

link nca

NUTRITION CAUSAL ANALYSIS



KENYA

MUKURU AND VIWANDANI SETTLEMENTS - NAIROBI COUNTY

Publication : July 2017



FINAL
REPORT





The author :
Mercy Wahome
Link NCA Expert

Mercy Wahome holds a MA in Medical Sociology from the University of Nairobi.

She followed courses in leadership in Strategic Health Communication, (John Hopkins), Baltimore, USA.

She is also a Doula trained by DONA International; therefore she is a special focus on maternal care issues.

She carried out her first Link NCA study with this study in Mukuru slums of Nairobi.

link
nca

NUTRITION CAUSE





KENYA
MUKURU AND VIWANDANI
URBAN INFORMAL SETTLEMENTS
NAIROBI COUNTY

AUGUST 2016-FEBRUARY 2017
PUBLICATION : AUGUST 2017

By **Mercy Wahome**

With the support of **Blanche Mattern** (Link NCA Technical Unit, Action Against Hunger-France), **Sajia Mehjabeen** (Concern Worldwide headquarters), **Edwin Mbugua Maina** (Concern Worldwide Kenya)



ACKNOWLEDGEMENTS

The author wishes to thank:

The participation and Cooperation of all the communities in the Mukuru Slum during the data collection

The Nairobi County health Management team led by Dr. Thomas Ogaro, County Director for Health, Esther Mogusi, County Nutritionist

All the Sub County Health Management team members including the sub county Nutritionists
Concern Worldwide Staff, who supported the entire survey including Koki, Kassim, Peter, Sajja, Edwin

The Action contre la Faim (ACF) France Link NCA Technical Unit for their methodological and logistical support

The OFDA for the funding of the study through ACF France.

The support and knowledge of local and National Technical Stakeholders in their participation in workshops to inform and validate the NCA preparation and results;



ABBREVIATIONS AND ACRONYMS

ACF	Action contre la Faim / Action Against Hunger
ARI	Acute respiratory infection
ANC	Ante-Natal Care
CHA	Community Health Assistants
CHMT	County Health Management team
CLTS	Community-Led Total Sanitation
DHS	Demographic Health Survey
FGD	Focus Group Discussion
FSL	Food Security and Livelihoods
GAM	Global Acute Malnutrition
HAZ	Height-for-Age Z-score
HH	Household
IYCF	Infant and Young Child Feeding
KII	Key Informant Interview
IUGR	In Utero Growth Retardation
LBW	Low Birth Weight
MAM	Moderate Acute Malnutrition
MDD	Minimum Dietary Diversity
MMF	Minimum Meal Frequency
MUAC	ARIMid-upper Arm Circumference
NCA	Nutrition Causal Analysis
NGO	Non-Government Organisation
PD	Positive Deviant
RFS	Risk Factor Survey
SAM	Severe Acute Malnutrition
SBCC	Social Behaviour Change and Communication
TBA	Traditional Birth Attendant
UNICEF	United Nation’s Children’s Fund
WASH	Water Access, Sanitation and Health
WAZ	Weight-for-Age Z-score
WCBA	Women of Child Bearing Age
WHO	World Health Organisation
WHZ	Weight-for-Height Z-score



GLOSSARY

ACUTE MALNUTRITION – Also known as ‘wasting’, acute malnutrition is characterized by a rapid deterioration in nutritional status over a short period of time. In children, it can be measured using the weight-for-height nutritional index or mid-upper arm circumference. There are different levels of severity of acute malnutrition: moderate acute malnutrition (MAM) and severe acute malnutrition (SAM).

ANTHROPOMETRIC STATUS – The growth status of an individual’s body measurements in relation to population reference values.

ANTHROPOMETRY – Anthropometry is the use of body measurements such as weight, height and mid-upper arm circumference (MUAC), in combination with age and sex, to gauge growth or failure to grow.

COMPLEMENTARY FEEDING – The use of age-appropriate, adequate and safe solid or semi-solid food in addition to breast milk or a breast milk substitute. The process starts when breast milk or infant formula alone is no longer sufficient to meet the nutritional requirements of an infant. It is not recommended to provide any solid, semi-solid or soft foods to children less than 6 months of age. The target range for complementary feeding is generally considered to be 6–23 months.

COUNTY - Second largest administrative units in Kenya which contains sub counties.

EXCLUSIVE BREASTFEEDING – An infant receives only breast milk and no other liquids or solids, not even water, with the exception of oral rehydration salts (ORS) or drops or syrups consisting of vitamins, mineral supplements or medicines. UNICEF recommends exclusive breastfeeding for infants aged 0-6 months.

FOOD SECURITY – Access by all people at all times to sufficient, safe and nutritious food needed for a healthy and active life. (1996 World Food Summit definition).

GLOBAL ACUTE MALNUTRITION (GAM) – The total number of children aged between 6 and 59 months in a given population who have moderate acute malnutrition, plus those who have severe acute malnutrition. (The word ‘global’ has no geographic meaning.) When GAM is equal to or greater than 15 per cent of the population, then the nutrition situation is defined as ‘critical’ by the World Health Organization (WHO). In emergency situations, the nutritional status of children between 6 and 59 months old is also used as a proxy to assess the health of the whole population.

MRENDA, KALES, MANAGU - Local vegetables normally used to supplement the local meals

SEVERE ACUTE MALNUTRITION – A result of recent (short-term) deficiency of protein, energy, and minerals and vitamins leading to loss of body fats and muscle tissues. Acute malnutrition presents with wasting (low weight-for-height) and/or the presence of oedema (i.e., retention of water in body tissues). Defined for children aged 6–60 months, as a weight-for-height below – 3 standard deviations from the median weight-for-height for the standard reference population or a mid-upperarm circumference of less than 115 mm or the presence of nutritional oedema or marasmic-kwashiorkor.

PROVINCE - Formerly second largest administrative unit in Kenya which contained districts



EXECUTIVE SUMMARY

Introduction

Nairobi, the Capital City of Kenya has experienced an exponential growth in the past 60 years with a population of 3.138million (Census 2009) and a projected estimate of 4.1million in 2016. As a result of the rapidly increasing population Nairobi, majority of the people live in the informal settlement which according to estimates, house approximately 60% of the Nairobi population and cover only 5% of the city's residential land. Nairobi is divided into 10 Sub County including Embakasi and Makadara sub counties which account for almost half of the total slum population (49.1%) with majority residing in the larger Mukuru slum ie Mukuru and Viwandani (54.03%).

Slum conditions create greater exposure to adverse health and nutrition outcomes, particularly for women and their children. Maternal and child outcomes are intimately linked. Poor maternal health affects the development of the foetus, the likelihood of a healthy pregnancy and birth outcomes. Maternal caring practices, including sub optimal maternal, infant and young child nutrition (MIYCN) practices from gestation up to two years of life, also contribute to poor and often irreversible child health outcomes. Poor nutrition in mothers and young children leave both vulnerable to opportunistic infections and diseases such as diarrhoea, malaria and acute lower respiratory infections. Indicators for infant mortality (IMR) in Kenya's informal settlements, commonly referred to as the slums are significantly worse than the Nairobi county and national average. Globally slums are one of the worst places to be a mother. In Nairobi slums for instance, maternal and child mortality rates are 50% higher in the slums than the national average, with poor urban children being 3 to 5 times as likely to die before their 5th birthday as their most affluent peers . The burden of malnutrition in the slums remains extremely high in comparison with the national and Nairobi county average with stunting begin the most prevalent. A comparative analysis of stunting trends over the past 6 years indicates doubling of stunting rates in the slums (APHRC, 2013). A more recent survey shows that 46% of the children in the urban slums are stunted (Kimani-Murage et al, 2015) . A health and nutrition survey conducted in June 2014 in all the major Nairobi slums showed Global Acute Malnutrition (GAM) rate of 5.7% and severe acute malnutrition (SAM) rate of 1.9% . Based on this survey a slum population of approximately 2,4000,000 inhabitants, with under-fives representing 16% of the population and a SAM of 1.9%, there were over 7,500 severely malnourished and over 22,000 moderately malnourished children in need of emergency nutrition response. The high population density in urban slums coupled with deplorable living conditions translates into extremely high numbers of malnourished children.

Urban informal settlements, the location of most malnutrition, are complicated; they contain fragmented, less cohesive communities than their rural counterparts. Informal settlement dwellers are mobile, moving between urban and rural settings, and within urban localities . With chronic unemployment and under employment, slum population is highly vulnerable to shocks, from price increases to disease outbreaks and political unrest. The consequences of these are a high disease burden, food insecurity, and ultimately high levels of malnutrition and mortality. Poor sanitation has been linked with high prevalence of malnutrition. Children in Nairobi's slums experiencing chronic diarrhoea often fail to absorb nutrients from food, contributing to malnutrition and stunting (Colburn & Hildebrand, 2015).

Both breastfeeding and complementary feeding practices are sub optimal. Women in urban poor settings face an extremely complex situation with regard to breastfeeding due to multiple challenges and risk behaviours often dictated to them by their circumstances (Kimani-Murage, 2014). Introduction of complementary foods is done too early with poor dietary diversity, deficient in key micro-nutrients especially iron, zinc and calcium . Child care practices are also poor, with numerous informal day care centers operating in the slums where mothers leave their children as



they go to work. Currently there is minimal support from the county authorities to address poor care practices in these centers.

The Link NCA was conducted in the larger Mukuru slum that cuts across Makadara and Embakasi sub counties of Nairobi County. For various reasons which include; high poverty index; high slum population; Insecurity; It is cosmopolitan and diversified with numerous socio-cultural groups represented therein; and the level of program activities and intervention by NGOs is minimal. In addition the prevalence of stunting was very high and high of absolute numbers of children under five with acute malnutrition was among the highest in Nairobi. The Maternal Newborn and health Indicators are also quite poor.

Objectives

The main objective of the Link NCA is to identify the most important causes of child under-nutrition, in particular stunting of children age 0-59 months, in Mukuru and Viwandani slums of Nairobi County. The Link NCA is considering vulnerable nutritional groups identified as children less than 23 months and tribes.

The Link NCA study specific objectives include:

To estimate the prevalence of known risk factors for under-nutrition among the population and key “nutrition vulnerable groups”

To identify main causes of under-nutrition in order to inform the technical strategy and programs for the prevention of the same at a local level

To determine which causal pathways of malnourishment are likely to explain most under nutrition cases in the target area

To develop an “emic” definition and understanding of good nutrition, malnutrition and believed causes of under nutrition within the target population

To understand the local seasonal and historical pathways to stunting

To support technical advocacy on causes of stunting so as to support technical strategy.

