‡K 39 bs cÖkœ wRÁvmv Ki"b Ges cybivq cÖv_wgK †mev`vbKvixi Kv‡Q hvb

No	Question	Response	Code
34.	How old were you when you gave birth to your first child? cÖ_g wkïwU Rb¥v‡bvi mgq Avcbvi eqm KZ wQj?	_____years	n/a
35.	During the pregnancy of "selected child" did you eat; wba©vwiZ wkïwU M‡f© _vKv Ae¯'vq wK cwigvY †L‡qwQ‡jb	0= □ Same amount of food as before pregnancy Mf©ve¯'vq c~‡e©i mgvb Lvevi 1= □ More food than before pregnancy Mf©ve¯'vq c~‡e©i ‡P‡q ‡ewk Lvevi 2= □ Less food than before pregnancy Mf©ve¯'vq c~‡e©i ‡P‡q Kg Lvevi 3= □ doesn't remember g‡b †bB	_____
36.	During your pregnancy with "selected child", did you see anyone for antenatal care? wba©vwiZ wkïwU Mf©ve¯'vq Avcwb wK Mf©Kvjxb ÓhZ¥b wb‡qwQ‡jbÓ	0= □YES 0=n¨v 1= □ NO 1=bv (if NO skip to 39)(bv n‡j 39 bs G hvb)	_____
37.	Who did you go to for Antenatal Care? Kv‡K †`wL‡qwQ‡jb?	0= □Doctor Wv³vi 1= □Midwife ¯^v¯'¨ †mweKv 2= □Traditional Healer mbvZb wbivgqKvix 3=□Other_____ Ab¨vb¨	_____
38.	During your pregnancy with "selected child", did you consume any additional vitamins/micronutrients? wba©vwiZ wkïwU M‡f© _vKv Ae¯'vq Avcwb wK AwZwi³ †Kvb wfUvwgb/ Abycywó†meb K‡iwQ‡jb?	0= □YES 0=n¨v 1= □ NO 1=bv	_____
39.	Has this child ever been breastfed at any time in his/her life? wkïwU wK KL‡bv ey‡Ki `ya †L‡q‡Q?	0= □YES 0=n¨v 1= □ NO 1=bv (if NO skip to 48)(bv n‡j 48 bs G hvb)	_____
40.	Which of the following describes the child's current feeding pattern: (read options) †Kvb ¸wj wkïwUi eZ©gvb Lv``vf`vm eb©bv K‡i:	0= □ The child is breastfeeding exclusively (not consuming anything but breast milk) 0=wkïwU ïaygvÎ ey‡Ki `ya cvb K‡i   1= □ Breastfeeding and consuming other types of food or drink 1=ey‡Ki `ya Ges Ab¨vb¨ Lvevi ev cvbxq cvb K‡i 2= □ Not breastfeeding at all now (If code 2 skip to 48) 2=GLb ey‡Ki `ya G‡Kev‡iB cvb K‡i bv (bv n‡j 48 bs G hvb)	_____
41.	Is the child breastfed on demand? (when the child cries) wkïwU‡K wK Zvui cÖ‡qvRb gZ ey‡Ki `ya LvIqv‡bv n‡q‡Q? (hLb wkïwU Kvbœev KiZ)	0= □YES 0=n¨v 1= □ NO 1=bv	_____
42.	Do you ever breastfeed your child during the night-time? Avcwb wK KLbI wkïwU‡K iv‡Z ey‡Ki `ya w`‡qwQ‡jb?	0= □YES 0=n¨v 1= □ NO 1=bv	_____
43.	Did you give the child any other liquids or foods before you initiated breastfeeding? (including sugar water and honey) R‡b¥i ci wkïwU‡K ey‡Ki `ya †`qvi c~‡e© Avcwb wK Ab¨ †Kvb Zij A_ev Lvevi w`‡qwQ‡jb?	0= □YES 0=n¨v 1= □ NO 1=bv 2=□ **Don't Remember**	_____
44.	How old was selected child when you first did this? wkïwUi eqm ZLb KZ wQj?	0= □ Don't remember 0=g‡b bvB 1= _____ Months 1=---gvm	_____
45.	How long after the birth of 'Selected child' did you first put him/her to the breast? R‡b¥i KZ¶b ci me©cÖ_g ey‡Ki `ya w`‡q‡Qb?	0= □ Immediately mv‡_ mv‡_ 1= □ Within the first day 1g w`‡bB   2= □ More than a day  1g w`bi c‡i 3= □Don't remember g‡b bvB	_____
46.	Did you give selected child colostrums? wba©vwiZ wkïwU‡K wK Avcwb KLbI kvj`ya w`‡qwQ‡jb?	0= □YES 0=n¨v 1= □ NO 1=bv	_____
47.	Does the child use a Bottle or a Pacifier? wkïwU‡K wK †Kvb †evZj A_ev Pzlwb e¨venvi K‡i?	0= □YES 0=n¨v 1= □ NO 1=bv	_____

