

Final report



NUTRITION CAUSAL ANALYSIS
August - December 2019

Kutupalong Makeshift Settlements, Cox's Bazar, Bangladesh



ACKNOWLEDGEMENTS

The Link NCA Nutrition Causal Analysis in Kutupalong Makeshift Settlements was funded by SIDA, UNHCR and WFP.

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The Link NCA team wishes to express their thanks to all those who have contributed to this study and facilitated its development, in particular:

- To local authorities, especially the Institute of Public Health Nutrition (IPHN), for their tireless dedication in the fight against undernutrition and their unwavering support over the course of the study;
- To all technical experts, who attended the Link NCA technical workshops, for sharing their expertise and hence contributing to the high quality of the study;
- To all participants in the sampled and randomly visited camps for their hospitality and genuine collaboration.

Special thank you to *Sandra Harlass*, Senior Public Health Officer, UNHCR, *Mary Chelang'at Koech*, Nutrition Officer, UNHCR and *Tracy Dube*, Programme Policy Officer, WFP, for their active engagement and support since the early stages of the process, including the technical contributions and mobilisation of funds, which made this study possible.

To quantitative and qualitative teams for their efforts in exceptionally trying conditions.

This study would not have been possible without the exceptional work and commitment of all involved.

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ACRONYMS

AAH/ACF	Action Against Hunger / Action Contre la Faim
ARI	Acute Respiratory Infection
BSFP	Blanket Supplementary Feeding Programme
CI	Confidence Interval
CiC	Camp in Charge
CMAM	Community-Based Management of Acute Malnutrition
CWW	Concern Worldwide
CXB	Cox's Bazar
ENA	Emergency Nutrition Assessment
FGD	Focus Group Discussion
FSL	Food Security and Livelihoods
GAM	Global Acute Malnutrition
GCM	Global Chronic Malnutrition
GFD	General Food Distribution
HAZ	Height-for-Age z-score
HB	Haemoglobin
HH	Household
IDDS	Individual Dietary Diversity Score
IOM	International Organization for Migration
IPHN	Institute of Public Health Nutrition
IYCF	Infant and Young Child Feeding
KMS	Kutupalong Makeshift Settlements
KRC	Kutupalong Registered Camp
MCM	Moderate Chronic Malnutrition
MEAL	Monitoring, Evaluation, Accountability and Learning
MNP	Micronutrient Powders
MS	Makeshift Settlements
MSF	Médecins Sans Frontières
MUAC	Mid-Upper Arm Circumference
NCA	Nutrition Causal Analysis
NGO	Non-governmental Organisation
NPM	Needs and Population Monitoring
NRC	Nayapara Registered Camp
NRS	Northern Rakhine State
OTP	Outpatient Therapeutic Programme
PLW	Pregnant and Lactating Women
PPS	Probability Proportional to Size
REVA	Rohingya Emergency Vulnerability Assessment
RUSF	Ready-to-Use Supplementary Food
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition

SARPV	Social Assistance and Rehabilitation for the Physically Vulnerable
SC	Stabilisation Centre
SCI	Save the Children International
SCM	Severe Chronic Malnutrition
SE	Standard Error
SHED	Society for Health Extension and Development
SIDA	Swedish International Development Cooperation Agency
SLEAC	Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage
SMART	Standardized Monitoring and Assessment of Relief & Transitions
TDH	Terre des Hommes
TSFP	Targeted Supplementary Feeding Programme
UK	United Kingdom of Great Britain and Northern Ireland
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USD	United States Dollars
WASH	Water, sanitation and hygiene
WAZ	Weight-for-age Z-score
WFP	World Food Programme
WHO	World Health Organization
WHZ	Weight-for-length/height z-score
WSB	Wheat Soya Blend

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EXECUTIVE SUMMARY

Cox's Bazar District is one of the disaster prone coastal district of Bangladesh with eight upazilas. It corresponds to an area of 2491.85 sq. km, surrounded by Chittagong district in the north, Bay of Bengal in the south, Bandarban district, Myanmar border (Rakhine State) and the Naf River in the east, the Bay of Bengal in the west.

Kutupalong Makeshift Site (hereafter, Kutupalong MS) is located in Cox's Bazar and it is home to Rohingya people who fled Myanmar during the intensification of conflict in August in 2017. Despite massive humanitarian interventions covering all key sectors, undernutrition in the settlements remains a public health concern while the context is shifting from the emergency phase to a protracted crisis phase, which highlights the necessity to clearly understand the causal mechanisms of undernutrition to support programming across all sectors.

For this reason, Action Against Hunger, together with its partners, sought to undertake a Link NCA study in Kutupalong MS with an objective to deepen the understanding of the root causes of undernutrition in the settlements in order to prioritise and adapt ongoing and future interventions to community's most urgent needs and possibly to sustainably reduce undernutrition in the study zone.

KEY FINDINGS

The prevalence of global acute malnutrition (GAM) on the basis of weight-for-height z-score was estimated at 11.7% [8.4-16.0, 95% CI]. The prevalence of severe acute malnutrition (SAM), according to the same criterion, was estimated at 0.8% [0.2-2.4, 95% CI]. The prevalence of global chronic malnutrition (GCM) was estimated to be 33.6% [27.9-39.8, 95% CI] and 29.1% [24.3-34.4, 95% CI] of children are underweight.

The group identified as most vulnerable to acute malnutrition were children under 24 months of age and children of mothers of younger age as their vulnerability to wasting weakly decreased as mother's age increased. Children older than 24 months appeared to be most vulnerable to stunting as well as children living in households with more than 11 members. Male children appeared to be most vulnerable to underweight. Similarly to wasting, the group identified as most vulnerable to anaemia were children under 24 months of age and children of mothers of younger age as their vulnerability to anaemia significantly decreased as mother's age increased. In addition, children living in households with 4-7 members were more likely to be anaemic while children living in larger households (8-10 members) seemed to be protected against the said deficiency.

The analyses undertaken during this Link NCA study allowed to identify 18 risk factors, believed to have an impact on the incidence of undernutrition in the study zone. Following a triangulation of data from diverse sources, three (3) risk factors were identified as having a major impact, ten (10) risk factors were classified as having an important impact and five (5) risk factors were judged to have a minor impact on the incidence of undernutrition in the zone of study.

Among the major risk factors, two were identified in the sector of maternal health, namely low birth-spacing and/or unwanted pregnancies and early marriage/pregnancy, while the last major risk factor, non-optimal hygiene practices, was identified in the sector of water, sanitation and hygiene.

The calculation of statistical associations between individual risk factors and nutritional status of children in surveyed households allowed to differentiate between the causal mechanisms for each nutritional outcome. A combined pathway for wasting, stunting and underweight and anaemia

was also designed to encourage understanding of their overlaps and a development of harmonised multi-sectoral responses.

Wasting and underweight

An important trigger to wasting and/or underweight of children under five years of age is a transition from Myanmar to Bangladesh and the implied loss of household income generating activities, which translate into a low household dietary diversity. Lack of purchasing power inhibits the ability to add fruits, vegetables, and meat-based proteins to family diets. The consumption of more than four food groups was identified as a protective factor against both acute malnutrition and underweight. A similar link with wasting and underweight was observed among children who consumed fruits and vegetables. In other words, it can be inferred that sub-optimal complementary feeding practices lead to inadequate nutritional intake and therefore undernutrition. The available data further suggests that children living in households with more than 7 members and children living in households with humanitarian assistance as their main source of income are less likely to attain an acceptable individual dietary diversity (IDDS) score.

However, a dominant pathway to underweight seems to take roots in limited female autonomy and decision-making power, which leads to poor-birth spacing. Children who were less than 12 months apart from their siblings were more likely to be underweight, especially if their mother had the first pregnancy under 18 years of age. Early or repetitive pregnancies potentially affect mother's nutritional status, which was identified as a protective factor against underweight. In addition, poor birth-spacing is likely to increase mother's workload, which may lower her capacities to fully attend to her children. The available data suggests that caregiver's workload significantly increased when a number of children under five years of age in the household increased. In this respect it is important to highlight a potential vicious cycle as heavy workload of women potentially leads to a lower exposure to relevant sensitisation messages, which then translates into poor birth-spacing and further increases mother's workload.

According to the available data, the mother's workload influences her child care practices as the likelihood of inappropriate child care practices increases with the increase of mother's workload. In addition, women's multiple household chores can exacerbate deterrents to proper water management, such as covering the water storage, which was identified as a protective risk factor against underweight. The data also suggests that children are more likely to be unclean if their mother's first pregnancy occurred before she reached 18 years of age.

Exacerbated by low female decision-making power and restrictions on female movement, woman's workload also translates into a low use of health services. This may result in non-optimal treatment of children with common illnesses and/or their prevention. Measles vaccination and deworming are potentially protective factors against the wasting while children who were born at home were potentially more likely to be underweight. Children suffering from fever during the last two weeks prior to the data collection were more likely to be wasted or underweight, especially if child was observed unclean during the surveyors' stay in the household.

Stunting

Similarly to acute malnutrition and underweight, a dominant pathway to stunting seems to take roots in limited female autonomy and decision-making power, which leads to poor-birth spacing. Children who were less than 12 months apart from their siblings were potentially more likely to be stunted, especially if their mother had the first pregnancy under 18 years of age. Early or repetitive pregnancies potentially affect mother's nutritional status, which was identified as a

weakly protective factor against stunting. In addition, poor birth-spacing is likely to increase mother's workload, which may lower her capacities to fully attend to her children. Medium to heavy workload, as reported by caregivers in the survey sample, was identified as a potential risk factor of chronic malnutrition. The available data also suggests that caregiver's workload significantly increased when a number of children under five years of age in the household increased. In this respect it is important to highlight a potential vicious cycle as heavy workload of women potentially leads to a lower exposure to relevant sensitisation messages, which then translates into poor birth-spacing and further increases mother's workload.

According to the available data, the mother's workload influences her child care practices as the likelihood of inappropriate child care practices increases with the increase of mother's workload. Children, who were during the data collection observed as having appropriate interactions with their caregiver, were less likely to be stunted. On a hygiene practices side, a covered water storage was identified as a weakly protective risk factor against stunting while the presence of soap in the household was significantly linked with lower odds of chronic malnutrition among children under 5 years of age. The data also suggests that children whose mother's first pregnancy occurred before she reached 18 years of age were more likely to be observed unclean.

One interesting statistical association exists between humanitarian assistance and stunting. Reception of humanitarian assistance as the main source of household income may protect a child against the risk of chronic undernutrition. Although this may seem as a slightly counter-intuitive finding, a possible explanation is that the humanitarian assistance is positively associated with household income. However, it needs also be noted that children living in households benefiting from such assistance were less likely to achieve an acceptable individual dietary diversity score (IDDS), which may likely be linked with the modalities of such assistance.

Anaemia

Similarly to preceding pathways, a dominant pathway to anaemia seems to take roots in limited female autonomy and decision-making power, which leads to poor-birth spacing. Children of mothers, who were pregnant or breastfeeding at the time of the data collection, were more likely to be anaemic. As early or repetitive pregnancies potentially affect mother's nutritional status, children of healthy mothers were less likely to be anaemic. In addition, poor birth-spacing is likely to increase mother's workload, which may lower her capacities to fully attend to her children. The available data suggests that caregiver's workload significantly increased when a number of children under five years of age in the household increased. In this respect it is important to highlight a potential vicious cycle as heavy workload of women potentially leads to a lower exposure to relevant sensitisation messages, which then translates into poor birth-spacing and further increases mother's workload.

According to the available data, the mother's workload influences her child care practices as the likelihood of inappropriate child care practices increases with the increase of mother's workload. Children of mothers, who reported an early initiation of breastfeeding, were less likely to be anaemic. On a hygiene practices side, children living in households, who reported long waiting times as a barrier of access to water, were potentially more likely to be anaemic. An interesting statistical association was detected between water treatment and an increased likelihood of childhood anaemia in the households, meaning that children living in households who reported to treat water with chlorine were more likely to be anaemic. The hypothesis that this relationship is caused by water over treatment with chlorine warrants further investigation.

Low female decision-making power and restrictions on female movement compounded by a heavy woman's workload also translates into a low use of health services. This may result in non-optimal treatment of children with common illnesses and/or their prevention, considering that Vitamin A supplementation and deworming were identified as significantly protective factors against anaemia.

Similarly to wasting, a complementary pathway might be likely taking roots in a transition from Myanmar to Bangladesh and the implied loss of household income generating activities, which translate into a low household dietary diversity. The consumption of more than four food groups was identified as a protective factor against anaemia. In other words, it can be inferred that sub-optimal complementary feeding practices lead to inadequate nutritional intake and therefore micronutrient deficiency. The available data further suggests that children living in households with more than 7 members and children living in households with humanitarian assistance as their main source of income are less likely to attain an acceptable individual dietary diversity (IDDS) score.

An overview of key differences in identified risk factors across nutrition outcomes is provided in the table below.

Risk factor	Wasting (WHZ)	Stunting (HAZ)	Underweight (WAZ)	Anaemia (HB)
Child's gender (male)				
Child's age (<24 months)				
Fever				
Vitamin A Supplementation				
Early initiation of breastfeeding				
Child IDDS (>4 food groups)				
Child IDDS (Fruits/Vegetables)				
Mother's age				
Mother's MUAC				
Mother currently pregnant or breast-feeding				
Birth spacing (<12 months)				
HH size: 8-10				
HH size 11+				
Water storage covered				
Water treatment				
Presence of soap				

*Red cells designate a risk factor, green cells a protective factor.

KEY RECOMMENDATIONS

Based on these findings, the following activities are recommended to be incorporated into a multisector action plan to address the identified risk factors. The recommendations are presented by thematic area of intervention but must be taken into account dynamically for a better improvement of the nutritional situation in the study zone.

- Strengthen the inter-sectoral approaches in addressing undernutrition in the makeshift settlements through an improved collaboration between Health, Nutrition, Food Security and Livelihoods, Water, Sanitation and Hygiene and Protection sectors in developing humanitarian assistance strategies and ensuring accountability in the implementation of the recommendations.

Health & Nutrition

- Mitigate predominant formal health care seeking barriers by increasing the number of trained and dedicated personnel in health facilities with the objective to reduce waiting times for

consultations while extending the length of each consultation, as appropriate, thus allowing for improved communication between the health staff and caregivers. Ensure that the health staff understand the Rohingya aetiology of diseases and preferred therapeutic itineraries and adapt their communication in light of caregivers' key concerns;

- Launch a community consultation aiming to define how existing health facilities and procedures should be adapted to encourage more assisted births under the supervision of trained health personnel;
- Promote health facilities as safe spaces for women by adapting private places, where women can discreetly breastfeed. Consider using these spaces as safe information sharing spots, where women can receive information on their key concerns, including among others, tips on good nutrition to encourage the production of breastmilk in sufficient quantities, breastfeeding length and frequency, etc.
- Strengthen the IYCF-E programmes to sensitise mothers on the importance of colostrum in as a means of prevention of diseases for children under 6 months of age and an appropriate meal composition from locally available food items to ensure diversified diets and iron rich foods are provided to children under 5 years of age;
- Continue promoting maternal and child health activities within a 1000 days' window, encouraging women to complete all essential consultations, including vaccination, Vitamin A supplementation and deworming, among others, especially among younger mothers and/or children from larger households. These activities should be accompanied by meaningful sensitization sessions on optimal child feeding and child caring practices and should be extended to adolescent girls as a preparation for their potentially upcoming role as wives and mothers;
- Promote adolescent-friendly sexual and reproductive health services among adolescent mothers and/or adolescents at large as means of prevention of early pregnancy/unwanted pregnancy and non-optimal birth spacing.
- Strengthen the integration of community members with a medical diploma and/or exercising a health-related function in the development and dissemination of health messages to targeted populations, ensuring that the messages are adapted to their key concerns. This may include, but not be limited to, messages on appropriate birth-spacing and family planning practices, especially among men as key decision-makers, emphasizing the challenges associated with low birth spacing in Kutupalong MS;
- Support the creation and/or capacity building of forums for men and elders, in order to strengthen existing social support mechanisms in communities and households, putting a particular emphasis on emotional support and stress relief;
- Integrate the identification of child protection concerns, including violence, abuse and neglect, into ongoing health and nutrition activities, such as nutrition screening, by training the personnel on child protection principles, confidentiality, identification of signs of abuse and referral pathways, thus allowing front-line service providers to identify suspect cases and support referral for follow up but specialized home visits.

Food Security and Livelihoods

- Support the diversification of income opportunities through public utility construction and maintenance activities, maximizing opportunities for Kutupalong MS residents to be hired for daily wage with an objective to rebuild and support a healthy development of self-esteem of breadwinners while alleviating high levels of stress;
- Identify potential market access opportunities and relevant vocational skills training opportunities for men, especially the youth, to further diversify household income;

- Consider an introduction of a replacement product for Super Cereal (WSB+/WSB++), which would be more palatable for community members and/or consider an introduction of humanitarian interventions based on alternative assistance transfer modalities, allowing community members to purchase food products of their choice;
- Strengthen the initiatives aiming to improve access to quality fresh fruits, vegetables and fish, including, including increasing a number of shops, stocking retail shops with fresh produce on a more regular basis or including these items in e-voucher entitlements;
- Support the creation and/or capacity building of households to set up multi-storey and/or box kitchen gardens as avenues for social support and improved dietary diversity.

Water, Sanitation and Hygiene

- Strengthen the capacity building activities for community hygiene and sanitation committees in order to encourage the maintenance of optimal practices on a community as well as household levels. This may include refresher trainings on latrine cleaning, water point maintenance and/or other issues of public health interest;
- Explore potential links between residual chlorine from water treatment methods and anaemia prevalence among children in Kutupalong MS. This may include putting more emphasis on the use of treatment methods at safe levels and closer monitoring of water treatment at a household level, allowing to prevent waterborne diseases while limiting children's vulnerability to micronutrient deficiencies, as a consequence;
- Adjust the modalities of soap distributions, passing from blanket approaches to distributions proportional to household size to encourage optimal use by all household members.

Gender

- Address congestion in households by constructing larger structures and introducing male and female only spaces;
- Extend the number of years adolescent girls receive free schooling with an objective to encourage proper preparation for adult life and to discourage early coupling and marriages. This may include strengthening of the CiC monitoring of governmental policies on early marriage.

I. INTRODUCTION

Cox's Bazar District is one of the disaster prone coastal district of Bangladesh with eight upazilas. It corresponds to an area of 2491.85 sq. km, surrounded by Chittagong district in the north, Bay of Bengal in the south, Bandarban district, Myanmar border (Rakhine State) and the Naf River in the east, the Bay of Bengal in the west.

The Rohingya are an ethnic, linguistic Muslim minority from Northern Rakhine State (NRS) of Myanmar that is de jure stateless in accordance with Myanmar's restrictive 1982 citizenship legislation. The systematic and continuous persecution has resulted in Rohingya people frequently seeking safety in Bangladesh over the past five decades.

Ukhiya and Teknaf Upazilas in the Cox's Bazar District host approximately 900,000 Rohingya people. An intensification of violence beginning in August 2017 caused 700,000 Rohingya people to flee NRS. They joined an existing community of 200,000 Rohingya people in Bangladesh who had fled in earlier waves of displacement. Within Ukhiya and Teknaf, there are two registered camps and numerous other makeshift settlements. Kutupalong Registered Camp (KRC) and Nayapara Registered Camp (NRC) are home to 44,922 refugees. The remainder of the Rohingya population reside in unregistered, makeshift settlements.

Rohingya people living in the Cox's Bazar camps have access to humanitarian services provided by UN agencies and several partners across all the sectors. Food assistance is supported World Food Program (WFP) to address the daily food security needs through general food distribution (GFD) and e-Voucher programmes¹. The voucher system enables the community to access 19 different food types from WFP e-Voucher shops. Because of restrictions which prevent the community members from leaving the camps and limited livelihoods opportunities, most of the Rohingya population rely on humanitarian assistance to meet their basic needs.

Survey Indicator	Makeshift Round 2 May 17 th – 28 th 2018	Makeshift Round 3 Oct 20 th – 31 st 2018	Statistical Significance
GAM/SAM (WHZ) children 6-59 months	12.0% [9.4-15.0] 2.0% [1.1-3.6]	11.0% [8.4-14.2] 1.1% [0.4-2.8]	P=0.626 P=0.269
GAM/SAM (MUAC) children 6-59 months	4.3% [3.2-5.9] 0.5% [0.2-1.6]	3.1% [1.9-5.0] 0.0%	P=0.224 P=0.031
Stunting Global/Severe children 6-59 months	37.7% [33.0-42.5] 7.9% [5.8-10.8]	26.9% [22.4-31.9] 5.9% [4.0-8.5]	P=0.002 P=0.228
Low Women's MUAC/ PLW MUAC MUAC <210 mm	2.6% [1.6-4.2] 3.4% [1.4-7.8]	3.0% [2.0-4.6] 2.8% [1.0-7.3]	P=0.646 P=0.771
Anaemia (Hb<11.0g/dl) children 6-59 months	32.3% [27.8-37.1]	39.8% [34.1-45.4]	P=0.043
Any anaemia (Hb<12.0 g/dl) Women 15-49 (non PLW)	Data not collected in Round 2	22.6% [16.7-28.5]	-
Children 6-59 months received Vitamin A in past 6 months	Data not collected in Round 2	92.1% [88.9-95.3]	-
Diarrhoea children 6-59 months	20.9% [17.4-24.8]	28.4% [24.5-32.4]	P=0.007
Mortality (CDR & USDR)	0.38 [0.23-0.64] 0.86 [0.37-1.94]	0.13% [0.06-0.28] 0.42% [0.16-1.10]	P=0.033 P=0.290

Prior to this Link NCA research project, the most recent SMART survey conducted in makeshift settlements and NRC (round three) was in November 2018. The table 1 summarises the results from rounds two and three of the SMART surveys conducted in the makeshift settlements.

Table 1: Rounds two and three, SMART Survey results, Makeshift Settlements²

¹ Provision of rice, lentils and oil, accompanied by complementary food vouchers to ensure dietary diversity within beneficiary households.

² Source: Nutrition Cluster, Emergency Nutrition and Health Assessment Round 3, October-November 2018: https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/2018/12/181223-ENA-R3-MS-%26-NYP-Prelim-Results_NUT_SECTOR_DEC2_2018.pdf

EVOLUTION OF GAM PREVALENCE IN MAKESHIFT CAMPS



Figure 1: Trends of Global Acute Malnutrition Prevalence (2017-18), Makeshift Settlements

The nutrition sector is implementing interventions which entail diverse components comprising both curative and preventive aspects and with a strategy to reduce mortality and the burden of malnutrition through prevention, control and treatment of acute malnutrition, blanket supplementary feeding programmes and anaemia prevention and control programmes and infant and young child feeding programmes. The major humanitarian interventions at the time of the study are:

- Implementation of Therapeutic Feeding Programme; Stabilisation Centre (SC) for severely acutely malnourished children (0-59 months) with medical complications, Outpatient Therapeutic Programme (OTP) for Severely malnourished children (6-59 months) without medical complications;
- Targeted supplementary feeding programme (TSFP) for moderately malnourished children aged 6-59 months and chronically ill patients such as those with tuberculosis;
- Blanket Supplementary Feeding Programme (BSFP) for children aged 6-59 months and Pregnant and Lactating Women;
- Growth Monitoring of children between 0 to 59 months, community screening and referral of acutely malnourished children (6-59 months);
- Micronutrient powder (MNP) distribution and promotion aiming at preventing anaemia among children 6-23 months and Iron Folic Acid (IFA) and Calcium supplementation for Pregnant and Lactating Women (PLW);
- Support to lactating women through breastfeeding corner;
- Health promotion, nutrition education, awareness sessions and community mobilisation on IYCF, balanced and diversified diet importance, MNP, importance and malnutrition prevention etc.
- Food assistance through e-Voucher modality.

Study justification

The findings of several nutrition surveys conducted from 2006 to 2018 in Kutupalong and Nayapara registered camps indicate persistent levels of wasting that have remained higher than the UNHCR thresholds of ten per cent for refugee camps, as per SMART SENS guidelines, considered also 'high' per the WHO classification.³

The 2017 influx brought about changes in GAM prevalence even within the established population. Rates increased from 12.7 to 24.3 per cent in KRC and from 12.2 to 14.3 per cent in NRC. Since 2012 the acute malnutrition rates have remained at around 13 per cent GAM. The most recent SMART⁴ conducted in the two registered camps also indicated no significant reduction in the malnutrition rates that remained close to the emergency thresholds indicating serious public health issues in the camps.

The health and nutrition situation in the new makeshift camps of Kutupalong and Nayapara differs from the older camps in terms of malnutrition prevalence. There has been a substantial decrease in GAM prevalence from 19.3 to 11.1 per cent and SAM prevalence from 3.6 to 0.9 per cent within a year after the influx. Despite the reduction in the GAM and SAM, other key indicators such as morbidity, acute respiratory infections (ARI), anaemia and stunting are within the same range in the registered and makeshift camps and may worsen over time due to aggravating factors.

Despite the expansion of multi-sectoral humanitarian support over past seven years (2012-18), undernutrition in registered camps and/or makeshift settlements remains a public health concern. Therefore, there is a need for further investigation of underlying causes of malnutrition in order to develop recommendations for future programmes with the aim of improving nutrition security situation in the makeshift camps. As the context is shifting from the emergency phase to a more protracted crisis, the factors such as congestion, catastrophic weather conditions (monsoon, floods and landslides), health seeking behaviours, limited food security and the high level of vulnerability among the affected population need to be considered in close interaction.

The findings of the study will be used by the nutrition sector and other relevant sectors in Cox's Bazar to sustainably reduce malnutrition in the study zone.

Study Zone

The Makeshift Settlements include refugee settlements outside of the two official registered refugee camps (KRC and NRC) and exclude Rohingya who have been absorbed into host communities.

Three largest makeshift sites were originally Kutupalong MS (which borders Kutupalong RC), Balukhali MS and Leda MS neighbouring Nayapara RC, but the rapid expansion of these sites has blurred borders and created new colloquial distinctions. To accommodate the rapid influx, a 3,000-acre piece of land that stretches from Kutupalong makeshift to Balukhali makeshift settlements was designated for settlements given the rapid influx of Rohingya. According to the IOM NPM estimates, the population of all makeshift settlements was 892,601 as of June 2019.

³ Source: de Onis M, Borghi E, Arimond M, et al. Prevalence thresholds for wasting, overweight and stunting in children under 5 years. *Public Health Nutrition*. 2019 Jan; 22(1):175-179.

⁴ Source: Round 1 SMART survey, Kutupalong RC, Oct-Nov 2017 & Round 3 SMART survey, Nayapara RC, Oct-Nov 2018

The exclusive geographic focus of this Link NCA study is Kutupalong extension sites (Camp 1 to 20) in Ukhiya.

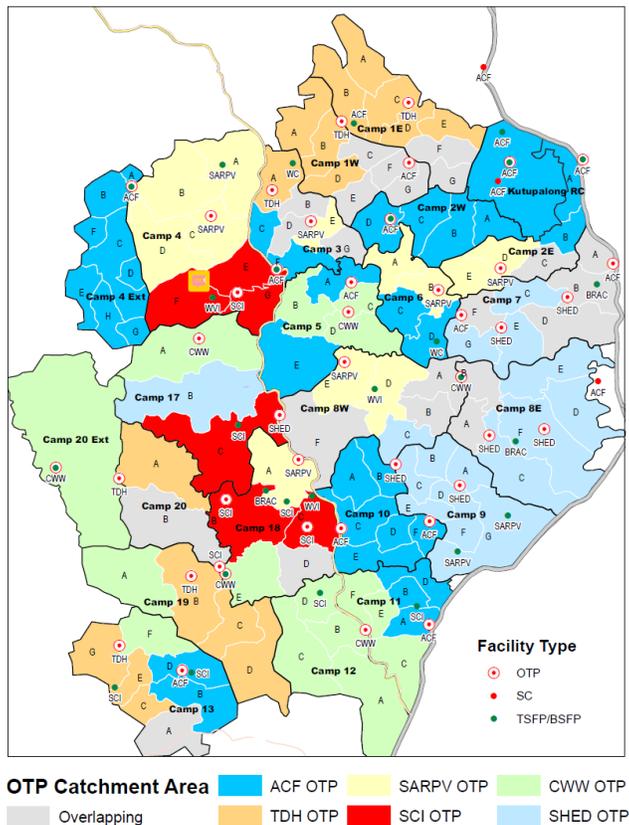


Figure 2: Kutupalong Makeshift Settlements by Outpatient Therapeutic Programme catchment area⁵

II. STUDY OBJECTIVES

Main objective

The main objective of this Link NCA study is to identify the major risk factors and causal pathways leading to undernutrition, both wasting and stunting in Kutupalong Makeshift Settlements (KMS). The findings from this research were used to develop recommendations for necessary adjustments in future programmes in order to utilise a more integrated approach in addressing the burden of malnutrition in the settlements.

Specific objectives

The Link NCA study aimed to answer the following study questions:

1. To identify and categorize risk factors responsible for the undernutrition among the population in the target area and to estimate the prevalence of these risk factors;
2. To understand how risk factors responsible for the undernutrition among the population in the target area interact with each other in order to determine which causal pathways to undernutrition are likely to explain most undernutrition cases in the target area;

⁵ Source: Nutrition Sector, April 2019

3. To understand how risk factors responsible for the undernutrition among the population in the target area have evolved over time and evolve in different seasons;
4. To identify vulnerable groups for each major risk factor of undernutrition among the population;
5. To identify and map the interventions of operational actors in the target area and analyse the perception and degree of adequacy and appropriation by communities of the current humanitarian operational response in relation to causes of undernutrition;
6. To identify the needs and capacities of communities to respond to the identified underlying mechanisms;
7. To identify with the communities, the levers and barriers likely to influence the main causal mechanisms of undernutrition;
8. To develop recommendations to improve nutrition security programs in the target area and to support the development of a comprehensive, multi-sectoral strategy.

III. METHODOLOGY

A Link NCA study is a method for analysing the multi-causality of undernutrition, as a starting point for improving the relevance and effectiveness of multi-sectoral nutrition security programming in a given context. It is a structured, participatory and holistic study that builds on UNICEF's conceptual framework of child undernutrition with an objective to build an evidence-based consensus on plausible causes of undernutrition in a local context.⁶

The methodology has been precisely defined and tested in the field with a guidance available for every step. It offers a unique opportunity for a great variety of key informants, from technical experts to community members, to express their opinions on the causes of undernutrition in the zone of study. The findings are constantly reviewed until validated by all stakeholders. The Link NCA places value on perceived causes as well as on evidence-based causes to display the complexity of perspectives. Undernutrition is examined globally, avoiding a vertical, sectoral approach, linking different verified sources of information to build consensus around the plausible causes of undernutrition in a given context.

A. KEY STAGES

Preparatory phase (August- September 2019)

The main objective of a preparatory phase was to define key parameters of the study, including its objectives, geographical coverage and feasibility. A preliminary secondary data and literature review was conducted in order to define the structure of the study. Considering new methodological advancements⁷ and a lack of availability certain key indicators for the zone of study, an option comprising all three Link NCA study components – a SMART survey, risk factor survey and qualitative research – was selected. This phase also included preparation and planning stages necessary for any type of study (such as, the development of Terms of Reference, resource mobilisation as well as a recruitment of a Link NCA Analyst).

Identification of hypothesised risk factors and causal pathways (September 2019)

⁶ For more information about the methodology, please refer to www.linknca.org.

⁷ For example, integration of statistical associations' calculations (prevalence of wasting/stunting in relation to identified risk factors) with an aim to enrich the data analysis/triangulation for a more precise definition of local causal pathways.

The key responsibility of the Link NCA Analysts at this stage was to gather an overall understanding of a local context and to identify a set of risk factors and their interactions, which could potentially trigger undernutrition among the target population in the zone of study. The identification of hypothesised risk factors and causal pathways was based on a systematic literature review (using the Link NCA Pathways to Undernutrition module and all grey literature available locally), supported by a series of exploratory interviews with key informants, such as representatives of relevant governmental institutions, non-governmental organisations and academia with an in-depth knowledge or work experience in the zone of study. The identified hypothesised risk factors were presented, examined and validated for field testing during the Initial Technical Workshop, which took place in Cox's Bazar during September 2019.

Primary data collection (September-November 2019)

The Link NCA methodology relies on a triangulation of both qualitative and quantitative data. The quantitative data collection, which comprised of an anthropometric data collection and the Risk Factor Survey was conducted between 25 September and 5 October 2019. It consisted of anthropometric measurements and 41 indicators, covering all risk factors identified and validated in preceding stages. The questionnaires were deployed on mobile devices and the collected data was uploaded and compiled in a Kobo Toolbox.⁸

The qualitative data collection, conducted by the Link NCA Analyst, lasted five weeks, spanning from 6 October to 3 November 2019. The data was collected exclusively by the Link NCA Analyst, accompanied by two research assistants and two translators. It comprised of an in-depth inquiry on all risk factors identified and validated in preceding stages through semi-structured interviews and focus groups discussions as two principal data collection methods. The collected data was recorded in writing in the form of notes and later reproduced electronically. This stage also included a series of community consultations about ongoing interventions as well as a prioritisation exercise with regards to future assistance.

Synthesis of results and building a technical consensus (November 2019)

Upon the completion of a data collection stage, the Link NCA Analyst synthesized all collected data sets and conducted a series of analyses in order to categorise risk factors according to their relative impact on undernutrition in the zone of study and to describe dynamic relationships between various risk factors and their effects on undernutrition. The categorisation of risk factors took into account all sources of information collected in the course of study. The results were presented during the Final Technical Workshop, which took place on 8 December 2019 in Cox's Bazar, followed by a development of operational recommendations for interventions in the zone of study.

B. SAMPLING FOR QUANTITATIVE SURVEY

Sample size

The sample size for the Link NCA Anthropometric data collection was calculated using ENA for SMART software (version 9 July 2015). As specified by SMART guidelines, the precision level is 3.5 per cent. An 11 per cent global acute malnutrition (GAM) prevalence was estimated using the SMART Survey in October to November 2018. A design effect of 1.4 was also calculated on the basis of the same survey. This resulted in a sample size of 468 children (including six reserve

⁸ Free tool for data collection in harsh environments, www.kobotoolbox.org.

clusters as contingency of which five were in Ukhiya and one were in Teknaf) for all Makeshift sites.

GAM estimated (%)	Precision	Group effect	Sample size-children	Average household size	Population <5 years old (%)	Non-response (%)	Sample size households	Number of clusters
11	3.5	1.4	468	5.4	20.7	8	506	51

Table 2: Parameters of the quantitative survey

Kutupalong Makeshift includes the first 42 clusters consisting of 420 HH with ten HH per cluster situated in Ukhiya Upazila. Data collection was integrated into a regular SMART survey. As a result, the sample was calculated for all makeshift sites, including Ukhiya and Teknaf, but only households in Ukhiya Upazila were analysed in this Link NCA study.

Two stage cluster sampling – first stage: cluster selection

The sample outside the registered camps targeted 506 households. The number of clusters was determined by the number of households to be targeted. At the first stage, the required number of clusters was assigned randomly using with probability proportional to size (PPS) where the clusters are defined as sub blocks. The total number of clusters was selected to allow for one team to complete one cluster per day. An advance team updated household listings prior to the arrival of the survey team. It was anticipated that each team would be able to visit ten households per day. Considering that ten households would be need from each cluster, it was calculated that 51 clusters would be selected in the first stage of sampling ($506/10 = 50.6$).