Methods

The Link NCA began in September 2016 with a review of current literature and secondary data to draft hypothesized causal risk factors for under-nutrition in Mukuru slum. An initial Stakeholder Technical Workshop with representatives from various sectors and organisations was held in October 2016 to validate the hypothesised causal risk factors for field testing. The data collection began in December 2016 and ran for 10 weeks in total. The Link NCA employs a mixed-methods approach, combining both qualitative and quantitative data collection. Focus Group Discussions (FGDs) and Key Informant Interviews (KIs) were conducted in 4 communities, and a Risk Factor Survey was conducted in 32 clusters, 2 in Mukuru and 2 in Viwandani with anthropometric measurements taken of children aged 6-59 months, and females aged 15-49 years. Following data analysis, results were presented for each hypothesized causal risk factors at a final Stakeholder Technical Workshop in March 2017. Through multi-sector working group, results were validated and a final rating was assigned to each of the causal risk factors based on: secondary data, Risk Factor Survey data, the evidence base for the strength of association between the risk factor and under nutrition, seasonal patterns/historical trends, qualitative data, and risk factor ranking by the communities (full explanation of Criteria can be found in the Report).

Findings

Findings from the Link NCA highlighted three major factors contributing to the high stunting:

- (a) Increasing number of non-optimal day care centers
- (b) lack of knowledge on the food diversification by the caregivers and
- (c) unhealthy environment leading to high rates of morbidity.

The findings further revealed that important contributory factors were non-optimal psychosocial care for women, gender based violence and micronutrient deficiencies among pregnant and



lactating women. Minor factors that were lined to stunting included low uptake of family planning, high cases of HIV/AIDs and TB and non optimal maternal healthcare.

Conclusions

The Link NCA results provide a number of actionable risk factors for undernutrition, especially stunting in Nairobi County.

1. The importance of qualitative information to validate the findings of the quantitative surveys was again confirmed through this pilot, which in many cases might not give representative picture of the situation. For example, the quantitative data showed that most of the respondents were married, but during qualitative data collection it was revealed that by marriage they meant 'living relationship' where the man had no responsibility to look after the children or wife and can walk out of the relationship any time without any obligation. The qualitative data helps to understand the quantitative information and gives a clear picture of what is happening behind those numbers and to understand the context before deciding on which intervention to use in a particular setting.

2. The psychological aspect of the mother or caregiver and the subsequent effect on child caring practices and overall nutrition status of the children needs to be considered while designing a program in any informal settlements. It was evident from the findings that the different psychological profiles of the mothers are affecting the caring practices. The women in the slum areas are usually overworked and usually don't have any support system. Domestic violence is very common and sometime they even starve their children to punish their husbands.

3. The importance of daycare center in an urban setting and the influence they have on the nutritional status of the children. Daycare is a great necessity in the slum areas as they serve as a safe place for the working parents. However, most of the cases these centers are managed by unskilled women or older women who can't go out for work. The centers are usually overcrowded, unhygienic and poorly managed.

4. Limited knowledge about balanced diet among the respondents. The participants in the workshop agreed that the findings were surprising as it's usually assumed that the people living in urban areas usually have general understanding about balanced diet. However, the study shows that most of the HH thought balanced diet includes only meat and fish. They also thought Kwashiorkor was a sign that the child was healthy and it was common in community. However, they do know that balanced diet is behind child malnutrition.

5. High level diffusion of cultural practices and subsequent adaptation of harmful practices, which was surprising in urban set up. Slums are composed of mixed tribes and they adapt cultural beliefs and practices from each other and some of the acquired beliefs are also affecting their health seeking behaviors and is life threatening. The removal of child teeth (plastic teeth) is one of them. People usually believe that plastic teeth cause diarrhea and ARI. Majority of the community members branded these teeth 'plastic teeth' which they argue are bad omen which can affect the baby's health and eventually kill. Special traditional doctors are consulted and use crude materials like needles and salt to remove the teeth which sometimes results in severe bleeding and infection and sometimes the child even can't eat anything for days.

Diarrhea and vomiting is very common in the slums and there are also some harmful cultural practices around them. For example, one of the respondents mentioned that if a baby had sunken head (usually from dehydration), they will place a Hawk in child's head and if it flies, they assume that the child will be ok.

6. The influence of different cultural practices on the food choices: The new 'slum tribe' adapt different cultural beliefs and practices from each other which sometimes have negative impacts on their food choices. i.e., some parts of animals are not eaten by some of the people.

7. Poor health seeking behaviors: Although services were available within reach, the general health seeking behavior of the slum residents are usually poor. For example, the deworming rate was very low and only 3% were dewormed thrice a year. Different factor such as clinic operating hours and influence of harmful cultural practices are behind this.



8. Heavy reliance on street foods: Most of the households regularly buy foods from the vendors. Usually the main reasons behind these practices are the limited space in the houses, workload and the cost of preparing food versus buying it from the vendors. Usually women do not want to say that they buy food because the men don't like it. The children confirmed that most of them ate chapatti and soups bought from the street vendors.
9. The slums also have very intrinsic social support system which helps them to cope, from outside it might not be apparent and not very visible, but it exists. Sometimes people go to the neighbor to share food and it was very common. They will add water to the bean and will share.
10. Poor breastfeeding practices. Most of the time mothers have the knowledge and even the attitude to practice exclusive breastfeeding but as most of the mothers are working during the day, they only have chance to breastfed at night.
11. Sanitation facilities are a major determinant of rent of the houses. House close to latrines costs more. There is an initiative by fresh life to charge toilets use and they clean it regularly and turns the waste into fertilizer. However, usually the child is not considered for toilet use and so the children just openly defecate, it's considered as normal and can be seen everywhere. There were some other initiatives where Oxfam have given buckets but it was not effective as the excreta was hard to dispose of, had issues with privacy and there is no space in the house where the bucket can be stored.
12. Although it might seem that LNCA is very nutrition focused, the results here clearly indicated that the assessment takes into account the underlying causes of malnutrition and explores the situation with a nutrition sensitive lens.
13. The information about water governance is crucial in an urban context and can be difficult to measure sometimes.

Recommendations

Prior to implementation of the programme, it is recommended to spend time to ensure community buy-in. Some communities were less inclined to participate in the Link NCA survey, and there were similar reports from Health staff for community awareness activities. Additionally, an overarching recommendation is the consideration of all caregivers (mothers, fathers, grandmothers, possibly adolescent siblings) for activities to ensure secondary caregivers are improving practices and fathers are support wives in good practices. In some communities, knowledge is not the issue but there are barriers to behaviour change, therefore SBCC approaches should be carefully designed to provide optimal behaviour change, and progress of positive behaviours should be monitored with strategies adapted and improved with operational learning and observations. The government's new approach of Baby Friendly Community Initiative (BFCI) should be adopted in order to promote the best infant and young child feeding practices. It is also recommended that the programme contain a Food Security and Livelihood (FSL) component to improve the capacity and ability of households to generate sustainable and reliable incomes to improve household wealth, which impacts on a number of risk factors, as well as providing alternative coping mechanisms that taking loans or selling assets, and reduces issues with food access at the household and subsequently improved child and household nutritional status. Overcrowding needs to be addressed as a matter of urgency. There is need to reinforce the existing policies that controls and limits the number of houses constructed in a given area.

Other key recommendations for improving nutrition situation among slum dwellers include tightening rules that govern the operation of the day care centers, targeting households for health and Nutrition community education through models and more engagement by stakeholders on waste management



TABLE OF CONTENTS

INTRODUCTION	1
SECTION I – METHODOLOGICAL CONSIDERATIONS	3
1/ WHY CONDUCT A LINK NCA?	3
1.1 CONTEXT INFORMATION	4
1.1.1 Child stunting, wasting and underweight	4
1.1.2 Poverty	5
1.1.3 Food availability, consumption and access	6
1.1.4 Child Feeding Practices	6
1.1.5 Health seeking behavior	7
1.1.6 Micronutrient deficiencies	7
1.1.7 Access to Health, Water and Sanitation	8
1.1.8 Infant, child, and maternal mortality	9
1.2 MAIN STUDY OBJECTIVE	9
1.3 SPECIFIC STUDY OBJECTIVE	9
2/ THE LINK NCA METHODOLOGY	10
2.1 OVERVIEW OF THE LINK NCA APPROACH	10
2.2 STUDY DESIGN	10
3/ SAMPLING PROCEDURE	11
3.1 SELECTED METHOD AND SAMPLE SIZE CALCULATION	11
3.2 SAMPLING PROCEDURE FOR THE RISK FACTOR SURVEY	15
3.3 SAMPLING PROCEDURE FOR QUALITATIVE DATA COLLECTION	15
4/ DATA COLLECTION METHODS	17
4.1 QUANTITATIVE SURVEY	17
4.1.1 Data collection methods	17
4.1.2 Field team composition, recruitment and training	18
4.1.3 Main challenges	18
4.2 QUALITATIVE COMMUNITY ENQUIRY	19
4.2.1 Research instruments and methods	19



4.2.2	Data Collection Methods	20
4.2.3	Field Team Composition, Recruitment and Training	22
5/	DATA MANAGEMENT AND ANALYSIS	23
5.1	INITIAL WORKSHOP	23
5.2	QUANTITATIVE DATA MANAGEMENT AND ANALYSIS	23
5.3	QUALITATIVE DATA MANAGEMENT AND ANALYSIS	23
5.4	RATING HYPOTHESES	23
5.5	FINAL STAKEHOLDER TECHNICAL WORKSHOP	24
6/	ETHICAL CONSIDERATIONS TAKEN DURING THE SURVEY	25
6.1	RESEARCH ETHICS	25
6.2	ETHICAL APPROVAL AND INFORM CONSENT	25
6.3	SAM AND SEVERELY ILLS PROTOCOL	25
7/	LIMITATIONS	26
7.1	LINK NCA METHODOLOGY LIMITATIONS	26
7.2	LIMITATIONS ENCOUNTERED RELATED TO THE STUDY PRESENTED MISSING	26
	SECTION II: LINK NCA FINDINGS	27
1/	PRELIMINARY TECHNICAL EXPERT WORKSHOP	27
1.1	INITIAL CAUSAL HYPOTHESES	27
1.2	HYPOTHESES TO BE FIELD-TESTED	27
1.3	NUTRITIONAL VULNERABLE GROUPS	31
2/	CHARACTERISTICS OF THE STUDIED POPULATION	31
2.1	HOUSEHOLD COMPOSITION	31
2.2	OVERVIEW OF THE LIVING CONDITIONS	31
2.3	MARITAL STATUS	32
2.4	EDUCATION LEVEL OF THE CAREGIVERS	32
2.4.1	Occupation of the caregiver	33
2.5	PERCEIVED SOCIAL CAPITAL	34
2.6	CAREGIVER WORKLOAD	35