48.	When the child is given other foods than breast milk what does the child eat? wkïwU‡K hLb ey‡Ki `y†ai cvkvcvwk Ab¨vb¨ Lvevi w`‡qwQ‡jb ZLb wkïwU wK †L‡qwQj?	0= □ Eats from the family pot cwiev‡ii Ab¨vb¨‡`i LveviB Lvq 1= □ Eats something separate (specify)_____ wKQzUv Avjv`v Lvq (D‡j−L Ki"b)	_____

No	Question	Response	Code
49.	Do you spend time listening attentively when your child speaks or play, with your children, or pay attention when they are eating? Avcwb wK Avcbvi wkïi K_v ejv, †Ljv A_ev LvIqvi mgq Zvi cÖwZ h‡_ó g‡bv‡hvM †`b?	0= □**YES** 0=n¨v 1= □ **NO** 1=bv **(if no skip to 51)(** bv n‡j 51 bs G hvb)	_____
50.	How frequently? wKiKg g‡bv‡hvM †`b?	0= □ Never KL‡bv bv 1= □ Rarely K`vwPr 2= □ Frequently Nb Nb 3= □ All the time me mgqB	_____
51.	Do you teach your child about something like how to eat, get dressed, wash or play by showing them how to do things and encouraging them in a positive and kind manner? Avcwb wK Avcbvi wkï‡K LvIqv,Kvco cov,cwi¯‹vi nIqv A_ev †Ljv G¸‡jv wKfv‡e Ki‡Z nq Zv †`wL‡q †`qvi gva¨‡g wkwL‡q‡Qb Ges f¨a I webqx~ fv‡e Drmvn w`‡q‡Qb?	0= □**YES** 0=n¨v 1= □ **NO** 1=bv **(if no skip to 53)(** bv n‡j 53 bs G hvb)	_____
52.	How frequently? wKiKg g‡bv‡hvM †`b?	0= □ Never KL‡bv bv 1= □ Rarely K`vwPr 2= □ Frequently Nb Nb 3= □ All the time me mgqB	_____
53.	Do you give directions and "correct" your child's behaviour (fighting with siblings or neighbour's kids, running quickly, breaking household items, eating dirty food)? Avcwb wK Avcbvi wkï†`i wb‡`©k †`b Ges Zv‡`i e¨venvi ïawi‡q †`b (fvB‡evb‡`i A_ev cÖwZ‡ekx‡`i ev"Pv‡`i mv‡_ gvivgvwi, †Rv‡i ‡`Šov‡bv, emZevwoi `ªe¨vw` †f‡½ †djv, gqjv Lvevi LvIqv)	0= □**YES** 0=n¨v 1= □ **NO** 1=bv **(if no skip to 55)** (bv n‡j 55 bs G hvb)	_____
54.	How frequently? wKiKg g‡bv‡hvM †`b?	0= □ Never KL‡bv bv 1= □ Rarely K`vwPr 2= □ Frequently Nb Nb 3= □ All the time me mgqB	_____
55.	Do you correct your child by hitting or spanking, yelling or shouting? Avcwb wK gviai, Po (cðv`‡`‡k), agK A_ev wPrKv‡ii gva¨‡g wkï‡K wVK K‡ib?	0= □**YES** 0=n¨v 1= □ **NO** 1=bv **(if no skip to 57)(** bv n‡j 57 bs G hvb)	_____
56.	How frequently? wKiKg g‡bv‡hvM †`b?	0= □ Never KL‡bv bv 1= □ Rarely K`vwPr 2= □ Frequently Nb Nb 3= □ All the time me mgqB	_____
57.	Do you praise, hug, kiss or smile at your child for his/her accomplishments (e.g. washing hands before eating, finishing food, following directions etc.)? Avcbvi wK wkï †Kvb KvR fvjfv‡e †kl Kivi Rb¨ Zvi cÖksmv K‡ib, Rwo‡q a‡ib, Pzgy Lvb A_ev nv‡mb wK (†hgb: LvIqvi c~‡e© nvZ †avIqv, Lvevi cy‡ivcywi †kl Kiv, wb‡`©k †g‡b Pjv BZ¨vw`)	0= □**YES** 0=n¨v 1= □ **NO** 1=bv **(if no skip to 59)(** bv n‡j 59bs G hvb)	_____
58.	How frequently? wKiKg g‡bv‡hvM †`b?	0= □ Never KL‡bv bv 1= □ Rarely K`vwPr 2= □ Frequently Nb Nb 3= □ All the time me mgqB	_____