The informal and makeshift settlements are now organized into camps. Within each camp are blocks and sub-blocks. Median block size is 108 households (range 29-970). Population estimates from each of the sub-blocks was obtained from the most updated IOM Bangladesh – Needs and Population Monitoring (NPM) data. All makeshift and informal settlements in which Rohingya persons are living (regardless of the date of arrival) was included in the sampling frame. Rohingya persons living among host communities was not included. Clusters was assigned based on population proportional to size (PPS) to each of the sub-blocks within informal camps and settlements. Clusters and reserve clusters were assigned using ENA software. No reserve cluster was visited as a sufficient sample size was achieved using the principal clusters.

Two stage cluster sampling – second stage: household selection

Households were selected using simple random sampling. An updated household list was developed by survey teams two weeks prior to the data collection with the help of the community. Existing household lists were collected from block leaders (known as *mahji's*) and updated by adding households who had recently arrived in the blocks and removing households that had left permanently. On the day of data collection an additional verification process was also conducted to ensure the household list was up to date.

The team then used a random number generator to select required number of households from the list. A community leader was appointed to guide the survey teams to the selected households on the day of the interview. In this case, the team also used a random number generator to select required number of households from the list. Clusters assigned to sub-blocks larger than 200 households was divided into smaller segments. This division was done based on existing administrative units, natural landmarks (for example, rivers, roads and hills) or public places (especially divisions formed by markets, schools and mosques) One segment was chosen at random applying PPS. The segment was then mapped and listed. Households within the segment

was selected using simple random sampling. All required households for the cluster was elected from the segment.

All children zero to 59 months and all women 13 to 49 years within selected households were eligible for measurement.

C. SAMPLING FOR QUALITATIVE SURVEY

Sampling for the qualitative survey was sensitive to the diversity of Kutupalong MS. The aim was to include as many perspectives and experiences as possible. The sampling unit was the sub-block. Four sub-blocks were chosen by the Link NCA team. The following factors were considered during the qualitative sampling:

- Geography – the qualitative sample incorporates camps from all four corners of the Kutupalong MS site (NE, NW, SE and SW)
- Remoteness – the qualitative sample includes areas with varying travel times and degrees of accessibility
- Nutrition lead agency – the sample comprises of different agencies working in the area including both local and international NGOs
- Population density – the level of congestion differs across the qualitative sample
- Topography – the sample contains both flat camps and those with hills

A summary of the sub-blocks selected for this Link NCA are given by the table below.

Camp	Block and sub-block	Comments
Camp 4	F2	SCI/TDH are the lead nutrition agencies. In the NW corner of the KMS site. Inaccessible and remote. Community in Camp 4 have had a unique journey to Kutupalong: a majority of residents stayed in Naikhongchhari prior to being relocated to this area.
Camp 13	F5	CWW is the lead nutrition agency. Located in the SW corner of the study zone. Furthest away from Kutupalong RC. Comparatively low level of population density.
Camp 9	A9	SHED is the lead agency. Close proximity to the main road. Densely populated.
Camp 14	B2	Disconnected from all other camps in the immediate vicinity (Camps 14, 15 and 16). AAH is the lead agency. Hilly and with a high level of congestion.

Table 3: Summary of the qualitative sample

On the sub-block level, the following categories of participants were selected to participate in semi-structured interviews and focus groups discussions:

- Community leaders (*mahji's*, *imam's*, assistant *imam's* and other religious leaders as well as other prominent community figures);
- Traditional healers or birth attendants;
- Health centre personnel (doctors, nurses, health extension workers);
- School directors or teachers;
- Representatives of community-based organisations;
- Mothers and fathers of children under five years of age;
- Grandparents of children under five years of age;
- Key government staff;
- NGO workers and volunteers.

D. QUANTITATIVE DATA COLLECTION

Team composition and training

The quantitative data collection team was composed of six teams of five enumerators (one measurer, one measurer assistant, one haemoglobin researcher and two interviewers) and a survey supervisor. There were six supervisors from nutrition sector partners - Action Against Hunger (2), WFP (2), SARPV (2), SCI (1) – who were responsible for methodology compliance and quality assurance of each team. The *mahji* in each sampled cluster was recruited to facilitate the survey team's work and to ensure community acceptance. Additionally one community nutrition volunteer from implementing partners from each cluster was engaged to support assessment team as well as to identify household and community sensitization. Prior to the commencement of data collection, all team members received a seven day residential training, which took place in Cox's Bazar from 15 to 22 September 2019. The training included, among others, modules on survey methodology, anthropometric measurements using the SMART methodology and an administration of household questionnaires using mobile devices. All team members participated in a standardisation test and a pilot test of all data collection tools for quality assurance purposes.

Data collection tools

The quantitative data was collected via an electronic questionnaire downloaded onto mobile devices. The questionnaire covered all areas of interest linked with validated hypothesised risk factors. It was composed of sub-sections pertaining to a head of household, a caregiver of a child under five years of age or such child. One sub-section was dedicated to observations of caregiver care practices or household hygiene and sanitation practices. The survey was translated into Chittagonian/Rohingya. In addition, for all children aged 6-59 months, anthropometric measurements, such as height/length, weight, mid-upper arm circumference (MUAC) and a presence of oedema, were recorded, as per the SMART methodology guidelines. The height/length was measured using standard height boards provided by UNICEF. The weight was measured by using SECA electronic scale that allowed for double measurement and recorded to the nearest 0.1kg. MUAC was measured using three coloured standardised tapes supported by Action Against Hunger. MUAC readings were recorded to the nearest 0.1cm. Oedema was diagnosed by applying a moderate finger pressure on the top of the feet. The child was recorded as oedematous only if both feet clearly had oedema. Anaemia was measured using a HemoCue Hb 301. Anaemia testing kits were supplied by UNHCR.

Main challenges for quantitative data collection

- Parental stress indicator – In this Link NCA study, a composite parental stress indicator was piloted. The integration of this research component into the Risk Factor Survey had some limitations. Even though enumerators were trained on the indicator, results suggest that some respondents may have misunderstood the parental stress survey questions. Thus, they were dropped from analyses.
- Respondent fatigue – Temperatures averaged over 30°C during the quantitative data collection period. As a result of travelling times of over four hours, it was necessary for the survey to be administered during the hottest periods of the day. Towards the end of each survey respondents were sometimes tired and reluctant to participate. This may have limited the quality of data collection.
- Repatriation fears – The issue of repatriation is highly sensitive in Kutupalong MS. During the informed consent process, potential participants were guaranteed confidentiality. Despite

this, a small number of households declined to participate due to repatriation-related fears. This did not prevent the Link NCA team from achieving the sample size outlined above in the preceding section.

E. QUALITATIVE DATA COLLECTION

Team composition and training

The qualitative data collection was led by the Link NCA Analyst with the help of two research assistants and two translators recruited locally from the Cox's Bazar area. The main role of research assistants was to ensure an equitable selection of participants for each focus group discussion in coordination with *mahji's* and to conduct any support functions as needed.

Prior to the commencement of data collection, team members received a detailed two day training, which took place in Cox's Bazar in September 2019. The training included modules on survey methodology and tools as well as a detailed explanation of ethical considerations to be respected during the study. A series of practical tests was integrated into a learning process in order to test the team's level of comprehension of key concepts and practices and to ensure that high quality standard of the data collection was met. Prior to data collection beginning, the qualitative team conducted a pilot research day in Kutupalong MS as part of the training.

Data collection tools

The qualitative survey team used semi-structured interviews and focus groups discussions as two principal data collection methods. However, in order to avoid an information bias due to a history of humanitarian interventions in the zone and a community dependence on external assistance, the qualitative survey team used a variety of participatory tools, aiming to reveal real determinants of undernutrition in the area. The selection of participatory tools included:

- A. Historical calendar
- B. Seasonal calendar
- C. Ranking
- D. Storytelling
- E. Daily activities chart
- F. Meal composition chart
- G. Household expenses
- H. Health journey / Therapeutic itinerary
- I. Agree/disagree game
- J. Courage to change game
- K. Risk game

Semi-structured interviews and focus group discussions were guided by interview guides, covering key topics related to risk factors validated during the initial technical workshop. The content of the interview guides took into account available findings for Kutupalong MS and instead of repeating certain inquiries it aimed to deepen the understanding about individual risk factors and their interactions in the zone of study. For more information about qualitative survey methods and tools, please refer to the Qualitative Survey Guide in Annex C.

Data collection

The qualitative survey took place in selected blocks from 6 October to 3 November 2019. Two public holidays (Dussehra and Laxmi Pooja) caused data collection delays.

	Total FGDs/ Participatory exercises	Total number of participants	Semi- structured interviews	Proportion of total number of participants that are female (%)	Number of observations	Community ranking exercises	Number of days
Camp 4	12	133	10	66	3	2	6
Camp 9	13	144	9	55	2	2	6
Camp 13	12	130	8	60	2	2	6
Camp 14	13	156	10	63	2	2	6
TOTAL	50	563	37	61	9	8	24

Table 4: Summary of community FGDs and participatory exercises

The last day of a data collection in each sampled community was dedicated to a restitution of findings with community representatives. The aim of these restitutions was to seek feedback on the interpretation of collected data and, more importantly, to engage them in the design of community-based solutions to identified problems and input on which solutions should be prioritised.

Main challenges

- Language – The Link NCA Lead Analyst conducted discussions, participatory exercises and interviews with two levels of translation, English to Bengali and Bengali to Chittagonian/Rohingya. Measures were taken to mitigate any loss of accuracy, including frequent use of the visual elements of the Link NCA qualitative approach. In addition, the team underwent a daily feedback and reflect process in order to constantly improve the quality of the translation.
- Weather - Data was collected during the hot monsoon season. High temperatures made participants uncomfortable and reduced their willingness to engage extensively with discussions.
- Logistics and travel – Poor road conditions and vehicle congestion resulted in travelling times that reached six hours plus every day of data collection. This reduced the time available for data collection.

F. DATA MANAGEMENT AND ANALYSIS

The quantitative data was collected via an electronic questionnaire downloaded onto mobile devices. All data was exported in the form of an Excel spreadsheet and analysed with STATA software (16.0). The anthropometric data was analysed using ENA for SMART software (11th January 2020 version).

Logistic and linear regression models were developed to determine whether the hypothesised risk factors were associated with nutritional status. The four dependent variables considered in the quantitative analysis are GAM (WHZ), stunting (HAZ), underweight (WAZ) and child anaemia (HB).

The qualitative data was recorded manually in a notebook and reproduced electronically at the end of each data collection period in a sampled community. The data was grouped by themes for a more efficient analysis, making sure that a confidentiality of speakers is guaranteed. All views were then analysed using qualitative content analysis methods.

Content analysis was used to organise the qualitative data into themes. The corpus of text was coded into five topics: health, nutrition and care practices, gender, food security and livelihoods and water, sanitation and hygiene (WASH).

G. ETHICAL CONSIDERATIONS

The following provisions were respected during the course of the Link NCA study:

- a. All relevant authorities, including the Institute of Public Health Nutrition (IPHN), were duly informed about the study by Action Against Hunger and expressed their agreement with the study implementation;
- b. The participants were selected equitably and their informed consent was sought to ensure that they participate in the study voluntarily;
- c. The participants of a qualitative survey were able to participate in more than one focus group discussion, if they chose to do so, but could not take part in more than one discussion on the same theme.
- d. The community leaders were informed of the selection of their community for the purpose of a qualitative study at least two days in advance. During the initial meeting they received a detailed planning of research activities in their block in order to facilitate the participant selection process and ensure the participants' availability at stated times. The detailed planning was subject to change, if required by community members. The qualitative data collection team accommodated to their routine as much as possible, taking into account time constraints of the study;
- e. The anonymity of participants was ensured during all stages of the study (data collection, data analysis and data storage). Their names were not collected nor shared;
- f. The qualitative data collection team organised a community wrap-up discussion during the last day of the data collection in order to allow communities to review their findings, rank identified risk factors and prioritise actions for the way forward;
- g. All children aged 6-59 months who were identified as suffering from acute malnutrition and/or other medical condition were referred to the nearest health facility for appropriate treatment.

H. STUDY LIMITATIONS

- **Correlations:** It is advised to appraise statistical associations with caution as observed links do not necessarily prove the causality, while unobserved links do not mean that the causality does not exist. Correlations thus must be considered within a larger framework, triangulated with other sources of data, and as such can be used for a prioritisation of current and future interventions.
- **Heterogeneity:** The time designated for a qualitative data collection, although substantial, did not allow for a complex study of the dynamics and heterogeneities of the zone of study. While certain differences were observed and are rightfully highlighted in the findings, certain information might have been omitted or distorted, depending on participants' knowledge.

IV. FINDINGS

Hypothesised risk factors

The identification of hypothesised risk factors was based on a systematic literature review (using the Link NCA Pathways to Undernutrition module and all grey literature available locally), supported by a series of exploratory interviews with key informants, such as representatives of relevant governmental institutions, non-governmental organisations and/or academia with an in-depth knowledge or work experience in the zone of study. The identified hypothesised risk factors were presented, examined and validated for field testing during the Initial Technical Workshop, which took place in Cox's Bazar on 19 September 2019.

All of the 19 hypothesised risk factors were retained for field-testing. Technical experts were afterwards invited to categorize risk factors according to their anticipated contribution to undernutrition in the zone of study on the scale from one (risk factor expected to contribute marginally to undernutrition) to five (risk factor expected to contribute substantially to undernutrition). The results of this exercise are presented in the table below.

	Hypothesis	Average score
A	Use of traditional health providers	3.2
B	Limited access to health services	3.4
C	Low birth spacing / unwanted pregnancies*	3.9
D	Parental stress*	3.9
E	Non-optimal infant and breast-feeding practices*	3.3
F	Non-optimal infant and young child feeding practices*	3.6
G	Low quality of interactions between a care provider and a child*	3.1
H	Low dietary diversity*	3.5
I	Low diversity, access and availability of income sources for households*	3.4
J	Malfunctioning market or supply system	2.9
K	Low coping capacities	2.9
L	Low access and availability of water (quality and quantity)*	2.9
M	Non-optimal water management	2.8
N	Poor sanitation practices*	3.3
O	Poor hygiene practices*	3.3
P	Heavy workload of women	3.2
Q	Low female autonomy / Low decision-making power*	3.4
R	Early marriages and/or early pregnancies*	3.4
S	Low nutritional status of women*	3.7

Table 5: Hypothesized risk factors validated for field-testing during Initial Technical Workshop, including technical experts rating

A.HEALTH

Health care provision

The Rohingya community in Kutupalong MS actively seek health care from a wide-range of different providers. Free primary and secondary health care facilities are provided in camps and are typically managed by international humanitarian organisations. Free secondary and tertiary care external to the camp is also available. To be able to access treatment at Ukhiya Hospital and Cox’s Bazar Hospital, a medical referral and camp-in-charge (CiC) permission is necessary. There is a community perception that this authorisation is rarely given. It was reported to the Link NCA research team that patients with serious health conditions were sometimes refused the necessary referral.

In addition to this cost free treatment, the Rohingya community in Kutupalong MS pay fees for medical care from a variety of sources. ‘Local’ (i.e. Bangladeshi) doctors and pharmacists deliver services to the community at a fee. ‘Myanmar’ health care providers – doctors, nurses and pharmacists who now live in Bangladesh – also provide paid-for medical treatment. Furthermore, patients are able to self-medicate, because Kutupalong MS has a burgeoning black market for drugs and other medical supplies. Market sellers often act as unqualified pharmacists and provide basic medical advice alongside the drugs. Finally, Rohingya people continue to receive treatment from *hazar’s*,⁹ herbal medicine practitioners, traditional birthing attendants, *imams*¹⁰ and religious healers. The proportion of household budgets allocated to health care expenditures can be substantial. Currently, the community perceive that the average family were dedicate up to 15 per cent of their income on health spending. In the markets of Kutupalong MS, paracetamol costs 100 taka (1.2 USD), oral rehydration tablets cost 150 *taka* (1.8 USD) and antibiotics cost 950 *taka* (11.20 USD).

Historically and especially immediately after the influx of 2017, some medicines (especially those to mitigate the symptoms of fever, diarrhoea and measles) were purchased by ordinary Bangladeshis that live in Ukhiya and distributed to Rohingya community for free.

Free health care provision	Paid alternatives
Primary and secondary health facilities in camp implemented by health sector partners	‘Local’ (i.e. Bangladeshi) doctors and pharmacists
Ukhiya Hospital/ Cox’s Bazar Hospital	‘Myanmar’ health care providers (i.e. doctors, nurses and pharmacists who now live in Bangladesh)
Medicines provided by the host community (in 2017)	Black market for drugs and other medical supplies
	Traditional healers (<i>‘hazar’s</i>)
	Herbal medicine practitioners
	Traditional birthing attendants
	<i>Imam’s</i> and other religious healers

Table 6: Healthcare treatment options

Therapeutic journeys between these different providers are complex. There is no single community preference or unified trajectory. Instead, Rohingya people in Kutupalong MS negotiate multiple types of paid or free and qualified or unqualified medical care in convoluted patterns.

⁹ *Hazar’s* are traditional healers that practice medicine in the Rohingya community.

¹⁰ In the Islamic faith, an *imam* is someone who leads prayers in a mosque.

Financial barriers to healthcare

Over the last two years, there has been a shift away from visiting traditional and unqualified practitioners towards the use of the free health care. A common starting point now is to seek treatment from the primary and secondary health centres in the camp. This option is increasingly preferred to the alternatives because it is free. Community members and health professionals agree that cost-related considerations are driving this change.

Prior to migration, paying for independent and 'unofficial' medical assistance was part of Rohingya culture. This community report experiences of prejudice in health centres managed by the Myanmar government. There is also a widespread community belief that doctors in these facilities murder Rohingya children. In Myanmar, Rohingya people also usually lived in remote and rural locations. As a result of these factors, historically this community has preferred the local Rohingya traditional healer over travelling to the nearest government health post. Fears of government authorities and negative experiences with Myanmar state provision even led Rohingya people to travel to Bangladesh prior to 2017 seeking health treatments.

Quality of care barriers to healthcare

Dissatisfaction with the free health care provided in the camp often leads Rohingya people in Kutupalong MS to seek help elsewhere. Therapeutic journeys often occur in a sequence. Long waiting times and queues, for instance, mean that parents often start the day in the health centre with a child with chronic diarrhoea or fever only to become frustrated and leaving without securing an appointment. In such circumstances, it is common for caregivers to spend money to see for-profit providers – either 'local' and 'Myanmar' doctors or traditional healers – or for the child to go without any medical care. In other instances, parents may explore alternative treatment options after experiencing short consultations or seeking a second opinion after thinking that doctors in the health centre have not had sufficient time to conduct checks and tests. The secondary data review confirmed that patient consultations were on average under five minutes.

The view from health professionals based in Kutupalong MS confirms that there are problems related to the quality of care. The workload in most health centres visited by the Link NCA team was usually reported to be high. One small primary care facility reported treating over 230 cases per day. In addition, staff morale is often low leading to turnover and recruitment issues. Two female nurses in one hospital described how difficult it was for them to live on site with an erratic electricity supply, no internet and restrictions on their movement after dark. Security concerns exasperate the shortage of female doctors in Kutupalong MS. Furthermore, congestion and overcrowding within medical facilities is common. Space is often limited. Some medical centres have to refer patients to facilities in other camps because they have insufficient room to conduct particular procedures and operations. In one secondary care facility there was a need to conduct 20 emergency deliveries or caesarean sections per day. There was insufficient space to conduct this number of procedures, so women were required to travel health facilities in neighbouring camps.

The Rohingya people and qualified health care professionals working in Kutupalong MS have divergent definitions of what constitutes quality medical treatment. This is a source of mutual frustration for both health care providers and patients. It also leads the community to seek secondary treatment options outside of the official, free health care provision. Rohingya people typically want one medicine to be provided for every symptom (for example, one drug for the temperature, another for the sore throat, a different medicine should be prescribed for the rash, etc.). This expectation has been shaped by the community's historic exclusion from formal health

care provision and culture of using spiritual healers. In Myanmar, the local village *hazar* focussed on treating each symptom on a one-by-one basis and providing separate treatments accordingly. Because of this, general advice about how to prevent the recurrence of a health problem or only providing drugs to mitigate pain are therefore viewed unfavourably by the community. Overall, Rohingya people in Kutupalong MS view medical treatment as method to alleviate the symptoms of disease as oppose to mitigate its causes. A common complaint is that camp health centres only prescribe paracetamol, saline solution or hygiene kits. Patients become even more dissatisfied if instead of a medicine the doctor recommends behaviour change (for instance, to improve hygiene practices when a child has diarrhoea). This does not necessarily affect how receptive the community is to behavioural change communication in general: Rohingya people in Kutupalong MS are open to sensitisation messages when they are delivered by NGOs or community health workers but if they attend a medical facility, they strongly prefer medicines to be provided.

There is also a strong community preference for injectable forms of medicine over oral administration. It is believed that drugs injected directly into the bloodstream are stronger and faster than oral methods. When pills are provided by the camp health facility, it is therefore common for them to be sold in the market place and preferred alternatives to be purchased. Due to the unpopularity of pills they are cheaper to buy in Kutupalong MS than equivalent forms of injectable medicine.

One medical professional reported to the research team that up to a third of free prescriptions are sold. This may make some health professionals reluctant to prescribe medicines and rely instead on the provision of advice which further exasperates the problem of patient dissatisfaction. In addition, some clinics and health centres within the camps have adopted policies of only prescribing medicines for a maximum of three days with the aim of reducing drug sales. Patients are required to return to the health post if they require medicines beyond the three day period. This is a source of annoyance for the community and many members prefer to use paid-for alternatives than making repeat visits.

Sociocultural barriers to healthcare

Gendered barriers prevent Rohingya people in Kutupalong MS from seeking appropriate and qualified healthcare. One of the advantages of 'Myanmar' doctors or pharmacists and *hazar's* is that no travel is necessary because they will visit the home. This is valued by the community as it means that women don't have to leave the house and therefore complies with rules restricting female movement (Cf: GENDER). In addition, as all care giving duties fall on females within the household, mothers are often prevented from taking a sick child to the medical centre due to concerns about who would look after his or her siblings in the home. Furthermore, the qualitative survey and secondary data review confirmed that females are reluctant to be treated by male medical staff (especially for antenatal, postnatal, sexual and reproductive health issues). This problem is exasperated by the struggle to recruit female medical practitioners in Kutupalong MS. The 2018 SLEAC study, for instance, found that a lack of females constrained community health worker coverage.¹¹

Opening hours are another reason why community members may choose to pay for alternative treatment options. Even though 24-hour emergency facilities are available within the camps, they are typically far away from most households. Primary health centres are usually open from 8:00am

¹¹ Source: Action Against Hunger UK, Cox's Bazar Refugee Settlements, Coverage survey, August-September 2018: <https://www.acutemalnutrition.org/en/resource-library/2jKDml3rv3oBAi8xV7mhws>.

until 4:00pm. Outside of these hours, patients will often choose to purchase goods from the ‘local’ or ‘Myanmar’ pharmacist.

A summary of quality of care and sociocultural barriers is listed below:

Quality of care barriers
Long wait times and queues
Short and inadequate consultations
Low staff morale
Limited space
Refusal to grant referrals to tertiary health centres
Sociocultural barriers
Norms restricting female movement
Fear of being “looked at” or sexual assaulted
Conceptions of female modesty
Male permission
Female care duties and housework
Remarriage and infidelity
Belief that the caesarean section limits the number of children to two or three
Belief that the caesarean section requires an elongated birth spacing period
Fear of organ removal
Negative experiences of health care provision in Myanmar
Use of traditional/spiritual healers
Culture of selling medicines

Table 7: Barriers to accessing healthcare

A majority of households seek medical care for children in the health centre or hospital. It is the preferred treatment destination for children with diarrhoea (71.4% [CI: 60.9-82.0]), fever (70.8% [CI: 61.9-79.7]) and cough, breathing difficulties and fever (67.6% [CI: 47.6-87.5]). These figures are confirmed by secondary sources as 30% of Rohingya people in Bangladesh are reported not to seek healthcare when sick because they do not believe that they would receive appropriate treatment.¹² Subsequent analyses considering anthropometric measurements and haemoglobin levels of children in the household did not reveal any statistical association between these indicators, which means that seeking treatment in a health centre or hospital was not a protective factor associated with wasting, underweight, stunting, or anaemia in Kutupalong MS (Cf: Annex B).

Child illnesses

“A healthy child is plump (‘boli’) with a round face. He should not be thin. He has lots of energy so laughs and is naughty.”

Female participant, health FGD, camp 13

The Rohingya community tend to agree that it is difficult to maintain child health in the Kutupalong MS environment, especially as cleanliness is strongly associated with health. The community perception of Kutupalong is that it is unclean. Parents, who are unable to provide shoes or clean clothes since the migration, experience shame and think that their children are more susceptible to poor health outcomes. Foot cleanliness and having a pair of shoes specifically for defecation are particularly valued by the Rohingya community. One participant in health FGD for fathers in camp 4 declared: *“A child can become healthy by having clean clothes and washed feet.”* Having clean feet is associated with spiritual cleanliness and therefore offers protection against diseases.

¹² Source: WFP. Refugee Influx Emergency Vulnerability Assessment – REVA 2018.

Rohingya people often use blood as a health metaphor. Children, who are well nourished, for instance, are said to have gained blood from eating food (Cf: NUTRITION AND CARE PRACTICES). It was commented by a female participant in camp 3 that: “Children who are healthy smile and have lots of blood.” In the camps, it is difficult to access the food types that are believed to provide enough blood to keep children healthy. For Rohingya people, healthy food is animal proteins: fish, meat and eggs. These are usually in short supply unless a household can generate an income to supplement WFP rations (Cf: NUTRITION AND CARE PRACTICES).

During the qualitative inquiry, diarrhoea was described as ubiquitous. The disease was viewed as having many different causes that range from the mundane (eating pulses from WFP rations and inadequate handwashing) to the supernatural (an evil eye curse). From the perspective of the community, the increase in the rate of diarrhoea since arriving in Bangladesh was closely associated with living in a more congested environment with less space. The smell from nearby drains in particular was said to cause diarrhoea in children. A widespread belief is that eating too much food causes diarrhoea due to the body being unable to digest the excess energy. This is viewed to be particularly the case after sudden changes to the quantity of food consumed. One focus group described how immediately after arriving in Kutupalong in 2017, children were given food after a long journey without eating. This abrupt increase in consumption was said to cause bellies to swell and diarrhoea to become particularly prevalent. Because it is associated with overeating, parents will typically restrict solid food intake for children that have diarrhoea.

In the qualitative survey, it was also revealed that the childhood illnesses perceived to be most common were fever, cough and diarrhoea. This perception was corroborated by the 2018 REVA survey, which revealed that 60 per cent of households with children aged six to 59 months had at least one child suffering from these diseases at any given time.¹² In general, it is perceived by the community the incidence of childhood diseases has decreased from the peak of the crisis in 2017 (this is the case for diarrhoea, acute respiratory infections and cold). The community view is that this trend has been driven by sanitation facilities and practices, especially the availability and condition of latrines (Cf: WATER, SANITATION AND HYGIENE). Although measles was common during the early period of the 2017 influx, there are now zero reported new cases. The incidence of skin diseases – especially those that are contagious – were reported to have increased over time. An outbreak of chickenpox was first detected in early 2019 and lasted until the end of summer this year.

	pre-2017	Nakkonchori ¹³	2017	2018	2019
Diarrhoea	+	+++	+++	++	++
Chicken pox					+++
ARI/pneumonia		+++	++	++	+
Skin diseases	+	+	+	++	+++
Cough/cold		+++	++	++	+
Fever	+	+++	+++	++	+++
Measles		+++	+++	++	

Table 8: Community perception of childhood diseases over time

¹³ Residents of camp four are the only section of the sample that lived in Nakkonchori before arriving in Kutupalong MS. The period in this town close to the Myanmar border was associated with a high prevalence of childhood diseases and childhood mortality. The community in camp four recalls that one hundred children under five died during the stay at Nakkonchori.

Disease	Causes	Treatment
Diarrhoea (<i>ga lamani</i>)	Bad smells from drains, excessive bathing (more than twice a day causes the body's temperature to fluctuate), not using soap when washing hands, not washing hands after visiting the latrine, 'over-eating', consumption of street foods/from market stalls, consumption of pulses, not wearing shoes to visit the latrine, evil eye, providing older children breast milk intended for a younger child.	Provision of additional fluids/ saline solution/ electrolyte replacement/ coconut water Restrict solid food intake
Chickenpox (<i>arra</i>)	Heat of the sun, Allah's will	Restrict consumption of oily foods, prevention of bathing, isolation in the home
ARI/pneumonia (<i>hafani</i>)	Dust and dirt, humidity and changes in climate	Keep child within the home to avoid market place and roads
Skin diseases/ringworm/eczema (<i>utani</i>)	Dust and dirt, children wearing dirty clothes, wearing dirty clothes after bathing, consumption of taboo foods (e.g. lamb, duck egg and coconut) during pregnancy	Consumption of goat milk, covering up blisters and ringworm with bandages, using moisturising creams for dry skin, antifungal creams, antibiotics for infections
Cough/cold (<i>khashani/thandi</i>)	Dust and dirt, cold winds, draft and cold inside the house, bathing with cold water after playing outside in the hot sun	Rest, honey and water solution
Fever (<i>zor</i>)	Climatic/seasonal transitions, the 'hotness' of the sun inside the scalp, catching 'bad eye' from the midday sun	Honey and water solution, staying in the shade, paracetamol If suspected cause is 'bad eye', then the child may be blessed with holy water or provided with a necklace to warn off evil spirits

Table 9: Summary of community perception of childhood diseases

Per the Link NCA Risk Factor Survey, 27.6% [CI: 22.7-32.4] of children had diarrhoea during 14 days preceding the data collection in the household.¹⁴ Subsequent analyses considering anthropometric measurements and haemoglobin levels of children in the household did not reveal any significant association between these indicators, which means that diarrhoea was not a risk factor associated with wasting, stunting, underweight or anaemia in Kutupalong MS (Cf: Annex B).

The 2018 SMART surveys indicated that 40% of children had fever in round two and 38% had the same condition in round three.² According to the Link NCA Risk Factor Survey, an estimated 48.7% [43.3-54.1] of children had fever during 14 days preceding the data collection in the household. Subsequent analyses considering anthropometric measurements and haemoglobin levels of children in the household revealed a significant association between these indicators, as children who experienced fever were more likely to be wasted or underweight. The same analysis indicated no association between fever and stunting or anaemia, meaning that it was not a risk factor for these conditions in the study zone (Cf: Annex B).

¹⁴ It should be noted that a prevalence estimate from surveys conducted in the summer season may be higher than this figure. October, when data collection for Link NCA was collected, is generally considered to be a month when diarrhoea prevalence is at a moderate to low level. For more details on this, reference the seasonal calendar of household diseases.

Using the same recall period, 9.7% [6.1-13.4] of children in the Link NCA Risk Factor Survey had a cough, difficulty breathing and a fever. Subsequent analyses considering anthropometric measurements and haemoglobin levels of children in the household did not reveal any significant association between these indicators, which means that reported cough, difficulty breathing, and a fever was not a risk factor associated with wasting, stunting, underweight or anaemia in Kutupalong MS (Cf: Annex B).

Measles vaccination, vitamin A supplementation, micronutrient powders and deworming

The Link NCA Risk Factor Survey revealed that 78.7% [CI: 71.4-85.94] of children were vaccinated against measles at the time of the data collection.¹⁵ Subsequent analyses of this indicator with anthropometric measurements and haemoglobin levels of children revealed that measles vaccination was weakly protective of wasting [p-val <0.1]. However, measles vaccination did not appear to be a protective factor against stunting, underweight, or anaemia in the study zone (Cf: Annex B).

Vitamin A supplementation according to the Round 3 SMART in makeshift settlements reached 92.1% [88.9-95.3] in 2018.² The findings of the Link NCA Risk Factor Survey in Kutupalong MS reflected lower coverage; 61.3% [48.6-74.02] of children in the sample received vitamin A supplementation. Subsequent analyses considering anthropometric measurements and haemoglobin levels of children in the household revealed a significant association between these indicators, meaning that children who had received vitamin A supplementation were less likely to be anaemic. No statistical association was observed between Vitamin A supplementation and other nutrition outcomes (Cf: Annex B).

According to the Round 3 SMART Survey, 58.7% of children in makeshift settlements received micronutrient powders.² Results from the Link NCA Risk Factor Survey revealed an estimated 38.4% [29.2-47.6] of children had consumed micronutrient powders in the recall period. Further analyses taking into consideration anthropometric measurements and haemoglobin levels of children in the household did not reveal any statistical association between these indicators, which means that micronutrient powders were not a protective factor associated with wasting, stunting, underweight, or anaemia in Kutupalong MS (Cf: Annex B).

In the six months prior to data collection, 69.7% [62.3-77.2] of children in the sample had been dewormed. Subsequent analysis considering anthropometric measurements and haemoglobin levels of children in the household revealed a significant association between these indicators, as children who were dewormed were less likely to be anaemic or wasted (Cf: Annex B). *Prima facie* evidence suggests that deworming is a risk factor for stunting, but closer inspection reveals this only because age is a confounding factor: older children are more likely to be both dewormed and stunted. More details on this result is provided in the regression results of Annex B.

Therapeutic journeys

Despite the trend towards using official camp health facilities, there are certain symptoms and diseases for which traditional or spiritual healers remain the preferred first destination treatment option. Certain symptoms (see Table 10 below) are said to have supernatural causes such as 'evil eye' or 'Allah's command' and these conditions are often referred to the *hazar* or imam. There is a strong overlap between some of these symptoms and undernutrition. Having a swollen stomach, for instance, is often said to be the result of a curse.

¹⁵ Per card confirmation and/or caregiver recall.

Symptoms associated with evil eye or Allah's command
Stomach ache
Vomiting
Swelling of the stomach
Tired eyes
Shivering or shaking
Paralysis
Insomnia
Crying with no interest in food
Examples of how a child under five years old could contract evil eye
A curse from someone else jealous of the healthy and happy baby
Contracting a fever from playing in the midday sun
Male strangers looking at a mother when she is breastfeeding

Table 10: Qualitative findings, symptoms associated with evil eye or Allah's command

In general, extreme symptoms are still viewed by the Rohingya community as having non-natural causes. As an example of this, one mother reported to the research team that she had two children with chronic diarrhoea. The younger child was taken to the *imam* to blow on holy water because she was defecating over eight times a day. The older child was taken to the camp health centre because he only had six or seven bowel movements per day.

Furthermore, the community are more likely to seek help from a traditional or spiritual healer for unknown, unusual or unexplained medical conditions. For instance, it is very common for children within Kutupalong MS to contract skin diseases. The community are familiar with the causes of these conditions and the recommended treatment protocol. As a result, when a child contracts a skin disease, they will normally be taken straight to the health centre. If, on the other hand, a symptom occurs for 'no reason', 'does not have any causes' or 'has never been seen before', then it is often said to be the result of supernatural forces.

For example, it was reported to the Link NCA team that one child in the community had previously had black stools. Given that this was a condition which was unfamiliar to the community, the child was taken to the spiritual healer to receive an amulet containing verses of the Quran designed to warn off malevolent spirits. After a month of the child having unusual stools, the parents in desperation sought help at the health centre. The child was soon referred to Ukhiya Hospital where doctors identified bleeding in the gastrointestinal tract.

The practice of using traditional healers may have no negative health effects if the 'spiritual treatment' is pursued in tandem with seeking qualified medical supervision. *Hazar's* do not usually discourage their patients from seeking other forms of health care. Even if the suspected cause of a condition is 'bad eye', parents may still seek help from conventional medical practitioners if they are uncertain why their child has become unwell. When different treatment options are explored in sequence, however, the use of *hazar's* may unnecessarily prolong access to evidence-based healthcare. For the case detailed above, for instance, treatment for serious internal bleeding was substantially delayed.