3/ UNDERNUTRITION	36
3.1 ANTHROPOMETRIC RESULTS	36
3.2 LOCAL DEFINITION AND UNDERSTANDING OF GOOD NUTRITION AND MALNUTRITION	38
4/ RESULTS BY HYPOTHESIS	39
4.1 HYPOTHESIS A: NON-OPTIMAL CARE FOR CHILDREN/POORLY MANAGED DAY CARES	39
4.2 HYPOTHESIS B: NON-OPTIMAL COMPLEMENTARY FEEDING PRACTICES	40
4.3 HYPOTHESIS C: NON-OPTIMAL BREASTFEEDING PRACTICES	42
4.4 HYPOTHESIS D: NON-OPTIMAL MATERNAL HEALTHCARE	44
4.5 HYPOTHESIS E: MICRONUTRIENT DEFICIENCIES AMONG PREGNANT AND LACTATING WOMEN	45
4.6 HYPOTHESIS F: NON-OPTIMAL PSYCHOSOCIAL CARE FOR WOMEN AND GENDER BASED VIOLENCE	45
4.7 HYPOTHESIS G: LOW UPTAKE OF FAMILY PLANNING	47
4.8 HYPOTHESIS H: HIGH CASES OF HIV/AIDS AND TB	48
4.9 HYPOTHESIS I: POOR HEALTH SEEKING BEHAVIOR	49
4.10 HYPOTHESIS J: NON-OPTIMAL ACCESS TO SAFE WATER	52
4.11 HYPOTHESIS K: NON-OPTIMAL VENTILATION AND OVERCROWDING IN HOUSES	56
4.12 HYPOTHESIS L: NON-OPTIMAL SANITATION FACILITIES	56
4.13 HYPOTHESIS N: NON-OPTIMAL LIQUID/ SOLID WASTE MANAGEMENT AND HYPOTHESIS M: INADEQUATE HYGIENE PRACTICES	58
4.14 HYPOTHESIS O: LIMITED ACCESS TO FOOD DUE TO ECONOMIC PROBLEMS	59
4.15 HYPOTHESIS P LIMITED KNOWLEDGE ON FOOD GROUP	62
5/ SEASONALITY, HISTORICAL EVENT AND SHOCKS	63
5.1 SEASONAL CALENDAR	63
5.2 HISTORICAL EVENTS AND SHOCKS	65
6/ COMMUNITY RATING	67
6.1 INTRODUCTION	67
6.2 RATING CAUSES OF MALNUTRITION	69



6.3 ISSUES THAT EMERGED DURING THE DISCUSSION THAT DID NOT COME OUT WHEN CONDUCTING QUALITATIVE DATA	70
6.4 FINAL RATING BY THE ANALYST AND EXPERT	72
7/ CAUSAL MODEL	75
SECTION III RECOMMENDATIONS AND LESSONS LEARNT	77
1/ GENERAL PROGRAMME AND POLICY RECOMMENDATIONS	77
1.1 RESPONSE ANALYSIS	80
2/ NEXT STEPS	97
CONCLUSION	98
ANNEXES	99



LIST OF TABLES

<i>Tab. 1. Measurement of risk factors</i>	12
<i>Tab. 2. Calculation of household sample to be surveyed</i>	14
<i>Tab. 3. Sampling for the qualitative study</i>	15
<i>Tab. 4. Interviews conducted and rating exercise</i>	20
<i>Tab. 5. Ratings as per Link NCA classifications</i>	24
<i>Tab. 6. Validation or modification of hypothesis</i>	27
<i>Tab. 7. Hypothesised risk factors</i>	30
<i>Tab. 8. Caregiver’s characteristics</i>	32
<i>Tab. 9. Anthropometric results from the SMART nutrition survey 2014</i>	36
<i>Tab. 10. Complementary feeding</i>	41
<i>Tab. 11. Breastfeeding characteristics</i>	42
<i>Tab. 12. Caregiver - child interaction</i>	46
<i>Tab. 13. Family planning methods</i>	47
<i>Tab. 14. Morbidity</i>	49
<i>Tab. 15. Morbidity</i>	49
<i>Tab. 16. Barriers to accessing health facilities</i>	50
<i>Tab. 17. Water management risks</i>	53
<i>Tab. 18. Fanta and Sphere standard measurement of water use</i>	53
<i>Tab. 19. Water Use</i>	54
<i>Tab. 20. Table 18: Hygienic and safe sanitation</i>	57
<i>Tab. 21. Months of adequate household food provisioning</i>	60
<i>Tab. 22. Copping strategies score</i>	61
<i>Tab. 23. Seasonal calendar</i>	63
<i>Tab. 24. Historical calendar</i>	65
<i>Tab. 25. Historical calendar - Mukuru</i>	66
<i>Tab. 26. General risk factors</i>	71
<i>Tab. 27. Source of risk factor information</i>	72
<i>Tab. 28. Risk factor rating</i>	73
<i>Tab. 29. : Risk factor evaluation from various perspectives</i>	74



LIST OF FIGURES

Fig. 1.	Caregiver occupation.....	34
Fig. 2.	Caregiver perceived social capital.....	35
Fig. 3.	Non optimal breastfeeding practices.....	44
Fig. 4.	Mothers seeking ANC services at a health facility <i>Erreur ! Signet non défini.</i>	
Fig. 5.	Mothers waiting at a health facility	51
Fig. 6.	Water source risk.....	52
Fig. 7.	Water sterilization in Mukuru	53
Fig. 8.	Water management	55
Fig. 9.	Non-optimal liquid/ solid waste management	58
Fig. 10.	F Household food insecurity access scale	59
Fig. 11.	Food consumption score.....	59
Fig. 12.	Consumption of food as per food groups by children	62
Fig. 13.	Causal Pathway.....	76



INTRODUCTION

Extreme hunger and malnutrition remains a huge barrier to development in many countries. According to the Food and Agriculture Organization (FAO) report on the state of food insecurity in the world, 795 million people are estimated to be chronically undernourished as of 2014, often as a direct consequence of environmental degradation, drought and loss of biodiversity.

Globally, about 2.2 million children die due to poor nutritional status and over 90 million children under the age of five are dangerously underweight. One person in every four still goes hungry in Africa. Under nutrition is not only linked to child mortality but also poor functional development to the child. Undernourished children are highly susceptible to common childhood ailments such as diarrhea, respiratory infections and worm infestations. The recurrence of these ailments compromises the child's health and functioning in adulthood.

More than half of the world's populations live in cities and the majority of them reside in cities in developing countries. Urban populations are projected to double in African and Asian cities over the next 30 years. The poor make and will continue to make up a large part of urban growth settling in informal urban slums. As a result, the number of slum dwellers has almost doubled in the last 20 years with over 70% of the urban population living in the slums. This number is projected to double by 2020. Urban slum growth in Kenya parallels the global pattern. The Nairobi slum development has been just one part of the wider economic and social development of the city and of the society as a whole. The significance of the growth of Nairobi slums is mainly due to the fact that the people who lived in them during the colonial period constituted the majority of the city population. In addition, the development of these urban slums was directly related to the character of economic development in the rest of the society of Kenya. This pace of urbanization exceeds the rate at which basic infrastructure and services can be provided with dire consequences for the urban poor. In Kenya, as in most parts of developing countries, urbanization is increasing at a rapid pace. A UN Habitat (2008) report showed that urban growth rates in Kenya are 1.2% and cites the case of Nairobi whose population in 2008 is estimated to be 3,125,000 up from 1,380,000 in 1990. Kenya's urban poor currently constitute over 4 million people and this number is set only to increase in the coming years as 50% of the country's population is expected to reside in urban centres by 2020.

Slum dwellers depend upon employment in the informal sector characterised by low pay and poor working conditions. Slum settlements are often located on hazardous land prone to the effects of natural disasters including landslides, flooding, and earthquakes. Due to the illegal nature of slum settlements, the urban poor are excluded from governments' development and service delivery plan limiting the urban poor from accessing schools, health clinics, water and sanitation, drainage, sewerage, or garbage collection services. They are made highly dependent on private providers for basic social services who charge exorbitant fees in comparison to public providers. Consequently, informal settlements in Kenya are characterized by poor environmental conditions predisposing inhabitants to poor health outcomes.

Many slum dwelling families exist on the edge of survival and urban slum populations are highly vulnerable to shocks, from price increases, to disease outbreaks, to political unrest, to a more subtle combination of all of these that cause a substantial proportion of these families to tip over the edge.

Nutrition is critical for survival, health and development. The role of optimal nutrition in health and development warrants increased commitment and investment in Kenya. The anticipated gains in investing in nutrition will enable the country make significant progress in achieving targets for



Sustainable Development Goals (SDGs) aim to end all forms of hunger and malnutrition by 2030, making sure all people – especially children and the more vulnerable – have access to sufficient and nutritious food all year round.

The Kenya Vision 2030 that aims to transform Kenya into a globally competitive and prosperous nation with a high quality of life by the year 2030.

The Kenyan constitution guarantees children the right to nutrition as a fundamental human right. Children have the right to access safe and nutritious food, and nutrition is a universally recognized component of the child's right to enjoyment of the highest attainable standard of health. These goals directly relate to and depend upon improvements in the nutritional status of women and children. The damage malnutrition has to the first 1,000 days of life is irreversible. Malnourished children are less likely to go to school, to stay there, and more likely to struggle academically; they earn less than their better-nourished peers over their lifetimes.¹ Intervention is critical to avoid such outcomes.

Kenya's Vision 2030, the country's development blueprint covering the period 2008 to 2030 aims to transform Kenya into a newly industrialized, globally competitive "middle-income country providing a high quality life to all its citizens by the year 2030." Kenya's vision for health is to provide "equitable and affordable health care of the highest attainable standard" to her citizens. Good health and nutrition play an important role in boosting economic growth, poverty reduction and the realization of social goals.

The ministry of health with support from UNICEF developed the Urban Nutrition Strategy 2013 to 2017. The strategy builds upon the National Food Security and Nutrition Policy and the National Food Security and Nutrition Strategy. The strategy has the following goal: "*to improve the nutrition status of urban populations in Kenya*".

Five strategic objectives underpin attainment of this goal and are defined as:

- Effective provision of preventive and therapeutic nutrition and social protection services for vulnerable urban populations
- Improve community engagement and resilience to prevent and address underlying causes of malnutrition
- Improve prevention, management and control of over nutrition and diet-related non-communicable diseases in urban populations
- Promote community centred market-based solutions and their pro-poor positioning to secure good nutrition and healthy environments for urban population
- Recognise and safeguard rights of the urban poor through enhanced accountability and voice

Concern Worldwide has been supporting the Ministry of Health (MoH) in the improvement of health and survival of children under five and pregnant and lactating women through support to health and nutrition systems to scale up high impact nutrition interventions³ (HINIs). Initially, the program was covering only three districts but later the program has been expanded to cover eight districts out of the nine districts in Nairobi County. These are Dagoretti, Westlands, Kamukunji, Starehe, Kasarani, Makadara, Njiru and Embakasi. In total, there are 80 facilities which are supported by Concern Worldwide in the implementation of the OTP services across the 8 districts.



SECTION I – METHODOLOGICAL CONSIDERATIONS

1/ WHY CONDUCT A LINK NCA?

In June 2014 a SMART survey was conducted through the partnership of the Ministry of Health, Feed the Children and Concern Worldwide and was funded by UNICEF, in order to get integrated baseline slum level information on both health and nutrition indicators for needs identification. The survey classified the slums into worse off (Majengo, Mathare, Gitare Marigu and Mukuru) and better off slums (Korogocho, Viwandani, Kibera, Deep Sea and Kawangware) based on the review of literature on the socio-economic, health and sanitation situation of the slums.