59. I'd like to talk to you about how you've been feeling lately

Avwg GLb Avcbvi mv‡_ Avcbvi eZ©gvb gb gvbwmKZv wb‡q mvgvb¨ wKQz K_v ej‡Z PvB

Over the last two weeks (14 days) MZ `yB mßv‡n (14 w`b)	5 - All the time (I was able to experience all the 12 to 14 days) memgq (12-14 w`b)	4 - Most of the time (I experienced it between 7 to 11 days) ‡ewkifvMmgq (07-11 w`b)	3 - Less than half of the time (I experienced it between 4 to 6 days only) A‡a©‡Ki Kg mgq (4-6 w`b)	2 - Some of the time (I experienced it between 1 to 3 days only) wKQz mgq (1-3 w`b)	1 - At no time (I never - 0 day-experienced it) KLbB bv (0 w`b)
I have felt cheerful and in good spirits (I have been able to laugh and see funny side of things.) Avwg Avbw›`Z ‡eva KiwQjvg Ges mywL wQjvg (Avwg nvm‡Z cviZvg Ges †Kvb wKQzi fvj w`K †`L‡Z m¶g)					
I felt calm and relaxed. (No worries, anxiety, scared or panicky feeling). Avwg nvjKv Ges Avivg ‡eva KiwQjvg (†Kvb wPš—v, fq, fxwZ A_ev AvZ¤K wQjbv)					
I felt active and vigorous. (I feel energetic and I look forward to do things.) Avwg mwµq Ges m‡ZR ‡eva KiwQjvg (Avwg Kv‡Ri †¶‡Î D`¨gx Ges AMÖMvgx †eva K‡iwQ)					
I woke up feeling fresh and rested. Avwg Nyg †_‡K D‡V mRxe Ges Avivg †eva KiwQjvg (fvj Nyg n‡qwQj)					
My daily life has been filled with things that interest me. Avgvi ˆ`bw›`b Rxe‡b AvKl©Yxq/AvMÖnx welq w`‡q c~Y© wQj					

60.	Do you face any difficulties to take care of your child because you have too many things to do/other responsibilities? Ab¨vb¨ `vwqZ¡ cvjb Kivi Kvi‡Y Avcwb wK Avcbvi wkïi †mev-h‡Zœ †Kvb mgvm¨vi m¤§yLxb n‡q‡Qb?	0= □ YES 0=n¨v 1= □ NO 1=bv	
61.	In the last week did you manage to have spare time (**NO** hoh work, **NO** taking care of child, **NO** work activities) for yourself? Avcwb wK MZ mßv‡n wekªv‡›Zi mgq †c‡qwQ‡jb?	0= □ YES 0=n¨v 1= □ NO 1=bv **(if no skip to 63)** (bv n‡j 63bs G hvb)	
62.	If **YES**; roughly how many hours? hw` nvu nq †gvUvgyUvU KZN›Uv?	___ Hrs N›Uv	n/a