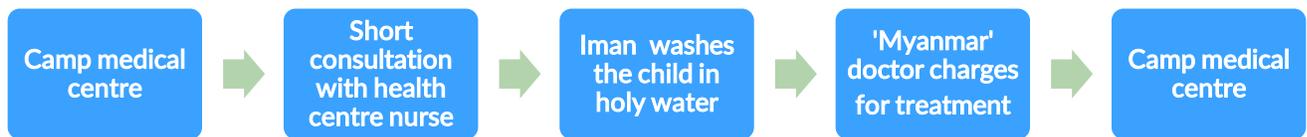
Therapeutic journeys for children with fever typically begin at the camp medical centre. It is common for parents to complain about overcrowding, long wait times and queues. After a short consultation, the child will usually be prescribed a pain killer (such as paracetamol) by a nurse at the centre. The prescription will last for a maximum of three days. If the child's fever persists after this time, instead of returning to the health centre for another round of the unsuccessful treatment caregivers will sometimes seek other options. One option is to invite the *imam* to the family home so that he can bless the child with holy water. If the child's fever persists and the household budget

allows, the “Myanmar doctor” may visit the family home and charge for treatments such as rehydration solution or more painkillers. If symptoms persist, the mother will return to the health centre with the child.

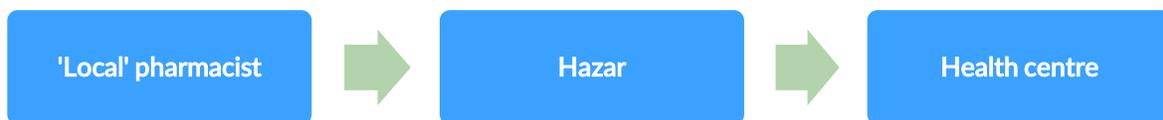
There is a tendency for children with diarrhoea to begin therapeutic journeys outside of the medical centre. The community perception is that diarrhoea is a common but minor condition. The first treatment option may be to ask the local pharmacist to visit the family home as opposed to using the free camp medical provision. This is often the case in large families because it is difficult for them to arrange alternative forms of childcare when the mother leaves the household. For diarrhoea, saline solution or other antidiarrheal medicines are purchased from the pharmacist. If symptoms persist for longer than five days and are perceived to be extreme, it may be decided that the disease has supernatural or “evil eye” causes. A typical treatment for such a condition is for the community *hazar* to provide a locket containing verses of the Quran. If symptoms continue after this point, the mother will take the child to the medical centre.

The types of skin diseases experienced by the community in Kutupalong MS are often extremely uncomfortable for the child. It is common for the skin disease to prevent the child from sleeping. For this reason, the mother will tend to take a child with skin disease to the medical centre soon after symptoms first appear. If the wait at the medical centre is too long, the mother may become frustrated and return to the family home without securing a consultation. If this happens, the husband will go to the market to purchase an antifungal cream. If this treatment is unsuccessful and symptoms persist, the mother may decide to visit an alternative medical centre in a neighbouring block with the hope of avoiding queues.

Fever



Chronic diarrhoea



Skin diseases



Figure 3: Examples of patient journeys for three selected common childhood illnesses

Birth spacing and family planning

Gender shapes views about the ideal size of a Rohingya family. Secondary sources have indicated that the average family across the makeshift sites was composed of 5.4 members. Rohingya men consistently state that they want a minimum of 10 to 12 children. Although women in the community often agree with this aspiration, especially when they are in a public setting, there is in reality more ambiguity in the female view about the ideal family size. In one discussion, the women argued that health workers should provide information to enable them to conceive more

children. There is often a more varied response from women on this question: for females the ideal family size can be anything from 6 to 12 children. Moreover, when women are interviewed, they are able to make distinctions between how many children their community, husband and mother-in-law think is ideal and their own personal preference to have a smaller family. To a substantial extent, the differences in opinion between males and females on this subject can be explained by men's limited caregiving role (Cf: GENDER). Men face almost no workload or labour costs associated with having more children and having a larger family is indicative of wealth and male virility.

Only 8.9% [CI: 5.6-12.2] of households sampled in the Link NCA Risk Factor Survey sample were composed of one to three members. The majority (64.3% [57.9-70.8]) of households had four to seven members. Subsequent analysis considering anthropometric measurements and haemoglobin levels of children in the household revealed no significant association between these indicators, as children who lived in households with one to three, or four to seven, members were no more or less likely to be wasted, stunted, underweight, or anaemic (Cf: Annex B).

Nearly one quarter (24.5% [18.8-30.2]) of households sampled had eight to ten people. Additionally, 2.3% [0-4.62] of households in the survey had 11 members or more. Subsequent analyses considering anthropometric measurements and haemoglobin levels of children in the household revealed a significant association between these indicators, as children who lived in households with eight to ten people were less likely to be anaemic (Cf: Annex B). This is a counterintuitive result, which may warrant further investigation. One possible explanation is that larger families have access to more income streams and are therefore able to achieve greater dietary diversity. Children who lived in a household sized eight to ten people were no more or less likely to be wasted, stunted, or underweight (Cf: Annex B).

Subsequent analyses revealed a significant association between these indicators and an even larger household size, as children in households with more than 11 members were more likely to be stunted but were no more or less likely to be wasted, underweight, or anaemic (Cf: Annex B).

For both Rohingya people and health professionals in Kutupalong MS, there is a strong belief that low birth spacing and undernutrition are closely linked. During discussions with the community, flashcards with pictures of malnourished children were presented. A common and unprompted response was that children like this '*have many brothers and sisters close in age*' and '*come from very large families with lots of children*'. Some secondary sources corroborate this perception of the community and health practitioners. The 2018 SLEAC, for instance, argued that there is a strong community perception that associated frequent pregnancies with undernutrition.¹¹ One reason for this relationship is community beliefs about breastfeeding multiple children (Cf: NUTRITION AND CARE PRACTICES).

The community in Kutupalong MS connect poor birth spacing with low birth weight. According to Rohingya beliefs, a mother loses blood during childbirth, which should be replaced before she becomes pregnant again. In Myanmar, the view was that this blood replenishing process lasts at least a year. In Bangladesh, it is thought that it takes up to two years to regain the blood lost in child birth. This change has occurred, because there is a shortage of foodstuffs available in the camps that contain blood. For this reason, it is customary for women after childbirth to consume pigeon because the bird is said to be a particularly valuable source of blood. If a woman gives birth before her blood supply has been restocked, then Rohingya people believe that both the mother and baby are likely to be weak and thin. As a result, Rohingya women now consider the ideal gap between births to be two years (in contrast to only one year prior to migration).

Women in Kutupalong MS face substantial barriers, which limit their ability to space birth and plan pregnancies. Contraception is highly stigmatised and viewed as contrary to Islamic teaching. Becoming pregnant is considered to be an instruction from Allah to have a child. Any form of contraception is therefore contrary to God's will and for this reason all of the *imam's* interviewed by the Link NCA team advise against using contraceptive methods. Therefore, the wives of *imam's* or *hazar's* are particularly unlikely to use contraception. Secondary sources have provided evidence to suggest that family planning was resistant to behaviour change campaigns despite a general availability of contraception.¹⁶

The concept of an '*unwanted child*' is also a taboo in Rohingya culture. It is commonly said that every child is a '*spiritual blessing*' or a '*blessing from God*'. In group discussions with women during this research, it was often difficult for individuals to break this orthodoxy. One-to-one interviews were the only context in which women could talk openly about using family planning methods. There are two main forms of contraception available to women in Kutupalong MS: the Depp-Provera three-month injection and the combined oral contraceptive pill. The former is preferred to the latter, because it is more private and not visible to family members. Women said that they would be ashamed if a neighbour or family member were to see contraceptive pills lying around the house.

The Link NCA Risk Factor Survey estimated that 90.6% [CI: 85.9-95.28] of pregnancies in Kutupalong MS were wanted. Per qualitative inquiry, immediately after migration, there was a high incidence of unwanted pregnancies as a result of rape. Subsequent analysis considering anthropometric measurements and haemoglobin levels of children in the household revealed no significant association between these indicators, as children whose mother did not desire their previous pregnancy were no more or less likely to be wasted, stunted, underweight, or anaemic (Cf: Annex B).

The male form of contraception is rarely used. Some older men within the Rohingya community in Kutupalong MS have no knowledge or understanding of condoms. Women reported to the research team their unsuccessful attempts to persuade their husbands to use this form of contraception. Women and men differ in their explanations as to why condoms are so unpopular. Men say that condoms are "uncomfortable" while women say that their husbands simply have no interest in any form of birth control.

Gendered power differences lead to low birth spacing because of a preference for boys over girls. Becoming pregnant with the hope that your new child will be male is a strong driver of family growth. Girls are associated with financial costs because they are unable to earn an income and a dowry is required for them to leave the family. While having a boy, on the other hand, is a net financial benefit.

¹⁶ Source: Women's Refugee Commission, 'A Clear Case for Need and Demand: Accessing Contraceptive Services for Rohingya Women and Girls in Cox's Bazar', 2019: <https://www.womensrefugeecommission.org/research-resources/contraceptive-service-delivery-in-the-refugee-camps-of-cox-s-bazar-bangladesh/>.

Birth Spacing	Doer	Non Doer
Perceived susceptibility	YES <i>"They are susceptible to being thin and having diarrhoea if there are too many of them too close together"</i>	NO <i>"I don't know any diseases my child could contract if I have small birth spacing alone, it is only when larger families don't have good hygiene that the children end up malnourished"</i>
Perceived severity	YES <i>"These are diseases that could kill my children"</i>	NO
Perceived action efficacy	N/A	NO
Perceived self-efficacy	NO <i>"I didn't know anything about birth control, I only starting using contraception because I was told to do so by my husband"</i>	NO <i>"Family planning is my husband's decision alone and I have no options"</i>
Perceived social acceptability	YES <i>"Seeing the negative effect of multiple pregnancies had on other women, I knew I wanted to use contraception", "I had to persuade my husband and his relatives to let me use contraception"</i>	YES <i>"No one will disapprove in the community if I have many children close in age", "my husband will be impressed if I am able to bring him lots of children"</i>
Perception of divine will	N/A	YES <i>"Every child is a blessing from Allah"</i>
Perceived advantages	YES <i>"There is lots of milk available for my children to breastfeed if I give birth less frequently", "less household expenses", "I can breastfeed my younger children in a timely fashion, while other mothers with lower birth spacing can't do this"</i>	YES <i>"I don't have to use contraception which is sinful", "giving different food to over four different children is complicated and time consuming"</i>
Perceived disadvantages	NO <i>"contraceptive pills are harmless, nothing bad will happen if I stop taking them"</i>	YES <i>"the pill is very harmful and causes many diseases", "the injection made me feel unwell and caused irregular periods", "contraception pills and injections cause bleeding, skin rash and injuries"</i>

Table 11: Birth spacing doer and no doer comparison

In the Link NCA Risk Factor Survey sample, the mean length of space between births was 2.4 years [CI: 2.3-2.5]. For 8.41% [CI: 3.8-13.07] of households in the sample, the youngest children were less than 12 months apart in age. Subsequent analyses with this indicator and measurements of children in the household revealed a significant association with birth spacing of less than 12 months and underweight, meaning children born less than one year after their next oldest sibling are more likely to be underweight. Birth spacing of less than one year was not significantly associated with wasting, stunting and anaemia (Cf: Annex B). Linear regression did not reveal any statistical associations with birth spacing months and the nutritional outcomes of the study, meaning a child's WHZ, WAZ, HAZ, and haemoglobin concentration did not significantly increase or decrease in relation to the months they were born after their next oldest sibling.

Prenatal care

Prenatal care is widely used by the community and the majority of pregnant women have prenatal appointments. Professionals working in Kutupalong MS tend to agree that the coverage for this type of medical service has vastly improved over the last two years since the 2017 influx. Pregnant women in Kutupalong MS value prenatal care. The provision of iron supplementation in prenatal care is particularly positively viewed by the community and coheres with existing community beliefs about nutrition in pregnancy (Cf: NUTRITION AND CARE PRACTICES).

Pregnant women use prenatal services in order to assess whether or not it is likely that they will have complications during child birth. In particular, they will ask about whether the child is correctly positioned in the womb. If the information they receive indicates that the midwife anticipates no problems during labour, they will give birth at home. If they are told about any possible complications, they will consider going to the health centre. This explains why so many women attend medical facilities for prenatal care, but not to give birth: women use the appointments to determine where they will deliver their babies.

Nearly 54.1% [44.1-64.2] of women in the Link NCA Risk Factor Survey sample had at least one prenatal care appointment during their last pregnancy. Subsequent analysis considering anthropometric measurements and haemoglobin levels of children in the household revealed no significant association between these indicators, as children whose mother attended a prenatal care appointment were not more or less likely to be wasted, stunted, underweight, or anaemic (Cf: Annex B).

Child birth

It is less common for Rohingya women in Kutupalong to give birth in medical facilities. According to the results of the Link NCA Risk Factor Survey, it is estimated that 90.6% [86-95.5] of women gave birth to their most recent child at home. This rate seems to be substantially higher than the rate set against facility-based deliveries of 52.9%, estimated in December 2019 on the basis of CHWG data. However, secondary sources indicate that the incidence of hospital births is increasing over time (programme data suggested that the rate improved from 22% to 40% between 2017 and 2018¹⁷). Subsequent analysis considering anthropometric measurements and haemoglobin levels of children in the household revealed no significant association between these indicators, as children whose mother gave birth at home were no more or less likely to be wasted, stunted, underweight or anaemic in Kutupalong MS (Cf: Annex B).

Fears about caesarean sections are one of the most important reasons for unpopularity of medical facility delivery. Rohingya women want to avoid this procedure because they believe it will limit the number of children they can have and require them to elongate the spaces between their pregnancies. It is thought that women who have caesarean sections can have a maximum of two to three children in between gaps of three to four years. Women fear retribution from their husbands if caesarean section operation limits the number of children they can produce. Other community beliefs about caesarean section include that during the operation doctors will remove Rohingya kidneys or livers and sell them to foreigners. These conspiratorial beliefs are likely to stem from a history of mistrust between the Rohingya community and medical professionals; verification was not possible with secondary sources.

The dominant community view about medical centre delivery in Kutupalong MS is that it is only the ideal option for births with additional complications. A substantial proportion of women in this community have complications during birth. Key informants suggest, for instance, that there is a high prevalence of both anaemia and high-blood pressure for pregnant women in this population. The commonness of these existing medical conditions reduce the number of normal deliveries that take place in Kutupalong MS. It is likely that community fears related to caesarean delivery are compounded by a high frequency of women needing this procedure.

¹⁷Source: Rohingya Refugee Response Gender Analysis, Joint Agency Research Group, 2018: <https://reliefweb.int/sites/reliefweb.int/files/resources/rr-rohingya-refugee-response-gender-analysis-010818-en.pdf>.

Avoiding the gaze of male doctors is one of the common reasons why women prefer to give birth at home. It is said to be immodest and sinful for a male stranger to view a woman while she is naked. They are also concerned about their husband's remarriage or infidelity if they are required to leave the family home for an overnight stay. Men's preference for women to deliver their babies away from a medical centre is even stronger. Their concerns primarily relate to who will perform household chores, cooking and cleaning in their wife's absence.

B. NUTRITION AND CARE PRACTICES

Household nutrition

Rice is the staple food in Kutupalong MS. Typically three meals are eaten per day. Food is shared equally between males and females: there is no evidence of gendered hierarchy within the household related to portion sizes. There is also no reported gendered sequence or hierarchy to meal times: men, women, boys and girls eat together, although sometimes young children eat before their parents.

Household dietary diversity is highly sensitive to whether they are able to generate an income to supplement WFP rations. This is because if a household receives GFD having an income is the only way to access the fresh foods on sale in the market of Kutupalong MS (Cf: FOOD SECURITY AND LIVELIHOODS).

It is common for food aid to be sold. Rohingya people consider pulses to be undesirable and a 'poor person's food' as well as a cause of diarrhoea. Usually, profit from the sales of such goods are invested in purchasing other foods (especially eggs, meat and fish). There are occasional reports of this income being used to buy non-food items (such as clothes). Furthermore, the sale of food rations creates a substantial dead weight loss. The price of pulses is kept low as they are continually oversupplied to the markets of Kutupalong MS. The quantity and quality of fresh foods that can be purchased from the sale of this good is therefore minimal. These inefficiencies are reducing as WFP transitions from general food distribution (GFD) to an e-voucher system (Cf: FOOD SECURITY AND LIVELIHOODS).

In general, the 2017 migration caused a reduction in the variety of food types consumed by the Rohingya community. Food products with flour, particularly roti, paratha or noodles, are also highly prized by the community and are rarely eaten in Kutupalong MS. A recurrent complaint from Rohingya people living in this study zone is that they cannot afford to purchase eggs, meat and fish. Sweet or sugary foods and fruits are aspirational items for Rohingya people in Kutupalong MS. When asked 'if money were no obstacle, what foods you would buy?' typical answers include: 'tea and biscuits', snacks, sweets ('jalebi') apples, grapes and even 'banana cake with gold leaf'. The most common reason for the popularity of these foods in the camps is that parents, and particularly fathers, want to indulge their children.

Breakfast		Lunch		Dinner	
Myanmar	Bangladesh	Myanmar	Bangladesh	Myanmar	Bangladesh
Cakes Biscuits Sticky rice (<i>binni dhan</i>) Puffed rice Flattened rice Paratha Banana Molasses Apple juice Tea	Rice Pulses Flat bread (<i>roti</i>) Tea	Rice Bata fish Ilish fish Baila fish Prawns Beef Chicken Eggs Leafy vegetables Bottle gourds Sweet gourds Okra	Rice Pulses Leafy vegetables Radishes Okra Eggs	Rice Vegetables Fresh fish Beef Chicken Eggs Leafy vegetables Gourds Mashed/fried chillies	Rice Pulses Leafy vegetables Radishes Gourds

Table 12: Meal composition before and after migration

The Rohingya community fast during Ramadan and sporadically throughout other religious holidays. Approximately 45 days per year are spent fasting. Children participate when they reach puberty at ten to 15 years of age.

Sehri (meal before dawn)	Iftar (meal after sunset)
Rice Vegetables Chicken/beef (only in Myanmar) Traditional homemade cakes	Chick peas Puffed rice Rice Chicken/beef (only in Myanmar) Banana Dried fish Fresh fish Sherbet

Table 13: Meal composition during Ramadan

Nutrition of pregnant and lactating women

Pregnant and lactating women fully participate in all of the community's religious fasting practices. As discussed above, a substantial proportion of the year (over one out of every ten days) is dedicated to religious fasting in the Rohingya calendar. It is considered a non-negotiable religious commitment (*'farz'*) for all adult Muslims, including pregnant women. One respondent said to us that being pregnant and fasting concurrently is like *'receiving a double blessing from Allah'*. Another talked about her fears that her unborn child would be irreligious and wayward unless she participated in the Ramadan fast.

Women report that when they are pregnant while fasting they feel additional discomfort and weakness. One discussion group described how combining pregnancy with fasting resulted in women trembling and shivering with hunger. The Link NCA team were also told stories of women who, in addition to limiting food consumption, refrained from using medicines while pregnant and fasting. One focus group discussion participant described that when she was pregnant with her first child she followed the *imam's* advice and avoided taking her medication against high blood pressure. As a result, she had a premature delivery with complications. Restricting the dietary intake of pregnant women is believed by Rohingya people to have no negative effects on prenatal development: Ramadan is a holy month and fasting women are participating in a sanctified activity. As a result, Allah will protect the unborn child in the womb. The Rohingya community in Kutupalong MS do not notice any difference between children born before and after Ramadan.

Health professionals working in the area disagree with the community's assessment. It is common for doctors and prenatal care assistants to report that during Ramadan pregnant women fail to gain the required weight to keep themselves and the unborn child healthy. There are even stories of pregnant women losing weight during prolonged fasting periods. Key informants suggest that there may be an association with low birth rates and fasting in Kutupalong MS: if the month of Ramadan falls within the third trimester, it is particularly likely that the baby will be born with a low weight.

Observation of fasting during pregnancy and breastfeeding	Doer ¹⁸
Perceived susceptibility	NO <i>"I don't know of any illness that could result from me fasting"</i>
Perceived severity	NO
Perceived action efficacy	NO
Perceived self-efficacy	NO <i>"There is nothing anyone could tell me to stop fasting, it is farz (a necessary act) for every Muslim"</i>
Perceived social acceptability	NO <i>"If I were to break the fast during Ramadan my in-laws would judge me", "I have to keep the fast because otherwise my family and husband will scold me", "People will say negative things about me if I don't fast"</i>
Perception of divine will	YES <i>"God will be satisfied and keep my child well", "Being pregnant and fasting is like having a double blessing from Allah", "I will keep fasting even if I die it will be God's will"</i>
Perceived advantages	YES <i>"God will bless me"</i>
Perceived disadvantages	YES <i>"Feeling weak and hungry", "They is not enough breastmilk produced for my baby"</i>

Table 14: Doers: Fasting during pregnancy

There are food taboos for pregnant and lactating women during non-fasting times, as well. Lamb, duck eggs and coconut, for instance, are avoided because they are said to cause the unborn child to have skin diseases. The tilapia fish is also not eaten by pregnant woman for fear it will lead to their baby to have wrinkly skin (*'like an old man'*). 'Fish with navels', shrimps and goat meat are other food taboos during pregnancy. It is commonly argued that Rohingya women avoid some vegetables such as aubergine and beans while pregnant but this was not corroborated by the Link NCA qualitative research. Not all women in Kutupalong, particularly the younger generation who are more likely to have received sensitisation messages, believe that these foods should be prohibited. Moreover, the taboos usually relate to foods that are not part of the ordinary Rohingya diet in either Kutupalong MS or Myanmar (Cf: Table 12). As a result, upholding these dietary restrictions tends to have a limited effect on the food intake of pregnant and lactating women. Non-halal foods (namely tortoise, crab and pork) are always avoided by women in this community.

Iron-rich foods, such as pigeon, are consumed by women in this community especially after labour. This is because they are said to replenish the blood stocks lost during childbirth. Iron supplementation is viewed favourably by pregnant women in this community for the same reason.

¹⁸No interviewee admitted to the Link NCA team of breaking the fast during Ramadan.

The average MUAC measurement for mothers in the Link NCA Risk Factor Survey sample was 264.3 mm [CI: 259.6-268.9]. Subsequent analyses with this indicator and measurements of children in the household revealed a significant association with mother's MUAC, underweight, and anaemia, meaning children whose mothers had higher MUAC were significantly less likely to be underweight or anaemic. Higher maternal MUAC was weakly protective of stunting [p-value <0.1] but did not demonstrate a significant association with wasting (Cf: Annex B).

Breastfeeding practices

Community beliefs and practices which constrain optimal breastfeeding practice in Kutupalong MS are multiple and extensive. Typically as soon as another child has been conceived, mothers will stop breastfeeding other children. Breastmilk that is '*intended for the younger child*' and '*has been provided by Allah for the new baby*' is thought to cause diarrhoea or vomiting if consumed by an older child. This belief prohibits the concurrent breastfeeding of multiple children and, combined with low birth spacing, leads to suboptimal breastfeeding practices. The community understand that breaking prolonged or exclusive breastfeeding causes undernutrition but assess that this is preferable to the effects of feeding a child the '*incorrect*' breastmilk (see example of Munira below).

One woman, Munira¹⁹, explained to the research team that she had two children a year apart. She expressed regret and sadness that both children were the same height. Her view was that she had no choice but to stop breastfeeding the first child as soon as she knew she had conceived again. When the older child was three months, she introduced him to family foods. She accepted that this decision caused the child to become thinner and over the long term stunted. Nevertheless, she believes that the consequences of consuming the 'wrong' breastmilk in terms of distress for the child would have been worse than limiting the child's height.

Providing honey and water solution as a pre-lacteal feed and deposing of colostrum as a waste product continues to be a widespread but far from universal Rohingya practice in Kutupalong MS. Typically, infants are given honey for three days after birth. The honey is said to help children "*speak sweetly*" by stopping them crying. It is also believed to have medicinal properties. In Myanmar, it would be given to children under five with the aim of fighting infection. Colostrum, on the other hand, is often said to be "*dirty*" and "*useless*". If consumed, it is said to cause vomiting. A women's nipples after child birth are also viewed to be "*unclean*" and "*harmful*" unless washed.

The general perception of both community members and post-natal care professionals that optimal initiation of breastfeeding has improved over the last two years since the 2017 influx. There have been sustained efforts to disseminate information on this issue. Most, if not all, of the women who participated in this research project had received sensitisation messages about the early initiation of breastfeeding, though not all communication translated to behaviour change.

Older women in particular were less likely to have adopted a favourable view of early initiation of breastfeeding. In several discussion groups, there was noticeable generational disagreement about whether honey or colostrum should be introduced to children after birth. Younger women describe how their mothers-in-law attempt to persuade them to ignore professional advice on the subject. There was also a tendency for women, who delivered babies in health facilities as opposed to at home, to say that they would feed colostrum. This is possibly because they were more likely to have received instruction from health professionals to do so. Mothers who practice optimal early initiation of breastfeeding, do so because it "*helps with the baby's brain development*"

¹⁹ Name changed to protect anonymity.

and “works like a vaccine.” Other caregivers reported that they wanted to introduce honey but were not able to afford it now that they lived in Bangladesh.

One mother of an eight month baby explained that she feeds her child honey and water for the first three days of his life. She said that this was a “traditional practice that Rohingyas have always done” and that there was no need to change it now that they lived in Bangladesh. Without the colostrum, he was at increased risk of developing an infection. He became unwell with sepsis after five days. At first, the baby was taken to the local health centre where he was provided with antibiotics. He didn’t get better and after 12 further days he began to shiver and develop a fever. Given that the treatment from the medical centre was ineffective, it was decided that the best course of action was to take him to the imam to receive holy water treatment and an amulet. After six more days and he still had not recovered, the baby was taken to hospital where he received further treatment and recovered after a week.

There are other circumstances beyond the immediate three days after birth when women’s breastmilk is considered to be a waste product. If there has been no secretion of milk from the breast for over five hours, it is believed to have gone “stale” and “sour”. Older milk is thought to cause vomiting in children if it is consumed. To prevent this, the stale milk is removed from the breast so that only the fresher milk is given to the child.

If a breastfeeding mother becomes sick, it is commonly believed that genies may have invaded her breast. In such circumstances, a mother will stop breastfeeding.

Both religious and spiritual rules prohibit public breastfeeding. Evil eye (“*mukh pora*”) is believed to be a risk if a baby breastfeeds in front of a stranger. The appearance of this evil spirit can occur by accident (“*he looked at me by mistake*”) or intention (“*it was a curse because he was jealous of my baby*”). In such cases, the mother is said to have pain and swelling in the breast and the child will experience vomiting and diarrhoea. Breastfeeding in public is also thought to be sinful and immodest.

There is a tendency for the Rohingya community in Kutupalong MS to have inflated expectations about what constitutes a sufficient quantity of breastmilk. The most common answer to the question “how often should children under six months be breastfed per day” is “ten to 20 times”. Mothers, who fall short of this expectation, report feelings of anxiety and inadequacy. As a result of workload constraints, most women said that it was only possible to breastfeed for a maximum of eight to ten times per day. Failing to meet the ten to 20 times per day breast feeding target leads to concerns that the child is hungry and at risk of becoming undernourished. As a result of these fears, family foods are often introduced to children before they are six months.

Exclusive breastfeeding	Doer	Non- Doer
Perceived susceptibility	YES "swollen belly", "fever" and "diarrhoea"	YES Even non doers think that "digestion problems" can result if family food are introduced before six months.
Perceived severity	YES "It will be very dangerous for the child, I would have to take him to hospital if it continued", "Child muscles will become soft unless there is breastfeeding"	YES "The children will not grow properly"
Perceived action efficacy	YES "Breastfeeding is very good thing to do if you want to stop your child becoming malnourished"	N/A

Perceived social acceptability	YES <i>"My husband, my in laws and the health visitor think well of me because I am able to breastfeed", "many people told me to introduce rice before six months, but I didn't listen"</i>	N/A
Perception of divine will	YES <i>"It is the way Allah made women, it is their role"</i>	YES <i>"Sometimes my child is sick because of God's will but other times it is because of my carelessness."</i>
Perceived advantages	YES <i>"The baby will not cry much", "I don't have to buy food from the market", "the baby will not get diarrhoea", "I gave my baby colostrum because it helps with brain development"</i>	YES <i>"Breastfeeding protects children from diseases."</i>
Perceived disadvantages	YES <i>"It is difficult to get up in the middle of the night when my child is crying and wants to be fed"</i>	YES <i>"It is difficult to breastfeed while doing housework."</i>

Table 15: Doers and Non-Doers: Exclusive Breastfeeding

The Link NCA Risk Factor survey revealed that an estimated 52.2% [CI: 43.8-60.5] of households in Kutupalong MS practice optimal early initiation of breastfeeding. This is a slight increase from recent secondary data, which found that 43.6% of children were breastfed within an hour of birth.²⁰ Subsequent analyses with this indicator and anthropometric measurements and haemoglobin levels of children in the household revealed a significant association with early initiation of breastfeeding and anaemia, meaning children who were breastfed early were less likely to be anaemic. No statistical association was observed between early initiation of breastfeeding and wasting, stunting or underweight (Cf: Annex B).

Over nine in ten children who were one years old²¹ (93.1% [83.8-102.41]) in the Link NCA Risk Factor Survey sample were still breastfed. This is substantially higher than some estimates from secondary sources. One existing estimate for the prevalence of breastfeeding up to a year was 41.9%.²⁰ The same source calculated the average length of exclusive breastfeeding in the community to be 5.2 months.²⁰ Unfortunately, due to a relatively small sample size of children 12-15 months, it is impossible to conduct statistical analysis to test the relationship between breastfeeding up to one year and anthropometric indicators or anaemia.

Infant and young child feeding practices

According to participants in discussions for this research, the only sign that your baby is ready for complementary foods is crying out of hunger. Most respondents were unable to describe other indicators of readiness for family foods (such as, holding their head up and starting to sit or biting instead of sucking). It was common for parents to report avoiding starting complementary feeding due to constraints on household budgets, even when knowing that their baby was ready.

The type of foods first introduced to infants in the Rohingya community has undergone substantial change since the migration of 2017. Rice remains a staple in both Bangladesh as well as Myanmar and is preferred for young children because it is said to give them energy. Overall, there was a

²⁰ Source: A.A. Abdullah et al. 'Infant and Young Child Feeding (IYCF) Practices, Household Food Security and Nutritional Status of Under-Five Children in Cox's Bazar, Bangladesh', *Current Research in Nutrition and Food Science*, 2018.

²¹ 12-15 months

tendency to introduce fewer fruits and vegetables in Bangladesh compared to Myanmar. While living in Myanmar gourds and leafy vegetables could be grown on the household smallholding, but in the camps have become expensive items. Prior to migration, it was also more common for the Rohingya community to introduce sugary foods (such as cakes, biscuits, sweets).

Myanmar	Bangladesh
Rice Cow's milk mixed with sugar/rice Fresh fish Eggs Bananas Leafy vegetables Gourds Bread Snacks, cakes and biscuits Sweets (especially lollipops) Watermelon Apple juice	Rice Milk powder Porridge Semolina Dried fish (occasionally) Leafy vegetables

Table 16: Complementary foods in Myanmar and Bangladesh

Ideal complementary foods are considered to be fish, meat (both chicken and beef) and fruits (such as apples and grapes). Shame and frustration was often expressed by parents who were unable to purchase these items for their children in Kutupalong MS. This particularly affected fathers as opposed to mothers (Cf: GENDER) and those who had multiple children under five. The ideal quantity of food that should be provided to children is viewed to be approximately 200-250g, three times a day or “as much as the child can eat”.

Secondary surveys confirm that optimal infant and young child feeding practices are severely limited in Kutupalong MS. The SMART round two survey, for instance, estimated that in the makeshift settlements as a whole, 12.6% of children under five have access to the minimum diverse diet, 57.5% of children have minimum meal frequency and 7.3% of children have an acceptable diet.²²

The Link NCA Risk Factor Survey revealed that only 47% [39.3-54.61] of children consume more than four food groups. Subsequent analyses taking into account the anthropometric measurements and haemoglobin levels of children within the household, revealed that children who had consumed at least four food groups were less likely to be wasted, underweight, or anaemic. A child's haemoglobin count significantly increased as the total number of food groups eaten increased. Children who had consumed fruits and vegetables in the prior 24 hours were less likely to be wasted or underweight. Dietary diversity was not significantly associated with stunting, meaning children who had consumed more than four food groups were no more or less likely to be stunted (Cf: Annex B).

Other care practices

Low birth spacing is perceived as linked to other poor caregiver practices. Having multiple younger children increases the workload of women and especially tasks related to fetching water and washing clothes. It also increases congestion within the family home and limits the space available for family members: regardless of how large the family becomes, the size of a family home in

²² Source: Nutrition Cluster, Emergency Nutrition and Health Assessment Round 2, April-May 2018
<https://www.humanitarianresponse.info/en/operations/bangladesh/infographic/emergency-nutrition-assessment-round-2-preliminary-results>.

Kutupalong MS remains constant. Mothers with larger families are therefore considered to be more 'stressed' and 'careless' than those with only a small number of children. The effect of this is that low birth spacing leads to more unscheduled meal times or there not being enough time in the day to wash children.

Care giving between mothers and their children in Kutupalong MS is extremely close and affectionate. The normal Rohingya practice is for women to keep their children with them at all times. This follows from practices developed in Myanmar. Prior to the 2017 migration, women would work on the family farm or smallholding. Starting from the age of six months, children would be taken out on the farm. Younger children would be strapped around their mother's chest while she labours. When children become too big to carry but too young to work (approximately from the ages of two to five years), they would be expected to play alongside the farming in full sight of their mothers. This tradition of Rohingya women combining paid and unpaid labour continues in Bangladesh. There are some rare cases of women in Kutupalong earning a wage in occupations such as volunteering for an NGO or teaching (Cf: FOOD SECURITY AND LIVELIHOODS). In such instances, women continue to take their children with them to work. Even during interviews and discussions for this Link NCA study, children were nearly always brought along if the participants were female, providing the research team with extended opportunities to observe parent and child interactions. However, the norm to have children with their mothers at all times sometimes creates barriers for mothers to access health and nutrition services (Cf: NUTRITION AND CARE PRACTICES). The caregiver culture is not only that children and mothers should be *together*, but also that children should be held by their mothers as much as possible. Surprisingly, even old children, up to five years old, are kept physically close to female caregivers.

To some extent, this practice is a new development. Since the transition to Bangladesh, it is viewed to be especially important to hold young children. The aim is to stop them roaming about the camp, becoming dirty and contracting diseases in an environment that is considered less safe than Myanmar. Another important reason for this caregiver intimacy is to protect against the threat of child abduction. Beliefs that Rohingya children are at risk of being stolen – by either human traffickers or Bangladeshi couples wanting to forcibly adopt – are widespread and extensive within Kutupalong MS. Fears that children will be abducted are a constant part of the Rohingya world view. In Myanmar, holding and closely watching children was said to be necessary to prevent Buddhist monks ("*bhikkhu*") from stealing them. Girls were also said to be at risk of being raped and kidnaped by Buddhist gangs.

According to the Link NCA Risk Factor Survey, 39.3% [31.77-47.45] of children were carried everywhere with their mother, meaning they could not be entrusted to anyone. Subsequent analyses with this indicator and measurements of children in the household revealed a significant association with this indicator and wasting, meaning children who were carried with their mother everywhere were more likely to be wasted. Maternal guardianship without other caretakers was not significantly associated with stunting, anaemia, or underweight, meaning it was neither a protective nor a risk factor (Cf: Annex B).