The survey concluded that the nutrition situation in the slums is *poor* according to the World Health Organization classification of malnutrition. The results of the survey showed that the prevalence of stunting in the Slums of Nairobi was 33.5% (30.1-37.2, 95% CI) which is categorized as high based on the WHO classification. Further, the prevalence of severe stunting was found to be 12.0% (9.7-14.8, 95% CI) which is considered high. When compared with Nairobi as a whole with a stunting rate of 21.1% (KDHS 2014), the stunting levels were relatively higher in the worse off slums. The high stunting levels in the slums represent a loss of both mental and physical potential for the affected children. Stunting (height-for-age) is an indicator of chronic (long-term) malnutrition arising from persistently poor food security situation, micronutrient deficiencies, recurrent illnesses and other factors, which interrupt normal growth. Unlike wasting, stunting is not directly affected by seasonality but rather related to the long-term effect of socio-economic development and long-standing food insecurity situation.

The proportion of children who were fed on the minimum acceptable diet in the slums was 54.8% (n=211) which did not vary significantly by the slum type. However, this was below the national recommended proportion of 80%. According to the results of the survey, 62.6% (n=241) consumed the minimum dietary diversity with the Better Off slums having a higher proportion though not significantly different with the Worse off Slums.

The study recommended continued management of Acute Malnutrition through the Integrated Management of Acute Malnutrition Program to include both the Outpatient Therapeutic Program and the Supplementary Feeding Program by the MoH and Nutrition Partners. It also recommended strengthening and improving capacity of staff through training and supervision in both public and private health facilities by government on continued obstetric care and agree on a unified maternal and child health information reporting systems.

It is therefore important to consider doing a Link NCA in one of the study areas to establish the effect of interventions (if any) in one of the worse off slums.

Moreover, only few studies are focusing on slums, but are more looking at global situation in Nairobi city. Given the high disparities between well-off areas and worse-off areas, results might



be washed-out and not give a representative view of the real situation in slums and informal settlement, nor of the “well developed” part of the city. At the time of the Link NCA implementation, many qualitative studies as well as quantitative assessments were already done in several slums of Nairobi. However quality information exist, most of them are not addressing the question of nutrition security in a holistic view and are giving partial view of the situation. Instead, of implementing several studies in a specific place, resulting on specific information on mechanisms linked to undernutrition, piloting a Link NCA in urban set-up was considered more cost-effective and more accurate to understand through the “security nutrition lens”. Indeed, in addition of building a case of causality of undernutrition, the method also aims at bringing stakeholders, experts and decision makers together to reach a consensus on the situation and engaged together in a program road map to alleviate the situation.

Although a need for better understanding on how implementing quality study in urban set-up, the Link NCA method was originally build and tested for rural set-up. Therefore, discussions were hold between implementing NGO to decide if piloting the method was feasible. Few criterions were taken in account during those discussions: need to understand better the context for further programming, expertise of Concern Worldwide and the Link NCA Technical Unit on urban studies/programming, availability of quality urban expert researchers, security issues, access to the slum, ethical considerations etc. One the decision was taken, the choice of which slums should be considered for implementing the pilot was taken in a consensus with several actors (University, NGO, Academics) at the end of a training on the Link NCA method hold in Nairobi in July 2017. Mukuru and Viwandi slums were chosen as they were not well studied, several actors were willing to implement programs and they were considered as more stable and easy to study for a pilot than other slums where for example, the population was not well settle or insecurity might have jeopardized the implementation of the pilot study. The first move of the Link NCA study team was to work on a design protocol on how to implement the study (review of different urban studies protocol and a one-month pre-study to understand better the overall situation of the slum).

1.1 CONTEXT INFORMATION

Under-nutrition in urban settlements can take a number of forms. These include stunting, wasting and micronutrient deficiency. Stunting is the predominant form of under-nutrition found in urban informal settlements. The causes of under-nutrition are multiple and the causal pathways are complex and interacting. In many instances, different types of under-nutrition overlap. The main causes of malnutrition are inadequate dietary intake and disease, which are associated with inadequate household food security, care practices, or health environment.

1.1.1 Child stunting, wasting and underweight

Access to food is a basic human right, supported by an international human rights framework that makes governments legally accountable for the nutritional status of their people (UN Convention). However, according to the 2014 KDHS 26% of children in Kenya were stunted while 8% were severely stunted. Nairobi is one of the regions with the lowest percentage with stunted growth of 7% however in the study area stunted growth is higher than the county rate, an APHRC surveillance system established in two Nairobi slums found that one in two children were stunted (Nairobi Urban Health and Demographic System, APHRC 2010).

Nationally 4% of children are wasted while 1% are severely wasted. Wasting levels were highest among children in the age group 6-8 months and 9-11 months. Children whose mothers had no education have a higher chance of wasting than children of educated mothers. A significant number of caregivers in Viwandani have a low literacy level which is one of the drivers of under nutrition among children. This was confirmed by proPan study, which found nearly a third of the



women had not attended school. Wasting in children generally decreases with increasing household wealth (2014 KDHS).

The percentage of Kenyan children that are underweight is 11% while the severely underweight stand at 2%, rural children are more (13%) underweight compared to those from urban areas who are 7%. (2014 KDHS).

The causes of under nutrition in the study area (Viwandani and Mukuru slums) are multiple, with complex interrelationships between the immediate causes of inadequate dietary intake and infection; the underlying causes of household food insecurity, suboptimal feeding and care practices, and poor access to health and hygienic environment; and the basic causes around education, infrastructure, economic factors, and socio-cultural norms.

The landscape analysis, done prior implementing the study, identified particular drivers of the high burden of under nutrition in the study area. In terms of immediate causes, the rates of child morbidity from respiratory infection and diarrhea are high due to sanitation and environmental issues, while dietary intake is inadequate in terms of both quantity and quality in many cases due to high levels of poverty. The underlying causes lead to severe food insecurity at the household level, low access to safe water and sub-optimum care giving practices where not all children between 0 – 6 months are breastfed exclusively. There is a strong linkage between maternal education and children's health. Children born to educated women suffer less from malnutrition, which manifests as underweight, wasting and stunting in children (proPan 2014).

The basic causes of under nutrition in the study area could be attributed to underlying societal issues related to poverty, which is prevalent. The availability of nutrition resources at the household level is a function of how society operates in terms of livelihood opportunities and economic structure.

1.1.2 Poverty

Urbanization rate in Kenya is one of the highest in the world with an annual urban population growth rate of 4.4%. Poverty in Kenya's urban slums is high with more than half of the residents living on meagre incomes and in crowded conditions with poor or no sanitation. Generally, urban poverty is characterised by a lack of employment, lower wages and returns from informal employment, and extremely poor levels of basic services such as housing, sanitation, health care, and education.

Poverty and vulnerability are some of the main characteristics of informal settlements in urban areas including the slums in Nairobi. In most cases, expenditure for food predominate household expenditures with many households having very little cash incomes leading to high levels of poverty which result in the inability of most households to purchase nutritious foods or engage in health-seeking behaviors. Major aspect of vulnerability relates to the dramatically increased cost of food in recent years, which has led a majority of slum dwellers to decrease the frequency and size of their meals as well as pushing people into high-risk livelihood activities in order to meet their basic needs

Informal settlement populations are highly vulnerable to shocks, from disease outbreaks to price spikes and political unrest during electoral season resulting to high disease burden, food insecurity and ultimately high levels of malnutrition and mortality. Food security is heavily associated with income given that almost all food consumed in informal settlements is purchased.

Feelings of insecurity in many of the city's informal settlements have heightened considerably since the violence following the contested election results of December 2007. Poverty in the city is worst amongst those with low levels of education, another cause for concern given that considerably fewer children attend the later stages of school in Nairobi than in Kenya's rural areas, and many slum areas have few or no public schools. Meanwhile gender inequalities remain severe, with female slum-dwellers being 5 times more likely to be unemployed than males.

Although there has not been any significant shocks like fires, political unrest, and disease outbreaks in Mukuru and Viwandani in the last five years. However, the prices of food vary



throughout the year. The community health volunteers reported that whilst the price of a bunch of kale remains at five shillings throughout the year, the number of stalks vary with the seasons. A market survey carried out in 2014 showed that the animal sources of foods are more expensive compared to the plant sources in Viwandani. This affects the affordability by the households with under 5 children. This could also attribute to the low intake of the animal sources of food as reported in ProPan Report.

1.1.3 Food availability, consumption and access

Food access is one of the main sources of food insecurity among the urban poor settlements particularly due to a lack of purchasing power. Food takes usually consumes the largest percentage of the urban poor's income. For example in Mukuru slums, poor households will spend up to 70% of their income on basic foods, buying 90-100% of their household food. As a result, poor urban households are more vulnerable to food price increases.

In most cases, urban populations rely on markets for all their goods, services and employment and are very vulnerable to any unfavorable changes in the market system. Food markets in poor urban areas tend to be inefficient in terms of providing adequate quantities, quality and competitive (Martine et al., 2012).

In urban households including informal settlements, there is a tendency to consume foods with a greater energy density with potentially fewer micronutrients. This is leading to the 'double burden' of malnutrition whereby overweight and obesity co-exist with undernutrition. Households where overweight adults and underweight children co-exist are increasingly common in some developing countries.

Findings from the field visits show that there is a variety of food sold in the slums. However the cost of preparing the food is high given that the cost of kerosene has gone up by 7.7% in 2016 compared to the price same time 2015. This is despite the price of petrol and electricity coming down according to consumer price indices and inflation rates for August 2016.

1.1.4 Child Feeding Practices

Feeding practices play a critical role in child development thus poor feeding practices can adversely affect the health and nutritional status of children consequently affecting their mental and physical development.

Early initiation of breastfeeding is important for the child. Colostrum the first liquid to come from the breast is highly nutritious and contains antibodies that provide natural immunity to the infant. The World Health Organization (WHO) is recommending that children should be fed with colostrum immediately after birth (within one hour) and they continue to be exclusively breastfed for six months. Introduction of solid/semi-solid food to infants is recommended after six months because breast milk alone is not sufficient to maintain a child's optimal growth. The appropriate infant and young child feeding (IYCF) practices include breast feeding through age 2 years, introduction of solid and semisolid foods at age 6 months and gradual increases in amount of food given frequency of feeding as the child gets older.

According to the 2014 KDHS, 61% of children younger than six months were exclusively breastfed while 90% of children continued to breastfeeding at age 1 and 53% continued breastfeeding at age 2. Eighty percent of children ages 6-8 months were introduced to solid, semi-solid or soft foods.

According to the ProPAN assessment, 86.3% of infants were fed on breast milk only in the first 3 days of life. The practice was attributed to advice from the health workers at the health facilities and mother's awareness that they should give the child only breast milk in the first 3 days of life (46% of caregivers). Other mothers indicated that they had adequate milk and hence did not see



the need to introduce other feeds to the children. Evidence from ProPAN assessment¹ (conducted in Viwandani slums) indicated none of the children 0 – 5 months was on exclusive breastfeeding. More than half of the children 6 -23 months did not receive minimum acceptable diet and yet none in the whole group were fed on the recommended nutrient density.