WASH Section

No	Question	Response	Code
63.	When do you usually wash your hands? সাধারণত আপনি আপনার হাত কখন পরিস্কার করেন?	0=□ Before preparing food □ খাবার ^Zix করার আগে 1=□ Before eating meals □ খাবার খাওয়ার আগে 2=□ Whenever they are dirty □ যখনই হাত অপরিস্কার হয় 3=□ After urination/defecation □ প্রস্রাব/পায়খানা করার পরে 4=□ After handling child waste □ বাচ্চাদের নোংরা জিনিস ধরার পরে 5=□ After Handling Dirty things □ কোন অপরিস্কার জিনিস ধরার পরে	_____
64.	When do you usually wash your child's hands or make them wash their own hands? wkïwU KLb wb‡RB Zvi nvZ †avq ev Avcwb ay‡q †`b?	0=□ Before eating meals □ খাবার খাওয়ার আগে 1=□ Whenever they are dirty □ যখনই হাত অপরিস্কার হয় 2=□ After they urinate/defecate □ প্রস্রাব/পায়খানা করার পরে 3=□ After Handling Dirty things □ বাচ্চাদের নোংরা জিনিস ধরার পরে 4=□ After eating meals □ কোন অপরিস্কার জিনিস ধরার পরে	_____
65.	From where do you get the water with which you use to wash yourself or your child? Avcbvi Ges mš—v‡bi Avcbvi †MvQ‡ji Rb¨ †Kv_v †_‡K cvwb Av‡bb ?	0=□ Tap U¨vc 1=□ Pond cyKzi 3=□ Hand Dug Well Kzqv 2=□ Other (please specify)_____ □ অন্য (নির্দিষ্ট করে বলুন)	_____
66.	What do you use to wash your hands? আপনারv হাত ধুতে আপনি কি ব্যবহার করেন ?	0=□ Soap □ সাবান 1=□ Ashes □ ছাই 2=□ Soil □ মাটি 3=□ Sand □ বালু 4=□ Nothing □ কিছুই না	_____
67.	Do you wash your utensils immediately before you use them? আপনি কি আপনার হাড়ি/পাতিল/বাসন/ইত্যাদি ব্যবহার করার ঠিক আগে ধুয়ে নেন?	0= □YES 0=n¨v 1= □ NO 1=bv (if no skip to 69)) (bv n‡j 69bs G hvb)	
68.	From where do you get the water with which you use to wash your utensils? আপনার হাড়ি/পাতিল/বাসন/ইত্যাদি ধুয়ার জন্য যে পানি আপনি ব্যবহার করেন, সেটা আপনি কোথা থেকে জোগাড় করেন?	0=□ Tap U¨vc 1=□ Pond cyKzi 2=□ Other (please specify)_____ □ অন্য (নির্দিষ্ট করে বলুন)	
69.	Can you name 3 things that make food contaminated? এমন ৩'টি জিনিসের নাম বলতে পারেন যা খাদ্যকে `~wlZ করে? (If 0 named correctly code = 0 ; 1=1 ; 2=2 ; 3=3)	1. 2. 3.	
70.	Do you use any other sources (other than water points provided) of water for drinking or washing etc? Dwj-wLZ Drm QvovI Lvevi ev Ab¨ Kv‡R Ab¨ †Kvb cvwb e¨venvi K‡ib?	0= □YES 0=n¨v 1= □ NO 1=bv (if no skip to 72)) (bv n‡j 72bs G hvb)	
71.	If **YES** please indicate where? যদি '**হ্যাঁ**,' তাহলে কোথা থেকে?	□ Pond cyKzi □ Hand Dug Well Kzqv □ Other (Specify) _____ □ অন্য (নির্দিষ্ট করে বলুন)	
72.	How long do you normally have to wait to get access to safe/clean water? পরিস্কার পানি পেতে হলে আপনার কি সাধারণত অনেক লম্বা সময়ের জন্য অপেক্ষা করতে হয়?	Min's Hours	
73.	Was the overall amount of clean/safe water available to you in the last 7 days sufficient? গত এক সপ্তাহে আপনার কাছে যতটুকু পরিস্কার পানি ছিল, সেটা কি আপনার জন্য যথেষ্ট ছিল?	□ more than sufficient □ যথেষ্ট হয়েও আরও বেশী □ sufficient □ যথেষ্ট □ insufficient □ যথেষ্ট না □ extremely insufficient □ একদমই যথেষ্ট না	
74.	**(Get them to show you what they use to transport water)** **(তাদের পানি আনা-নেওয়ার সরঞ্জামটি দেখতে চান)** Do you wash 'container' before using it to transport drinking water? খাবারের পানি এক স্থান থেকে আরেক স্থানে নিয়ে যাওয়ার আগে কি আপনি 'সরঞ্জাম'টি পানি দিয়ে পরিস্কার করেন?	□ Always □ প্রত্যেক বার □ Sometimes □ মাঝেমাঝে □ No □ না	