In this community, the role of grandmothers in child rearing activities is usually limited. The contribution is usually confined to the provision of advice and/or play. The husband's mother is often an extremely influential voice within the household (see, for instance, NUTRITION AND CARE PRACTICES, Breastfeeding; GENDER, Domestic violence). The research team often observed the paternal grandmother playing, joking or talking with children. When it comes to actually performing other caregiving related tasks, however, the husband's mother usually leaves these activities for her daughter-in-law. Even looking after children for a short period of time (for

instance, during a medical or nutrition appointment) is viewed unfavourably by the mother. In group discussions with women over the age of 50, it was reported that grandmothers had no specific time of the day dedicated to caring for children. Maternal grandmothers in particular tended to conduct no child rearing activities on a routine basis (and may not even have any contact with their grandchildren).

According to the Link NCA Risk Factor Survey, 22.4% [16.6-29.4] of children were entrusted to a grandparent when the mother needed someone to watch the child. Subsequent analyses with this indicator and measurements of children in the household revealed a potential association with anaemia, meaning children who were watched by a grandparent were potentially more likely to be anaemic [p-value <0.1]. However, childcare by a grandparent was neither a risk nor protective factor of stunting, underweight, or wasting (Cf: Annex B).

Caregiving by older siblings is considered unusual in this community and only rarely occurs. It again is viewed by mothers as an inferior childcare option and one that should only be used as a last resort. When asked why this was the case, it was said that sisters were unable to provide breastmilk and they were too weak to hold babies for longer time periods.

Per the Link NCA Risk Factor Survey, 20.8% [15.8-27.0] of children were watched by an older sibling less than 18 years old, while only 8.0% [4.6-13.5] of children were watched by an older sibling less than 10 years old. Subsequent analyses with this indicator and measurements of children in the household revealed a potential association with wasting and anaemia, meaning child care by an older sibling less than 18 years old was a weak risk factor for wasting and anaemia. However, this association did not exist for children cared for by older siblings less than 10 years old. Child care by a sibling was not associated with stunting or underweight (Cf: Annex B).

Men play almost no role in caring for their children. During group discussions with men there was a tendency for them to overestimate their contribution to child rearing. Often when asked about the specifics of what they do to look after children on a daily basis, they could only provide unsatisfactory and vague answers. Claims made by men that they bathe and wash their children are uncorroborated by women in Kutupalong MS. Men are responsible for taking children to the market to buy snacks.

According to the Link NCA Risk Factor Survey, only 10.5% [7.1-15.4] of children were watched by the father when it was needed. Subsequent analyses taking into account measurements of the child and this indicator revealed no significant association between these indicators. These children were not more or less likely to be stunted, anaemic, underweight, or wasted (Cf: Annex B).

Corporal punishment is a widespread practice for this community. Per qualitative inquiry, this type of punishment can be premediated and planned. It was common, for instance, for parents to tell stories about misbehaviour in a public place that resulted in their choice to take a child home for a beating. In other instances, the violence could be an erratic expression of frustration. During one focus group, for instance, after a four year old cried for over 30 minutes, his mother suddenly decided to hit him with a shoe. The corporal punishment observed by the research team both resulted from and caused stress for parents as well as children. Spanking was observed in 17% [CI: 11.2-22.73] of households visited by the risk factor survey team. Subsequent analyses taking into account measurements of the child revealed no significant association between these indicators, meaning children who were spanked during the course of the interview were no more or less likely to be wasted, stunted, underweight, or anaemic (Cf: Annex B).

General closeness and high quality of mother-child interactions was something that was corroborated by Link NCA Risk Factor Survey findings. Generally, the survey teams observed that mothers watching their children (94.1% [CI: 90-98.18]), talking to their children (92.3% [CI: 88.6-96.0]), smiling at their children in (83.8% [CI: 77.8-89.8]) and interacting with their children (61% [CI: 52.1-69.8]). Subsequent analyses taking into account measurements of the child and this indicator revealed no significant association between these variables and wasting, stunting, underweight or anaemia, meaning observed child care interactions were neither a risk factor nor protective of nutrition outcomes (Cf: Annex B).

C. FOOD SECURITY AND LIVELIHOODS

Income generating activities in Myanmar

The most common income generating activity in Myanmar was agricultural work with the vast majority of this population living on a smallholding or farm. There was a high-degree of self-subsistence among the Rohingya community prior to the move to Bangladesh with most families relying on local markets for only a minority of their food consumption needs. Even the poorest community members could usually borrow land from others.

After agriculture, the most common forms of employment were labour work and housekeeping. Others would collect wood and bamboo to sell on the market. More educated community members would sometimes work as teachers, although the Rohingya people faced difficulties in being appointed to this role in Myanmar due to discrimination.

The wealthiest Rohingya people in Myanmar were owners of larger shops and gold merchants. Prior to the 2017 influx, those with an education and an income in this community were able to send their children abroad. The Rohingya diaspora would later become a valuable source of remittances after the move to Kutupalong MS.

Earnings would increase in the winter, because temperatures would get colder making it easier to work. Many vegetables and crops would also come into harvest at this time.

Income generating activities in Bangladesh

Employment opportunities for Rohingya people are scarce due to movement restrictions which makes travelling outside the camps illegal. Despite these legal restrictions, there is a variety of different income generation methods used by the community. These include but are not limited to the following:

- Men report that they will work on average one to five days per month in labouring or construction projects (employed by NGOs or UN agencies). The shortage of this type of work is source of contention within the Rohingya community. If there is no work in their own camp, sometimes men travel to other camps in the hope of finding work. This can be the cause of violent confrontations.
- Illegal employment outside of the camps is sometimes pursued by younger men who live in Kutupalong MS. The community perception of this type of work is that it is uncommon and pursued only by younger men. Older men viewed as unwilling to accept risk of violent retribution if they are caught travelling outside for work. A Rohingya man who works illegally anticipates that if he is detected by law enforcement agencies he will be beaten.
- Being an NGO “volunteer” or teacher is a sought form of paid employment. To gain access to these jobs, there are education requirements (eight to ten years of schooling as a minimum) as well as a challenging written and oral examination. There is intense competition for these

posts: one agency working in Kutupalong MS reported that they had 20 applicants for every volunteer position.

- Wealthier community members who have brought money from Myanmar or who have remittances have been able to open shops and other businesses within the camps. The merchandise on offer from Rohingya businesses in Kutupalong MS ranges from fresh fish and meat, snacks and other food sources to betel leave and bamboo.

Labourers and construction workers earn approximately 300 *taka* (3.5 USD) per day, NGO volunteers earn 500 *taka* (5.8 USD) per day and teachers earn 700 *taka* (8.3 USD) per day. Under 18 year-olds and adults over 50 are not allowed to work as labourers. This constrains the income generating opportunities of adolescent parents.

Per the Link NCA Risk Factor Survey, 82.4% [76.3-88.4] of sampled households relied on humanitarian assistance as their main source of income. This finding was confirmed by secondary sources, for instance the 2018 REVA 2 found that 88% of the Rohingya population in Cox’s Bazar camps are entirely reliant on assistance for their income.¹² There was a significant relationship between reliance on assistance and new arrival status of households. Further analysis taking into consideration the anthropometric indicators and haemoglobin levels of children in the household indicated a potentially protective [p-value <0.1] relationship between humanitarian assistance and stunting, in that children in these households were less likely to be stunted. Relying on assistance was not identified as a risk factor for wasting, underweight or anaemia. On the other hand, children in households dependent on humanitarian assistance were significantly less likely to have acceptable dietary diversity (Cf: Annex B).

A summary of income generating activities in Myanmar and Bangladesh is referenced below.

Myanmar	Bangladesh
<ul style="list-style-type: none"> • Agricultural activities (including cultivation of rice, potatoes, cabbage, beans, garlic, onions, leafy vegetables, chili, mustard) • Fishing • Shopkeeping • Teaching • Housekeeping • Day labour • Managing small businesses (for example, with betel leaves) 	<ul style="list-style-type: none"> • Illegal work outside the camps (for example, on farms or local factories) • Shop keeping or managing a small consumer business • Teaching for an NGO • Being a paid volunteer for an NGO • Construction and labour (working on roads, drains, bridges, shelter, stairs) • Micro-gardening • Making goods to be sold in local markets (for example, pita or local cakes) • Selling aid (sugar, oil, semolina, clothing/shoes, medicines and especially pulses) • Remittances

Table 17: Comparison of income generating activities for the Rohingya community before and after migration

Household expenditure in Myanmar

Education was a major expense when the community lived in Myanmar. The community perception is that the average household spent up to 35 per cent of its budget on education prior to migration. The Rohingya experience of state education in Myanmar was one of humiliation and discrimination; as a result, the community sought private and paid-for alternatives. Rohingya parents also value Islamic religious education and Quranic teaching for their children, which was only available in Myanmar at a cost. If they did attend schools, they were required to buy their own supplies (including, books, pencils, school uniforms, shoes and bags).

Health was also a major expenditure for Rohingya people in Myanmar. It is perceived by the community that a quarter of a household's budget was dedicated to healthcare before the migration to Bangladesh. Again, this is a consequence of negative experiences of the Myanmar state. Use of traditional healers and private providers was therefore an important cost item.

Rohingya people were self-reliant in Myanmar and able to cultivate most of their own foods. A typical household would spend approximately 50000 to 70000 taka per month in markets on these products such as oil and spices. The community report spending only a very small fraction of their income or nothing at all on sanitation and hygiene prior to the migration to Bangladesh.

Household expenditure in Bangladesh

Compared to Myanmar levels, the Rohingya community in Kutupalong MS are spending a high proportion of their income on food. This is because the migration has coincided with a transition from subsistence living to receiving assistance and accessing a market economy. Historically, being self-sufficient was a source of pride for Rohingya people, particularly for men and dependency on aid is experienced as a humiliation. In order to adapt to this change, Rohingya people in Kutupalong MS have reprioritised how the household budget is allocated.

Table 18 represents results of participatory exercises on household spending.

Item	Myanmar	Bangladesh
Food	10	30
Health	25	15
Education	35	10
Clothes	10	5
Household items	15	20
Hygiene and sanitation	0	5
Tobacco	5	15
Betel leaf	0	10
Housing	15	0

Table 18: Expenditure as a proportion of total household expenditure in Myanmar and Bangladesh (%)²³

Firstly, the proportion of each Rohingya household spends on food has increased from ten per cent to 30% since this community moved to Bangladesh. Only a few food items (such as oil) would need to be purchased in markets prior to 2017. Currently, food is the most substantial expenditure item for Rohingya people in Kutupalong MS.

Secondly, households are dedicating more of their budgets to betel nut and cigarettes after the migration. In Myanmar, households could cultivate and consume betel leaf at a low cost. Now an average family would spend up to 500 taka per week on this product. Tobacco use is reported to have increased since 2017. When asked why this change has occurred, it is typically said that 'men are bored' or 'stressed'. Although women consume both tobacco and betel products, they do so at a lower level than men. This is because using these drugs is generally associated with the male domains of the tearoom and market place as opposed to the family home. This has been a common source of marital contention in Kutupalong MS. As is outlined in the GENDER section it is unusual for men to share their income with their families and women have a low level of power over the household budget.

Finally, spending on education has decreased since the move to Bangladesh even if it remains a significant item of expenditure for the Rohingya people. This is because schooling is free for

²³ Highest expenses are highlighted in orange, while those that do not present cost to the family are highlighted in light green.

children under 14 years old. Those families that choose to purchase private schooling beyond this age threshold, can spend up to 500 taka per month on tutoring for older children. In addition, communities within the camps pool financial resources to build and run Quranic teaching centres ('*moktaps*') for children.

As discussed in the HEALTH chapter, despite free healthcare provision in camps the Rohingya community continue to spend money on medical treatments and advice. Reported healthcare expenditure has declined since arriving in Bangladesh but remains high. In Myanmar, a typical Rohingya family report spending up to 25% of the household's income on health related items. In Kutupalong MS this proportion is estimated to be closer to 15 per cent. This suggests that even if the camp health centre is the preference for the first treatment site, expensive subsequent alternatives continue to be used by the community. The Rohingya community in Kutupalong MS sometimes experience harm due to the financial pressures associated with paying for this type of traditional or spiritual treatment. The community even report taking out loans or selling WFP rations to pay for treatment costs.

Other expenditures include household items (such as spoons, mats, mosquito nets and utensils) as well as shelter materials.

Expenditure on sanitation and hygiene items remains low after the migration. Participants often reported to the Link NCA team that cost-related factors lead to suboptimal hygiene practices. For example, it was common for community members to report that they could not wash their hands because soap was expensive. The results from the expenditure allocation game (Cf. Table 18) cast doubt over this conclusion. Poor hygiene practices are as much a consequence of budget prioritisation decisions as a lack of financial resources.

Coping strategies in Myanmar and Bangladesh

The coping strategies adopted by this community in Bangladesh have been influenced by pre-2017 experiences in Myanmar. Rohingya culture is strongly linked to the storage and sale of food items to mitigate periods of financial strain. Prior to moving to Kutupalong, each Rohingya household would store non-perishable foods (such as rice, seeds, chili and oil) only to sell them again in the monsoon season when earnings from agriculture were low. Now that the community lives in Bangladesh, the seasonal variation in food availability is less severe. Nevertheless, this tradition of storing and preserving food continues in the form of selling aid: household will often build up reserves of rice or pulses in order to prepare for times when there is no other method to generate an income.

Although micro gardening within Kutupalong MS remains a minority pursuit, it is well received when it is practiced. Community members say that having a small plot of land to cultivate crops coheres with their way of life established in Myanmar and enables them to improve their household's dietary diversity. Two factors limit the prevalence of micro gardening in Kutupalong. Firstly, average usable space per person is low (less than eight square meters per person) and secondly, climate hazards may lead to the loss of vegetation.

Another common coping strategy used by the Rohingya community in Kutupalong MS is limiting portion sizes. Although all respondents in the qualitative survey said that portions were shared equally between family members, it was common for parents to say that they reduced the amount given to each person due to food scarcity. Larger families were perceived to be no more or less likely to use this coping strategy than smaller families. Female only households or female headed

households were perceived to resort to this strategy more than male headed households because they are excluded from income activities.

Gaining employment in non-preferred forms of employment was also used as a coping strategy while this community lived in Myanmar. During the monsoon season, household members would sometimes work as housekeepers or in the cultivation of low value crops (such as bamboo or leafy vegetables).

High-risk coping strategies (such as child labour) are unusual in Kutupalong MS. Begging is used by some members of this community and it is highly stigmatised. Beggars are typically described as feckless and manipulative. Sometimes people who beg target mosques on Friday after prayers, as this is when members of the community are thought to be at their most generous. Because women are prevented from accessing this space, they beg less than men. It was reported to the Link NCA team that children never beg in this community. During the qualitative data collection period, the research team did not observe child begging. Given that parents were the principal participants of group discussions, it may be possible that parental shame prevented them from admitting to sending child out to beg in a public forum.

In the Link NCA Risk Factor Survey, an estimated 13.7% [CI: 7.6-19.83] of households reported selling or exchanging food aid. Further analysis taking into consideration the anthropometric indicators and haemoglobin levels of children in the household demonstrated no statistical association: selling or exchanging food assistance is not a risk factor for wasting, stunting, underweight or anaemia (Cf: Annex B). In addition, the community reported that the frequency and level of sold aid is significantly lower among e-vouchers beneficiaries compared to in-kind recipients, so it is anticipated that the prevalence of this coping strategy will decline over time as GFD is phased out across the camps.

The 2018 REVA analyses estimated that 90% of the Rohingya people in Kutupalong MS rely on coping mechanisms to satisfy food needs. The same source indicated that the use of these coping strategies is associated with both the sale of assistance and low child MUAC.¹²

Historical and seasonal variations

There are small seasonal variations in food availability and price in Kutupalong MS. Some vegetables, fruits and beans are more plentiful in the camps markets and for a lower price during the winter months of December, January and February. The supply of fish is viewed to peak in July and August.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Seasons												
Summer season			+++	+++	+++							
Monsoon season						+++	+++	+++	+++	+++		
Winter season	+++	+++									+++	+++
Foods												
Beans	+++	+++	+++	+	+	+	+	+	+	+	+++	+++
Radish	++	++	++	+	+	+	+	+	+	+	+++	+++
Aubergine	+	+	+	++	+++	+++	++	+	+	+	+	+
Gourds	+++	+++	+++	+++	+	+	++	++	+	+	+	+
Pumpkin	+++	+++	+++	+	+	+	+	+	+	+	+	+

Yam	+++	+++	+	+	+	+	+	+	+	+	+	+
Fresh fish	++	++	+	++	+	+	+++	+++	+	+	+	+
Potato	+++	+++	+	+	+	+	+	+	+	+	+	+
Okra	+++	+++	+	+	+	+	+	+	+	+	+	+
Leafy vegetables	+++	+++	+	+	+	+	+	+	+	+	+	++
Tomato	+++	+++	+	+	+	+	+	+	+	+	+	++
Cauliflower	+++	+++	+++	+	+	+	+	+	+	+	+	++

Table 19: Seasonal calendar of the affordability and availability of selected foods

In general, there are few reported problems related to the access of markets in Kutupalong MS. On average in the camps sampled for this Link NCA study, a food market was at most 15 minutes away. Sometimes close-by markets would close down during the monsoon season lengthening the overall distance travelled.

Market choice is dependent on distance, price and availability. Sometimes the commute takes precedence over price and availability. For example, even if a market does not offer all products needed and the prices are higher than elsewhere, people would still visit this market if the distance is shorter and they don't need to pay for a bus fare. Some participants explained that they prefer to buy their products from Rohingya (as opposed to Bangladeshi) market stallholders and this may influence where they choose to buy their food. One reason for this is that going to the market to purchase food is a social occasion: it is opportunity to converse with the market stallholder and it is easier to do this when there are no cultural barriers. In addition, Rohingya to Rohingya interactions are characterised by a higher degree of trust than exchanges between Rohingya people and Bangladeshis. The community commented that they could be more certain they were getting a fair price at Rohingya-owned business.

Food prices have steadily increased from the beginning of 2018. There has been a decrease in oil and sugar consumption from 2017 to 2018 while meat, fish and egg consumption has stabilised over the same period. Currently, there is sharp price changes in products such as garlic, ginger, turmeric, onions, eggs, fresh fish and chicken. The Rohingya community believe that this has two causes: firstly, population growth within the camps and an increase in demand, and secondly, unscrupulous Bangladeshi shop owners manipulating prices. These price increases may affect future food consumption patterns. For example, the cost of onions is increasingly prohibitive due to trade differences between Bangladesh and India, where they are imported from, while households report that they anticipate buying less fish products next year.

D.WATER, SANITATION AND HYGIENE

Water availability and access

Prior to migration to Bangladesh, each Rohingya household tended to have access to their own protected tube wells. Now in Bangladesh, there were only communal sources of water available. Accessibility to the water sources varies, depending mainly on the location of the household and tube well.

In the qualitative component of the Link NCA study, participants reported spending up to 30 minutes travelling to the tube well. A 2019 assessment found that 31% of households reported a

water collection time exceeding 30 minutes.²⁴ Link NCA qualitative evidence also suggests that queuing at the water source can lead to waiting times of 20 minutes to two hours. These wait times add to women's workload and cause marital tensions as females break rules restricting movement in public places. One focus group participant in camp 13 said, 'Sometimes children are left with their fathers, siblings or alone when mothers go fetching water. Leaving children alone causes tension until the mother returns.' Queues for water access can also cause arguments between women and are a source of stress. Another focus group participant in camp 4 explained, 'People feel bored when waiting for a long time to collect water. This sometimes leads mothers to quarrel with each other and head back home without taking water.'

Factors	Results	Facilitators	Barriers	Notes
Time needed to walk to a water source	Zero - 30 minutes	Living nearby to a tube well	Damaged tube well Summer reduces water availability	Some people have to search water in surrounding blocks, increasing time required to access water
Queuing time to access tube well	20 minutes - Two hours	Setting up more tube wells Timely repair/maintenance of tube wells	Only one to two tube wells available Tube wells in nearby sub-block Damaged tube well Lack of proper support to repair tube well	NGOs repairing tube wells and can take one to three days to do so thus increasing queues at other tube wells Preparation time depends on receiving prompt and adequate support as sometimes requests for repair were ignored by tube well providers
Number of times that water needs to be collected	On average, families collect water twice a day, fetching enough for 15 litres per person, per day		Summer season and fasting period lead some families to access water four to five times a day	
Quality of water	Water is reported to be safe, but variable by camp		Communal management of tube wells	

Table 20: Factors influencing water availability and accessibility

The Rohingya community in Kutupalong MS reported that it is common for tube wells to be damaged, which increases the time needed to collect water. The way that tube wells are repaired depends on the camp. Some communities repair the wells independently of external assistance by collecting money all the households. The maintenance amount per household per month is approximately 50 to 70 taka. Poor families, that cannot financially contribute, are usually paid to conduct the repairing work. In other blocks, NGOs take responsibility for fixing faults in water sources. Complaints related to the timeliness of NGO repair work were often made by

²⁴ Source: REACH Initiative, UNICEF and WASH Cluster, *Water, Sanitation and Hygiene (WASH) Household Dry Season Follow-up Assessment*, May 2019: <https://reliefweb.int/report/bangladesh/water-sanitation-and-hygiene-wash-household-dry-season-follow-assessment-may-7>.

respondents in some camps (with some communities saying that water sources remained broken for up to three days).

Social norms establish that collecting water is a job for women (Cf: GENDER). Water is usually collected twice a day for most of the year. During summer, some families need to fetch more water (up to four times a day) compared to the rest of the year. During fasting periods such as Ramadan, more water is used as it is necessary to drink more fluids. One recent assessment found that 69 per cent of households reported collecting at least 15 litres of water for all domestic uses per person, per day; while 88 per cent of households reported collecting at least three litres of drinking water per person, per day.²⁴

Immediately after the 2017 influx to Kutupalong, the availability and accessibility of water was poor. During this time, water was often sourced from other host communities or delivered in jars (eight to ten jars per day) until tube wells were established. According to the Link NCA Risk Factor Survey, an estimated 92.2% [CI: 85.4-99.05] of the population have access to a functioning tube well or hand pump. Further analyses taking into consideration the anthropometric measurements and haemoglobin levels of children in the household demonstrated that no significant association between these indicators, meaning that sourcing water from a functioning tube well or hand pump was not a protective factor against wasting, underweight, stunting or anaemia.

Though the majority of households reported water access from a tube well or hand pump, 55.5% [42.5-68.39] of households reported that distance was a barrier which limited water access. Subsequent analyses taking into consideration the anthropometric indicators and haemoglobin levels of children in the household indicated no significant associated between these indicators, meaning that the distance to a water point was not protective or a risk factor for wasting, underweight, stunting or anaemia (Cf: Annex B).

One in five, or 20% [9.7-29.35] of households said reported that wait times were a barrier to water access. Subsequent analyses taking into consideration the anthropometric indicators and haemoglobin levels of children in the household indicated no significant associated between these indicators, meaning that a waiting time at a water point was not protective or a risk factor for wasting, underweight, stunting or anaemia (Cf: Annex B).

Quality of water

Previous research, for example the 2017 REVA, found that water quality was a main driver of malnutrition.²⁵ WASH professionals generally consider the quality of water available in Kutupalong MS to be of a superior quality to that available in other sites within the Cox's Bazar area (such as Nayapara MS and RC)²⁶. Most focus group participants said they have access to water that is safe. However, the community perception is that the water they are able to access in Kutupalong MS is of lower quality than in Myanmar. A common explanation for this is that prior to migration each Rohingya household would have access to their own private tube well. Despite community groups being set up, communal facilities are less well cared for and require NGO maintenance.

²⁵ Source: WFP, Rohingya Emergency Vulnerability Assessment (REVA), 2017: <https://reliefweb.int/report/bangladesh/rohingya-emergency-vulnerability-assessment-reva-summary-report-cox-s-bazar>.

²⁶ The reason for this difference is related to the topographical differences between Nayapara compared to Kutupalong MS. Historically, steep hills have made it more difficult to maintain an adequate water supply to Nayapara.

Mothers often explained that when children drink from water sources that are not intended for drinking then they get sick. For example, a focus group participant in camp 9 said, *'The drinking water is very clean but other water from the wells near the household is less clean because it is not intended for drinking; I try to stop my children drinking it but it is difficult. It causes skin disease, fever and coughing.'*

Over four in five [82.2% [77-87.4]] of households cover the water storage unit to protect water quality. This finding was corroborated by secondary sources, including a 2019 REACH assessment which indicated that 96% of households transported water in an aluminium pitcher and that 97% of households reported cleaning the water container.²⁴ Further analysis taking into consideration the anthropometric indicators and haemoglobin levels of children in the household revealed a significant association with these indicator and underweight, as children in households where the water storage unit was covered were less likely to be underweight. However, this indicator was not significantly associated with other outcomes, meaning children whose household had a covered water storage unit were no more or less likely to be wasted, stunted or anaemic (Cf: Annex B).

Far fewer [32.5% [22.2-42.76]] households in the sample treated their water. Further analysis taking into consideration the haemoglobin levels of children in the household demonstrated a statistical association: household water treatment is a risk factor for anaemia. This result may seem counter-intuitive, however, there is some research suggests that excess chlorine may be linked to anaemia by damaging the hematopoietic system.²⁷ Analysis of the water treatment variable with anthropometric indicators indicated no significant association, meaning treating water was not a protective factor against wasting, stunting or underweight in Kutupalong MS (Cf: Annex B).

Hygiene practices

Handwashing and other hygiene practices were easier to undertake in Myanmar compared to the Refugee camps in Bangladesh, as water and soap were more freely available. Cooking with unwashed hands is considered to be a sin. Evidence from in-depth Link NCA interviews reveals that the practice of optimal handwashing remains low in Kutupalong MS, despite extensive sensitisation efforts. Access to soap is the most common reason why community members do not wash their hands. When soap is unavailable it is common for this community to wash their hands with sand or ash.

Larger families may be particularly affected by the lack of soap. One community explained how they receive soap from a humanitarian organisation, but that each household receives the same amount regardless of its size. Family budgets deprioritize the purchase of hygiene and sanitation items (Cf: FOOD SECURITY AND LIVELIHOODS). It is common for families to explain that buying more soap would mean less money available for food. Soap price ranges between 10 and 45 taka per bar.

The Joint Response Plan suggested that 65 per cent of households have soap.²⁸ Findings of the Link NCA Risk Factor Survey likely reflect humanitarian assistance; 93.4 [89.3-95.6] percent of children's homes had confirmed presence of soap in the household. Subsequent analyses taking into account measurements of children in the home revealed a significant association with this indicator and stunting, meaning children in homes that confirmed presence of soap were less likely

²⁷ See, for instance, A.A. Moshtaghi et al., 'Study of the Effect of Residual Chlorine on Serum Iron and Related Parameters', Medical Journal of the Islamic Republic of Iran, 1996.

²⁸ Source: Inter Sector Coordination Group – Bangladesh, 2019-19 Joint Response Plan for Rohingya Humanitarian Crisis.

to be stunted. Presence of soap was not significantly associated with wasting, underweight, or anaemia.

The importance of the presence of soap and/or environmental hygiene in general should be considered within a of environmental enteropathy disease (EED), which is an enteric disease caused by a continued exposure to faecal microorganisms due to poor environmental conditions at the household level- such as animal and human faeces as well as pollution and contamination from water, soil, air and food. It is considered as an entry point for chronic undernutrition because this condition would reduce the system's capacity to absorb nutrients.

Behaviour	Community agreement	Community justification
Handwashing	Ambivalent	Handwashing is practiced depending on the circumstances: hands need to be always washed before cooking, eating and after using the toilet. Cooking with dirty hands is considered to be a sin.
Use of soap	Ambivalent	Hands are not usually washed when waking up in the morning. Sometimes hands are not washed due to the long waiting times. Ash or soil from nearby the household is used for handwashing when soap is unavailable. Access to soap is difficult as quantities provided by NGOs are insufficient. Purchasing power to buy soap is limited and buying soap is a low priority in household budgets.
Water is safe to drink	Agree	Water of the camp is considered to be safe for drinking and does not cause stomach diseases
Bathing of children when dirty	Agree	Mothers believe that children are more likely to contract skin diseases caused by worms if they play outside and return to the house unbathed with dirty clothes

Table 21: Hygiene practices, community agreement and justification

On first arrival in Kutupalong MS in 2017, women used cloths to dispose of menstrual waste. Currently, humanitarian actors provide sanitary napkins and most respondents during the qualitative inquiry said that this item was freely available. In Myanmar, burying menstrual waste was the normal practice. After migration, space limitations in the camps reduced the incidence of menstrual waster burial but secondary sources indicate that it is still the most common disposal method in the study zone.²⁴

Sanitation

In Myanmar, the majority of Rohingya families had their own latrines next to their home and separate latrines for men and women. A new latrine would be dug every year, the location would rotate and the old facility would be filled in. After migration however, again it is impossible to retain this practice in Kutupalong MS due to the area's population density.

Provision of sanitation facilities was poor when the community first arrived in Bangladesh: there were no latrines and open defecation in nearby forested areas was the only option. For this reason, women used to fast during the day so that they would only need to visit the forest during the night. In general, woman prefer to conduct WASH activities under the cover of darkness. Currently, younger women prefer to fetch water during the night time (Cf: GENDER). This community preference is testimony to how much Rohingya people value female modesty: it is better to be unseen by men even if it is unsafe and there is an increased risk of sexual assault. Typically, in the sampled areas visited by the Link NCA qualitative team it was reported that latrines were set up after one and a half months after the influx.

The sufficiency of latrine provision varies between camps. Ten per cent of households within the makeshift sites have access to their own latrine but the majority use public or communal

facilitates.²⁴ Typically, there is one latrine per four to ten households. One camp reported that there was only one latrine for 25 households. Waiting times for latrines is a contentious issue in most camps. Rohingya adolescent girls and women feel very ashamed and uncomfortable in using a latrine while someone else, especially a man, is waiting outside or knocks on the latrine door. Communities would prefer to have separate toilets for men and women.

It is reported by the community in the qualitative survey that the incidence of open defecation has declined over the two year period since the arrival in Bangladesh but some children continue this practice. The Joint Response Plan 2018-19 estimates that 65% of households have children who defecate in open spaces.²⁸ Another secondary source estimated that 30% of children under five defecate in open spaces and ten per cent of families 'always' or 'often' find faeces within 30 metres of the household.²⁴ The normal practice is for faeces to be covered with soil. A mother in Camp 4 explained that *'there is always a bad smell and flies due to open defecation. Some children touch the faeces, come back home and eat without washing their hands.'*

The cleanliness of latrines is poor. Humanitarian actors are responsible for cleaning and maintaining latrines, but complaints about the quality of this service are common. One community reported that it had been six months since their latrine had been cleaned. The result of this was that there had been an increased prevalence of diarrhoea in children over the past two to three months. Damaged latrines are still being used and several communities explained that the agencies responsible are unresponsive to complaints.

Nearly all [97.2% [93.7-100.72]] of the Link NCA Risk Factor Survey sample reported using an improved sanitation facility. Subsequent analyses taking into consideration the measurements of children in the home revealed no significant association between these indicators, meaning children in households that reported using an improved sanitation facility were not more or less likely to be wasted, stunted, underweight, or anaemic (Cf: Annex B).

E. GENDER

Early marriage and early pregnancy

The age at which Rohingya people marry has varied over time. In general, however, 14 to 18 years old is considered the ideal age range for women to be married. Rohingya men can find a marriage partner at any age, but it is considered optimal for them to be at least two years older than their wives.

Historically, early pregnancies were common in Kutupalong MS due to younger Rohingya women being raped in Myanmar. Adolescent marriages peaked during the immediate aftermath of the migration to Bangladesh. In Myanmar, the government and a discriminatory legal system limited the number of Rohingya couples who could marry. Men under the age of 18 were required to pay a tax of 200,000 taka (approximately \$2,500 USD) to the King if they wanted to marry. Whereas adolescent women would often need to bribe government officials if they wanted to marry before their eighteenth birthday. Without pressure from external authorities, there is a tendency for early marriage in the Rohingya community to increase. Since the beginning of 2019 in Bangladesh, the camp-in-charge (CiC) verify proof of age before granting a marriage licence. If the CiC finds adolescents cohabiting with a common-law marriage, they will separate the union and return the young people to their parents.

Thus the period prior to the introduction of these new CiC policies and after arriving in Kutupalong MS was associated with freedom to practice early marriage. Many of the reasons why Rohingya

people took advantage of this new opportunity are unrelated to the 2017 migration. Fear of sexual assault and harassment before marriage drive the Rohingya inclination to marry early. The loss of virginity or sexual purity prior to securing a marriage contract reduces women's ability to find a husband. To mitigate this risk, it is rational for women to marry as soon as they are considered sexually desirable by men (which in this community is 14 to 15 years old). Moreover, by marrying early *"there is less competition for wealthy and beautiful men"* and it is *"easier to find a husband."*²⁹ Finally, parents are believed to have committed a sin if they live in the same house as unmarried daughters who are menstruating. The severity of this sin increases the longer it has been since the daughter has begun her periods.

Anxieties about entering marriage too late are shared equally between adolescent women and their parents. Since the change in CiC policy, the topic of early marriage has also become a community taboo. There was a reluctance to talk openly about adolescent marriages due to concerns about CiC retribution. A traditional healer (*"mama"*) who is the mother of five daughters initially told the Link NCA research team that she believed that it was ideal if women wait until they are 18 to get married. Later in the same interview she admitted that she is already looking for a husband for her eldest child who is only 14 years old. Although she believes that at this age one is too immature to have sexual relationships, she fears being unable to find a husband if the search is delayed until the daughter reaches adulthood. The reason for this is that her daughter has *"darker skin"* and is therefore seen by the community as an undesirable match.

These preoccupations about young women living together in the same house as their parents became more pronounced after the 2017 migration. For most Rohingya people, the transition from life in Myanmar to Kutupalong MS involved a reduction in living space. Typically, after the migration all family members sleep in the same room. Adolescent women and men from the same family sharing a bedroom is forbidden in Islam. Parents with children in such circumstances are said to be committing a sin. Thus, increased congestion within homes resulted in parents adopting an early marriage strategy.

Other pressures to marry early came from young women. Adolescents often said that as soon as they moved to Bangladesh they persuaded their parents to arrange marriages. One group of adolescent women described how being unmarried was *"shameful now that we are in Kutupalong"* because *"other people in the home can smell menstruation"* and *"men in the family sometimes walk in during periods."*³⁰

According to many participants in group discussions, the rise in early marriages in the initial period after moving to Bangladesh was caused by the increasing popularity of *"love matches"*. While such marriages were rare in Myanmar, in Bangladesh they have become more common. This is often linked to adolescents having an increased ability to communicate with each other since the migration. In Kutupalong MS young people live in closer to geographic proximity to each other than in the remote villages and farms of Rakhine State. Many Rohingya people also gained access to a mobile phone for the first time after arriving in Bangladesh. Finally, restrictions on movements between camps apply only to adults, which provides an opportunity for adolescents to meet without parental knowledge.

The effect of *"love matches"* on the incidence of early marriage should not be overestimated. Rohingya people in Kutupalong MS often claim that early marriages only occur without the consent of the parents. This is implausible, as the practice of arranging marriages is deeply rooted

²⁹ Adolescent woman, Camp 13.

³⁰ Adolescent woman, Camp 4.

within Rohingya culture. It is unlikely that all adolescents who marry do so without family permission. The argument that secret meetings between young lovers lead to adolescent marriages absolves parents of responsibility and those who make it may be motivated by a desire to avoid CiC censure.