The high cost of fuel deters many mothers from giving children healthy foods such as pulses in the study area, they instead rely on prepared street food or easy to cook starches. This leads to widespread poor child feeding and care practices, malnutrition and stunting growth affecting more than one in two children in urban slums². Wasting and underweight were found to be prevalent in the study area.

1.1.5 Health seeking behavior

Nutrition and health are closely related, since disease contributes to malnutrition, while malnutrition makes an individual more vulnerable to disease. Most cases of child mortality result from disease aggravated in a vicious circle by malnutrition. High levels of infections such as malaria, diarrhea, intestinal parasites, and acute respiratory infections impact on individual's nutritional status because of the vicious cycle between infection and malnutrition.

The conditions in which the urban poor live in predispose them to poor health, these include poor hygiene and sanitation, poor environmental sanitation, poor housing, and low income levels. There is a high prevalence of communicable diseases such as TB, diarrhoea, malaria and other water borne diseases, contributing to high levels of malnutrition. This is in addition to poor maternal health and rates of HIV which are estimated at double the national average. The high rate of maternal mortality in the slums is associated with pregnancy complications arising from anaemia, maternal morbidity and low weight in pregnancy, all closely linked to malnutrition. More than half the pregnant women in Kenya are iron deficient (KDHS, 2008/09).

One of the most worrying indicator of vulnerability amongst informal settlement populations is child health. High the prevalence of disease at the individual level, leads to loss of appetite, reduced food intake, mal-absorption, and increased nutrient needs.

Prevention or prompt treatment of these disease episodes that cause weight loss can reduce the incidence of malnutrition that is not caused by lack of food. Therefore, reducing barriers to accessing preventive and curative health care can potentially have a positive impact on nutrition through the reduction of incidence of communicable diseases.

1.1.6 Micronutrient deficiencies

Micronutrient deficiencies are associated with increased risk of morbidity and mortality through their effect on the immune system. Micronutrient deficiencies result from poor quality diets and high rates of infection, which negatively affect nutritional status by increasing nutrient requirements and reducing nutrient absorption.

Micronutrient deficiency is a major contributor to childhood morbidity and mortality. It remains a major problem facing Kenya's poor. The condition has severe consequences leading to stunted growth, high maternal mortality, miscarriages to name a few. The 2014 KDHS indicated that 72% of children aged 6-23 months consumed food that were on Vitamin A supplements.

According to the 2014 proPan study, micronutrient deficiencies were found in Viwandani where 72% of children were on Vitamin A supplements. The study also mentioned the existence of multivitamin, mineral supplement and micronutrient powder programs in the same community.





The presence of this program in the study area are a pointer of micronutrient deficiency. In low resource settings, supplementary food is often nutritionally inferior.

1.1.7 Access to Health, Water and Sanitation

Recent surveys have shown that between 70 and 75% of slum dwellers are poor with limited access to water and sanitation, compared to 46% of the national population as a whole.

Access to health, water and sanitation is one of the underlying causes of under nutrition in the Mukuru and Viwandani.

Access to quality and affordable water in the study area is a challenge. Majority of informal settlement dwellers pay exorbitant prices (eight times) for water compared to other communities. Often times the available water is not safe resulting to a high prevalence of waterborne diseases. A study conducted by APHRC concluded that informal settlement children are likely to experience fever and diarrhoea more frequently than children in other parts of the country, and also links the Infant Mortality Rate (IMR) to poor access to sanitation and safe water (APHRC, 2005). Another study conducted by Oxfam (2009) indicated that bloody diarrhoea incidences in the informal settlement is three times higher than the national average of 17%. The study area has poor hygiene and sanitation practices with a few residence having access to latrines. Due to low hygiene and sanitation cover, the study area population experience a vicious cycle of infection and malnutrition, where repeated infections lead to negative consequences on the absorption of nutrients by the body resulting to under nutrition.

Environmental health issues such as over-crowding, poor water and sanitation, pollution, open sewerage and contamination are most severe in informal settlements including the study area. In slums, basic human needs such as clean air, water, food and housing are difficult to access. Poor environmental health due to poor dumping of waste results influxes of insects and rodent increasing incidences of vector borne diseases (malaria), acute respiratory infections (ARIs) and skin infections all of which have significant impact on child and household health. Indoor air pollution and ARIs contribute to child mortality in slums, accounting for 18% of deaths among children under five (Baker, 2008). Poor health is compounded by overcrowding. Awareness in preventative practices (washing hands, maintaining sanitary environments in the home etc.) in slum households is needed to ensure that children do not contract multiple diseases which weaken immunity and increase the risk of under nutrition.

Public health facilities in urban slums including the study usually lack supplies and are understaffed due to these challenges, most facilities close early and they do not open on weekends. This poses a challenge for slum dwellers accessing health care services. Due to this challenge there exists sub-standard, unrecognized and unlicensed private health clinics. This has resulted to many slum dwellers seeking treatment elsewhere creating a challenge to the referral system in case of a complication. This challenge coupled with poor health seeking behavior has resulted to patients especially children seeking treatment too late and with severe conditions.

The study area has poor hygiene and sanitation practices with a few residence having access to latrines. Due to low hygiene and sanitation cover, the study area population experience a vicious cycle of infection and malnutrition, where repeated infections lead to negative consequences on the absorption of nutrients by the body resulting to undernutrition. A visit to Mukuru was a confirmation that the poor state of sanitation is a health hazard especially during the rainy season. The area has toilets made of iron sheets that drain into a river. During the rainy season, the river overflows into the residential houses and business premises.

From the interviews conducted with the community health workers, efforts by partner organisations have seen the introduction of various strategies including giving buckets to households. These strategies have been elicited both positive and negative reactions from the community.



1.1.8 Infant, child, and maternal mortality

Nairobi, the Capital City of Kenya has experienced an exponential growth in the past 60 years where the current population of 3.5 is almost 29 times higher than the 1948 population which was 120,000. This is despite the fact that the area in kilometers squares has remained the same at 696.1 and hence the current population density is 5028 which is quite high and still increasing. As a result of the skyrocketing population in Nairobi, majority of the people live in the informal settlement which according to estimates house approximately 60% of the Nairobi population and cover only 5% of the city's residential land.

Emerging evidence reveals that the urban population explosion in the region has been accompanied by increasing rates of poverty and poor health outcomes. It has been documented that the urban poor face worse health indicators than their rural counterparts or their counterparts in the urban non-poor settlements. Despite the urban population enjoying easy access to health services (Essendi et al, 2011), the incidence of child under nutrition, morbidity and mortality has been shown to be higher in slums and peri-urban areas than in more privileged urban settings or, sometimes, even rural areas². Life in these slum areas is associated with poor health indicators due to inadequate access to clean water, electricity and health facilities, and generally poor sanitation. Slum conditions create greater exposure to violence (often sexual and gender based), unwanted pregnancy and adverse health and nutrition outcomes, particularly for women and their children. Maternal and child outcomes are intimately linked. Poor maternal health affects the development of the foetus, the likelihood of a healthy pregnancy and birth outcomes. Maternal caring practices, including sub optimal maternal, infant and young child nutrition (MIYCN) practices from gestation up to two years of life, also contribute to poor and often irreversible child health outcomes. Poor nutrition in mothers and young children leave both vulnerable to opportunistic infections and diseases such as diarrhoea, malaria and acute lower respiratory infections.

A study conducted in Nairobi's informal settlements (African Population and Health Centre 2002) found that children living in unhygienic environments indicated by poor drainage systems, inadequate or non-existent toilets and piles of uncollected garbage suffer higher levels of morbidity and mortality (Caldwell & Caldwell, 2002). The study further reveals that only 24% of all households within Nairobi have access to piped water in form of public water taps and 75% purchase water for domestic use (Wasao & Bauni, 2001). In terms of child health the rate of diarrhea was 31% for children under five years while the infant mortality rate (IMR) was 91/1000 compared to 39/1000 in non-slum parts of Nairobi (APHRC, 2002). Malnutrition is also a major cause of child morbidity and mortality can, therefore, be related to environmental degradation (APHRC, 2002). This study linked child malnutrition, morbidity, hygienic practices, food and/or water safety in impoverished Mukuru slum in Makadara division, and the poorest in Nairobi City (GoK, 2005).

1.2 MAIN STUDY OBJECTIVE

The main objective of the Link NCA is to identify the most important causes and mechanisms leading to child under-nutrition, in particular stunting of children age 0-59 months, in Mukuru and Viwandani slums of Nairobi County. In addition, the Link NCA is considering vulnerable nutritional groups identified as children less than 23 months and tribes.

1.3 SPECIFIC STUDY OBJECTIVE

The NCA study specific objectives include:



To estimate the prevalence of known risk factors for under-nutrition among the population and key “nutrition vulnerable groups”

To identify main causes of under-nutrition in order to inform the technical strategy and programs for the prevention of the same at a local level

To determine which causal pathways of malnourishment are likely to explain most under nutrition cases in the target area

To develop an “emic” definition and understanding of good nutrition, malnutrition and believed causes of under nutrition within the target population

To understand the local seasonal and historical pathways to stunting

To support technical advocacy on causes of stunting so as to support technical strategy.

2/ THE LINK NCA METHODOLOGY

2.1 OVERVIEW OF THE LINK NCA APPROACH

A Link NCA is a structured, participatory, holistic, multi-sectorial study, based on the UNICEF causal framework, to build a case for nutrition causality in a local context.

- **Structured** – the steps of the methodology are precisely defined and have all been tested in the field.
- **Participatory** – the study is giving a real opportunity to national technical experts as well as caregivers in the community to express their opinion on the causes of under nutrition, and to discuss, review and finally validate the conclusions of the study.
- **Holistic** – under nutrition is here studied globally to avoid a sectorial approach, and to highlight the inter-relations between risk factors.
- **Multi-sectorial** - a nutrition causal analysis (NCA) investigates and presents a “multi-sectorial” overview of the contributing factors affecting nutritional status within a given community.
- **Building a case for nutrition causality** – the core exercise of an NCA is to identify
- **Specific to a local context** - causes of under-nutrition are often different from one location to another. The purpose of the methodology is to go beyond generic interventions by identifying context specific causes in order to propose adequate solutions.

2.2 STUDY DESIGN

The NCA methodology involves five key steps:

1. **Preparatory Phase:** The preparatory phase is to ensure that implementing a Link NCA study is relevant and need. It also ensure timely recruitment process; clear objectives



and the choice of NCA methodology (comprehensive, qualitative, quick) is selected. In this specific study, the preparatory phase also included designing the urban-pilot protocol and selecting adequate procedures to be field tested.