75.	**(Get them to show you what they use to store water)** **(তারা পানি সংগ্রহ করার জন্য যেটা ব্যবহার করে, সেটা দেখতে চান)** Do you wash 'storage container' with clean water before using it for storing drinking water? থাবারের পানি সংগ্রহ করার আগে কি আপনি এই 'সরঞ্জাম'টি পরিস্কার পানি দিয়ে ধুয়ে নিন?	□ Always □ **প্রত্যেক বার** □ Sometimes □ **মাঝেমাঝে** □ No □ **না**	
76.	Do you cover the container when you store it? আপনি যখন সরঞ্জামটি কোথাও রেখে †`b, সেটা কি আপনি ঢেকে রাখেন?	□ Always □ **প্রত্যেক বার** □ Sometimes □ **মাঝেমাঝে** □ No □ **না**	

77.	During the past month, where do **HH adult females** usually defecate? MZ gv‡m Avcbvi evwoi gwnjviv †Kv_vq gj Z¨vM K‡i‡Q?	0=□ Latrine cvqLvbv 1=□ Pond cyKzi	2=□ Shed ‡kW 3=□Open Space †Lvjv RvqMvq	4=□ Makeshift ‡gBKwkd&U 5=□ Other (Specify)_____ Ab¨vb¨	_____
78.	During the past month, where does "**selected child**" usually defecate? গত মাস হতে, "এই বাচ্চাটি" সাধারণত কোথায়ে পায়খানা করছে?	0=□ Latrine cvqLvbv 1=□ Pond cyKzi	2=□ Shed ‡kW 3=□Open Space †Lvjv RvqMvq	4=□ Makeshift ‡gBKwkd&U 5=□ Other (Specify)_____ Ab¨vb¨	_____
79.	If going to latrines, do all members of the hoh use sandals? পায়খানা যাওয়ার সময়ে (যদি যায়), বাড়ির সব সদস্যরা কি স্যান্ডাল পরে যায়?	0= □**YES** 0=n¨v 1=□ **NO** 1=bv			_____
80.	Can you mention 3 main causes of diarrhoea? ডায়ারিয়া হওয়ার ৩'টি মূল কারণ কি বলেন পারেন?	1. 2. 3.			
81.	How do you dispose of your HH waste? আপনার বাড়ি থেকে আপনি ময়লা/বাজে আবরজনা কিভাবে সরান?	0=□ Take it to Waste Disposal Site □ ময়লা রাখার স্থানে নিয়ে যাই 1=□ Take it away from the House □ বাড়ি থেকে সরিয়ে	2=□ Use it for Compost □ মিশ্রসারের জন্য ব্যবহার করেন 3=□ Burn it away from the house □ বাড়ি থেকে দূরে নিয়ে পুড়িয়ে দেই	4=□ Throw it outside □ বাহিরে ফেলে দেই 5=□ Burn it near/in the House □ বাড়ির কাছে বা ভিতরে পুড়িয়ে দেই	_____