Rohingya marriage rules tend to disadvantage women at the expense of ensuring male power. As an example, women are required to pay a new dowry if they want to remarry. For men, on the other hand, a new marriage – as either a consequence of polygamy or divorce – is profitable because his family receives the payment.

Furthermore, marital life in this community is built on a system patrilocal residence. Men are therefore supported by their mothers in household decision making. Older women often said, for instance, that they would instruct their sons to leave their wives unless they wanted more children. The mother is incentivised to side with her son in household disputes because the daughter-in-law has no economic power. In addition, having many grandchildren enhances her social status within the community and provides her with role within the family related to advising on child rearing.

The Link NCA Risk Factor survey estimated that the average age of marriage for Rohingya women in Kutupalong MS was 16.9 years old. The average age of mothers in the Link NCA Risk Factor Survey sample was 27 years [CI: 26.1-27.9]. Subsequent analyses taking into account the anthropometric indicators and haemoglobin levels of children in the household demonstrated no significant associations with the age at marriage, meaning that the age women, at which women marry appears to be unrelated to wasting, stunting, wasting and anaemia. The average age of marriage for women was therefore not categorised as a risk factor for these conditions (Cf: Annex B). However, a significant association was observed between maternal age and anaemia, meaning that children with older mothers were less likely to be anaemic. There was no significant association between maternal age and wasting, stunting, or underweight, meaning maternal age was not a protective factor for these conditions (Cf: Annex B).

Female autonomy and decision making power

Most of the important decisions that affect the lives of women and girls are made by men or at least require male consent. There are multiple secondary data sources that confirm that women in Kutupalong MS have minimal decision making power. One survey, for instance, estimated that 59 per cent of men do not share their incomes with their families, while eight per cent of men share some of their income.¹² In addition, another source found that only 58 per cent of Rohingya women in Kutupalong MS report that it is their decision whether or not to send a child to the nutritional centre.¹¹

There are multiple barriers to female movement in the Kutupalong MS environment. The 2018 Infant and Young Child Survey estimated that only 17% of women leave the family home.²⁰ Of those that do venture to public places within the camps, 90% spend a maximum of three hours away before returning. As discussed above, Rohingya women avoid leaving the house during the day to prevent men looking at them. Leaving the family home at night is also best avoided due to fears of rape, sexual assault and kidnapping. Puberty is the age at which these restrictions tend to begin. As an example of this, since arriving in Bangladesh the age at which boys finish school has increased from 12 to 16 years old. Typically, girls continue to finish school at 11 or 12 years old, because this is considered to be the start of menstruation.

Being unable to move freely in public spaces severely limits the income generating powers of women. Occasionally in Kutupalong MS, women work as teachers or NGO paid volunteers. In order to access this type of employment, applicants are usually required to have a level of education beyond which is considered normal for women. The only other opportunity women have to generate an income independently of their husbands is to sell aid. Inequalities in economic power have far reaching implications for gender dynamics. During household disagreements, for instance, the husband can credibly threaten divorce. If married couples separate, women have an increased risk of destitution and reliance on assistance.

Nearly three quarters of WFP ration cards in Kutupalong MS are held by females.²⁵ Women as opposed to men drive the use of food aid as a source of money. The decision to sell is most often made by women and sometimes done so in secret without male knowledge. These exchanges normally take two forms. Firstly, the market stall seller walks round the camp to collect the unwanted pulses and gives taka in return to the woman. Note that this process has been designed so that women can remain within the house and don't have to go to the market themselves. Secondly, they can also use the aid directly as currency. One common practice is for mothers to send the child to the shops with a cup of rice to exchange it for snacks. For the most part, women use the proceeds from the sale of food rations to purchase preferred food items (but some admit to purchasing clothes instead). Women risk domestic violence if they make either of these decisions without their husband's consent.

The Link NCA Risk Factor Survey estimated that 10.5% [CI: 4.9-16.21] of females in sampled households were market decision makers. Even fewer [8.5% [CI: 4.6-12.4] women made health-related decisions while 9% [CI: 5.6-12.4] of women took decisions related to household. Over four in five [84.1% [CI: 77.3-89.0] mothers were involved in zero of the surveyed decisions. Further analysis considering the anthropometric measurements and haemoglobin levels of children in the household, demonstrates no statistical association between female decision making power and wasting, stunting, underweight and anaemia.

Using a 95 per cent confidence interval, it is estimated that between 7.4% and 19.1% of households within Kutupalong MS were headed by women and girls. In general, female headed households are only socially acceptable when there is no male present in the household. Analysis of the risk factor survey reveals that children from female headed households were no more or less likely than other children to be malnourished (either wasting, stunting or underweight) or anaemic. A secondary source reveals that female headed households (or larger households with a high dependency ratio) were more likely to have unacceptable levels of food consumption Cf: Annex B).

Domestic violence

Violence perpetrated by husbands against wives and children was a core feature of marital life in Myanmar but the threat to women has intensified since the migration. The community perception is that incidence of domestic violence has increased since the community arrived in Kutupalong MS. Focus group participants linked violence perpetrated by men to symptoms of stress and depression in women.

Disagreements about food are the most common trigger for domestic violence. For this reason, households unable to generate an income to purchase food items with the aiming of supplementing WFP provisions are considered to be particularly dangerous for women and children. Irregular meal times or food being prepared later than scheduled can initiate domestic violence. Women told the Link NCA research team that if they were sick, they were likely to be

beaten because they could not cook. Finally, men wasting the household budget on non-food items (such as, tea, betel nut and tobacco) was a source of violence between husbands and wives.

There are spikes in domestic violence during times of the day when food is being prepared. Women say that they are most likely to be beaten at midday. The reason for this is that this is the time when the husband returns to the family home (after spending the morning “roaming” around the camp and its tea stalls). The heat is most repressive during this time. It is also the point of the day when the wife finds out whether the husband has brought back food from the market.

Disagreements between men and women about family size are common in Kutupalong MS. The man will normally be successful in expanding the number of children in his family. Men reported to the Link NCA team they would beat their wives unless they agreed to more pregnancies.

Women’s daily routine

The workload of women has declined since migration. In Myanmar, a typical Rohingya woman would have at least ten hours of household and agricultural labour per day. The average day for women before the 2017 migration began with cooking breakfast for the family at 6:00, starting agricultural work at 7:00 and returning to caregiving labour at 16:30. By contrast in Kutupalong MS, women who participated in the qualitative inquiry typically estimated that they do approximately four to five hours of work each day. Their days typically begin with waking up to pray around 4.30 am, then beginning household chores- washing clothes, preparing breakfast, and sending the child to school. Women typically chat with neighbours and friends and/or rest, before fetching water (if aged 50 years and above) to prepare lunch. In the afternoon, a woman will send her children to the *maqtab*³¹ and then wash dishes and complete other household chores. Older women will again fetch water before preparing the evening dinner. Children are put to bed ~ 20.00, and the woman goes to sleep shortly after.

Note that women in the community, unlike men, continue the Myanmar practice of prayer five times a day. This indicates that although they have less work than before 2017, they have less free time than their husbands. The reduction in female labour hours is viewed as one of the positive aspects of life in Bangladesh. In general, women participants were less likely than men to report strong desires to return to Myanmar. This may be because women, generally speaking, have a manageable and moderate workload in the camps while men have nothing to do.

There are some exceptions to this trend. Firstly, women with larger families, particularly with multiple children under five may still face a substantial workload. Additional children mean that tasks related to keeping health or outpatient (OTP) appointments, washing clothes, bathing and fetching water take more time. Secondly, in some of the camps sampled for this Link NCA, problems related to water supply created additional issues for women. Broken or inadequate water sources for example result in extra travelling and queueing time for women. In one sub-block, it took an hour and a half to collect water. Considering this journey is done twice a day (or even thrice a day in the summer) this type of water issue has the potential to exhaust women or at least create an avoidable burden.

It may seem counterintuitive that for this community fetching water is considered women’s work. The activity requires walking to a communal water source in public. The community believe that as far as possible the movement of women should be restricted to the privacy of the family home. Going to the market, for example, is an activity which is only performed by males. This gendered division of labour is historical and cultural. In Myanmar, each family had its own tube well.

³¹ Islamic teaching centre.

Conducting household chores requiring the collection of water (washing, bathing, cleaning, etc.) did not require women to leave the household. After migration, the tradition of women collecting the water was retained in a new environment. Practices and rules were developed to adapt to the changing circumstances. For example, women under 50 years old could now only fetch the water after sunset whereas older women could go to the water source at any time of day. Above this age, women are no longer viewed as sexually desirable and as a result, are unconcerned about the male gaze. Under the cover of darkness, younger women cannot be seen by men and can therefore be mobile.

Over half [54.2% [46.9-61.6]] of females in sampled households had a medium to heavy workload. As a woman's workload increased, her child's HAZ potentially decreased, such that woman's workload was categorised as a weak risk factor for stunting [p-value <0.1]. As a woman's workload increased, scaled caregiver-child interactions significantly decreased, indicating a possible relationship between stress and childcare. Additional analysis considering the anthropometric indicators and haemoglobin levels of children in the household demonstrated no statistical associations between women's workload and anaemia (Cf: Annex B).

Ideal Rohingya woman in Kutupalong MS

There is a strong association between hygiene, cleanliness and Rohingya femininity, which further explains why fetching water is women's responsibility. Recurrent responses to the question "what is the ideal Rohingya woman?" include: "she should keep her children clean", "she should use soap" and "she should bathe regularly". Washing in Rohingya culture is often connected to spiritual purity: women are required to clean themselves before prayer ("wudu").

An 'ideal' Rohingya woman is modest, respectful, and permissive. She is devout and religious. Furthermore, she should have an eagerness to serve her parents, parents-in-law, and children.

Beyond the difficulties related to maintaining hygiene standards in what is considered to be an unclean environment, Rohingya women can pursue their ideal version of femininity in Kutupalong MS. When asked what makes a good Rohingya woman responses typically include "obedient to her parents", "avoids talking to unknown men", "cares for her children" and "seeks her husband's permission". When asked about their perfect lifestyle, female members of the community say they want to stay in the house and have many children. In general, women say that it has been possible for them to do this since 2017. Women, in contrast to men, have therefore not experienced an identity crisis that caused by the inability to meet the societal expectations of the 'ideal' Rohingya woman after migration to Bangladesh.

Men's daily routine

Child-care only plays a limited role in the daily routine of Rohingya men in both Kutupalong MS and Myanmar. Everyday caregiving activities performed by males in the camps is limited to taking children for walks around the local area, accompanying children to the market to buy them snacks and playing with children or keeping them on their lap.

A typical man wakes up at 4.30 am to pray, then returns to sleep until bathing before the breakfast prepared for him. An employed man begins work around 8.00 am, while an unemployed man roams the camp, participating in various leisure activities, such as visiting the tea stall, smoking cigarettes, consuming betel leaf (an addictive stimulant with effects similar to nicotine or caffeine), and talking with friends. It is commonly estimated by the community that the prevalence of tobacco consumption for men has increased from around 30% to 80% since migration. Boredom

sometimes even leads men to pass the day continuously walking in circles around the perimeter of their camps.

After a prayer at the mosque, a man will return home for lunch. He will collect WFP rations once or twice a month. After this, a man again engages in more leisure activities and/or plays with his children before taking an evening shower. Employed men finish work around 6 pm. After dinner and prayer, a man listens to the news with his friends, and then go to sleep shortly after his wife.

Prior to migration, the daily routine of men was built around agriculture. Activities related to fishing, animal rearing and arable production would begin at 6:00 am and finish at 7 pm. Due to the shortage of employment and income generating opportunities in Kutupalong MS, there have been substantial changes to this daily schedule accompanied by an increase in the religiosity of Rohingya life. In Myanmar, men prayed only five times a day due to agricultural commitments. Now in Bangladesh they have additional free time and as a result Rohingya men now pray eight times per day. Male community activities in Kutupalong MS are centred on going to the mosque, attending Islamic lectures or learning in the Islamic school.

Ideal Rohingya man in Kutupalong MS

Rohingya male identity is intimately linked to work. Being able to generate a livelihood is essential to this community's conception of masculinity. The expectation that men will be able to provide money and food for the household is closely related to the Rohingya marriage practices. The reason why the wife's family pay the dowry to the husband's family is that after the initial payment the wife becomes the husband's financial responsibility. The dowry is best understood as a one-off form of compensation owed to men: after the wedding the man is expected to meet all future female economic needs. An ideal man should be pious and devout; he should be sober, wealthy, and respected.

Male shame is commonly experienced by those unable to fulfil this role. The transition from Myanmar to Bangladesh has fundamentally challenged the self-esteem and confidence of Rohingya men. As a result of the scarcity of jobs and livelihood activities in Kutupalong MS, men often describe "feeling worthless", "being a burden", "being a different person", "bringing dishonour to their families", "becoming less of a man" and "being unrecognisable". As the following testimonies suggest, there is a link between male feelings of humiliation or inadequacy and violence.

"I am trying to help at home by entertaining my five children aged between one and eight while my wife is cooking the evening meal. The children are getting in the way of the food preparation so they need to be taken out of the house. But I don't have anywhere to go. I decide to take the children for a walk to look around the market even though I have no money. When we arrive at market stalls, children start to complain that they are hungry. They ask me to buy them some snacks. I am so ashamed that I can't provide these items, I am embarrassed and angry. Out of frustration, I beat my two eldest children."³²

"Outside the home" is considered a male space. Without an occupation external to the household, men have nowhere to go. Due to restrictions on female movement, the home is seen as being the domain of women. Wives ask their husbands to leave the family home during the day. When men return to the family home at meal times, this often causes marital tension and domestic violence.

There are negative mental health effects related to this form of alienation and shame experienced by men in Kutupalong MS. They describe their lives when they unemployed as "tense" and "stressful". They report that the lack of work leads to them developing "high blood pressure" and "feeling restless". Being inactive and sitting around all day leads to "pains in the bones" and

³² Focus group participant. Identity concealed for confidentiality purposes.

movement difficulties. The lack of activities for men in Kutupalong MS intensifies the trauma experienced during the 2017 displacement. Conversations when men are at the tea room or “roaming” around the camp are often focused on the same topic of returning to Myanmar (“when will they return?”, “how will they go?” and “is it safe to go back?”). The subject of repatriation is an obsession for the men of Kutupalong and they report that it is sometimes difficult for them to think about anything else.

F. UNDERNUTRITION

Results from anthropometric data

The anthropometric data collection findings reveal a prevalence of global acute malnutrition (GAM) on the basis of weight-for-height z-score at 11.7 [CI: 8.4-16.0] per cent. The prevalence of severe acute malnutrition (SAM), according to the same criterion, was estimated at 0.8 [0.2-2.4] per cent. The prevalence of global chronic malnutrition (GCM) is estimated to be 33.6 [27.9-39.8] per cent. 29.1 [24.3-34.4] per cent of children are underweight.

References	Indicators		Results [95% CI]
WHZ	Z-scores and/or oedema (N =386)	Global Acute Malnutrition W/H <-2 z and / or oedema	11.7 % [8.4 - 16.0]
		Severe Acute Malnutrition W/H <-3 z and / or oedema	0.8 % [0.2 - 2.4]
HAZ	Z-scores (N =381)	Global Chronic Malnutrition H / A <-2 z	33.6 % [27.9 - 39.8]
		Severe Chronic Malnutrition H/A <-3z	5.5 % [3.6 - 8.4]
WAZ	Z-scores (N =385)	Global Underweight W/A <-2z	29.1 % [24.3 - 34.4]
		Severe Underweight W/A <-3z	4.2 % [2.3 - 7.3]
MUAC	Age = 6-59 months (N =386)	Global Acute Malnutrition (MUAC <125mm) and/or oedema	5.4 % [3.3 - 8.9]
		Severe Acute Malnutrition (MUAC <115mm) and/or oedema	0.0 % [0.0 - 0.0]

Table 22: Summary of anthropometric results

It is estimated that 14.1 [9.9-19.8] per cent of boys are classified as GAM on the basis of weight for height z-score compared to 9 [5.7-14.1] per cent of girls. However, this difference is not statistically significant. According to the same criterion, it is one per cent of boys are categorised as SAM compared to 0.5 per cent of girls. Boys were significantly more likely to be underweight than girls; however, prevalence differences by gender were not significant for wasting, stunting, or anaemia.

Prevalence by W/H	Total (n=386)		Boys (n=198)		Girls (n=188)	
	% [95% CI]	n	% [95% CI]	n	% [95% CI]	n
Prevalence GAM	11.7 % [8.4 - 16.0]	45	14.1 % [9.9 - 19.8]	28	9.0 % [5.7 - 14.1]	17
Prevalence MAM	10.9 % [7.8 - 15.0]	42	13.1 % [9.2 - 18.5]	26	8.5 % [5.1 - 13.8]	16

Prevalence SAM	0.8 % [0.2 - 2.4]	3	1.0 % [0.2 - 4.1]	2	0.5 % [0.1 - 3.7]	1
Prevalence by H/A	Total (n=381)		Boys (n=194)		Girls (n=187)	
	% [95% CI]	n	% [95% CI]	n	% [95% CI]	n
Prevalence GCM	33.6 % [27.9 - 39.8]	128	32.5 % [25.7 - 40.1]	63	34.8 % [28.0 - 42.2]	65
Prevalence MCM	28.1 % [23.1 - 33.7]	107	26.8 % [21.0 - 33.6]	52	29.4 % [22.9 - 36.9]	55
Prevalence SCM	5.5 % [3.6 - 8.4]	21	5.7 % [3.0 - 10.5]	11	5.3 % [2.8 - 10.0]	10

Table 23: Prevalence of Global Acute Malnutrition (GAM) and Global Chronic Malnutrition (GCM) disaggregated by sex according to the SMART nutritional survey

Community perception of undernutrition

Summer months (March to June) is viewed to be the season when undernutrition is most prevalent. This is confirmed by an analysis of the seasonality of childhood diseases (Cf: HEALTH). Many medical conditions related to malnutrition (such as diarrhoea) and child ill health (such as fever and skin diseases) are also more common at this time of year. The prevalence of undernutrition is said to have declined dramatically during the two year period this community has lived in Bangladesh.

A swollen abdomen (“*pet fola*” or “*pet er poka*”) or swelling in other parts of the belly is often said to be caused by the consumption of insects. It is believed that when children play outside they mistakenly bugs or worms which later cause body parts to enlarge. The reason why this is thought to occur is that the insects initiate a reaction which causes the spleen to malfunction. Other causes of swelling in the abdomen are said to include the consumption of wheat soya blend Super Cereal. The coarseness and bitterness of this product is believed to result in “digestion problems” for children.

In this community, overeating is often understood to cause some undernutrition symptoms. If children eat and drink too much especially after a period of low food consumption, it is thought that their abdomens will swell and as a result they will get diarrhoea.

In general, the Rohingya community in Kutupalong MS believe that weight loss, thinness and “*sunken eyes*” are mostly caused by factors related to sanitation and hygiene. When presented with flashcards depicting marasmus symptoms, it was rare that the focus group participants said that insufficient dietary intake was the cause of the disease. It was more common for the Link NCA research team to be told that “*unflushed drains*”, “*no handwashing*”, “*being unable to wear sandals while using the latrine*” and “*long nails*” were responsible for a child becoming wasted. Bad smells, particularly from drains or latrines, are often believed to be responsible for children being too thin. It is thought that living in close proximity to unpleasant smells leads to diarrhoea and therefore wasting.

Boys are thought to be more vulnerable to these symptoms. This is because they are believed to be less hygienic than girls. For girls, cleanliness is highly valued and viewed as a female virtue. They are also said to play outside more than girls and as a result are more likely to encounter hygiene risks (such as uncleaned drains and latrines).

Children under 24 months old are perceived to be more susceptible to thinness caused by diarrhoea. This is because their bodies are viewed as weaker.

When respondents did say that they thought insufficient food or irregular meals were associated with thinness in children, this was caused by the lack of blood in child's body, a common way for the Rohingya community in Kutupalong MS to talk about health (Cf: HEALTH). If dietary intake is low, it is thought that children loose blood and as a result their tissues waste away.

Extreme thinness, particularly if a child is so thin their movement is restricted or limited, is often thought to be the result of evil eye. One of the most common reasons why a child may contract this type of curse is public breastfeeding and strangers looking at mothers when they are breastfeeding (Cf: HEALTH). The idea that moderate illness have natural causes while their more extreme counterparts are caused by supernatural beings is widespread in this community (Cf: HEALTH).

Rohingya	Bengali	English	Translation	Notes
<i>Barammya</i>	রোগ/ অসুখ	Roge/Oshukh	Diseased	
<i>Leda</i> <i>Leda beram</i>	পাতলা/	Patla/ Shukna	Thin	Underweight, low weight for height, thin/ lean child
<i>Baitta</i> <i>Tena</i> <i>Gyanda</i> <i>Battya Poa</i>	খাটো	Khato	Short	Low height for age, stunted
<i>Lula Bera</i> <i>Mazur</i> <i>Atur othur</i>	পক্ষাঘাতগ্রস্ত	Pokhhaghat grosto	Paralyzed	Severely wasted child with swollen belly who cannot move, and becomes paralyzed or physically disabled
<i>Shakti Kamjor</i>	দুর্বল	Durbol	Weakness	Become very weak physically
<i>Ga lamani</i>	ডায়রিয়া	Diarrhoea	Diarrhoea	
<i>Pet fula</i> <i>Pet poka</i> <i>Fok</i>	পেট ফোলা, পেট পোকা, কুমি	Pet fola, Pet Poka/krimi	Swollen belly Stomach worm/insect	Belly become larger or swollen due to worm/insect in the stomach
<i>Khina poran</i>	হাড়িসার	Excessively thin, very skinny	Excessively thin, very skinny	Marasmus, malnourished, very sick
<i>Bumi</i>	বমি	Vomiting	Vomiting	
<i>Fet horani</i>	পেট ব্যথা	Stomach pain	Stomach pain	Stomach ache, belly ache
<i>Tola Khawano</i>	তোলা খাওয়ানো/ পরিপূরক খাবার খাওয়ানো	Tola Khawano/ Poripurok khabar khawano	Complementary food	
<i>Hapani beyaram</i>	শ্বাসকষ্ট	Shash koshto	ARI	
<i>Pillay</i>	প্লীহা	Pleeha	Spleen enlargement	Swollen left abdomen, enlargement of spleen, often referred to as enlarged liver

Table 24: Selected terminology associated with undernutrition

Stunting is most often thought of as having genetic causes. During discussion exercises, groups are presented with a flashcard picturing two children, one stunted and one normal height. It was

rare for discussants to guess that the children were the same age (or that the older child was actually smaller than the younger child). Moreover, on being told that the children were in fact sisters, there was still a belief that being stunted is a hereditary condition. Other community members said that “no one knows why some children are like that they just are, it’s part of life”³³ and that “it is just bad luck that the stunted child is small”.³⁴

Socio-economic factors were perceived to be associated with the prevalence of undernutrition in Kutupalong MS. Families that have access to an income, especially through labour work or construction, are believed to be less vulnerable to malnutrition because they “can afford soap” and are able to provide “decent foods such as meat, fish and eggs” (Female participant, . Historic class distinctions established in Myanmar continue to play a role in Bangladesh. Malnourished children are thought to most often come from families who “could not afford to bring money with them to Kutupalong” or who “did not have family members abroad who could help”.

Firstly, RUTF and RUSF rations are said to cause diarrhoea or vomiting in children. The reason why this is said to occur is that “they contain too much food” or the “children “overeat” on the ration”. Typically, if child has diarrhoeal or vomiting symptoms while being enrolled on a Community-Based Management of Acute Malnutrition (CMAM) programme, parents will pause the provision of RUTF and RUSF until these symptoms stop. Secondly, it is common for parents in the Rohingya community within Kutupalong MS to give RUTF or RUSF rations to children for whom they are not intended. Most parents have heard and understood the advice that therapeutic foods should not be given to older children or those who are not undernourished. When asked why they continue this practice, parents described making difficult decisions and having to choose between “what is said at the OTP, and what is fair for all my children” (Female participant, undernutrition FGD, Camp 9). Furthermore, older children were not necessarily considered to be more vulnerable than those that had been prescribed RUSF or RUTF. Finally, some parents sell the RUSF and RUTF rations. This is a minority practice and one that is usually done to purchase preferred food sources. Families who believe that the rations cause diarrhoea or vomiting were also likely to report selling them.

ACUTE MALNUTRITION - MARASMUS	
Causes	<ul style="list-style-type: none"> • Unclean latrines • Poorly maintained drains • Suboptimal handwashing • Not wearing appropriate shoes for defecation • Bad smells • Long nails • Inadequate supply of blood to the body • Supernatural causes including evil eye and curses
Vulnerability	Vulnerable groups include: <ul style="list-style-type: none"> • Children under 24 months • Boys • Children from large families • Children with ‘careless’ mothers • Children from poorer families/those without access to remittances or family abroad
Prevention	Improving WASH practices is the Rohingya community’s favoured method of preventing undernutrition: <ul style="list-style-type: none"> • Buying and using soap • Cleaning drains to prevent bad smells

³³ Male participant, undernutrition FGD, Camp 9

³⁴ Male participant, undernutrition, Camp 13

	<ul style="list-style-type: none"> • Cleaning the family • Wearing shoes to the latrine • Drinking cleaner water • Avoiding cold baths after being outside in the sun
Treatment	<p>It is generally believed that children with Marasmus symptoms should be taken to the nutrition centre to receive therapeutic foods. There are substantial barriers to successful CMAM treatment (including pausing the treatment if the child develops diarrhoea or vomiting, sharing rations with all children in the family and selling the assistance).</p> <p>If Marasmus symptoms are extreme and persistent, an imam or a <i>hazar</i> will be asked to provide treatment (including blessing the child, washing the child with holy water, providing a religious locket for the child).</p>
ACUTE MALNUTRITION - KWASHIORKOR	
Causes	<ul style="list-style-type: none"> • Ingestion of insects/worms/bugs • Overeating • Super Cereal (WSB++) • Malfunctioning spleen • Digestive problems • Consumption of too much food/drink after a period of low dietary intake (for example, immediately after the migration)
Vulnerability	<p>Vulnerable groups include:</p> <ul style="list-style-type: none"> • Boys • Children from wealthier families
Prevention	<ul style="list-style-type: none"> • Prevent children from playing outside • Reduce dietary intake • Prevent consumption of Super Cereal (WSB++)
Treatment	<p>The community do not believe that Kwashiorkor symptoms can be treated effectively with treatments provided by the nutrition centre.</p> <p>Digestive problems are treated with rehydration salts and restricting dietary intake.</p> <p>Deworming with the aim of removing insects/worms /bugs from the intestine.</p>
CHRONIC MALNUTRITION – STUNTING	
Causes	<p>Genetics and inheritance</p> <p>Suboptimal breastfeeding after low birth spacing</p>
Vulnerability	<p>Considered to be randomly assigned to families</p>
Treatment	<p>The community do not think that there is a treatment that can prevent stunting</p>

Table 25: Summary of community perceptions of the causes and treatment of different forms of undernutrition

Summary of community perception of the causes of malnutrition

Figure 4 depicts how the community in Kutupalong MS perceive the causes of undernutrition. One major pathway begins at the trigger point of the migration from Myanmar to Bangladesh. For Rohingya people, this transition is synonymous with the loss of livelihoods and economic self-sufficiency. As may be expected, Rohingya people emphasise how this change reduced household income and restricting the type and variety of foods that could be purchased. In Bangladesh, the community can no longer afford to introduce the complementary foods that they value: animal proteins, particularly meat, fish and eggs. The result of this pathway is inadequate nutritional intake. An addition route from the loss of income generating activities is related to male shame. The identity and self-esteem of men in Kutupalong MS is closely linked to being able to provide for the household. Because men lack livelihood opportunities there is an increased risk of domestic violence caused by stress and martial disagreements about food. This in turn reduces the quality of caregiver and breastfeeding practices in the community and makes children more susceptible to disease.

G. SUMMARY OF RESULTS AND CATEGORISATION OF RISK FACTORS

A risk factor prioritisation exercise was conducted at the end of data collection period in each of the four communities sampled by the qualitative component of the Link NCA study. All risk factors identified by community members were presented back to them with the use of flashcards, portraying each discussed risk factor. After a recapitulation of survey findings by the qualitative data collection team, participants were invited to validate the interpretation of results and suggest modifications, if necessary. Subsequently, they were requested to divide risk factors into three categories (major, important, minor), depending on their impact on child undernutrition. Table 26: Community risk factor categorisation presents the results of this exercise. Risk factors perceived as having a major impact are red, important factors are orange while risk factors with only minor impact are green. White cells marked “N/A” signify that a respective community did not identify that risk factor as a cause of undernutrition in their milieu.

	Risk factor	Camp 14 M	Camp 14 F	Camp 4 M	Camp 4 F	Camp 9 M	Camp 9 F	Camp 13 M	Camp 13 F	Total
A	Use of traditional health providers	+	+++	+	+	+	++	+	++	+
B	Limited access to health services	+++	+++	+	+++	+	+++	+++	+++	+++
C	Low birth spacing / unwanted pregnancies	+++	++	+++	+++	+++	+++	++	+	+++
D	Parental stress	+	+	+++	++	+	+	++	+	++
E	Non-optimal breast-feeding practices	+++	+	+	+	+++	+	+	+	+++
F	Non-optimal IYFC practices	+	++	+++	++	++	+	+	+	+
G	Low quality of interactions between a care provider and a child	N/A	N/A	+	+	+	+	N/A	N/A	+
H	Low dietary diversity	+++	+++	+++	+++	+++	+++	+++	+++	+++
I	Low diversity, access and availability of income sources for households	++	+++	++	+++	+	+	+++	+++	+++
J	Malfunctioning market or supply system	+	+	N/A	N/A	+	+	+	+	-
K	Low coping capacities	N/A	N/A	+	+	N/A	N/A	+	+	-
L	Low access and availability of water (quality and quantity)	+++	+	+	++	++	+	+	+++	+
M	Non-optimal water management	N/A	N/A	N/A	N/A	+	++	+	+	-
N	Poor sanitation practices	+	+	N/A	N/A	+++	+++	+++	+	++
O	Poor hygiene practices	+	+++	+++	+++	++	+++	++	+++	+++
P	Heavy workload of women	+	+	+	+	+++	+	+	++	+
Q	Low female autonomy / Low decision-making power	+	+	++	+	N/A	N/A	N/A	N/A	+
R	Early marriages and/or early pregnancies	+++	+++	+++	+	+	++	+++	++	+++
S	Low nutritional status of women	++	++	+	+	N/A	N/A	N/A	N/A	-

Table 26: Community risk factor categorisation

After the completion of both quantitative and qualitative data collection, the Link NCA Analyst triangulated all available data sets, compared correlations for each risk factor and determined the strength of its association with undernutrition. The ratings for each hypothesized risk factor are summarized in the table below.

	Risk factor	Prevalence of risk factor	Statistical associations from the	Strength of the association	Association of the risk factor with seasonal	Classification of the risk factor	Classification of the risk	Interpretation / Impact of the risk factor
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		according to secondary data / review of the literature	quantitative survey	of the risk factor with under-nutrition in the scientific literature	and historical trends of undernutrition	according to the results of the qualitative study	factor by the communities	
A	Use of traditional health providers	++	N/A	++	+	++	+	Important
B	Limited access to health services	++	++	++	-	+++	+++	Important
C	Low birth spacing / unwanted pregnancies	+++	++	++	++	+++	+++	Major
D	Parental stress	++	N/A	++	+	+++	++	Important
E	Non-optimal breastfeeding practices	+	+	+++	-	+++	+++	Important
F	Non-optimal IYFC practices	++	++	+++	-	+	+	Important
G	Low quality of interactions between a care provider and a child	+	+	+	-	++	+	Minor
H	Low dietary diversity	++	N/A	++	++	+++	+++	Important
I	Low diversity, access and availability of income sources for households	+++	+	++	+	+++	+++	Important
J	Malfunctioning market or supply system	N/A	N/A	+	+	N/A	N/A	Rejected
K	Low coping capacities	+	-	+++	-	+	N/A	Minor
L	Low access and availability of water (quality and quantity)	+	-	+++	+	+	+	Minor
M	Non-optimal water management	+	+	++	-	+	N/A	Minor
N	Poor sanitation practices	+++	N/A	++	+	++	++	Important
O	Poor hygiene practices	+++	++	++	-	+++	+++	Major
P	Heavy workload of women	+	+	++	-	+	+	Minor
Q	Low female autonomy / Low decision-making power	++	-	+	-	+++	+	Important
R	Early marriages and/or early pregnancies	+++	+	+	+++	+++	+++	Major
S	Low nutritional status of women	+	N/A	+++	-	++	N/A	Important

Table 27: Summary of risk factor ratings

The weight of each risk factor was determined according to the categorization grid presented below.

Category	Criteria
Major risk factor	No conflicting information AND Strength of association with literature review classified as [++] or [+++] AND Majority of [++] or [+++] for all other sources of information
Important risk factor	Quantity of contradictory information minimal AND Strength of association with literature review classified as [++] or [+++] AND Majority of [++] or [+++] for all other sources of information
Minor risk factor	Quantity of contradictory information moderate AND Strength of association with literature review classified as [+] or [++] AND Majority of [+] for all other sources of information
Risk factor rejected	Non-contradictory information AND Majority of [-] or [+] for all other sources of information

Table 28: Risk factor categorisation grid

Using data provided by the communities during the qualitative inquiry, the Link NCA Analyst developed sectoral causal pathways for the following nutritional outcomes: wasting, stunting, undernutrition and anaemia. The simplified outlines are presented below. By differentiating between the causes of nutritional deficiencies, this exercise highlights how response strategies need to be tailored to the respective types of undernutrition.

Figure 5 depicts a causal mechanism for acute malnutrition and underweight, highlighting the risk factors with a significant statistical association with any of these nutritional outcomes. The most vulnerable group to acute malnutrition were children under 24 months of age and children of mothers of younger age as their vulnerability to wasting weakly decreased as mother's age increased. Male children appear to be most vulnerable to underweight.

Similarly to the causal pathway, as perceived by consulted communities (Figure 4 above), an important trigger to undernutrition is a transition from Myanmar to Bangladesh and the implied loss of household income generating activities, which translate into a low household dietary diversity. The consumption of more than four food groups was identified as a protective factor against both acute malnutrition and underweight. A similar link with wasting and underweight was observed among children who consumed fruits and vegetables. In other words, it can be inferred that sub-optimal complementary feeding practices lead to inadequate nutritional intake and therefore undernutrition. The available data further suggests that children living in households with more than 7 members and children living in households with humanitarian assistance as their main source of income are less likely to attain an acceptable individual dietary diversity (IDDS) score.

According to the available data, the mother's workload influences her child care practices as the likelihood of inappropriate child care practices increases with the increase of mother's workload. Children, who were during the data collection observed as having appropriate interactions with their caregiver, were less likely to be stunted. On a hygiene practices side, a covered water storage was identified as a weakly protective risk factor against stunting while the presence of soap in the household was significantly linked with lower odds of chronic malnutrition among children under 5 years of age. The data also suggests that children whose mother's first pregnancy occurred before she reached 18 years of age were more likely to be observed unclean.

One interesting statistical association exists between humanitarian assistance and stunting. Reception of the humanitarian assistance as the main source of household income may protect a child against the risk of chronic undernutrition. Although this may seem as a slightly counter-intuitive finding, a possible explanation is that humanitarian assistance is positively associated with household income. However, it needs also be noted that children living in households benefiting from humanitarian assistance as their main source of income were less likely to achieve an acceptable individual dietary diversity score (IDDS), which may likely be linked with the modalities of such assistance.