2. **Development of causal hypotheses:** a literature review, data review and stakeholders interviews (Community Health and Nutrition Workers (CHNW) and NRC staff) were undertaken to generate an overall understanding of the local context of undernutrition and design a set of local causal hypothesis of undernutrition. These hypotheses have been validated to be field tested by Technical Experts during a workshop held on the 16th of November 2016 in Nairobi.
3. **Data Collection:** Both quantitative and qualitative data were collected to provide more evidence on levels of undernutrition, key risk factors and community perceptions, practices and constraints.
4. **Identification of highest priority causes of undernutrition:** Based on the evidence gathered during the data collection, the causal hypotheses were then ranked by order of importance with particular attention to seasonal differences and vulnerable groups. The results were then validated with the local community before being presented at a final workshop on the 22nd February 2017, where technical and NCA experts tried to reach a consensus on the most important risk factors and priorities for action.
5. **Identification of response options and design of a program road map to be implemented in the coming years:** Based on the Link NCA results and global recommendations drew, a two-days response analysis with stakeholders and decision makers was hold on the 23rd and 24th February 2017. This response analysis result on selection of program options based on the causal analysis findings and forecasting and were aggregated in road map for improving nutrition security programming in the given area that mentioned also which actors will be engaged along the processus.

3/ SAMPLING PROCEDURE

3.1 SELECTED METHOD AND SAMPLE SIZE CALCULATION

The method selected was random cluster sampling and followed the recommendations provided by the NCA guidelines. Clusters have been defined as the smallest administrative unit, i.e. clusters refer to villages. A sample size has been calculated for a list of key indicators present on the NCA indicators guide. This list was a sufficient basis to calculate the sample to be surveyed.



Tab. 1. Measurement of risk factors

TYPE OF INDICATOR	INDICATOR	TARGETED POPULATION
	HDDS	Household
	HFIAS	Household
	MAHFP	Household
	Early initiation of breastfeeding	0-24 months
	Exclusive breastfeeding under 6 months	0-5 months
	Continued breastfeeding at 1 year	12-15 months
	Introduction of solid, semi-solid or soft foods	6-8 months
	Minimum dietary diversity	6-23 months
	Meal frequency	6-23 months
	Reported responsive feeding	6-59 months
	Mother's food intake evolution during pregnancy and/or lactation	Mother
	Caregiver's completed years of education	Caregiver
	Perceived social capital	Mother
	Caregiver's perceived workload	Caregiver
	Caregiver-child interactions scale	Caregiver



ARI past 14 days	0-59 months
Diarrhoea past 14 days	0-59 months
Deworming	12-59 months
DPT3 immunization status	12-23 months
ANC/PNC attendance	Mother
Barriers from going to the health centre	Caregiver
Access to a safe water source	Household
Water management score	Household
Quantity of water per capita per day	Household
Use of hygienic and safe sanitation facilities	Household
Presence of soap or ashes in the house	Household

of 10% is considered to cater for non-response. In the table 2 above, only the blue rows considered. The sample sizes calculated on the orange rows were too big to be surveyed human resources, budget and time available for this NCA. 712 households to visit were selected since it was the highest sample size within the blue rows.



Tab. 2. Calculation of household sample to be surveyed

EXAMPLE OF INDICATOR	POPULATION TARGETED	D ³	D ⁴	P ⁵	NB OF MEASURED NEEDED ⁶	NB OF MEASURES/HOH VISITED ⁷	% OF NON RESPONDANT	HOH SAMPLE SIZE ⁸
PRESENCE OF SOAP IN THE HOUSE	Household	2	0.1	0.5	214	1	10	214
ANC ATTENDANCE	Caregiver	2	0.1	0.64	197	1	10	197
ARI IN THE PAST 14 DAYS	0-59 months	2	0.1	0.25	160	0.68	10	235
EARLY INITIATION OF BREASTFEEDING	0-23 months	2	0.1	0.66	192	0.27	10	712
EXCLUSIVE BREASTFEEDING	0-5 months	2	0.1	0.63	199	0.07	10	2843
CONTINUED BREASTFEEDING AT 1 YEAR	12-15 months	2	0.1	0.84	115	0.05	10	2300
DPT3 COVERAGE	12-23 months	2	0.1	0.99	8	0.14	10	57
IDDS	6-23 months	2	0.1	0.61	203	0.2	10	1005



³Design effect

⁴Precision

⁵Estimated prevalence-As estimated from the SMART -2014 survey. When no previous data were available the prevalence were set at 50% since this is the most demanding estimate in terms of sample size.

⁶Calculated from ENA Software

⁷The age groups have been defined from the SMART-2014 survey. As the average household is 4.0 members, the average of children per age group per household have been found. As example, there are approximately 0.68 children from the age group 0-59 months per household.

⁸The risk factor survey considering only the families with at least one child aged from 0 to 59 months, the target population by household has been found. Then, the number of household to be surveyed has been defined



INTRODUCTION OF SOLID, SEMI-SOLID OR SOFT FOODS	6-8 months	2	0.1	0.5	213	0.03	10	7100
--	------------	---	-----	-----	-----	------	----	------

Each interview is expected to last for 60 minutes. Without the morning/evening journey to the field, the lunch break, the journey from one house to another and the time allocated to the HoH sampling, each team is considered to work 6hr per day. Each team can manage 6 HoH per day. 712 HoH can be allocated 32 clusters each having 23 HoHs but for logistic purpose each cluster constituted 24 HoHs. Therefore 2 teams would survey one cluster every day.

Considering 8 teams of 2 surveyors, 32 clusters were surveyed for 16 days.

3.2 SAMPLING PROCEDURE FOR THE RISK FACTOR SURVEY

This survey adopted a 3 stage sampling technique. A mapping of the slums was done before the survey which aimed at providing the distribution of households in the slum. This mapping used both satellite map and field visit. The field visit was added to cross-check if existing identified cluster boundaries was reflecting communities boundaries. Indeed, clusters can be defined as bounded by element such streets, but can also be organized around specific centers such as religious centers, schools, markets... As the Link NCA aims at giving a picture of realities facing by communities, this stage was considered as relevant to insure that the quantitative mapping will reflect the same population as the one surveyed by the qualitative enquiry, and that figures to be triangulated are representative. After the mapping, the slums were segmented into block of approximately 1000 households. With the list of the blocks for all the slums, then the selection of the blocks to be included in the survey was selected using the simple random sampling which was the 1st stage sampling. The sampled blocks were then segmented into enumeration areas of approximately 100 households which were the primary sampling unit for this survey. The selection of the enumeration areas was the 2nd stage sampling and this was done using the simple random sampling. Finally, with the sampled enumeration areas, a list of all households was drawn upon which 24 households were sampled using simple random sampling, this was 3rd stage sampling.

3.3 SAMPLING PROCEDURE FOR QUALITATIVE DATA COLLECTION

Of the risk factors selected clusters, 4 were selected for the qualitative survey to ensure good representation.

In order to choose communities where to conduct the qualitative enquiry, the Link NCA study utilized hybrid approach called “random purposive sampling”. This approach is useful when the category of individuals meeting the purposive sampling criteria is large. Among the list of selected clusters, 2 clusters were from the list of Viwandani and 2 clusters from Mukuru villages.

Tab. 3. Sampling for the qualitative study



CLUSTER	CLUSTER NUMBER
KINGSTONE	7
SINAI	14
GATOPE	21
WESINYE	32



4/ DATA COLLECTION METHODS

4.1 QUANTITATIVE SURVEY

4.1.1 Data collection methods

Quantitative data was collected through the Risk Factor Survey at household level. Questionnaires were administered at randomly selected households in each cluster and fully addressed only where there was at least one child under 0-59 months.

A definition of a household was defined during the survey with the survey staff. The definition approved was:

“All the members who eat from the same pot and sleep under one roof at night.”

The selection of households was done following a two-stage cluster sampling or three-stage cluster sampling methodology.

Data was collected through household interviews. Questionnaires were uploaded on to ODK for use on the tablets. Questionnaires can be found in annex.

The Risk Factor Survey consisted of four sections:

Household level data/section

This was the first questionnaire to be filled and aimed in getting the information of a household specification. Answer to every question was compulsory. The questionnaire consisted of three main sections which included the food security, livelihood and WASH section.

Caregiver data/section

This contained question on care for women and care practices questions, Health and Mental Health questions

Child data/section

This questionnaire targeted all the children in a household ranging 0-23 months and 0-59 months, on care practices of the caregiver to the child and observation and health questions.

WASH observation (Water source, sanitation facilities)

Each section was completed in selected household with at least one child under 5 years. If there was no child under 5 years, the questionnaire was terminated.

The data collection was done using the mobile phones under the platform of ODK which operate under the android version. This helped in getting real time data and helped improving the quality of the data. The questionnaires were uploaded on the phones and the teams were required to share the data on daily basis.

Quantitative Data analysis was done using Excel and SPSS version 20. The analyzed data was presented in both tabular and graphical format.



4.1.2 Field team composition, recruitment and training

An intensive 5-day training of the survey team on the Link NCA Risk Factor methodology was undertaken. The survey team comprised of 16 Enumerators and 4 supervisors: 8 MoH nutritionists and 8 researchers together with 4 Community Health Assistants (CHA's) who were to supervise on data collection. The 5 phases of Link NCA process were explained to the team. The essence of Link NCA being structured, participatory, holistic study, based on the UNICEF causal framework, to build a case for nutrition causality in a local context was emphasized. Prior to data collection, all the three tools were revisited to ensure that the survey team comprehensively understood each one of them. The training was facilitated by the Link NCA Study Experts. Practical exercises with the survey team were done to contextualize the data collection tools to fit the Kenyan urban slum situation. Direct translation and back-translation of the questionnaires to Swahili language was done as majority of the slum dwellers are more conversant with Swahili language compared to English. Role plays and short skits were used in order to boost the understanding of the questionnaires. In addition, practical exercises were conducted to highlight the common errors to avoid. Ethical issues on how to conduct research were emphasized e.g. seeking consent before administering survey, assuring the respondent of total confidentiality of the information given and assuring the respondent that the information provided will not be used for any other purpose other than for the research purpose. Respect of local cultures and the expected code of conduct were emphasized prior to commencement of the data collection.

In order to ascertain that the teams had understood the data collection procedures and the tools, a pretest was undertaken in a slum in Eastleigh, in Nairobi County. Any difficulties or issues that might be encountered in the field was identified and discussed. The teams narrated their experiences and lesson learnt in the field. The time taken to collect data per household was also noted, which enabled the teams to plan on how many households could be visited practically during the actual survey.

The selected teams were expected to work as a team while in the field. Every team constituted of two members. A tight supervision of the data collectors was ensured by the quantitative expert and Concern Worldwide team. Finally, in moving from one randomly selected household to another, the teams were guided by a community volunteer/ community health worker, depending on who is available.

The quality of data and the survey at large was maintained in various ways. One, Link NCA experts made sure that the training is as explicit as possible. Secondly, there was maximum supervision in field by the quantitative expert and the MoH Team; in this regard a term was attached to a supervisor who spent the entire day with the team.