Health Section

No	Question	Response		Code
82.	Has 'selected child' had Diarrhea (more than 3 loose or watery stools in a 24-hour period) in the past 2 weeks? গত দুই সপ্তাহে "এই বাচ্চাটির" কি কোন ডায়ারিয়া (২৪-ঘন্টার মধ্যে ৩'বারের বেশী পাতলা বা পানির মতো পায়খানা) হয়েছে?	0=□ **YES** □ **হ্যাঁ** 1=□ **NO** □ **না** 2=□ **Don't Remember** □ **মনে নেই**		_____
83.	Has 'selected child' had an illness with a cough (trouble breathing or breathe faster than usual with short, fast breaths) in the last 2 weeks? গত দুই সপ্তাহে "এই বাচ্চাটির" কি সর্দি (যখন নিঃশ্বাস নিতে কষ্ট হয় বা অস্বাভাবিকভাবে খুব তাড়াতাড়ি এবং ছোট করে নিঃশ্বাস নিতে হয়) সহ কোন রোগ হয়েছিল?	0=□ **YES** □ **হ্যাঁ** 1=□ **NO** □ **না** 2=□ **Don't Remember** □ **মনে নেই**		_____
84.	Did you receive help from the health centre (OPD or IPD)? আপনি কি কোন চিকিৎসাগার (OPD or IPD) থেকে কোন প্রকারের সাহায্য পেয়েছিলেন	0=□ **YES** □ **হ্যাঁ** 1=□ **NO (if no skip to 87)** □ **না** (bv n‡j 87bs G hvb**)**		_____
85.	How long did it take for your child to be treated? আপনার বাচ্চার চিকিৎসা করাতে কত সময় লেগেছিল?	0=□ Same Day □ একই দিনে 1=□ >1 Day□ ১'দিনের বেশি	2=□ >2 Days □ ২ দিনের বেশি 3=□ Child was not seen at all □ আমার বাচ্চাকে কেউ দেখেই নাই	_____
86.	Do you sell any of the medicines you receive? আপনি যা ঔষধ পান, তার মধ্য থেকে কি আপনি কিছুটা বিক্রি করে দেন?	0=□ **YES** □ **হ্যাঁ** 1=□ **NO** □ **না**		_____
87.	Do you save any of the medicines for another time when you or your family may be ill? আপনি কি কোন ঔষধ সঞ্চয় করে পরে ব্যবহার করার জন্য রেখে দেন যখন/যদি কি না আপনি বা আপনার পরিবারের কেউ অসুস্থ হয়ে পরেন?	0=□ **YES** □ **হ্যাঁ** 1=□ **NO** □ **না**		_____
88.	Do you use all the medicine you receive the way the doctor tells you to? ঔষধ পাওয়ার পরে চিকিৎসক আপনাকে যেভাবে নির্দেশনা দেই, আপনি কি ঠিক সেইভাবে ঔষধগুলো ব্যবহার করেন?	0=□ **YES** □ **হ্যাঁ** 1=□ **NO** □ **না**		_____
89.	If you think your child has Diarrhea, how long do you wait until you take them to the health clinic (OPD or IPD)? আপনার যদি মনে হয় আপনার বাচ্চার ডায়ারিয়া হয়েছে, তাকে চিকিৎসাগারের (OPD or IPD) কাছে নেওয়ার আগে আপনি কতক্ষণ অপেক্ষা করবেন?	□ Straight away □ আমি সঙ্গে সঙ্গে নিয়ে যাব □ Wait 1 Day □ ১দিন অপেক্ষা করবো □ Wait ≥2 days □ ২'দিন বা তারও বেশি অপেক্ষা করবো		_____

The following information should be filled in at the same time the corresponding questions are being asked in the Household Questionnaire

1.CAM Camp code…... |__|

2.BLOC Block code…………….|__|

3.SHED **NO**…. |__||__||__||__|

4. MRC Household code |__||__||__||__||__||__|

5.CLUST **NO** |__||__|

6. HHN Household number……… |__||__|

7. Team number……………..|__|

8. DOI   Date of interview (DD-MM-YYYY)….. |__||__|-|__||__|-|__||__||__||__|

Name of Selected child _____

124.   **Date of Birth** _____   **or**   Age of child _____ months (refer to event calendar)

(Once the Household Composition Section of the Household Questionnaire is complete, it is the responsibility of the Surveyor to take the following measurements under the supervision of the team leader. A volunteer or Household Adult should be used to help with the weight.)