Figure 7 depicts a causal mechanism for anaemia, highlighting the risk factors with a significant statistical association with this nutritional outcome. Similarly to wasting, the group identified as most vulnerable to anaemia were children under 24 months of age and children of mothers of younger age as their vulnerability to anaemia significantly decreased as mother's age increased. In addition, children living in households with 4-7 members were more likely to be anaemic while children living in larger households (8-10 members) seemed to be protected against the said deficiency.

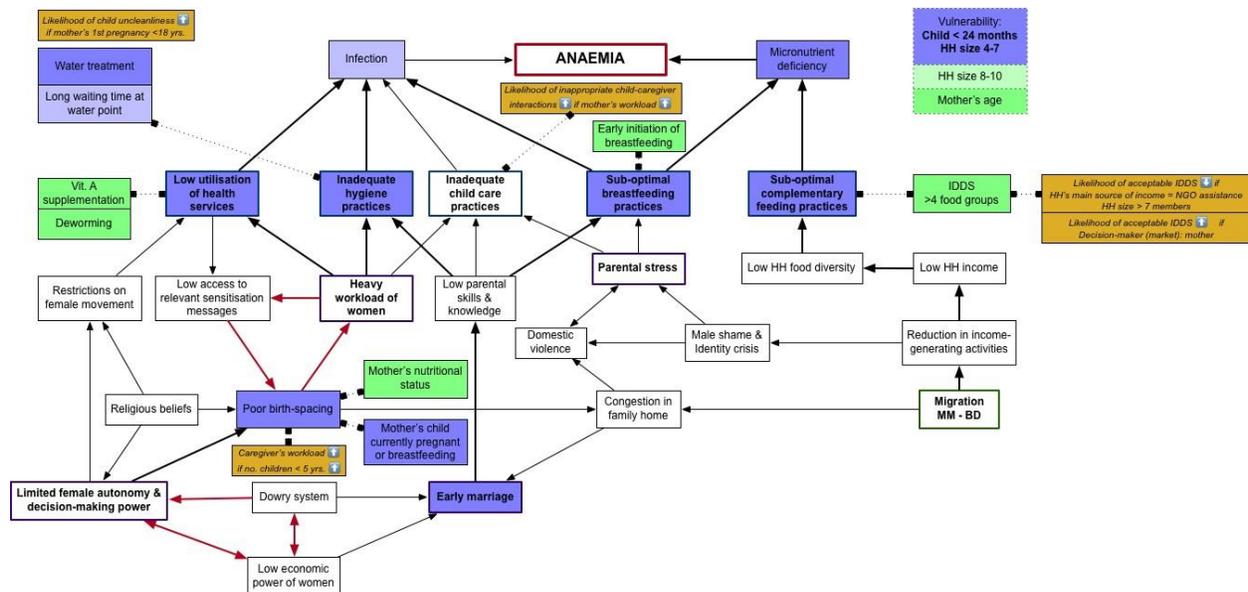


Figure 7: Causal pathways for anaemia³⁷

³⁷ Cells highlighted in dark purple signify risk factors with a significant link to anaemia (p value <0.05) while cells highlighted in light purple signify risk factors with a potential link to anaemia (p value <0.1). Cells highlighted in dark green signify protective factors (p value <0.05) while cells highlighted in light green signify risk a potentially protective risk factor (p value <0.1).

Similarly to preceding pathways, a dominant pathway to anaemia seems to take roots in limited female autonomy and decision-making power, which leads to poor-birth spacing. Children of mothers who were pregnant or breastfeeding at the time of the data collection were more likely to be anaemic. As early or repetitive pregnancies potentially affect mother's nutritional status, children of healthy mothers were less likely to be anaemic. In addition, poor birth-spacing is likely to increase mother's workload, which may lower her capacities to fully attend to her children. The available data suggests that caregiver's workload significantly increased when a number of children under five years of age in the household increased. In this respect it is important to highlight a potential vicious cycle as heavy workload of women potentially leads to a lower exposure to relevant sensitisation messages, which then translates into poor birth-spacing and further increases mother's workload.

According to the available data, the mother's workload influences her child care practices as the likelihood of inappropriate child care practices increases with the increase of mother's workload. Children of mothers, who reported an early initiation of breastfeeding, were less likely to be anaemic. On a hygiene practices side, children living in households, who reported long waiting times as a barrier of access to water were more potentially more likely to be anaemic. An interesting statistical associations was detected between water treatment and an increased likelihood of childhood anaemia in the households, meaning that children living in households who reported to treat water with chlorine were more likely to be anaemic. The hypothesis that this relationship is caused by water over treatment with chlorine warrants further investigation.

Low female decision-making power and restrictions on female movement compounded by a heavy woman's workload also translates into a low use of health services. This may result in non-optimal treatment of children with common illnesses and/or their prevention. Vitamin A supplementation and deworming were identified as significantly protective factors against anaemia.

Similarly to wasting, a complementary pathway might is likely taking roots in a transition from Myanmar to Bangladesh and the implied loss of household income generating activities, which translate into a low household dietary diversity. The consumption of more than four food groups was identified as a protective factor against anaemia. In other words, it can be inferred that sub-optimal complementary feeding practices lead to inadequate nutritional intake and therefore micronutrient deficiency. The available data further suggests that children living in households with more than 7 members and children living in households with humanitarian assistance as their main source of income are less likely to attain an acceptable individual dietary diversity (IDDS) score.

Combined causal pathway for all nutritional outcomes

Figure 8 summarises all previously detailed pathways in order to highlight potential overlaps and encourage a development of harmonised multi-sectoral responses. A combined pathway confirms the categorisation of three major risk factors, namely low birth-spacing and/or unwanted pregnancies, early marriage/pregnancy and non-optimal hygiene practices as all nutritional outcomes are linked to them to a varying degree.

It is important to note, though, that all these risk factors are inherently linked with the living conditions of makeshift settlements, be it congestion in family homes, which may motivate an earlier marriage of adolescent girls to "clear" some space and/or household's limited income streams, which may encourage the thriving of the dowry system while limiting women's economic and decision-making autonomy. As men control the household decision-making, including the birth-spacing and family planning, while women's workload may limit their access to information

Based on these findings, the following activities are recommended to be incorporated into a multisector action plan to address the identified risk factors. The recommendations are presented by thematic area of intervention but must be taken into account dynamically for a better improvement of the nutritional situation in the study zone. A full version of the recommendations developed during the community workshops and the final technical workshop is provided in Annex D.

- Strengthen the inter-sectoral approaches in addressing undernutrition in the makeshift settlements through an improved collaboration between Health, Nutrition, Food Security and Livelihoods, Water, Sanitation and Hygiene and Protection sectors in developing humanitarian assistance strategies and ensuring accountability in the implementation of the recommendations.

Health & Nutrition

- Mitigate predominant formal health care seeking barriers by increasing the number of trained and dedicated personnel in health facilities with the objective to reduce waiting times for consultations while extending the length of each consultation, as appropriate, thus allowing for improved communication between the health staff and caregivers. Ensure that the health staff understand the Rohingya aetiology of diseases and preferred therapeutic itineraries and adapt their communication in light of caregivers' key concerns;
- Launch a community consultation aiming to define how existing health facilities and procedures should be adapted to encourage more assisted births under the supervision of trained health personnel;
- Promote health facilities as safe spaces for women by adapting private places, where women can discreetly breastfeed. Consider using these spaces as safe information sharing spots, where women can receive information on their key concerns, including among others, tips on good nutrition to encourage the production of breastmilk in sufficient quantities, breastfeeding length and frequency, etc.
- Strengthen the IYCF-E programmes to sensitise mothers on the importance of colostrum in as a means of prevention of diseases for children under 6 months of age and an appropriate meal composition from locally available food items to ensure diversified diets and iron rich foods are provided to children under 5 years of age;
- Continue promoting maternal and child health activities within a 1000 days' window, encouraging women to complete all essential consultations, including vaccination, Vitamin A supplementation and deworming, among others, especially among younger mothers and/or children from larger households. These activities should be accompanied by meaningful sensitization sessions on optimal child feeding and child caring practices and should be extended to adolescent girls as a preparation for their potentially upcoming role as wives and mothers;
- Strengthen the integration of community members with a medical diploma and/or exercising a health-related function in the development and dissemination of health messages to targeted populations, ensuring that the messages are adapted to their key concerns. This may include, but not be limited to, messages on appropriate birth-spacing and family planning practices, especially among men as key decision-makers, emphasizing the challenges associated with low birth spacing in Kutupalong MS;
- Support the creation and/or capacity building of forums for men and elders, in order to strengthen existing social support mechanisms in communities and households, putting a particular emphasis on emotional support and stress relief;

- Integrate the identification of child protection concerns, including violence, abuse and neglect, into ongoing health and nutrition activities, such as nutrition screening, by training the personnel on child protection principles, confidentiality, identification of signs of abuse and referral pathways, thus allowing front-line service providers to identify suspect cases and support referral for follow up but specialized home visits;
- Promote adolescent-friendly sexual and reproductive health services among adolescent mothers and/or adolescents at large as means of prevention of early pregnancy/unwanted pregnancy and non-optimal birth spacing.

Food Security and Livelihoods

- Support the diversification of income opportunities through public utility construction and maintenance activities, maximizing opportunities for Kutupalong MS residents to be hired for daily wage with an objective to rebuild and support a healthy development of self-esteem of breadwinners while alleviating high levels of stress;
- Identify potential market access opportunities and relevant vocational skills training opportunities for men, especially the youth, to further diversify household income;
- Consider an introduction of a replacement product for Super Cereal (WSB+/WSB++), which would be more palatable for community members and/or consider an introduction of humanitarian interventions based on alternative assistance transfer modalities, allowing community members to purchase food products of their choice;
- Strengthen the initiatives aiming to improve access to quality fresh fruits, vegetables and fish, including, including increasing a number of shops, stocking retail shops with fresh produce on a more regular basis or including these items in e-voucher entitlements;
- Support the creation and/or capacity building of households to set up multi-storey and/or box kitchen gardens as avenues for social support and improved dietary diversity.

Water, Sanitation and Hygiene

- Strengthen the capacity building activities for community hygiene and sanitation committees in order to encourage the maintenance of optimal practices on a community as well as household levels. This may include refresher trainings on latrine cleaning, water point maintenance and/or other issues of public health interest;
- Explore potential links between residual chlorine from water treatment methods and anaemia prevalence among children in Kutupalong MS. This may include putting more emphasis on the use of treatment methods at safe levels and closer monitoring of water treatment at a household level, allowing to prevent waterborne diseases while limiting children's vulnerability to micronutrient deficiencies, as a consequence;
- Adjust the modalities of soap distributions, passing from blanket approaches to distributions proportional to household size to encourage optimal use by all household members.

Gender

- Address congestion in households by constructing larger structures and introducing male and female only spaces;
- Extend the number of years adolescent girls receive free schooling with an objective to encourage proper preparation for adult life and to discourage early coupling and marriages. This may include strengthening of the CiC monitoring of governmental policies on early marriage.

V. ANNEXES

A. SAMPLING FRAMEWORK FOR COLLECTING ANTHROPOMETRIC DATA & INVESTIGATION OF RISK FACTORS

Site Name	Site SSID	Block Id	Local Block name	Total number of households	Population size	Family size average	Cluster
Camp 01E	CXB-201	CXB-201-026	I1-28	121	532	4.4	1
Camp 01E	CXB-201	CXB-201-066	J-C2	109	491	4.5	2
Camp 01W	CXB-202	CXB-202-041	I2-D5	83	418	5.04	3
Camp 01W	CXB-202	CXB-202-078	F	79	327	4.14	4
Camp 02E	CXB-203	CXB-203-018	E3-HILL 7	192	915	4.77	5
Camp 02E	CXB-203	CXB-203-045	A1-New	75	336	4.48	6
Camp 02W	CXB-204	CXB-204-017	D3	136	577	4.24	7
Camp 02W	CXB-204	CXB-204-043	D4-B	180	843	4.68	8
Camp 03	CXB-205	CXB-205-028	DD1/2 (28)	65	306	4.71	9
Camp 03	CXB-205	CXB-205-068	AA5	149	632	4.24	10
Camp 04	CXB-206	CXB-206-050	UUD9	67	325	4.85	11
Camp 04 Ext	CXB-232	CXB-232-009	I2	170	751	4.42	12
Camp 05	CXB-209	CXB-209-033	EE5C	150	610	4.07	13
Camp 06	CXB-208	CXB-208-010	E312	110	532	4.84	14
Camp 06	CXB-208	CXB-208-034	Hill12 (E3)	126	540	4.29	15
Camp 07	CXB-207	CXB-207-023	Hill8 (E3)	233	1071	4.6	16
Camp 07	CXB-207	CXB-207-049	A1	102	440	4.31	17
Camp 08E	CXB-210	CXB-210-008	B82	100	430	4.3	18
Camp 08W	CXB-211	CXB-211-005	A45	137	550	4.01	19
Camp 08W	CXB-211	CXB-211-040	I10	119	484	4.07	20
Camp 08W	CXB-211	CXB-211-076	I16	106	480	4.53	21
Camp 09	CXB-213	CXB-213-029	C20	82	352	4.29	22
Camp 09	CXB-213	CXB-213-071	A7	96	405	4.22	23
Camp 10	CXB-214	CXB-214-022	F31	87	389	4.47	24
Camp 10	CXB-214	CXB-214-060	H13	112	480	4.29	25
Camp 11	CXB-217	CXB-217-016	D4-H3	86	328	3.81	26
Camp 11	CXB-217	CXB-217-054	A13	77	400	5.19	27
Camp 12	CXB-218	CXB-218-010	H12	156	720	4.62	28
Camp 13	CXB-220	CXB-220-021	A13	106	475	4.48	29
Camp 13	CXB-220	CXB-220-054	C36	115	454	3.95	30
Camp 13	CXB-220	CXB-220-089	A25	83	406	4.89	31
Camp 14 (Hakimpara)	CXB-222	CXB-222-056	M13	124	439	3.54	32
Camp 15 (Jamtoli)	CXB-223	CXB-223-021	G3	120	625	5.21	33
Camp 15 (Jamtoli)	CXB-223	CXB-223-052	E13	99	450	4.55	34
Camp 15 (Jamtoli)	CXB-223	CXB-223-083	C3	104	482	4.63	35

Camp 16 (Potibonia)	CXB-224	CXB-224-014	C5	74	387	5.23	36
Camp 16 (Potibonia)	CXB-224	CXB-224-057	A12	90	352	3.91	37
Camp 17	CXB-212	CXB-212-030	H88	116	477	4.11	38
Camp 18	CXB-215	CXB-215-029	M11	115	464	4.03	39
Camp 18	CXB-215	CXB-215-072	M18	95	405	4.26	40
Camp 19	CXB-219	CXB-219-043	C3	86	400	4.65	41
Camp 20	CXB-216	CXB-216-014	M38	111	435	3.92	42
Camp 21 (Chakmarkul)	CXB-108	CXB-108-018	E2	81	383	4.73	43
Camp 22 (Unchiprang)	CXB-085	CXB-085-026	C	60	317	5.28	44
Camp 23 (Shamlapur)	CXB-032	CXB-014-001	A6	400	1500	3.75	45
Camp 24 (Leda)	CXB-233	CXB-038-016	C9	46	204	4.43	46
Camp 24 (Leda)	CXB-233	CXB-041-008	B	369	2892	7.84	47
Camp 25 (Ali Khali)	CXB-017	CXB-017-003	D6	130	520	4	48
Camp 26 (Nayapara)	CXB-025	CXB-025-025	B3	97	405	4.18	49
Camp 26 (Nayapara)	CXB-025	CXB-037-038	B	1240	5015	4.04	50
Camp 26 (Nayapara)	CXB-025	CXB-044-001	A8	117	455	3.89	51

B. CALCULATIONS OF STATISTICAL ASSOCIATIONS BETWEEN HYPOTHETICAL RISK FACTOR AND ANTHROPOMETRIC MEASURES AND ANAEMIA IN CHILDREN IN SAMPLED HOUSEHOLDS

Logistic Regression												
Independent variables			Prevalence [95%CI]	Def f	GAM (WHZ)		Stunting (HAZ)		Underweight (WAZ)		Anaemia (HB)	
	N	n			p-value	OR [CI-95%]	p-value	OR [CI-95%]	p-value	OR [CI-95%]	p-value	OR [CI-95%] ⁴
Child Gender (Male)	437	224	51.26 [46.8-55.76]	0.9	0.13	1.64 [0.86-3.10]	0.825	0.95 [0.62-1.46]	0.004	1.95 [1.24-3.06]	0.849	1.04 [0.69-1.58]
Household head Gender- Female	437	57	13.27 [7.4-19.12]	3.2	0.977	0.99 [0.40-2.46]	0.731	1.11 [0.60-2.07]	0.744	0.9 [0.46-1.73]	0.619	0.85 [0.46-1.59]
Age (<24 months)	437	168	38.67 [35.4-41.94]	0.5	0.012	2.24 [1.20-4.20]	0.045	0.61 [0.38-0.99]	0.553	0.86 [0.54-1.40]	0	4.11 [2.61-6.49]
Mother's age (<18 years)	437	6	1.37 [0-2.79]	1.6			0.408	1.98 [0.39-9.93]	0.807	1.24 [0.22-6.86]	0.136	3.67 [0.66-20.30]
Mother's age birth (<18 years)	437	116	26.77 [20.8-32.75]	1.9	0.742	0.89 [0.44-1.79]	0.592	0.88 [0.55-1.41]	0.456	0.83 [0.50-1.36]	0.868	0.96 [0.61-1.53]
HH size: 1-3	437	38	8.92 [5.6-12.21]	1.4	0.468	1.45 [0.53-3.99]	0.326	0.66 [0.29-1.52]	0.927	0.96 [0.43-2.15]	0.174	1.66 [0.80-3.43]
HH size: 4-7	437	280	64.3 [57.9-70.75]	1.9	0.404	1.34 [0.68-2.64]	0.327	0.8 [0.52-1.25]	0.429	1.21 [0.76-1.94]	0.056	1.55 [0.99-2.44]
HH size: 8-10	437	107	24.49 [18.8-30.21]	1.9	0.159	0.55 [0.24-1.27]	0.377	1.25 [0.77-2.03]	0.46	0.82 [0.48-1.39]	0.012	0.51 [0.30-0.86]
HH size 11+	437	10	2.29 [0-4.62]	2.6	0.94	1.08 [0.13-9.02]	0.028	6.1 [1.21-30.65]	0.809	0.82 [0.16-4.12]	0.198	0.25 [0.03-2.06]
HH > 1 child ≤59 months	437	309	70.71 [64.9-76.52]	1.7	0.248	0.68 [0.35-1.31]	0.238	1.34 [0.82-2.18]	0.776	1.07 [0.66-1.76]	0.62	0.89 [0.56-1.41]
HH arrival (August)	437	320	73.23 [62.4-84.03]	6.4	0.497	1.29 [0.62-2.72]	0.207	0.74 [0.46-1.18]	0.509	0.85 [0.52-1.39]	0.162	1.42 [0.87-2.32]
Main source of income (humanitarian assistance)	437	360	82.38 [76.3-88.44]	2.7	0.12	2.32 [0.80-6.72]	0.086	0.62 [0.36-1.07]	0.696	1.13 [0.62-2.03]	0.943	1.02 [0.58-1.78]
Received food aid sold or exchanged	437	60	13.73 [7.6-19.83]	3.4	0.3	0.57 [0.19-1.65]	0.741	1.11 [0.60-2.03]	0.889	1.05 [0.56-1.97]	0.412	1.28 [0.71-2.30]
Diarrhoea	381	105	27.56 [22.7-32.42]	1.1	0.282	1.44 [0.74-2.82]	0.481	1.19 [0.74-1.92]	0.224	1.36 [0.83-2.22]	0.9	1.03 [0.64-1.66]
And child unclean	379	36	9.5 [7.0-12.9]	0.9	0.101	2.12 [0.86-5.21]	0.882	1.06 [0.51-2.21]	0.200	1.61 [0.78-3.35]	0.981	0.99 [0.47-2.07]
Diarrhoea: sought care at health centre	105	75	71.43 [60.9-81.96]	1.4	0.391	1.8 [0.47-6.90]	0.964	1.02 [0.42-2.48]	0.171	1.97 [0.75-5.21]	0.265	1.71 [0.67-4.39]
Cough, difficulties breathing & fever	381	37	9.71 [6.1-13.36]	1.4	0.304	1.64 [0.64-4.20]	0.256	1.51 [0.74-3.06]	0.248	1.53 [0.74-3.17]	0.876	0.94 [0.45-1.96]

And child unclean	37 9	12	3.17 [1.77- 56.00]	1.0	0.595	1.52 [0.33-7.19]	0.247	1.98 [0.62- 6.25]	0.319	1.81 [0.56- 5.85]	0.445	0.60 [0.16- 2.24]
Cough: sought care at health centre	37	25	67.57 [47.6- 87.49]	1.5	0.777	0.76 [0.12-5.01]	0.336	2.15 [0.45- 10.29]	0.582	1.56 [0.32- 7.49]	0.736	1.31 [0.27- 6.37]
Fever	38 0	18 5	48.68 [43.3- 54.08]	1.1	0.032	2.04 [1.06-3.91]	0.876	1.03 [0.67- 1.59]	0.086	1.49 [0.95- 2.33]	0.472	1.17 [0.76- 1.79]
And child unclean	37 8	68	18.00 [13.17- 24.09]	1.9	0.071	1.95 [0.95-4.03]	0.718	0.90 [0.51- 1.59]	0.320	1.34 [0.75- 2.37]	0.166	1.47 [0.85- 2.53]
Fever: sought care at health centre	18 5	13 0	70.81 [61.9- 79.67]	1.7	0.315	1.64 [0.62-4.31]	0.641	1.18 [0.59- 2.33]	0.229	1.55 [0.76- 3.15]	0.534	1.24 [0.63- 2.42]
Micronutrient powders	38 0	14 5	38.42 [29.2- 47.6]	3.3	0.64	1.17 [0.61-2.21]	0.96	1.01 [0.65- 1.58]	0.547	1.15 [0.73- 1.82]	0.157	0.72 [0.46- 1.13]
Vitamin A Supplementation	38 0	23 3	61.32 [48.6- 74.02]	6.3	0.549	0.82 [0.44-1.56]	0.218	0.76 [0.49- 1.18]	0.836	1.05 [0.66- 1.66]	0.02	0.6 [0.39- 0.92]
Measles immunization (card & recall) 9-59m	36 1	28 3	78.67 [71.4- 85.94]	2.8	0.055	1.94 [0.99-3.8]	0.598	.88 [0.57- 1.38]	0.730	.92 [0.58- 1.5]	0.492	1.17 [0.75- 1.8]
Deworming (6-59m)	38 0	26 5	69.74 [62.3- 77.22]	2.5	0.054	0.53 [0.28-1.01]	0.015	1.85 [1.13- 3.04]	0.111	1.51 [0.91- 2.52]	0.014	0.57 [0.36- 0.89]
Vitamin A, Measles immunization, AND Deworming	36 1	15 9	44.04 [33.2- 55.5]	4.6	0.138	0.59 [0.29-1.19]	0.904	1.03 [0.66- 1.60]	0.786	1.07 [0.67- 1.69]	0.171	0.73 [0.47- 1.14]
Early initiation of breastfeeding	16 1	83	52.17 [43.8- 60.5]	1.1	0.955	0.97 [0.38-2.50]	0.669	1.2 [0.53- 2.72]	0.736	0.87 [0.39- 1.96]	0.02	0.41 [0.19- 0.87]
Exc. breastfeeding at 6 months	40	40	100%									
Continuation of breastfeeding at 1 year	29	26	93.1 [83.8- 102.41]	0.9					0.4	0.29 [0.02- 5.28]		
Child IDDS score (>4 food groups)	39 6	18 6	46.97 [39.3- 54.61]	2.3	0.003	0.35 [0.18-0.71]	0.893	0.97 [0.64- 1.49]	0.036	0.62 [0.40- 0.97]	0.015	0.59 [0.39- 0.90]
IDDS: Fruit and/or vegetable	39 6	27 8	75.75 [68.55- 81.74]	2.1	0.000	0.29 [0.15-0.56]	0.884	0.96 [0.58- 1.60]	0.004	0.47 [0.28- 0.78]	0.130	0.68 [0.42- 1.12]
Mother of child currently pregnant or breast-feeding	38 8	26 2	67.53 [61.2- 73.84]	1.7	0.636	0.85 [0.45-1.64]	0.678	1.1 [0.70- 1.75]	0.594	0.88 [0.55- 1.41]	0.001	2.2 [1.36- 3.56]
ANC consultation during last pregnancy	38 6	20 9	54.15 [44.1- 64.23]	3.9	0.224	1.49 [0.78-2.82]	0.343	1.23 [0.80- 1.90]	0.251	1.3 [0.83- 2.04]	0.786	0.94 [0.62- 1.44]
Place of Birth (Home)	38 9	35 3	90.75 [86- 95.52]	2.6	0.566	1.43 [0.42-4.89]	0.317	0.69 [0.34- 1.42]	0.06	2.55 [0.96- 6.77]	0.911	1.04 [0.50- 2.18]
Assistance at last birth	38 9	38 0	97.94 [95.9- 99.97]	1.9	.	1 [1.00-1.00]	0.324	0.49 [0.12- 2.01]	0.797	1.24 [0.25- 6.22]	0.937	0.94 [0.22- 4.01]
Caregiver rest after childbirth (<7days)	22 1	11	4.98 [0.4-9.58]	2.4	0.557	1.61 [0.33-7.88]	0.647	0.73 [0.19- 2.83]	0.541	1.48 [0.42- 5.26]	0.762	0.82 [0.23- 2.90]

Desired pregnancy	38 3	34 6	90.6 [85.9-95.28]	2.4	0.872	1.09 [0.37-3.25]	0.9	0.95 [0.46-1.99]	0.58	1.25 [0.57-2.75]	0.277	1.53 [0.71-3.27]
Birth spacing (<12 months)	30 9	25	8.41 [3.8-13.07]	2.1	0.698	0.74 [0.17-3.32]	0.062	2.19 [0.96-4.99]	0.014	2.81 [1.23-6.44]	0.252	0.57 [0.22-1.48]
Birth spacing (<24 months)	30 9	18 9	61.17 [54.2-68.14]	1.5	0.67	0.85 [0.40-1.80]	0.829	1.06 [0.65-1.72]	0.375	0.8 [0.48-1.32]	0.467	0.84 [0.51-1.36]
Decision maker-Mother: Market	38 9	41	10.54 [4.9-16.21]	3.2	0.847	1.1 [0.41-2.98]	0.913	1.04 [0.51-2.11]	0.809	1.09 [0.53-2.24]	0.459	0.76 [0.37-1.56]
Decision maker-Mother: Earnings	38 9	35	9 [5.6-12.38]	1.3	0.28	1.68 [0.66-4.32]	0.254	1.53 [0.74-3.16]	0.108	1.81 [0.88-3.72]	0.911	0.96 [0.46-2.00]
Decision maker-Mother: Male Earnings	38 9	11	2.83 [1-4.63]	1.1	0.853	0.82 [0.10-6.63]	0.168	2.55 [0.67-9.68]	0.153	2.5 [0.71-8.83]	0.799	1.18 [0.33-4.26]
Decision maker-Mother: Woman's Health	38 9	32	8.48 [4.6-12.38]	1.9	0.495	1.42 [0.52-3.90]	0.297	1.49 [0.70-3.15]	0.493	1.31 [0.61-2.81]	0.825	0.92 [0.43-1.97]
Mother involved in zero household decisions	38 9	32 7	84.06 [77.25-89.12]	2.5	0.416	0.72 [0.33-1.59]	0.700	0.89 [0.50-1.60]	0.633	0.87 [0.48-1.57]	0.501	0.82 [0.47-1.45]
Observations: Mother watches Child	38 9	36 6	94.09 [90-98.18]	2.9	0.79	1.22 [0.27-5.46]	0.739	1.18 [0.44-3.15]	0.362	1.68 [0.55-5.15]	0.911	1.06 [0.41-2.71]
Observations: Mother talks to Child	38 9	35 9	92.29 [88.6-95.97]	1.8	0.899	1.08 [0.31-3.76]	0.573	0.79 [0.35-1.79]	0.522	0.76 [0.33-1.76]	0.75	1.14 [0.50-2.62]
Observations: Mother interacts with Child	38 9	23 7	60.93 [52.1-69.79]	3.1	0.454	0.79 [0.42-1.47]	0.144	0.72 [0.47-1.12]	0.17	0.73 [0.46-1.14]	0.907	1.03 [0.67-1.58]
Observations: Mother smiles at Child	38 9	32 5	83.8 [77.8-89.83]	2.5	0.416	0.72 [0.33-1.59]	0.777	0.92 [0.51-1.64]	0.867	0.95 [0.52-1.74]	0.618	1.16 [0.65-2.08]
Observations: Mother spansks Child	38 9	66	16.97 [11.2-22.73]	2.2	0.136	0.45 [0.15-1.29]	0.274	0.71 [0.39-1.31]	0.165	0.64 [0.34-1.21]	0.728	1.1 [0.63-1.93]
Child keeper: grandparent	38 9	87	22.37 [16.59-29.44]	2.3	0.384	1.37 [0.67-2.79]	0.844	0.95 [0.56-1.61]	0.970	1.01 [0.59-1.73]	0.081	1.56 [0.95-2.57]
Child keeper: father	38 9	41	10.54 [7.11-15.35]	1.7	0.346	0.56 [0.16-1.88]	0.421	1.32 [0.67-2.56]	0.452	1.30 [0.65-2.59]	0.456	1.29 [0.66-2.49]
Child keeper: sibling < 18 years old	38 9	81	20.82 [15.79-26.95]	1.8	0.088	0.43 [0.16-1.13]	0.408	0.80 [0.46-1.37]	0.237	0.71 [0.40-1.25]	0.085	0.62 [0.36-1.07]
Child keeper: sibling < 10 years old	38 9	31	7.97 [4.59-13.48]	2.4			0.589	0.80 [0.36-1.79]	0.105	0.44 [0.17-1.19]	0.934	0.97 [0.45-2.09]
Child keeper: mother brings everywhere	38 9	15 3	39.33 [31.77-47.45]	2.5	0.051	1.86 [1.00-3.48]	0.976	0.99 [0.64-1.54]	0.315	1.26 [0.80-1.98]	0.870	1.04 [0.67-1.59]
Feel Safe in Camp	38 9	28 4	73.26 [65.5-81.04]	2.9	0.128	0.6 [0.31-1.16]	0.785	1.07 [0.65-1.76]	0.158	0.7 [0.43-1.15]	0.659	1.11 [0.69-1.80]
Feel safety outside Camp	38 9	18 9	48.59 [38.8-58.4]	3.7	0.558	0.83 [0.44-1.55]	0.4	1.2 [0.78-1.85]	0.742	1.08 [0.69-1.68]	0.493	0.86 [0.57-1.32]
Feel safety in AND outside of camp	38 9	17 7	45.5 [36.2-55.1]	3.5	0.261	0.69 [0.37-1.31]	0.175	1.35 [0.88-2.07]	0.881	1.03 [0.66-1.61]	0.489	0.86 [0.56-1.32]

Baby WASH Observation: Child with clean face	37 9	23 5	62.01 [55.9- 68.15]	1.5	0.425	0.77 [0.41-1.46]	0.796	1.06 [0.68- 1.65]	0.191	0.74 [0.47- 1.16]	0.829	0.95 [0.62- 1.48]
Baby WASH Observation: Child with clean clothes	37 9	17 2	45.38 [37.4- 53.32]	2.4	0.11	0.58 [0.30-1.13]	0.122	0.71 [0.46- 1.10]	0.208	0.75 [0.47- 1.18]	0.569	0.88 [0.58- 1.35]
Baby WASH Observation: Child washed recently	37 9	10 6	28.23 [19.9- 36.52]	3.1	0.346	1.38 [0.71-2.69]	0.652	0.9 [0.55- 1.45]	0.464	1.2 [0.74- 1.96]	0.613	1.13 [0.71- 1.81]
Baby WASH Observation: Animal in play area	37 9	57	15.04 [8.3- 21.75]	3.3	0.477	0.7 [0.26-1.86]	0.143	0.62 [0.32- 1.18]	0.195	0.64 [0.32- 1.26]	0.732	1.11 [0.62- 2.00]
Baby WASH Observation: Animal excrement in play area	37 9	49	12.93 [6.9- 18.99]	3.0	0.405	0.63 [0.22-1.86]	0.129	0.59 [0.29- 1.17]	0.045	0.44 [0.20- 0.98]	0.403	1.3 [0.70- 2.40]
Baby WASH Observation: Baby crawling in the dirt	43 7	20 8	47.6 [38.9- 56.33]	3.3	0.042	0.51 [0.27-0.98]	0.83	1.05 [0.69- 1.60]	0.296	0.79 [0.51- 1.23]	0.226	1.3 [0.85- 1.97]
Food hygiene Observation: Free range animals in the kitchen or entering the house	43 7	55	12.59 [7.2- 17.97]	2.8	0.801	1.13 [0.45-2.82]	0.636	1.17 [0.62- 2.21]	0.877	1.05 [0.54- 2.06]	0.478	1.25 [0.67- 2.34]
Food hygiene Observation: Food uncovered or on the floor	43 7	86	19.68 [13.9- 25.46]	2.3	0.635	0.82 [0.37-1.84]	0.463	0.82 [0.48- 1.40]	0.185	0.68 [0.38- 1.21]	0.132	1.47 [0.89- 2.44]
Food hygiene Observation: Organic waste within 10 m	43 7	16 4	37.53 [28.8- 46.27]	3.5	0.509	0.8 [0.42-1.55]	0.025	0.6 [0.38- 0.94]	0.071	0.65 [0.41- 1.04]	0.396	0.83 [0.54- 1.28]
Availability of a mosquito net in HH	22 3	21 4	96.41 [92.7- 100.1]	2.1	0.693	0.64 [0.07-5.76]	0.354	2.79 [0.32- 24.35]	0.682	1.58 [0.18- 13.83]	0.848	1.18 [0.21- 6.63]
Quality of housing: mud floor	43 7	16 1	37.07 [27.6- 46.53]	4.1	0.307	0.71 [0.36-1.38]	0.62	1.12 [0.72- 1.72]	0.053	0.63 [0.39- 1.01]	0.865	1.04 [0.68- 1.60]
Durable roofing	43 7	14	3.43 [-1-7.86]	6.3	0.256	2.14 [0.57-7.99]	0.471	1.49 [0.51- 4.38]	0.245	1.9 [0.64- 5.61]	0.996	1 [0.33- 3.04]
Energy Source (LPG)	43 7	40 9	93.82 [89.6- 98.09]	3.4	0.956	0.97 [0.28-3.36]	0.523	1.34 [0.55- 3.30]	0.924	1.04 [0.42- 2.58]	0.685	1.2 [0.50- 2.85]
Barrier to accessing water (any)	43 7	21 9	50.34 [42.1- 58.56]	2.9	0.367	1.33 [0.71-2.49]	0.611	1.12 [0.73- 1.71]	0.283	0.78 [0.50- 1.22]	0.442	0.85 [0.56- 1.29]
Water access barrier (distance)	22 0	12 1	55.45 [42.5- 68.39]	3.6	0.44	1.41 [0.59-3.38]	0.737	1.11 [0.60- 2.04]	0.6	1.19 [0.62- 2.30]	0.942	0.98 [0.53- 1.80]
Water access barrier (long waiting time)	22 0	43	19.55 [9.7- 29.35]	3.3	0.593	0.73 [0.24-2.28]	0.525	0.78 [0.35- 1.70]	0.221	0.57 [0.23- 1.40]	0.052	2.05 [1.00- 4.24]
Water Source (tube well/ hand pump)	43 7	40 3	92.22 [85.4- 99.05]	7.0	0.71	0.81 [0.27-2.45]	0.933	0.96 [0.42- 2.23]	0.563	1.3 [0.54- 3.13]	0.418	0.72 [0.33- 1.58]