4.1.3 Main challenges

The main challenges of the Risk Factor Survey were poor roads within the sampled segments of the blocks and sometimes lack of well defined boundaries. Another challenge was unavailability of the caregivers leading to some limitation on the use of analyzed data. Indeed, mostly caregivers were working on the day time, with their children placed at day cares, while the qualitative survey was able to get input of working mothers.



4.2 QUALITATIVE COMMUNITY ENQUIRY

4.2.1 Research instruments and methods

Qualitative survey took place from the 5th of December to 22nd of December, 2016 then later continued from 9th January 2017 to 23rd January 2017. The break was inevitable due to the Christmas and New Year festive seasons.

During the landscape analysis, all the clusters in Mukuru and Viwandani were described as being generally homogeneous. Two clusters were selected randomly from each area. The team spent 5 days in every cluster and began the enquiries by interviewing the community leaders as key informants who were also the community gate keepers. A sixth day was used for the rating exercise. They provided an overall understanding of malnutrition in their area and also provided a lead on who else to be interviewed. Using the snow ball technique, the team was able to get other key informants and respondents both indepth interviews and focus group discussions. Each interview and FGD lasted for almost 2 hours and discussed 3 themes.

Focus Group Discussion (FGD), in-depth interviews, key informant interviews and observations were organized in 4 clusters.

The Qualitative guidelines were developed covering 10 key sessions:

1. Overview, general information and guidelines for interview and FGD with local leaders and Key informants - Day 1
2. Nutrition - Day 2
3. Care Practices - Day 2
4. Health - Day 3
5. Food security and livelihoods - Day 3
6. Water, Sanitation and Hygiene - Day 4
7. Gender, Education - Day 4
8. Seasonal and historical calendar – Day 5
9. Positives deviant case study - Day 5
10. Community rating exercise and Community action Plan - Day 6

The six core objectives of the community-level qualitative enquiry are presented below:

Develop a local definition and understanding of malnutrition

The qualitative assessments in the villages generate an understanding of how individual and groups conceive of good nutrition and under-nutrition, the ways in which under-nutrition manifests itself in the community, their beliefs about its causes and consequences, the population most at risk and what is 'normally' done to prevent and treat it.

Characterize food security, health, and care in the community

The purpose of this step is to understand the food security, health, and care situation in the community (i.e., typical knowledge, attitudes, practices, assets, access issues, strategies and trade-offs).

Explore respondent perceptions of the causes and consequences of poor food security, health, and care in relation to malnutrition

The purpose of this step is to document 1) whether or how respondents feel that food insecurity, health insecurity or poor caring practices lead to malnutrition outcomes, 2) what respondents believe to be the main constraints (if any) to achieving optimal food security, health, and care for their children, and 3) the interrelationships among these constraints.



Understand the practices of caregivers of deviant and positive deviant children

The community-based qualitative work provides an important opportunity to uncover the practices of families and caregivers of malnourished children (deviants) as well as those of positive deviant practices in the community; Positive deviants are children who have exceptionally good health and nutrition despite the fact that they are living under the same conditions as the deviants and normal children despite facing similar constraints.

Identify seasonal and historical trends in malnutrition and risk factors

The purpose of this objective is to explore seasonal and historical trends in food security, health, and care situation as well as in the causes and consequences. The process of developing the seasonal calendar and historical timeline will be incorporated into the focus group discussions, in order to more efficiently elicit the desired information.

Understand how the community prioritizes these factors

The purpose of this next step is to engage community members in prioritizing factors according to a) which causes are believed to be problematic (i.e., both prevalent and severe), and b) which causes are likely to be modifiable given community knowledge and resources. Focus group discussions (FGD) and in-depth interviews have been the methods employed to collect rich contextual data on community perceptions, practices and constraints with regards to child under nutrition. FGD and individual interview guidelines have been pre-tested, with a particular emphasis placed on the phrasing of questions in the local languages.

4.2.2 Data Collection Methods

The qualitative component aimed at understanding the community’s own conceptualization of malnutrition, the degree to which they perceive it as a problem, what they observed to be the causes and how community deals with the problems. Interviews of key informants were an important source of information for the NCA since it allowed enhancing knowledge of under nutrition, traditional beliefs and roles of traditional practitioners and health workers.

Interviews of health and day care workers, teachers, community leaders, religious leaders, traditional birth attendant and traditional practitioners had been realized.

Another important step in the methodology was the rating exercise. The purpose of this next step was to engage community members in prioritizing factors according to a) which causes are believed to be problematic (i.e., both prevalent and severe), and b) which causes are likely to be modifiable given community knowledge

Tab. 4. Interviews conducted and rating exercise

Cluster	FGD	IDI
Kingstone	Mothers Fathers Children	Village elder (Male) Village elder (Female) Traditional healer Baby care owner (trained) Baby care owner(not trained) Positive deviant



		<p>Negative deviant(mother and father) Vegetable vendor (<i>Mama mboga</i>) Shopkeeper Single father Grandmother with special child Health officer In charge Lunga Lunga health centre</p>
Sinai	<p>Fathers Mothers</p>	<p>Shop keeper Mama mboga 2 Nurses 1 village elder 1 Baby care owner Traditional Birth Attendant Traditional healer (Who alledgedly removes evil eye and treats plastic teeth) Traditional brew vendor (<i>Mama busaa</i>) Positive Deviant Positive Deviant Community Health Workers (CHW) and also as grandmother</p>
Gatope	<p>Mothers Negative Deviant Mothers</p>	<p>Village Elder Shopkeeper Vegetable Vender Positive deviant child Negative deviant child Single mother Single father Daycare Owner Traditional Birth Attendant Teacher</p>
Wesinya		<p>Vice Chairman Baby care Owner Nutritionist Medical Missionaries of Mary (MMM) Nutritionist Mukuru Health Centre 2 CHV</p>



		1 Administrator – Lea Toto(a day care centre) 1 Social worker Volunteer Lea Toto Daycare owner 1 Community Strategist Embakasi East Sub - County
Total	7	44
Rating exercise		Viwandani Mukuru

4.2.3 Field Team Composition, Recruitment and Training

The Link NCA Analyst lead the qualitative data collection with the assistance of a research assistant/note taker, a Community Facilitator who was a Community Health Extension Worker under the Ministry of Health who played a key role of introducing the team to the community leaders, Community Mobilizer/ Community Health Volunteer’ in each village, a had been recruited to help mobilize the community. A transcriber was also part of the team to assist with translating and transcribing the recorded interviews in English.

A two days training for the Research assistant and community facilitator was conducted. The following describes the three main objectives of the training session:

To familiarize the team with the objectives of the Link NCA and the methods used to meet these objectives

To ensure that the principles of research ethics are understood

To explore some of the possible challenges of data collection in slums and prepare accordingly

To practice effective interviewing, facilitation, and note taking.

The training also included a practice session/ pilot test before starting data collection.



5/ DATA MANAGEMENT AND ANALYSIS

5.1 INITIAL WORKSHOP

The proposed hypothesized risk factors were presented to technical experts at the Initial Stakeholder Technical Workshop. Technical experts were invited to discuss, modify and add hypothesized risk factors. At the end of the workshop stakeholders were asked to rate each hypothesized risk factor. These were then averaged for each hypothesized risk factor.

5.2 QUANTITATIVE DATA MANAGEMENT AND ANALYSIS

Data was collected using ODK Collect and uploaded to a central, internet-based Concern ODK Aggregate. Data was exported and transferred to a database designed in Microsoft Excel. For analysis, Excel and Epi Info was used.

5.3 QUALITATIVE DATA MANAGEMENT AND ANALYSIS

Qualitative data was analysed using ongoing thematic coding at the end of each day. Summaries of emerging themes were also developed. Discussions were assigned themes, group type and village and later analysed using content analysis methods.

5.4 RATING HYPOTHESES

Following data analysis, the Link NCA analyst assigned ratings to the field-tested causal hypotheses based on the following information:

The prevalence of risk factors from secondary data (where available)

The strength of the association between the risk factor and under-nutrition based on the current international evidence base

Seasonality of the hypothesis and under nutrition

Community participatory ratings

Ratings were assigned based on the Link NCA classifications:



Tab. 5. Ratings as per Link NCA classifications

CATEGORY	CRITERIA
MAJOR RISK FACTOR	<p>No contradictory information AND Strength of association from literature review is classified as [++] or [+++] AND Majority of [++] or [+++] for all other sources of information</p>
IMPORTANT RISK FACTOR	<p>A minor amount of contradictory information exists AND Strength of association from literature review is classified as [++] or [+++] AND Majority of [++] or [+++] for all other sources of information</p>
MINOR RISK FACTOR	<p>A moderate level of contradictory information is permitted AND Strength of association from literature review is classified as [+] or [++] AND Majority of [+] for all other sources of information</p>
REJECTED RISK FACTOR	<p>No contradictory information AND Majority of [-] or [+] for all sources of information</p>
UNTESTED RISK FACTOR	<p>Contradictory information AND / OR Information gathered not complete or not available</p>

5.5 FINAL STAKEHOLDER TECHNICAL WORKSHOP

The findings and results of the rating exercise were presented and validated by technical experts at the Final Stakeholder Technical Workshop. Technical experts were asked to inform their level



of confidence in each rating by giving a ‘confidence note’. These were then averaged for each hypothesized risk factor.

6/ ETHICAL CONSIDERATIONS TAKEN DURING THE SURVEY

6.1 RESEARCH ETHICS

The main principles of human research are: respect for persons, beneficence, and justice:

Respect means to respect that each person can make their own choice about whether to participate, and to respect the culture and communities where the research is conducted.

Beneficence means that researchers are responsible for the participants’ physical, mental and social wellbeing. Ethical research should reduce the risks of the participant to a minimum. Additionally, any benefits to the community should be made clear.

Justice means that participants must be recruited equitably, and the researcher should ensure special protected for vulnerable participants.

6.2 ETHICAL APPROVAL AND INFORM CONSENT

Approval was sought at county level from the County health management team and the sub county health management teams in Embakasi sub county. The approval of the study methodology was sought and granted by the National Nutrition Information Working Group. The methodology was also reviewed by the research team at the county. Verbal informed consent was obtained from all participants in the Link NCA.

6.3 SAM AND SEVERELY ILLS PROTOCOL

IMAM protocols were available to the field staff who were able to apply them to identify and refer children with SAM to Mukuru and Makadara Health centers. A prior agreement with the sub county health management team ensured the referral and treatment of the children was smooth. During the training, criteria for referral were highlighted. children identified as having SAM were referred to the health centre.



7/ LIMITATIONS

7.1 LINK NCA METHODOLOGY LIMITATIONS

The Link NCA report presents a detailed, contextualized local model of causes of undernutrition specific to Viwandi and Mukuru slums of Nairobi, Kenya. As such, results cannot be generalized to other part of the city nor to other areas of Kenya.

The Link NCA does not provide statistical causal associations. The Link NCA provides prioritization of risk factors, with an inference of strength of causality.

7.2 LIMITATIONS ENCOUNTERED RELATED TO THE STUDY PRESENTED MISSING

Sample size was calculated for a number of key indicators. Due to time and resource constraints, the largest sample size could not be selected, therefore those indicators should be taken with caution.