125.   **Weight** of Child _____ **kg**

126.   **Height** of Child _____ **cm**

127.**Oedema**   □**YES**   □**NO**

128.**MUAC** _____ **cm**

The following Observations should be made after the Measurements have been taken and while the Team Leader is going through the HH Questionnaire

129. Child observation

□ Yes	□ No	Is selected child relatively clean with no offensive odour?
□ Yes	□ No	Does the selected child have dirty hands?
□ Yes	□ No	Does the selected child have soil or mud in finger nails?
□ Yes	□ No	Does the selected child have a dirty face?
□ Yes	□ No	Does the selected child have a potbelly?
□ Yes	□ No	Can you see domestic animals in the house or in the living area around the house?
□ Yes	□ No	Are human or animals faeces visible in the house or in the living area around the house?
□ Yes	□ No	Can you smell human or animal faeces while in or near the house?
□ No Clothes		
□ Partially Clothed		Is the selected child wearing clothes?
□ Adequately Clothed		
□ Yes	□ No	If wearing any, are the selected child clothes dirty?
□ Yes	□ No	Is the selected child wearing shoes?

130. **Housing Observation**

In what condition is the living space	□ **Clean**	□ **A bit dirty**	□ **Very dirty**
In What Condition is the Shed? (roof leaks, Walls Damaged etc)	□ **Good**	□ **Average**	□ **Poor**
Are Faeces or Urine evident around or in the House (visual or smell)	□ **YES**	□ **NO**	

131. **Water storage :** Ask one member of HH **(not respondent)** to show you where the water is stored

How many containers are available?   Number of Containers _____

What is the type of containers?	□ narrow mouth less than 3 cm	□ wide mouth	□ both types
Are the containers covered?	□ all are covered	□ some are covered	□ none are covered

132. **Cooking hygiene**: Ask one member of HH **(not respondent)** to show you the cooking place:

Where is the cooking place?	□ On the floor	□ Elevated	
Where are the cooking utensils (pans,…) stored?	□ On the floor	□ Elevated	
In what condition are the cooking utensils?	□ Clean	□ A bit dirty	□ Very dirty
Where are wastes disposed?	□ no specific place	□ specific open place	□ specific place covered
If there is food in the kitchen, is it covered?	□ YES	□ NO	□ NA

Where is cooked food stored	□ On the floor	□ Elevated

133. **Latrines:** Ask one member of HH **(not respondent)** to show you the Latrine they use

□ Yes	□ No	101. Did the respondent show toilet/latrine
□ Yes	□ No	102. Feaces on floor
□ Yes	□ No	103. Dirty
□ Yes	□ No	104. Flies
□ Yes	□ No	106. Are soap or ash close to the latrine used by the household?

107. From the beginning up to the end of the interview have you observed:

□ Often	□ Sometimes	□ Rarely	□ Never	The caregiver tends to keep the selected child within visual range and looks at the child quite often
□ Often	□ Sometimes	□ Rarely	□ Never	The caregiver talks to selected child during the course of the visit
□ Often	□ Sometimes	□ Rarely	□ Never	The caregiver interacts with selected child to promote development and learning
□ Often	□ Sometimes	□ Rarely	□ Never	The caregiver smiles at the selected child or laughs with the selected child
□ Often	□ Sometimes	□ Rarely	□ Never	The caregiver spanked or hit selected child during the visit

(Indications) **Rarely = 1 or 2 times during the interview**   **Sometimes = 3 to 5 times during the interview**   **Often = More than 6 times**

108. How does the caregiver appear to you? □ **Good form & healthy** □ **Sad** □ **Apathetic** □ **Anxious/Worried**

109. How does the child appear to you? □ **Good form & healthy** □ **Sad** □ **Apathetic** □ **Quiet**