Water stored on the ground	43 7	32 6	74.6 [68-81.19]	2.4	0.35	0.72 [0.37-1.42]	0.902	0.97 [0.60-1.58]	0.221	0.74 [0.45-1.20]	0.292	0.78 [0.48-1.24]
Water storage covered	43 7	35 8	82.15 [77-87.35]	2.0	0.976	0.99 [0.44-2.23]	0.05	0.59 [0.34-1.00]	0.031	0.55 [0.32-0.95]	0.517	1.2 [0.69-2.10]
Water treatment	43 7	14 1	32.49 [22.2-42.76]	5.1	0.727	0.89 [0.45-1.73]	0.281	1.28 [0.82-2.00]	0.982	1.01 [0.63-1.61]	0.014	1.74 [1.12-2.70]
Improved sanitation facility	43 1	41 9	97.22 [93.7-100.72]	4.8	.	1 [1.00-1.00]	0.353	2.1 [0.44-10.04]	0.212	3.76 [0.47-30.03]	0.126	5.06 [0.63-40.34]
Women's workload (medium to heavy)	38 9	21 0	54.24 [46.9-61.57]	2.1	0.953	1.02 [0.54-1.91]	0.086	1.47 [0.95-2.28]	0.469	1.18 [0.75-1.85]	0.361	0.82 [0.54-1.25]
rCSI 4 (food reserved for children) 5-7 d/w	24 5	3										
rCSI 1, 2,3 & 5	21 1	18	9 [2.4-15.63]	2.7	0.121	2.63 [0.78-8.94]	0.110	2.27 [0.83-6.19]	0.944	0.96 [0.32-2.87]	0.495	1.43 [0.52-3.94]
Baby WASH Observation: Child with unclean face, unclean clothes, and not washed recently	37 9	12 9	34.04 [27.35-41.42]	2.1	0.283	1.12 [0.91-1.39]	0.995	1.00 [0.86-1.16]	0.241	1.10 [0.94-1.29]	0.947	1.01 [0.87-1.17]
Soap: presence confirmed	43 7	40 8	93.4 [89.3-95.6]	1.8	0.227	3.48 [0.46-26.33]	0.003	0.29 [0.13-0.66]	0.265	0.63 [0.28-1.43]	0.256	0.63 [0.28-1.40]

Linear regressions																
					GAM (WHZ)			Stunting (HAZ)			Underweight (WAZ)			Anaemia (HB)		
Risk	N	Mean (95% CI)	SE	Def	p-value	Coeff.	SE	p-value	Coeff.	SE	p-value	Coeff.	SE	p-value	Coeff.	SE
Mother's age	389	27 [26.1- 27.9]	0.44	1.9	0.073	0.012	0.01	0.994	0	0.01	0.177	0.009	0.01	0	0.033	0.01
Mother's age at marriage	389	16.9 [16.7- 17.2]	0.13	1.3	0.426	-0.016	0.02	0.536	-0.017	0.03	0.334	-0.02	0.02	0.977	0.001	0.03
Mother's MUAC	377	264.3 [259.6- 268.9]	2.31	1.8	0.294	0.001	0.00	0.059	0.003	0.00	0.017	0.003	0.00	0.002	0.006	0.00
Women workload scale (1-4)	389	2.7 [2.5-2.8]	0.08	2.4	0.373	0.04	0.04	0.064	-0.11	0.06	0.486	-0.032	0.05	0.958	-0.003	0.06
Birth spacing (<1, 1-2, 2-3, 3-4, >4 years)	309	2.4 [2.3-2.5]	0.06	1.5	0.219	-0.069	0.06	0.38	0.066	0.08	0.761	-0.017	0.06	0.239	-0.095	0.08
rCSI	245	9.4 [8.4- 10.4]	0.51	1.3	0.437	0.007	0.01	0.105	-0.018	0.01	0.493	-0.006	0.01	0.132	0.016	0.01
IDDS: Food groups	396	3.3 [3.1-3.5]	0.10	2.2	0.233	0.039	0.03	0.947	-0.002	0.04	0.223	0.041	0.03	0.000	0.198	0.05
Number of decisions mother involved in (0-4)	389	0.31 [0.19- 0.422]	0.06	1.8	0.484	-0.036	0.05	0.134	-0.104	0.07	0.100	-0.087	0.05	0.280	0.076	0.07
Mother child interactions observed	389	3.5 [3.3-3.6]	.07	2.0	.475	-.029	.04	.031	.118	.05	.241	.049	.04	.848	.011	.05
Positive child WASH observations	389	3.6 [3.3-3.8]	.13	2.7	.159	-.039	.03	.308	.038	.04	.684	-.011	.03	.933	.003	.04
Positive food hygiene practices observed	383	2.3 [2.2-2.4]	.07	3.1	.464	-.038	.05	.524	-.044	.07	.340	-.046	.05	.819	-.016	.07

Combined Food hygiene score + Diarrhoea

Risk factor	Diarrhoea	
	P Val.	OR [CI-95%]
Positive food hygiene practices observed		
0	0.781	1.21 [0.78-5.06]
1	0.536	0.81 [.43-1.55]
2	0.580	0.86 [0.51-1.45]
3		Base

Sold or exchanged food aid + Child's dietary diversity

Risk factor	Dietary diversity (number of food groups)	
	Mean (number of food groups consumed)	p value
Sold or exchanged food aid		
No	3.20 [28.7-3.3]	
Yes	3.6 [3.1-3.9]	
Difference	-4.3 [.8-0]	.027

Deworming + Child's age

Risk factor	Child age in months	
	Mean (age in months)	p value
Dewormed		
No	25.3 [22.4-28.2]	
Yes	35.0 [33.3-36.6]	
Difference	-9.6 [-12.8- -6.5]	<.001

Child age + HAZ

Risk factor	HAZ		
	P val.	Coef.	SE
Child's age (months)	<.001	-0.021	0.003

Indicator 1	Prevalence [CI 95%]	Indicator 2	Prevalence [CI 95%]	Chi ²	P-value
Birth spacing <24 months	61.2 [54.0-67.9]	Age of first birth < 18	26.8 [21.2-33.2]	2.95	0.086
Soap confirmed in the household	93.4 [89.3-95.6]	Decision maker-Mother: Market	10.54 [4.9-16.21]	0.010	0.920
Main source of income (humanitarian assistance)	82.38 [76.3-88.44]	Arrival: since August	73.23 [62.4-84.03]	8.671	.003
Received food aid sold or exchanged	13.73 [7.6-19.83]	Arrival: since August	73.23 [62.4-84.03]	0.517	0.420
Received food aid sold or exchange	13.73 [7.6-19.83]	Soap confirmed in the household	93.4 [89.3-95.6]	4.94	0.026
Antenatal care attendance	54.15 [44.1-64.23]	Early initiation of breastfeeding	52.17 [43.8-60.5]	0.400	0.707
Age of first birth < 18	26.8 [21.2-33.2]	Early initiation of breastfeeding	52.17 [43.8-60.5]	0.016	0.898
Age of first birth < 18	26.8 [21.2-33.2]	Antenatal care attendance	54.15 [44.1-64.23]	6.22	0.013

Indicator1	Mean [CI 95%]	Indicator 2	Mean [CI 95%]	Pearson Coeff.	P-value
Mother's age	27.0 [26.1-27.9]	Caregiver interaction scale	3.5 [3.3-3.6]	-0.067	0.189
Mother's workload	2.7 [2.5-2.8]	Caregiver interaction scale	3.5 [3.3-3.6]	-0.151	0.003
Mother's age at marriage	16.9 [16.7-17.2]	Birth spacing (<1, 1-2, 2-3, 3-4, >4 years)	2.4 [2.3-2.5]	-0.043	0.453
Mother's age at first pregnancy	18.5 [18.2-18.8]	Birth spacing (<1, 1-2, 2-3, 3-4, >4 years)	2.4 [2.3-2.5]	-0.023	0.694
Total number of children under 5	2.1 [2.0-2.2]	Workload scale	2.7 [2.5-2.8]	0.235	0.000
Mother's age at marriage	16.9 [16.7-17.2]	Decision making (0-4)	0.3 [0.2-0.4]	-0.071	0.164
Mother's age at first birth	18.5 [18.2-18.8]	Decision making (0-4)	0.3 [0.2-0.4]	0.064	0.210
Mother's age	27.0 [26.1-27.9]	Decision making (0-4)	0.3 [0.2-0.4]	0.045	0.377
Mother's age at marriage	16.9 [16.7-17.2]	Decision making (0-4)	0.3 [0.2-0.4]	-0.071	0.164
Mother's age at first birth	18.5 [18.2-18.8]	Decision making (0-4)	0.3 [0.2-0.4]	0.064	0.210

Logistics regression					IDDS Score Acceptable (>=4 groups)	
Risk factor	N	n	Prevalence [CI 95%]	Design effect	P-value	Odds ratio [CI 95%]
Main source of income (humanitarian assistance)	437	360	82.38 [76.3-88.44]	2.7	0.008	0.48 [0.28-0.83]
Received food aid sold or exchanged	437	60	13.73 [7.6-19.83]	3.4	0.102	1.61 [0.91-2.85]
Child is male	437	224	51.26 [46.8-55.76]	0.9	0.508	0.88 [0.59-1.30]
Head of household female	437	57	13.27 [7.4-19.12]	3.2	0.359	1.31 [0.73-2.34]
Arrival since August	437	320	73.23 [62.4-84.03]	6.4	0.764	1.07 [0.68-1.68]
Household size > 7 members	437	117	26.77 [21.34-33.02]	1.9	0.052	0.63 [0.40-1.00]
Decision maker-Mother: Market	389	41	10.54 [4.9-16.21]	3.2	0.005	2.67 [1.34-5.32]

C. QUALITATIVE GUIDE

INFORMATION NOTE³⁹

Link Nutrition Causal Analysis (NCA) Kutupalong MS implemented by Action Against Hunger.

Name of principal researcher: Charles Maughan

INVITATION: We would like you to participate in a study conducted by Action Against Hunger, a non-governmental organization, which fights against the causes and effects of hunger in almost 50 countries around the world, including in Bangladesh. The organisation has expertise in the domain of health and nutrition, including mental health and care practices, water, sanitation and hygiene, as well as food security and livelihoods.

STUDY OBJECTIVES: The main objective is to identify the major risk factors and causal pathways leading to undernutrition (wasting, stunting) in Kutupalong MS. The findings will be used to develop recommendations that will be used to make necessary adjustments in future programmes in order to utilise a more integrated approach in addressing the burden of malnutrition in the camps. The study will take place from 29 September to 26 October 2019 across four sub-blocks.

PROCEDURE: In your community we would like to spend 5 consecutive days, starting today. We will share a detailed planning of our activities in order to facilitate the selection and mobilisation of participants for interviews and focus group discussions. The study will concern mainly parents of children under 5 years of age but other key informants may be solicited to contribute. Any person desiring to share his opinion outside of scheduled interviews and focus group discussions can approach the study team to do so. The study team would also like to conduct a number of observations and household visits in your community, if possible, in order for us to better understand your daily challenges. Focus group discussions will be organised around themes, such as health, nutrition, care practices, water, hygiene and sanitation, food security and livelihoods, as well as gender. Each focus group discussion should be attended by 8-12 people, as outlined in the shared detailed planning. It should be noted that we will not be able to accommodate more people at the time. Participants are asked to come on time in order not to delay following focus group discussions. Do you agree to let us conduct this study in your community? Do you have any questions? If so, we will need you to appoint a community mobiliser. It needs to be someone that is known and respected by all members of your community. The role of this person will be to mobilise participants for semi-structured interviews and focus group discussions, as outlined in our detailed planning. Preferably, the selection of participants will be coordinated with you. Please note that it is preferable if selected participants attend only one focus group discussion. If they wish to contribute more than once, this is permitted only if it concerns different topics. However, we are interested in talking to as many community members possible and for this reason it would be better if more people in the village/cluster of villages were mobilised to participate. Please note that the participation of a community mobiliser will not be remunerated and needs to be fully voluntary.

Please note that there is no good or bad response to our questions, no good or bad opinion, and no good or bad way of doing things. We are sincerely interested in immersing into your daily lives and learning about your beliefs and practices. If you agree to participate, we will ask for about one hour of your time.

³⁹ To be used as an opening of each exchange with key informants, be it a semi-structure interview or a focus group discussion. Sentences in grey are relative only for an initial meeting with community leaders.

CONFIDENTIALITY: We will not ask for your name and will not share the content of our discussion with other people in your community. Your name will not appear in our study and no one will be able to identify what you shared with us.

RISKS: Unfortunately, apart from our sincere appreciation, we cannot promise you anything in exchange for your participation in this study. The participation in this study does not guarantee your selection in future Action Against Hunger activities nor should it have a negative effect on your involvement in ongoing activities. However, during focus group discussions we will share some water and snacks with you, which you may choose to take home with you, if you wish.

INFORMED CONSENT: The participation in this study is your choice. You are free to stop the interview or leave the focus group discussion at any time. Your participation is fully voluntary. If you do not wish to answer a question, you may decline to do so and we will move onto a next question. If you have any questions about us or the work we do, you can ask us any time.

1. SEASONAL CALENDAR⁴⁰

A seasonal calendar is a diagram of changes over the seasons – usually over the period of 12 months. Seasonal calendars are useful to identify seasonal patterns of change – for example, changing availability of resources, such as food; to identify when people may be particularly vulnerable; to explore seasonal patterns of well-being and hardship and how different people are affected; or to identify when people are particularly vulnerable to infection.

During the qualitative survey, the study team will explore seasonal variations for each risk factor while the topic will be discussed. Respective risk factors will be listed on a printed template of a seasonal calendar, depicting twelve months of a universal year, aligned with 6 seasons of a Bangladesh year. During focus groups discussions, participants will be asked to define in what month each risk factor is most important and precise causes of these changes.

2. HISTORICAL CALENDAR

A historical calendar is a diagram that shows change over a certain period of time. For the purposes of the Nayapara study, a period of 10-15 years will be considered. For the purposes of the Kutupalong study, a period from August 2017 until September/October 2019 will be considered. However, if participants mention key events dating prior to these periods (including those that occurred in Myanmar), these will equally be noted. A historical calendar is useful for exploring change over time in a particular situation, and the reasons for change. This may include changes in behaviour, knowledge and attitudes in a community. It is also useful when exploring the consequences of a particular event or assessing the effectiveness (impact) of a project or a community initiative.

During the qualitative survey, the study team will explore historical variations for each risk factor while the topic will be discussed. Respective risk factors will be listed on a hand-drawn template of a historical calendar (A2 format), depicting the timeframe in universal years. During focus groups discussions, participants will be asked to define in what year each risk factor was most important and precise causes of these changes. All important events that marked the life in a community in a positive or negative way, be it political, socio-economic, environmental or other, will be noted as potential triggers. The aim will be to draw trends based on the community knowledge and potentially identify correlations between various risk factors.

⁴⁰ Participatory Learning and Action (PLA) tool no. 19 & 20 (<https://www.aidsalliance.org/>).

3. STORYTELLING⁴¹

Storytelling involves participants discussing ‘typical’ stories from their community. This approach helps to open discussions on sensitive subjects in a non-threatening way and to identify the real-life situations and issues that affect people in their community. It helps to explore how people feel about those situations and what action they would like to take.

During the qualitative survey, the study team will introduce pre-prepared real-life stories during focus group discussions to test participants’ standpoint on subjects, which may be particularly sensitive, and/or test their responses given in a classic question-answer exchanges. The aim of this method will be to shift the attention from them (which may make them feel uncomfortable) and rather involve as observers and counsellors to other people in situations, which reflect their daily reality.

4. DAILY ACTIVITIES CHART

Daily activity charts show how people spend their time over the course of a day. They are useful to explore how men and women spend their day; to evaluate their workload and to discuss their different roles and responsibilities or to explore the factors that influence these differences.

During the qualitative survey, the study team will introduce printed images of daily activities in a given community and will ask participants of focus group discussions to place them on a timeline starting with the usual time when they get up and ending with the usual time when they go to bed. This will be done for men and women separately. Any other groups, such as children or elderly, or groups with different economic functions (farmers, herders or market sellers) may be introduced, if deemed relevant.

5. MEAL COMPOSITION CHART

Meal composition charts show what people usually eat over the course of a day. They are useful to explore community’s perception of good nutrition and how that reflects on their eating habits now and in situations when money would not be a barrier to a procurement of desired foods. For the purpose of this study three scenarios will be considered: typical food intake during a fasting period, typical food intake during a non-fasting period and a typical food intake when money would not be a barrier.

During the qualitative survey, the study team will introduce a hand-drawn chart (A2 format), divided into three columns, representing each scenario. The participants of a focus group discussion will be asked to state how many meals a day they eat during each scenario and what actual meals they eat at those times of a day.

6. HOUSEHOLD EXPENSES

Household expenses is a participatory exercise, the main objective of which is to show how household income is distributed to cover its expenses. It may reveal household’s priorities in terms of spending, identify harmful behaviour or decision-making mechanisms within the household.

During the qualitative survey, the study team will introduce a printed set of images representing different types of regular expenses incurred by a household in a given community. These images will be placed in front of participants. The participants will also receive a set of pebbles representing money, which a household has available to cover these expenses. The role of

⁴¹ Participatory Learning and Action (PLA) tool no. 58 (<https://www.aidsalliance.org/>).

participants will be to distribute the income among various expense group, just as they would in a real life.

7. HEALTH JOURNEY / THERAPEUTIC ITINERARY⁴²

This tool involves drawing the story of a person's health-seeking journey over a period of time. It involves tracing the development of person's health since falling ill, marking all different treatment options, which were explored in order to cure. The therapeutic itinerary is an engaging participatory exercise, which allows to open a discussion about traditional and non-traditional treatments in a non-threatening way. It also permits to explore people's understanding of current illnesses, which eventually trigger their choices. In addition, the tool allows to explore barriers of access to a biochemical treatment available in state-supported health facilities.

During the qualitative survey, the study team will introduce a blank sheet of paper (A2 format) and ask the participants to explain their typical health journey in case of current illnesses, which will be traced on a blank sheet of paper. The aim is to identify whether their knowledge of these illnesses triggers the same reaction and/or certain differences exist. A particular attention will be paid to an understanding and treatment of child undernutrition.

8. GENDER BOXES⁴³

This tool involves participants placing 'typical' women and men in 'gender boxes' and identifying the roles, qualities and behaviours expected of them. It involves exploring what happens if a woman or man breaks out of their box and does not do what is expected of them. The aim of this exercise is to explore, in a non-threatening way, where those roles, qualities and behaviours come from and the pressures that they bring. It also allows to identify what roles, qualities and behaviours need to be changed and how that can be done. Gender boxes are particularly useful for exploring issues related to gender vulnerability, power and cultural traditions.

During the qualitative survey, the study team will introduce a blank sheet of paper (A2 format) and ask the participants to trace two same-size boxes next to each other. One will represent a woman and one will represent a man. The participants will then be asked to place all qualities, roles or behaviours expected of them inside the box. Any qualities, roles or behaviours not aligned with societal expectations will need to be drawn outside of the box. Once completed, the participants will be requested to compare and discuss what gender boxes show.

9. AGREE/DISAGREE GAME⁴⁴

This tool involves participants to express their agreement or disagreement with different statements relating to studied risk factors in their community. Agree/disagree game is highly interactive and engaging. It can serve as an energiser and an opener of more structured exchanges, which will follow. It helps to provide a lively and non-threatening way for people to explore their attitudes about key issues in their community. The agree/disagree game is particularly useful for exploring attitudes about gender, cultural traditions and stigma. It can also provide an additional layer of understanding to a researcher in a community, which is reliant on humanitarian assistance and whose answers to different questions may be biased by expectations of a follow-up aid.

⁴² Participatory Learning and Action (PLA) tool no. 17 (<https://www.aidsalliance.org/>).

⁴³ Participatory Learning and Action (PLA) tool no. 25 (<https://www.aidsalliance.org/>).

⁴⁴ Participatory Learning and Action (PLA) tool no. 36 (<https://www.aidsalliance.org/>).

During the qualitative survey, the study team will place three printed signs with emoticons in front of focus group participants. Each sign will represent 'I agree' 😊, 'I disagree' ☹️ or 'I am not sure'. The study team will then read out pre-prepared statements relating to a discussed topic and ask the participants to stand next to a sign, which represents their opinion on the matter. The participants will be encouraged to explain why they are standing by different signs. They will also be encouraged to try to persuade each other and change their minds if they wish to. Once all statements will be used, participants will be encouraged to discuss what the game has shown.

10. COURAGE TO CHANGE⁴⁵

This tool involves participants standing at different points along a line to show how easy or hard it is to adopt certain behaviours or make changes relating to challenges experienced in their communities. Using courage to change helps to create a non-threatening environment, in which participants can express freely how they feel about certain sensitisation messages deemed to improve their quality of life. The exercise allows participants to identify barriers, which they face in relation to suggested behaviours, which will eventually lead to a deeper understanding of a gap between knowledge and practice. This may be particularly helpful to organisations implementing projects focusing on behaviour change.

During the qualitative survey, the study team will draw a line on the ground. One end will represent "easy" while the other end will mean "difficult". The study team will then introduce pre-prepared behaviours, which are expected to be adopted by the community. The participants will be asked to position themselves at that end of the line that represents their attitude towards the stated behaviour, i.e. whether it is easy or difficult to adopt. Participants will be encouraged to explain why they feel that way about those behaviours and what makes it easy/difficult to adopt.

11. RISK GAME⁴⁶

This tool involves participants identifying a perceived risk relating to certain behaviours along a line showing a low to high risk. Using the risk game helps to explore people's knowledge and attitudes about levels of risk related to their current behaviour and/or suggested behaviour through sensitization activities. In this respect, the tool may help to identify areas of risky behaviour that might need to be prioritized for future action. A risk game is particularly useful for raising awareness about illness prevention among the general community, including breastfeeding, care and hygiene practices.

During the qualitative survey, the study team will draw a line on the ground. One end will represent "low risk" while the other end will mean "high risk". The study team will then introduce pre-prepared behaviours, which are current in the community or expected to be adopted by the community. The participants will be asked to position a flashcard depicting the concerned behaviour at that point of the line that represents their perception of risk related to the stated behaviour, i.e. whether it is safe or dangerous practicing/not practicing certain behaviour. Participants will be encouraged to explain why they feel that way about those behaviours.

12. INTERVIEW GUIDE: HEALTH

1. How would you describe a healthy child? Are children on these images healthy? (Cf. Child illness flashcards)

⁴⁵ Participatory Learning and Action (PLA) tool no. 39 (<https://www.aidsalliance.org/>).

⁴⁶ Participatory Learning and Action (PLA) tool no. 55 (<https://www.aidsalliance.org/>).

2. Are these illnesses present in your community? Which ones are the most widespread? (PROBE: diarrhoea/cholera, fever, acute respiratory infections, scabies, malaria)
3. Do they differ by season? (Cf. Seasonal calendar)
4. How have they changed over the past 2 / 10-15 years? (Cf. Historical calendar)
5. What are the causes of these illnesses? (PROBE: diarrhoea/cholera, fever, acute respiratory infections, scabies, malaria)
6. How are these illnesses treated? (Cf. Health journey/Therapeutic itinerary) (NB: Trace for each cause independently. Inquire about seasonal differences)
7. Have the treatment options changed in the past 2 / 10-15 years? (Cf. Historical calendar)
8. How do you decide which treatment to choose? Who gives you advice?
9. What role do mama's (traditional health care providers) play in your community?
10. How do you care for a sick child? (PROBE: Do you breastfeed a sick child? Why/Why not? Do you feed him/her less/more? What types of food cannot be fed to a sick child? Why?)
11. Are some children in your community sicker than others? Do you know why? How would you describe them?
12. What do you do to keep your child healthy? How much effort does it take to do it every day?
13. Where is the nearest health post/health centre? How long does it take you to get there? Does your access change by season? (Cf. Seasonal calendar)
14. What are health post's opening hours? Is the staff available when there is an emergency? How do you contact them?
15. What kind of services are available in the nearest health post? Which ones do you use? Why?
16. Does the staff know how to treat illnesses, which are frequent in your community? Do they speak your language? Are they kind?
17. Who do you prefer to seek medical treatment from? Why?
18. What motivates you to seek treatment in the health post? What discourages you to do so? (PROBE: quality of health care, staff absence, lack of drugs, decision-making power, workload, distance to the health facility, etc.)

Perceptions of interventions

19. Have you tried to address these problems individually/collectively on a community level? If so, how?
20. Have there been any projects that attempt/attempted to address problems related to health/access to health facilities?
21. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
22. How do you think they could be improved? (SOLUTIONS)
23. Are there any obstacles to make it happen? (OBSTACLES)
24. What could be done on your side? (LOCAL CAPACITIES)
25. What do you need to make it happen? (NEEDS)
26. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
27. Who should be targeted by this action in priority? Why?

13. INTERVIEW GUIDE: MALNUTRITION

1. What do you think of children on these photos? Are children on these images healthy? Why/Why not? (Cf. Photos of wasted children (Marasmus/Kwashiorkor) + stunted children)
2. Which illness are they suffering from? What words do you use to describe such children in your community? Are certain words more sensitive than others? Why?

3. What are the causes of this illness? What are the reasons a child would become like this?
4. What do you think of this illness? (PROBE: Is it similar to/different from other child illnesses? If so, how?)
5. Do you have children like this in your community? If yes, which type is most common?
6. Are there any households in your community, which are more affected? If yes, what do they have in common? (PROBE: Are children of certain age group more affected? Why?)
7. Do you think your child can become like this? Why/Why not? (PROBE: What behaviours/practices can induce/prevent this condition?)
8. Do you think you can become like this? Why/Why not?
9. Do you know any women in your community who are like this? If s/o, why do you think they are like this?
10. During which season/month do you observe more children to be like this? (Cf. Seasonal calendar)
11. Since when have children in your community been suffering from this illness? (Cf. Historical calendar)
12. How do you treat this illness in your community? (Cf. Health journey/Therapeutic itinerary) (PROBE: What is the most common treatment? Why?)
13. What do you do to keep your child healthy?
14. What challenges do you face to keep your child healthy? During which seasons/months, does it become more difficult?
15. *Storytelling: XX has a daughter that was born two years ago. She was breastfeeding her during the first year and then started to give her food, which she prepared for the rest of the family. Her daughter started to lose weight and was no longer interested to play with other children. XX decided to take her to a mama (traditional healer) to cure her. However, her daughter was not getting any better.*
What do you think of this story? Did XX make good decisions? Why/why not? What would you do differently? What would you suggest XX does next?
16. *Storytelling: XX has a large family with two little boys who are close in age. She was breastfeeding the first child for a few months but then she became pregnant again when he was only 5 months old. After that she stopped breastfeeding and started to give her first boy food that she prepared for the rest of the family. Her first son started to lose weight and become sick. He is not getting any better.*
What do you think of this story? What do you think about XX's situation? Did XX make good decisions? Why/why not? Do women in your community face same difficulties? Why/why not? What would you do differently?

Perceptions of interventions

17. Have there been any projects that attempt/attempted to address problems related to malnutrition?
18. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
19. How do you think they could be improved? (SOLUTIONS)
20. Are there any obstacles to make it happen? (OBSTACLES)
21. What could be done on your side? (LOCAL CAPACITIES)
22. What do you need to make it happen? (NEEDS)
23. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
24. Who should be targeted by this action in priority? Why?

14. INTERVIEW GUIDE: NUTRITION

1. What is a staple food in your community (what do you eat most?) How many times a day do you eat?
2. Have there been any changes to your eating habits in the past 2 / 10-15 years? (Cf. Historical calendar)
3. Are there any changes to your eating habits throughout the year? (Cf. Seasonal calendar)
4. Would you like to eat differently? If so, how? Why/Why not? (Cf. Meal composition chart)
5. Who decides what you eat?
6. Are eating habits the same for children/pregnant and lactating women? Why/Why not?
7. What foods cannot be eaten by children/pregnant and lactating women? Why/Why not?
8. What foods cannot be eaten by girls/boys? Why/why not?
9. *Storytelling: XX is 19 years old. She married about three years ago. She is now pregnant with her second child and therefore avoids beef/shellfish/insert food types mentioned above and only drinks hot tea. She is not allowed to leave the home because she is pregnant. However, she noticed she has been feeling weaker and feels sometimes sick throughout the day. When she asked to visit the health centre, her husband refused permission.*
What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? What would you do differently? Is it the situation applicable to lactating women as well?
10. What foods do you consider healthy? Why?
11. Do you have access to this food in your community? Where do you access it? (PROBE: food aid/own production/purchase)
12. Does the access change throughout the year? (Cf. Seasonal calendar)
13. Has the access changed in the last 2 / 10-15 years? (Cf. Historical calendar)
14. Do you have enough food to feed your household throughout the year?
15. Has this changed in the last 2 / 10-15 years? (Cf. Historical calendar)
16. What do you think about meals of two children on the picture? (Cf. Images of balanced/unbalanced meal)
17. What do you think about meals of two children on the second picture? (Cf. Images of meal portions)
18. How would you divide this food among your family? Does the family eat together or in a specific order?
19. *Storytelling: XX has a husband and 5 children. Parents of her husband will with them. Her husband gave her some money to prepare an evening meal. XX bought some rice but it will not be enough for the whole family. During the dinner time, she set aside a plate for her husband and his parents. She gave the rest of the meal to her eldest children, two boys. XX and her three little girls went to bed hungry.*
What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? What would you do differently?

Perceptions of interventions

20. Have there been any projects that attempt/attempted to address problems related to nutrition?
21. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
22. How do you think they could be improved? (SOLUTIONS)
23. Are there any obstacles to make it happen? (OBSTACLES)
24. What could be done on your side? (LOCAL CAPACITIES)

25. What do you need to make it happen? (NEEDS)
26. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
27. Who should be targeted by this action in priority? Why?

15. INTERVIEW GUIDE: BREASTFEEDING & COMPLEMENTARY FEEDING

1. How does your daily routine with a baby look like? (Cf. IYCF & Care practices flashcards)
2. Does your routine change throughout the week? If so, how?
3. Does your routine change throughout the year? If so, how? (Cf. Seasonal calendar)
4. Has the daily routine changed in the past 2 / 10-15 years? Do you do things differently than your parents/grandparents? Explain. (Cf. Historical calendar)
5. Would you like the daily routine to change? If so, how? Why?
6. Does someone help you with child caring? If so, when (daily/weekly/sporadically)?
7. How are fathers involved in child caring activities? How do you feel about their involvement? (sufficient/not sufficient?) Why?
8. What challenges do you face when caring for your children? (PROBE: lack of knowledge/resources/time/other)
9. Storytelling: *XX is 25 years old. She has four children. The last one was born three months ago. She is breastfeeding him when she is at home in the mornings and in the evenings. In between she has lots of activities (fetching water, collecting firewood, preparing food) and she does not bring her baby with her. She leaves the baby with her mother-in-law. Few weeks ago she went to the health centre and the staff told her to breastfeed her baby on demand in order for the baby to grow well. She is afraid that the baby will grow fat and somebody will give it a bad eye. She prefers her baby to stay the way he is. In addition, she has so many things to do! She can't possibly carry the child around the whole day!*

What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? What would you do differently?

Agree/disagree game (+DEBRIEFING)

10. When my baby is born, the first thing I give him to drink is honey / sugar solution / mustard oil.
11. When my baby is born, I wash him up and put him to sleep.
12. When my baby is born, I breastfeed him immediately.
13. When my baby is born, the first milk in my breasts is not good. I throw it away.
14. When my baby is born, I take him to a religious leader for a blessing.
15. When I breastfeed, I also give my baby some water because it is very hot and the baby is thirsty!
16. When I breastfeed, I also give my baby some cow/goat milk.
17. When I breastfeed, I do not have enough milk to keep my baby happy.
18. Breastfeeding is time-consuming.
19. When I breastfeed, I feel weak.
20. When I breastfeed, my breasts hurt.
21. When I breastfeed, I eat more.
22. When I breastfeed, I do not fast.
23. When I get pregnant, I stop breastfeeding.
24. When I work, my milk is hot and I cannot breastfeed my baby.
25. I start giving some food to my baby when he is 4 months old.

26. I start giving some food to my baby when he is 8 months old.
27. If I start giving food to the baby too soon, he will be less resistant later.
28. I cook special meals for my baby.
29. I feed my baby the food I prepared for the whole family.
30. During meals, I help my baby to eat.
31. During meals, it is older children who help my baby to eat.
32. When my baby does not want to eat, I do not force him.
33. When my baby cries, I take him into my arms to calm him down.
34. When my baby cries, I give him something to eat.
35. When my baby cries, I give him something to drink.
36. When my baby cries, I leave him to calm down by himself.

Risk game (+DEBRIEFING)

37. Breastfeeding on demand.
38. Breastfeeding when a woman is pregnant.
39. Breastfeeding when a woman is hot or ill.
40. Eating little during breastfeeding.
41. Fasting during breastfeeding.
42. Giving holy water to the baby before he is 6 months old.
43. Giving water to the baby before he is 6 months old.
44. Giving tea to the baby before he is 6 months old.
45. Giving family food to the baby.
46. Giving food to my baby during the fasting period.
47. Leaving a baby with older siblings.
48. Leaving a baby with his grandmother/grandfather.
49. Raising a voice or slapping a baby when he does something wrong.

Courage to change (+DEBRIEFING)

50. Early initiation of breastfeeding.
51. Exclusive breastfeeding till 6 months of age.
52. Breastfeeding on demand.
53. Feeding baby during a fasting period.
54. Preparing special meals for babies.
55. Non-fasting during breastfeeding.
56. Non-fasting for children under 5 years of age.
57. What do you normally feed your baby throughout a day during a fasting period? (Cf. Meal composition chart)
58. What do you normally feed your baby throughout a day during a non-fasting period? (Cf. Meal composition chart)
59. Would you like to give him something else? If so, how? Why/Why not? (Cf. Meal composition chart)
60. Have the eating habits for children changed in the past 2 or 10-15 years? Do you do things differently than your parents/grandparents? Explain. (Cf. Historical calendar)
61. *Storytelling: XX has a little boy. She gave birth to this little boy 6 months ago. After the birth, she decided against giving the boy colostrum. Her belief is that colostrum is dirty and spiritually damaging to the new-born. Instead she made a sugar solution of water and honey for his first feed. The little boy became sick and is still not better.*

What do you think of this story? What do you think about XX's choice? Do you agree with her? Why/why not? What would you do differently?

Perceptions of interventions

62. Have there been any projects that attempt/attempted to address problems related to breastfeeding and complementary feeding?
63. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
64. How do you think they could be improved? (SOLUTIONS)
65. Are there any obstacles to make it happen? (OBSTACLES)
66. What could be done on your side? (LOCAL CAPACITIES)
67. What do you need to make it happen? (NEEDS)
68. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
69. Who should be targeted by this action in priority? Why?

16. INTERVIEW GUIDE: MARRIAGE, PREGNANCY & BIRTH SPACING

1. At what age do young men marry in your community? What is the usual age of women they are marrying? Do you consider it problematic? Why/Why not? What are the reasons for marrying at that age?
2. Storytelling: *XX is 14 years old. She has 7 other siblings and she is the oldest one. Her parents think XX should marry so they have less stomachs to feed.*
What do you think of this story? What do you think about XX's situation? Do women in your community face same difficulties? Why/why not? If you were XX's parents, what would you do differently?
3. Are there other reasons for early marriage in your community?
4. When do you think a girl is ready to be a mother (physically and emotionally?)
5. Who advises women, and especially adolescent girls, during pregnancy?
6. Do couples in your community have disagreements during the marriage? Are they frequent? How are they handled? What is the cause of these disagreements?
7. How many children do people in your community usually have? Why?
8. Storytelling: *XX is 28 years old. She married her husband 12 years ago. Since then, she gave birth to a child almost every year. Out of 10 children, 3 died rather young. XX's husband wants to replace them. XX does not want any more children, she is tired of successive pregnancies. She is afraid to tell her husband that she does not want any more children because he says they are a gift from God.*
What do you think of this story? Can this happen in your community? Why do you think it happens? What do people think about birth spacing? Is a woman involved in a decision on a number of children? Why/why not? What would you do if you were XX?
9. What is a usual birth gap in your community? How do you feel about it? (Short/adequate/long) Why?

Agree/disagree game (+DEBRIEFING)

10. When I am pregnant I go to a health centre for a check-up.
11. When I am pregnant I go to a religious leader for a blessing.
12. When I am pregnant I go to a traditional healer to make sure my baby develops well.
13. When I am pregnant I do not go to a health centre because it is too far.
14. When I am pregnant I do not go to a health centre because the staff is seldom there.
15. When I am pregnant I do not go to a health centre because I am afraid they will make my baby to grow big.

16. When I am pregnant I do not go to a health centre because they give me advice I cannot follow.
17. When I am pregnant I do not go to a health centre because I do not have money.
18. When I am pregnant I do not go to a health centre because I do not have time.
19. When I am pregnant I eat more so that my baby can grow.
20. When I am pregnant I eat less because I do not feel well.
21. When I am pregnant I eat less because I am afraid my baby will grow big.
22. When I am pregnant I fast.
23. When I am pregnant I work as usual.
24. When I am pregnant I work less.
25. I prefer to give birth at home.
26. I prefer to give birth at a health centre.
27. After birth I rest for at least 6 weeks.
28. After birth I resume my activities after a few days.
29. If I wanted to space births, I would be perceived badly in my community.
30. If I wanted to use family planning, I would not receive a blessing at church.
31. If I used family planning, I would bleed more and then I would not be able to have more children.

Risk game (+DEBRIEFING)

32. Young woman having a baby at 15 or 16 years of age.
33. Woman having a baby at 30 years of age.
34. Woman having a baby every twelve months.
35. Woman getting pregnant when breastfeeding a baby.
36. Woman not attending prenatal care services at a health centre.
37. Woman fasting when pregnant.
38. Woman working during pregnancy.
39. Woman giving birth at home.
40. Woman working after giving birth.

Courage to change (+DEBRIEFING)

41. Having a first child at 18 years of age.
42. Having children about two years apart.
43. Having less children.
44. Use different contraception means.
45. Attending prenatal care at health centre.
46. Not fasting during pregnancy.
47. Not working during pregnancy.
48. Not fasting during breastfeeding.

Perceptions of interventions

49. Have there been any projects that attempt/attempted to address problems related to birth-spacing?
50. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
51. How do you think they could be improved? (SOLUTIONS)
52. Are there any obstacles to make it happen? (OBSTACLES)
53. What could be done on your side? (LOCAL CAPACITIES)
54. What do you need to make it happen? (NEEDS)
55. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)

56. Who should be targeted by this action in priority? Why?

17. INTERVIEW GUIDE: WOMEN'S WORKLOAD & SOCIAL STATUS

1. How does your daily routine look like? (Cf. Daily activities chart)
2. Does your routine change throughout the year? If so, how? (Cf. Seasonal calendar)
3. How do you perceive your workload? How does it make you feel?
4. When do you feel most busy or tired? What do you do when you feel that way? Do you have someone to help you?
5. Has the daily routine changed in the past 2 / 10-15 years? Do you do things differently than your parents/grandparents? Explain. ? (Cf. Historical calendar)
6. Are there differences in daily routines among different households? If so, what differences? What characterises these households?
7. How does your daily routine vary from that of men?
8. Did you attend school when you were younger? What are the reasons why girls do not go to school in your community? What are the reasons why they drop out from school?
9. Can women in your community make decisions on their own? If so, what can you decide on your own? (PROBE: schooling, marriage, leaving home, HH expenses, meal composition, daily activities, workload, rest after childbirth, health treatment in case of illness, family planning?)
10. Can women in your community leave the home when they want to? Why/ Why not?
11. Does your decision-making power change when your husbands migrate? Who takes decisions in his absence?

(Or alternatively for 9 & 10) Agree/disagree game (+DEBRIEFING)

12. I could make decisions on whether or not I go to school.
13. I can make decisions on whether or not my children go to school.
14. I decided when I wanted to get married.
15. I decided whom I wanted to get married to.
16. I can decide on when my daughter will get married.
17. I can decide on whom my daughter marries.
18. My daughter will decide herself when she gets married.
19. My daughter will decide herself whom she will marry.
20. My husband decides how I spend money.
21. I decide what I cook.
22. My husband tells me how much I can spend on food.
23. I only prepare food that my husband likes.
24. I cannot decide how much I work, I need to do everything that women are supposed to do.
25. My husband has less responsibilities than I.
26. After birth, I can rest for 6 weeks.
27. When I am sick, I can decide whom to see to treat my illness.
28. When my children are sick, I need to ask my husband whom to see to treat my illness.
29. I can tell my husband I do not want any more children.
30. I can decide on all household matters when my husband is not at home
31. Have you been in a situation where you were not satisfied with the decision that was made in relation to you? Explain. How did you feel?
32. If you have a problem, who do you go to help you? What was the most recent situation when you needed someone's help? Explain.
33. What possibilities do women in your community have? (PROBE: What roles can young women aspire to play in their community when they grow up?)

34. How do you feel about those possibilities – are they sufficient? If not, what is lacking? What would you like to change/do differently? What is preventing you from doing so?
35. Do you feel safe in your community? Has there been any change in community relations in the past 2 / 10-15 years? (Cf. Historical calendar)
36. What activities do you usually engage in with other community members? Are there any occasions that you celebrate together? (Cf. Seasonal calendar)

Perceptions of interventions

37. Have there been any projects that attempt/attempted to address problems related to your workload or decision-making?
38. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
39. How do you think they could be improved? (SOLUTIONS)
40. Are there any obstacles to make it happen? (OBSTACLES)
41. What could be done on your side? (LOCAL CAPACITIES)
42. What do you need to make it happen? (NEEDS)
43. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
44. Who should be targeted by this action in priority? Why?

18. INTERVIEW GUIDE: MEN'S WORKLOAD & SOCIAL STATUS

1. How does your daily routine look like? (Cf. Daily activities chart)
2. Does your routine change throughout the year? If so, how? (Cf. Seasonal calendar)
3. How do you perceive your workload? How does it make you feel?
4. When do you feel most busy or tired? What do you do when you feel that way? Do you have someone to help you?
5. Has the daily routine changed in the past 2 / 10-15 years? Do you do things differently than your parents/grandparents? Explain. ? (Cf. Historical calendar)
6. Are there differences in daily routines among different households? If so, what differences? What characterises these households?
7. How does your daily routine vary from that of women?
8. Did you attend school when you were younger? What are the reasons why boys do not go to school in your community? What are the reasons why they drop out from school?
9. Can women in your community make decisions on their own? If so, what can they decide on their own? (PROBE: schooling, marriage, HH expenses, meal composition, daily activities, workload, rest after childbirth, health treatment in case of illness, family planning?)
10. Does their decision-making power change when their husbands migrate? Who takes decisions in their absence?
11. Have you been in a situation where a woman was not satisfied with the decision that was made in relation to her? Explain.
12. What possibilities do men in your community have? (PROBE: What roles can young men aspire to play in their community when they grow up?)
13. How do you feel about those possibilities – are they sufficient? If not, what is lacking? What would you like to change/do differently? What is preventing you from doing so?
14. Do you feel safe in your community? Has there been any change in community relations in the past 2 / 10-15 years? (Cf. Historical calendar)
15. What activities do you usually engage in with other community members? Are there any occasions that you celebrate together? (Cf. Seasonal calendar)

16. If you have a problem, who do you go to help you? What was the most recent situation when you needed someone's help? Explain.

Perceptions of interventions

17. Have there been any projects that attempt/attempted to address problems related to your workload or social status?
18. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
19. How do you think they could be improved? (SOLUTIONS)
20. Are there any obstacles to make it happen? (OBSTACLES)
21. What could be done on your side? (LOCAL CAPACITIES)
22. What do you need to make it happen? (NEEDS)
23. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
24. Who should be targeted by this action in priority? Why?

19. INTERVIEW GUIDE: MARKET ACCESS, USE OF RESOURCES AND COPING STRATEGIES

1. What markets are you normally using? How long does it take you to get there?
2. Does your access vary throughout the year? (Cf. Seasonal calendar)
3. Has your access changed in the last 2 / 10-15 years? (Cf. Historical calendar)
4. What has caused the change? What consequences does it have on your household?
5. Are products available throughout the year? If not, what and when is not available? Why? (Cf. Seasonal calendar)
6. How do you use food aid? (probe: sell/exchange)
7. How does the price of food changed throughout the year?
8. How appropriate is the quantity of food aid which you receive?
9. Has the product availability changed in the last 2 / 10-15 years? (Cf. Historical calendar)
10. Are product prices stable throughout the year? If not, what product prices fluctuate? When? Why? (Cf. Seasonal calendar)
11. Have product prices changed in the last 2 / 10-15 years?
12. How do you spend your household resources? (Cf. Household expenses)
13. Do women receive a weekly allowance? If so, how much and what for? Is it sufficient? Why/why not?
14. Do men and women spend resources differently? If so, how? Why?
15. Where do you usually get your food? (PROBE: own production, purchase, food aid, barter)
16. Does this vary throughout the year? (Cf. Seasonal calendar)
17. Has this changed over the last 2 / 10-15 years? (Cf. Historical calendar)
18. How do you ensure that you have enough food for your household throughout the year?
19. What do you do when you do not have enough food for your household?
20. Are certain households in your community more vulnerable to food insecurity? Why?
21. Who in this community is able to earn an income? How are they able to do this?
22. Who in your community catches fish? What do they do with the catch?

Perceptions of interventions

18. Have there been any projects that attempt/attempted to address problems related to food security?

19. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
20. How do you think they could be improved? (SOLUTIONS)
21. Are there any obstacles to make it happen? (OBSTACLES)
22. What could be done on your side? (LOCAL CAPACITIES)
23. What do you need to make it happen? (NEEDS)
24. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
25. Who should be targeted by this action in priority? Why?

20. INTERVIEW GUIDE: WATER, HYGIENE AND SANITATION

1. Where do you get water for your household? Do you use a different source for drinking/cooking/bathing?
2. Does your source change in different seasons? (Cf. Seasonal calendar)
3. Has your source changed in the last 2 / 10-15 years? (Cf. Historical calendar)
4. Do you have enough water for your needs throughout the year? If not, when? (Cf. Seasonal calendar)
5. Has the access to water changed in the last 2 / 10-15 years? (Cf. Historical calendar)
6. Do all the people in the community have the same access to water? If not, why? Who are they?
7. Who is responsible for fetching water for the household?
8. How long does it take to get water? How far away is the water point? (NB: time to water point, queuing, time back from water point). Does it change throughout the year? (Cf. Seasonal calendar)
9. How much water do you collect in a day? Does it change throughout the year? (Cf. Seasonal calendar)
10. Has this changed over the last 2 / 10-15 years? (Cf. Historical calendar) How? Why? What are the consequences of these changes?
11. How safe and clear is the water in this community?
12. How appropriate is the provision of latrines in this community?
13. Who defecates in the open spaces of this community? If so, what are the consequences?
Agree/disagree game (+DEBRIEFING)
14. The water in my community is good for drinking.
15. The water in my community gives us stomach problems.
16. The water in my community makes children sick.
17. The water in my community is clear.
18. I wash my hands and my body in the morning.
19. I wash my hands when I go to toilet.
20. I wash my hands before cooking.
21. I wash my hands before eating.
22. I do not wash my hands often because there is not enough water in my community.
23. I do not wash my hands often because I need to preserve it for other use.
24. I do not think I need to wash my hands often, we have always lived this way.
25. I buy soap every time I go to the market.
26. The soap is very cheap.
27. I do not like latrines.
28. I do not need a latrine at home. I spend a lot of time working away from my house.
29. I do not need a latrine at home. It is more natural to do our needs in the field.
30. I wash my baby every time it gets dirty.

31. I let my baby play outside the house.
32. There are animals wandering around my house.
33. There are animals wandering inside my house.

Risk game (+DEBRIEFING)

34. Drinking water at the source.
35. Drinking water from the water stream.
36. Drinking rain water.
37. Leaving water containers open.
38. Letting flies sit on a plate of food.
39. Eating without washing hands.
40. Cooking without washing hands.
41. Not washing hands after defecating.
42. Defecating around the house.
43. Cleaning a latrine.
44. Baby playing in the dirt.
45. Baby in contact with household animals.
46. Animals wandering around the house.

Courage to change (+DEBRIEFING)

47. Fetching water
48. Water treatment
49. Handwashing
50. Bathing
51. Open defecation
52. Using a latrine
53. Cleaning a latrine
54. Buying a soap
55. Cleaning a house
56. Cleaning a courtyard
57. Washing clothes
58. Covering food
59. Storing food

Perceptions of interventions

60. Have there been any projects that attempt/attempted to address problems related to water, sanitation and hygiene?
61. What do you think about them? Have you benefitted from them the way you wished? Why/Why not?
62. How do you think they could be improved? (SOLUTIONS)
63. Are there any obstacles to make it happen? (OBSTACLES)
64. What could be done on your side? (LOCAL CAPACITIES)
65. What do you need to make it happen? (NEEDS)
66. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
67. Who should be targeted by this action in priority? Why?

21. INTERVIEW GUIDE: COMMUNITY BELIEFS & SENSITISATION ACTIVITIES

1. How would you describe an ideal baby? How does it look like? (size/characteristic features/behaviour)
2. What can you do to have such a baby before/after he is born?
3. Has the image of an ideal baby changed in the last 2 / 10-15 years? Why?
4. Do you feel a pressure from your family/neighbours/community to have an ideal baby? If yes, what do they say/do?
5. What happens if somebody's baby does not fit this criteria? Which consequences does it have on household's reputation in the community?
6. Have you observed that certain mothers/fathers care for children differently? How? How do you feel about it?
7. Have you observed that certain mothers/fathers neglect their children? What do they do or not do? Why/why not? What consequences does it have on the growth and development of these children?
8. What do you consider very important for the good development of children? Do all parents do it? Why/why not?
9. What do you think about vaccination? (PROBE: access, availability, cultural acceptability, etc.)
10. Do you participate in sensitisation sessions organised by health workers or community development officers of different NGOs? Why/why not?
11. Who is invited to those sensitisation sessions? Are there any other people who should be included? Why?
12. What do you think about different subjects that they talk about? Have you found them useful/relevant/easily applicable? Why/why not? (
13. Which behaviours did you particularly struggled with? Why? (Advantages/Disadvantages)
14. Are there people in your community who are not endorsing certain messages/behaviours? Who & why? (APPROVAL)
15. What should be improved? (SOLUTIONS)
16. Are there any obstacles to make it happen? (OBSTACLES)
17. What could be done on your side? (LOCAL CAPACITIES)
18. What do you need to make it happen? (NEEDS)
19. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
20. Who should be targeted by this action in priority? Why?

22. INTERVIEW GUIDE: HEALTH & NUTRITION (HEALTH FACILITY PERSONNEL)

1. What is your role in the health facility? How long have you been working here? Have you worked in a similar position elsewhere? If so, where and for how long?
2. How do you feel about your position? (PROBE: training, supervision, workload, availability of materials/medicine, location, salary)
3. What types of services do you offer? What fees do you charge? (PROBE: antenatal care, childbirth, postnatal care, vaccination)
4. What are your working hours/opening hours? Are you available in the cases of emergency? How can people reach you?
5. What is your daily routine? Does it change throughout the week/month? Does it change throughout the year? If so, how? Why?
6. What challenges do you face in relation to your daily routine?
7. How does the community perceive services at this health facility? What services do they tend to use the most? Why?

8. Are there any services that they do not use at all? Why?
9. Are you aware of any barriers, which may be preventing them from using services at this health facility? If so, what are they?
10. What childhood diseases are most current in this community? What are their principal causes in this community?
11. In which months are they most frequent? (Cf. Seasonal calendar)
12. Has there been a change in the prevalence of these diseases in the past 2 / 10-15 years? (Cf. Historical calendar)
13. What is their preferred treatment option and/or classic therapeutic itinerary in case of current childhood diseases? (PROBE: diarrhoea/cholera, fever, acute respiratory infections, scabies, malaria, malnutrition)
14. Does it change throughout the year? (Cf. Seasonal calendar) Has it changed over the past 2/ 10-15 years? (Cf. Historical calendar)
15. Do you offer services related to the treatment of malnutrition? If so, can you explain how it is organised? Are there specific days when the service is available?
16. What challenges do you face in relation to CMAM programme? (PROBE: case load/workload, screening, stock-outs, community perception, etc.)
17. What is the community perception of malnutrition? What are its principal causes in this community? Does the community understand its causes differently? If so, how? Why?
18. Is malnutrition stigmatised in this community? If so, how?
19. What categories of children are most vulnerable to malnutrition? Why?
20. Are there children in these categories who are not malnourished? If so, why? What do their parents do differently?
21. What main challenges do parents face to keep their children healthy? (Cf. Hypotheses flashcards)⁴⁷ How do you think it is linked with malnutrition?

Perceptions of interventions

22. Have there been any projects that attempt/attempted to address problems related to health/access to health facilities?
23. What do you think about them?
24. How do you think they could be improved? (SOLUTIONS)
25. Are there any obstacles to make it happen? (OBSTACLES)
26. What could be done on your side/community side? (LOCAL CAPACITIES)
27. What do you need to make it happen? (NEEDS)
28. Which solution should have the greatest priority? What is the most important action to be taken? (PRIORITISATION)
29. Who should be targeted by this action in priority? Why?

23. INTERVIEW GUIDE: HEALTH & NUTRITION (TRADITIONAL HEALER/BIRTH ATTENDANT)

1. What is your role in the community? How long have you been living here? Have you also lived elsewhere? If so, where, when & why?
2. What types of services do you offer? How can people reach you?
3. What main challenges do people in this community face?
4. What consequences do these challenges have on their health? Why?

⁴⁷ Use for probing depending on feedback.

5. What do you think of children on these photos? Are children on these images healthy? Why/Why not? (Cf. [Photos of wasted children \(Marasmus/Kwashiorkor\) + stunted children](#))
6. Which illness are they suffering from? What words do you use to describe such children in your community? Are certain words more sensitive than others? Why?
7. What are the causes of this illness? What are the reasons a child would become like this?
8. What do you think of this illness? (PROBE: Is it similar to/different from other child illnesses? If so, how?)
9. Do you have children like this in your community? If yes, which type is most common?
10. Are there any households in your community, which are more affected? If yes, what do they have in common? (PROBE: Are children of certain age group more affected? Why?)
11. How do you treat this illness in your community? (Cf. [Health journey/Therapeutic itinerary](#)) (PROBE: What is the most common treatment? Why?)
12. What main challenges do parents face to keep their children healthy? (Cf. [Hypotheses flashcards](#))⁴⁸ Do you think that they are linked with malnutrition⁴⁹? If so, how & why?
13. Are there citations from holy scripts/local beliefs that may be linked with these challenges? If so, which? What do you think about them? Do they need to be strictly followed? Why/why not?
30. If not mentioned, ask specifically about the use of holy water during the first 6 months of child's life, fasting of children, fasting of pregnant & lactating women, birth spacing. Have they been followed in the same manner in the past 2 / 10-15 years? If not, what has changed? Why? (Cf. [Historical calendar](#))
14. If shown that these practices have life-endangering consequences, what can you/church/community can do?
15. Have you heard any stories in the past when certain local beliefs had to be reconsidered? If so, what beliefs did it concern? How was it handled? Do you think that it can be replicated? Why/why not?

24. INTERVIEW GUIDE: HEALTH & NUTRITION (RELIGIOUS LEADERS)

1. What is your role in the community? How long have you been living here? Have you also lived elsewhere? If so, where, when & why?
2. What types of services do you offer? How can people reach you?
3. What is your daily routine? Does it change throughout the week/month? Does it change throughout the year? If so, how? Why?
4. What main challenges do people in this community face?
5. What consequences do these challenges have on their health? Why?
6. What do you think of children on these photos? Are children on these images healthy? Why/Why not? (Cf. [Photos of wasted children \(Marasmus/Kwashiorkor\) + stunted children](#))
7. Which illness are they suffering from? What words do you use to describe such children in your community? Are certain words more sensitive than others? Why?
8. What are the causes of this illness? What are the reasons a child would become like this?
9. What do you think of this illness? (PROBE: Is it similar to/different from other child illnesses? If so, how?)
10. Do you have children like this in your community? If yes, which type is most common?
11. Are there any households in your community, which are more affected? If yes, what do they have in common? (PROBE: Are children of certain age group more affected? Why?)

⁴⁸ Use for probing depending on feedback.

⁴⁹ If not recognised, point to the children on photos.

12. How do you treat this illness in your community? (Cf. Health journey/Therapeutic itinerary) (PROBE: What is the most common treatment? Why?)
13. What main challenges do parents face to keep their children healthy? (Cf. Hypotheses flashcards)⁵⁰ Do you think that they are linked with malnutrition⁵¹? If so, how & why?
14. Are there citations from holy scripts/local beliefs that may be linked with these challenges? If so, which? What do you think about them? Do they need to be strictly followed? Why/why not?
15. If not mentioned, ask specifically about the use of holy water during the first 6 months of child's life, fasting of children, fasting of pregnant & lactating women, birth spacing. Have they been followed in the same manner in the past 2 / 10-15 years? If not, what has changed? Why? (Cf. Historical calendar)
16. If shown that these practices have life-endangering consequences, what can you/church/community can do?
17. Have you heard any stories in the past when certain local beliefs had to be reconsidered? If so, what beliefs did it concern? How was it handled? Do you think that it can be replicated? Why/why not?

25. INTERVIEW GUIDE: DO-ERS

FOCUS ON:

- a) Birth-spacing;
 - b) exclusive breastfeeding till 6 months of age,
 - c) Antenatal Care visits
 - d) Sanitation (Improved source)
1. What illnesses can you/your child suffer from if you DO NOT DO THE BEHAVIOUR?
 2. What do you think of [DISEASE mentioned by mother]? Is it dangerous?
 3. When a person (DOES THE BEHAVIOR), does that (LEAD TO THE INTENDED EFFECT)? (E.g. "When a person exclusively breastfeeds a child for the first six months of life, does that help to avoid [DISEASE mentioned by mother]?")
 4. To what degree does (THE BEHAVIOR) help prevent the (DISEASE)?
 5. Who (individuals or groups) do you think object or disapprove if you (DO THE BEHAVIOR)?
 6. Who (individual or groups) do you think approve if you (DO THE BEHAVIOR)?
 7. Which of these individuals or groups in either of the two questions above is most important to you?
 8. Is it easy for you to (DO THE BEHAVIOR)?
 9. Is it easy to remember to (DO THE BEHAVIOR) every time that you need to do?
 10. Is it sometimes God's will that people/children get (DISEASE)?
 11. Why do some people get (DISEASE) and some people do not?
 12. Do people sometimes get (DISEASE) because of curses or other spiritual or supernatural causes?
 13. What do you see as the advantages or good things that happen if you (DO THE BEHAVIOR)? What are the things you like about (DOING THE BEHAVIOR)?
 14. What do you see as the disadvantages or bad things that happen if you (DO THE BEHAVIOR)? What are the things that you don't like about (DOING THE BEHAVIOR)?

⁵⁰ Use for probing depending on feedback.

⁵¹ If not recognised, point to the children on photos.

26. INTERVIEW GUIDE: NON DO-ERS

FOCUS ON:

- e) Birth-spacing
 - f) exclusive breastfeeding till 6 months of age,
 - g) Antenatal Care visits
 - h) Sanitation (Improved source)
1. What illnesses can you/your child suffer from if you DO THE BEHAVIOUR?
 2. What do you think of [DISEASE mentioned by mother]? Is it dangerous?
 3. When a person (DOES NOT THE BEHAVIOR), does that (LEAD TO THE INTENDED EFFECT)? (E.g. "When a person does not exclusively breastfeed a child for the first six months of life, does that help to avoid [DISEASE mentioned by mother]?")
 4. To what degree does (NOT DOING THE BEHAVIOR) help prevent the (DISEASE)?
 5. Who (individuals or groups) do you think would object or disapprove if you (DID THE BEHAVIOR)?
 6. Who (individual or groups) do you think would approve if you (DID THE BEHAVIOR)?
 7. Which of these individuals or groups in either of the two questions above is most important to you?
 8. Would it be easy for you to (DO THE BEHAVIOR)?
 9. What would make it difficult or impossible for you to (DO THE BEHAVIOR)?
 10. What would make it easier for you to (DO THE BEHAVIOR)?
 11. Would it be easy to remember to (DO THE BEHAVIOR) every time that you decided to do that?
 12. Is it sometimes God's will that people/children get (DISEASE)?
 13. Why do some people get (DISEASE) and some people do not?
 14. Do people sometimes get (DISEASE) because of curses or other spiritual or supernatural causes?
 15. What do you see as the advantages or good things that would happen if you (DID THE BEHAVIOR)? What are the things you would like about (DOING THE BEHAVIOR)?
 16. What do you see as the disadvantages or bad things that would happen if you (DID THE BEHAVIOR)? What are the things that you would not like about (DOING THE BEHAVIOR)?

27. SUMMARY OF FINDINGS, CATEGORISATION OF RISK FACTORS & FINAL RECOMMENDATIONS

The purpose of this exercise is to involve community members in the categorisation of risk factors with regards to their impact on the occurrence of malnutrition in their community. In other words, community members will be encouraged to rank identified risk factors from most problematic to less problematic in relation to their link with malnutrition. In addition, they will be encouraged to identify risk factors, which they believe are likely to change first, if properly addressed/supported.

Before the actual ranking exercise will be conducted, the study team will summarise their findings, which they collected during the first 5 days in the community with the use of pre-prepared flashcards. After the presentation of all identified risk factors, community members will be asked to validate the findings and the team's interpretation of community's main challenges in relation to malnutrition. If certain elements are deemed not representative of the community, the study team will modify the interpretation, as necessary.

Afterwards, the participants will be invited to rank identified risk factors from most problematic to least problematic in relation to their link with undernutrition. With the help of pebbles, they

will be asked to give three pebbles to factors, which have a major impact on child undernutrition, two pebbles to factors, which have an important impact on child undernutrition and one pebble to factors, which have a minor impact on child undernutrition in their community. They will be visually aided by photos of undernourished children, which were previously used during focus group discussions, in order to keep the focus on this health issue rather than other main challenges that they face in their community.

All exchanges among participants with relation to this rating exercise and/or their justification of their rating will be duly noted. All participants will be encouraged to contribute and any disagreements will be rightfully addressed. The aim of this exercise will be to categorise risk factors into three groups, which all participants will agree with.

Once this stage is completed, the participants will be asked to pick few risk factors, which they think explain most cases of undernutrition in their community, and create a main pathway.

Alternatively, if a consensus on three categories of risks proves difficult, the study team will give three pebbles to each participant and will ask them to assign a pebble to each risk, which they consider the most important in relation to undernutrition in their community. Once all pebbles are counted, risk factors will be divided into three categories. The study team will ask participants to validate them and reach a consensus on 4-5 factors, which have a major impact on undernutrition in their community.

After the categorisation of risk factors, the study team will present solutions, which the community identified during focus group discussions to address these challenges. A validation, followed by a prioritisation of activities, will be sought.

A complete set of visual aids (flashcards) is available in a separately.

D. COMMUNITY AND TECHNICAL EXPERT ACTION PLAN

The table below summarises community and technical expert recommendations related to the risk factors considered in this study. Recommendations are classified according to the following categories: missing intervention (M), insufficient intervention (I) and intervention adaptation (A). Recommendations in bold are recurrent themes supported by multiple communities or experts. Community recommendations are in green. Technical expert recommendations are in blue.

Sector	Risk factor	Recommendations	Obstacles	Local capacities	Needs	Prioritisation
Health	Limited access to health services	<p>Improved counselling from health workers to educate about the low efficacy of traditional healing as a form of medicine. These sessions should be home visits to reach the population that are most likely to rely on the hazar's (A).</p> <p>Reduce queues and wait times at health facilities by increasing the number of doctors, nurses and other medical staff (I).</p> <p>Elongate the time-period attached to prescriptions (currently a maximum of three days) to bring down wait times (A).</p> <p>Tokens of gratitude should be provided to traditional birth attendants for each woman they refer to pregnancy health services (M).</p>	<p>A belief that "this is always how we have accessed health care" means that some community members continue to use traditional healers.</p> <p>Staff morale and recruitment issues result in staff shortages in health centres.</p> <p>The current time-period for prescriptions is designed to prevent the selling of medicines and health supplies.</p>	<p>More doctors, nurses and other health staff should be recruited from the Rohingya community.</p> <p>Groups of women can meet, discuss and share advice to determine whether a child needs a medical appointment in order to save health care resources.</p>	<p>Only a small proportion of the community have medical or nurse training. But there are many more women who have relevant skills and experience to promote health in the community. They would like training on how to do this.</p>	<p>Any additional health care staff should work with pregnant women and the under-fives as these are the most vulnerable groups.</p>
	Low birth spacing / unwanted pregnancies	<p>More women should use the Depo-Provera. The injection should be promoted and offered to more women (I).</p> <p>Educate men about the challenges of low birth spacing. Make the information relevant</p>	<p>Religious barriers prevent some women from using the Depo-Provera vaccine. Contraception is avoided because of the "fear of God".</p>	<p>Low community capacities in this area. Only a few community members would want to play an active role in educating others about contraception or in reducing the stigma</p>	N/A	<p>Women married to imams or other religious leaders face the most family planning related challenges.</p> <p>Women in larger households have the</p>

		by emphasising the challenges associated with low birth spacing in the Kutupalong MS environment Strengthen the male forums and elderly community groups. (M)	Social shame and stigma often prevents women from using visible forms of contraception (e.g. pills).	associated with contraception.		least privacy and are more likely to be shamed because of using contraception.
Nutrition and care practices	Non-optimal breastfeeding practices	The community should lengthen the period between births so that mothers continue breastfeeding older children when younger children are conceived (A). More private places in health facilities and OTP centres so that women can breastfeed without men looking at them (I).	Factors that contribute to low birth spacing (see above). Limited space within sites currently used by health and nutrition facilities. Mother in laws strongly encourage the honey and water solution to be provided after birth (and are often supported by the husbands).	Women can organise community meetings to educate others about the advantages of breastfeeding and particularly of early initiation.	In order to organise information sessions, women would like to receive advice how to do this from community health workers and midwives.	Mother in laws are an influential decision-maker on breastfeeding so they should be targeted by sensitisation messaging.
Gender	Early marriage and early pregnancy	Decrease congestion in houses by making them bigger and introducing female only spaces. (A) Special and targeted contraceptive advice for adolescent wives (and their husbands). (A) Given women who are marry early are often financially vulnerable, they should receive additional e-Vouchers or GFD rations. (A) Monitor and support CiC implementation of government policy on early marriage (I). Creation of female-only adolescent spaces where sexual	Adolescent women who are married or pregnant have negative experiences of health services (e.g. they complain about being "chastised" by medical staff) and as result are less likely to seek advice about contraception. They are also afraid that their marriage will be annulled by the CiC so often live secretly and avoid contact with all authorities.	Low community capacities in this area. Most parents still would like their daughters to be married prior to their eighteenth birthday.	N/A	Adolescent women who are married but have not been detected by the CiC are particularly vulnerable.

		<p>reproduction health advice and counselling can be provided (M).</p> <p>Extend the number of years girls/adolescent women receive free schooling (A).</p> <p>Integrate nutrition and mental health and psychosocial support by providing counselling sessions for adolescent women in outpatient therapeutic centres. (A)</p>				
WASH	Poor sanitation practices	<p>Provide training and equipment for committees to clear their own latrines. Most blocks sampled by the Link NCA team had organised a committee for latrine maintenance. Often these committees were well organised with sophisticated rules. For instance, the committee collects money from community members in order to pay for latrine maintenance (which included both staff and material costs). Those who could not afford the "tax" were exempt from paying as long as they made non-material contributions to the community (for instance, by donating labour hours to clean the community's latrines). (A)</p>	<p>Communities do not possess the machinery needed to excavate and remove waste from the latrines. This is owned by NGOs. Currently, the community can only work to clean and maintain the exterior features of the latrines.</p>	<p>Strong local pre-migration knowledge and traditional of maintain latrines. In Myanmar, a new latrine would be dug every year after the old one was filled in. Due to space constraints, this practice is impossible in Kutupalong MS.</p>	<p>The communities would like to have access to the machinery currently possessed only by NGOs.</p>	<p>The condition of latrine facilities varied substantially by camp (in some communities, for instance, waste had not been removed for over six months).</p>
	Non-optimal water management	<p>Further analysis of the possible link between residual chlorine and anaemia prevalence. (M)</p>	N/A	N/A	N/A	N/A

	Poor hygiene practices	<p>Humanitarian actors should vary the amount of soap they distribute according to household size. Currently, when soap is distributed every family is given the same amount regardless of its size. This makes larger households particularly vulnerable to poor hygiene practices. (I)</p> <p>Reduce queues and waiting times at the tube wells and pumps so that women always have time collect water. (A)</p>	<p>Broken and faulty tube wells increase women's workload and the time it takes to collect water.</p> <p>Restrictions on female movement result in queues at particular times of the day (especially after dark).</p> <p>Household budgets are already stretched and the purchase of food is preferred to buying soap.</p>	<p>Men within the community say that they have the skills to fix broken tube wells but that they are not permitted to do so by camp authorities.</p> <p>Due to strict gender roles, the task of fetching water cannot be shared between men and women.</p>	More soap to be provided.	Larger households should be prioritised in hygiene promotion as they currently tend to have the worst practices.
FSL	Low dietary diversity	<p>More income generation opportunities are viewed as essential to improve dietary diversity. In particular, the community would like more labouring and construction jobs. There is a preference for work related to building schools, paths and stairways, housing and shelter as well as drain or latrine cleaning tube well maintenance. (I)</p> <p>This community also views micro/kitchen gardening favourably and more community members would like the opportunity to cultivate their own crops. Innovations related to micro/kitchen gardening, e.g. multi-storey gardening, box gardening, should be explored. (A/I).</p> <p>Advocate for nutrition products that have community acceptance and replace Super</p>	<p>Labouring and construction jobs in the camps have to be provided by NGOs or UN agencies. Currently, there is a shortage of this type of work.</p> <p>Opportunities related to micro-gardening and agriculture are constrained by the limited space available in Kutupalong MS.</p>	<p>It is often believed that the mahji's should improve their advocacy efforts in order to bring more labour and construction jobs into the community.</p> <p>Extensive agricultural skills and knowledge from subsistence living in Myanmar.</p>	Plots of land close to households should be made available.	Families with young children should be given preference for job opportunities.

		<p>Cereal with a preferred alternative. (A)</p> <p>Men are particularly likely to say that they would like freedom of movement so that they can access job opportunities outside of the camps.</p> <p>Demonstration kitchens in nutrition centres. (M)</p>				
Cross-sectional	Social Behaviour Change Communication (SBCC)	<p>Improve knowledge of condoms and encourage men to use them in counselling sessions (M).</p> <p>Target and religious leaders with contraceptive, birth control and early marriage sensitisation messages (M).</p> <p>Extend social behaviour change communication related to optimising household dietary diversity with a limited income and effective food storage. (A/I)</p>	N/A	N/A	NA	N/A