The Link NCA is a mix-method approach, based on triangulation of several sources of information. Although, a lot of precautions to insure to have the same population for both qualitative and quantitative survey, the pilot show a difficulty to interview all the caregivers. Indeed, during the quantitative data collection time, most of the caregiver was working while their children were placed at a baby care centers. Therefore, the child and caregivers quantitative information are more representative of homemakers and their children population. On the other hand, the qualitative enquiry team was able to interview working parents who are facing different issues in term of childcares. Finally, readers should keep in mind that the report is presenting results of a pilot study and that few changes had to be made regarding the report structure to be able to present the findings in a logical way, while other non-pilot study are presented following a standardized format.



SECTION II: LINK NCA FINDINGS

1/ PRELIMINARY TECHNICAL EXPERT WORKSHOP

1.1 INITIAL CAUSAL HYPOTHESES

Based on the results of a secondary data and literature review on risk factors and pathways to under nutrition, a list of 16 hypothesised risk factors and a hypothesised causal model, were presented to the technical experts.

A debate helps to reach a consensus on the hypotheses to be field-tested. Some definitions were modified in order to be more precise

Hypotheses were validated, modified or merged as follow:

Tab. 6. Validation or modification of hypothesis

VALIDATED	A,B,C,D,E,G,J,K,L,M,N,O,P
MODIFIED	I
MERGED	F,H

1.2 HYPOTHESES TO BE FIELD-TESTED

These 16 hypothesised risk factors were validated, modified or merged. 13 of them was validated. “High cases of HIV/AIDS” was modified to include cases of TB. “Non-optimal psychosocial care for women” and “Gender based violence” were merged to form the hypothesis “Non-optimal psychosocial care for women and Gender based violence.”

Hypotheses risk factors to be field-tested are presented below, as well as a short description.



Hypothesis A: Non-optimal care for children/Poorly managed day cares

Many of the households in Mukuru and Viwandani are women headed. These women have to go to work and therefore leave their young ones under the care of privately owned day care centers. The centers face two major challenges that contribute to poor health and nutrition to children under five. These are:

1. Low level of education among the caregivers including lack of basic information on hand washing and infant nutrition. As a result, the caregiver is not able to advise mothers on the types of food to pack for the children. They are also not able to observe basic hygiene. From observation, most packs had rice and black tea.
2. There is overcrowding and poor sanitation in the daycare centers. The centers operate from 6.00am to 6.00pm and have an average of 28 children in a 10mx10m room.

Hypothesis B: Non-optimal complementary feeding practices

Most children are fed on potatoes, bananas and porridge during introduction of complementary food. This is mainly because most caregivers do not understand the various food classes and their value.

Hypothesis C: Non-optimal breastfeeding practices

Low exclusive breastfeeding rates seems due to the fact that women have to go back to work as soon as they can so they take babies to day care centers. Low rate of EBF is also attributed to the high rate of alcoholism among women as many don't have time to take care of their infant babies. In some instances the children are given the alcohol to sleep.

Hypothesis D: Non-optimal maternal healthcare.

Maternal health care is very low with women making an average of one ANC visit during the entire nine months pregnancy period. Majority of the pregnant women were found to visit ANC for at least once though this does not translate to high hospital deliveries. Some women were found to shy from attending ANC due to HIV/AIDS stigmatization. Cultural practices during pregnancy and home deliveries are common despite the high charges by TBAs. This is attributed to the poor provider attitude at the health centres.

Hypothesis E: Micronutrient deficiencies among pregnant and lactating women

There is poor nutritional status of pregnant and lactating women due to lack of knowledge and worm infestation, poor food diversity, food availability due to cost and low iron and vitamin intake. Supplementation is low due to stock out. Micronutrients deficiency leads to low birth weight which usually has a long term effect on the nutritional status of the child. Maternal nutrition status during pregnancy has a significant impact on foetal growth and birth weight. Malnourished lactating mother may be weak and unable to provide optimal care to their infant and other children.

Hypothesis F: Non-optimal psychosocial care for women and gender based violence

There is poor child/parent interaction and care with some households being headed by children. Children as young as 10 years take care of infants. Poor nutrition in under five years is also attributed to domestic violence. Women reported denying their babies food to get back at their husbands after family wrangles especially when a man has been unfaithful.

Hypothesis G: Low uptake of family planning

The women have a high knowledge of FP but low uptake due to misconceptions on FP (Govt supplies are fake). In the event of unplanned pregnancies, some women and young girls opt for



abortion facilitated by chemists while others end up with many children(as many as 8) with short birth spacing.

Hypothesis H: High cases of HIV/AIDs and TB

Health facilities report high cases of HIV and AIDs as a major contributor to under nutrition and poor health status among pregnant women and children under 5years. Affected households have a low rate of treatment compliance a high dependency on free supplies from Lea toto project.

Hypothesis I: Poor health seeking behavior

Cultural beliefs about evil eye and refusal of modern medicine. Omo+ paraffin and use the mixture to wash a newborn to treat oral thrush believed to have been caused by evil eyes. Lack of adherence to treatment due to seasonal migration to rural areas.

Hypothesis J: Non-optimal access to safe water

Drinking water is highly contaminated leading to water borne diseases. Clean water pipes run on the surface along the roadside where open drains run too. These pipes are regularly vandalized as people try to get free water. In the process clean water is contaminated

Hypothesis K: Non-optimal ventilation and overcrowding in houses

Most houses do not have windows. This is a health risk especially in crowded slum areas. TB is one of the common airborne diseases found among the population thus affecting the general health status of children under 5 years. Mukuru and Viwandani are located near industrial areas and therefore prone to air pollution.

Hypothesis L: Non-optimal sanitation facilities

Very poor hygiene and open defecation with the stool having tapeworms .Most toilets drain into a river that is highly polluted. Jitegemee-bucket toilet provided by Oxfam did not solve the problem and homes using the buckets were stigmatized. Community members would empty the buckets in the river and open trenches at 5am. This leading to fecal-oral contamination and waterborne diseases such as, cholera

Hypothesis M: Inadequate hygiene practices

Homes and schools do not have hand-washing facilities. Hand washing practices by both the caregivers and the children was also poor. Household hygiene was also found wanting.

Hypothesis N: Non-optimal liquid/ solid waste management

Poor liquid and solid wastes management contribute to poor sanitation. The pollution caused by a bad wastes management may have strong environmental issues. Indeed, it can increase the risk of contamination of water source. There are no systems of garbage collection in both Mukuru and Viwandani. Community members put their garbage in plastic bags and throw it in the nearby river. Though there is a bit of intervention by individual who collect this garbage, they usually charge which is not affordable by many households.

Hypothesis O: Limited access to food due to economic problems

Fluctuation of food prices in the local market limits accessibility at household level. This is due to low income as a result of inadequate income sources and lack of income generating activities. A bunch of kale for example remains at Ksh 5 but the number of leaves depends on the season.

Those hypotheses were individually rated from 1 (hypothesis believed to contribute marginally to under-nutrition) to 5 (hypothesis believed to be a major contributor to under-nutrition).



Tab. 7. Hypothesised risk factors

HYPOTHESISED RISK FACTORS	
HYPOTHESIS A: NON-OPTIMAL CARE FOR CHILDREN/POORLY MANAGED DAY CARES	5
HYPOTHESIS B: NON-OPTIMAL COMPLEMENTARY FEEDING PRACTICES	5
HYPOTHESIS C: NON-OPTIMAL BREASTFEEDING PRACTICES	5
HYPOTHESIS D: NON-OPTIMAL MATERNAL HEALTHCARE.	3
HYPOTHESIS E: MICRONUTRIENT DEFICIENCIES AMONG PREGNANT AND LACTATING WOMEN	4
HYPOTHESIS F: NON-OPTIMAL PSYCHOSOCIAL CARE FOR WOMEN AND GENDER BASED VIOLENCE	4
HYPOTHESIS G: LOW UPTAKE OF FAMILY PLANNING	3
HYPOTHESIS H: HIGH CASES OF HIV/AIDS AND TB	3
HYPOTHESIS I: POOR HEALTH SEEKING BEHAVIOR	4
HYPOTHESIS J: NON-OPTIMAL ACCESS TO SAFE WATER	3
HYPOTHESIS K: NON-OPTIMAL VENTILATION AND OVERCROWDING IN HOUSES	4
HYPOTHESIS L: NON-OPTIMAL SANITATION FACILITIES	5
HYPOTHESIS M: INADEQUATE HYGIENE PRACTICES	4
HYPOTHESIS N: NON-OPTIMAL LIQUID/ SOLID WASTE MANAGEMENT	5
HYPOTHESIS O: LIMITED ACCESS TO FOOD DUE TO ECONOMIC PROBLEMS	3



1.3 NUTRITIONAL VULNERABLE GROUPS

The following groups were identified as nutrition vulnerable groups: children 0- 59 months with a specific emphasis on children less than 24 months.

2/ CHARACTERISTICS OF THE STUDIED POPULATION

2.1 HOUSEHOLD COMPOSITION

A total of 707 households were visited and caregivers interviewed during the survey period resulting in a response rate of 99.2%. The response rate was above 80% and hence the sample size had met the minimum threshold for the response rate. The surveyed households had an average of 4 members (± 1.226 SD). Majority of the interviewed households were men headed (88.1%). Almost all of the interviewed women were mothers of the studied children (98.6%).

2.2 OVERVIEW OF THE LIVING CONDITIONS

Mukuru and Viwandani has a generally young population with majority being 20- 35 years. Most of these people have been born in other parts of the country and only moved to the city after the age of 18years in search of employment. They therefore travel back to the village during festive seasons, burials, traditional ceremonies or when they are not able to secure employment.

Most work as casual laborers in the nearby industries like *Maleba* that employs more than 1000 workers. Other residents are engaged in small-scale businesses like selling food and vegetables, hair salons, selling second hand clothes, washing clothes and collecting garbage to sell for recycling.

“I am a hustler, usually I wash clothes for people and get paid and feed my children. I have 3 children I was born and raised here in Mukuru Reuben, Mombasa village”, Single mother, Gatope.

Most houses are made of iron sheet with very few being made from stone. The houses measure a standard size of 10 by 10 feet each with some being double storey. A block has about 10 rooms each hosting a family of four to five members (mother, father, and in some cases a relative).

Each room is divided into two using a cloth to separate the sitting area from the sleeping space. The sitting area is also used as the cooking area. However, communities from western and nyanza ,ie Luos, Luhyas and Kisii, cook from the sleeping space to avoid being bewitched.



2.3 MARITAL STATUS

Several researchers and studies support the notion that, on average, children do best when raised by their two married, biological parents who have low-conflict relationships⁹. Single parent families (mother/ father only) and teenage mothers were found to be a common phenomenon especially among girls born in the urban slums. Child headed households were also observed. The surveyed households had an average of 4 members (± 1.226 SD). Majority of the interviewed households were men headed (88.1%). Almost all of the interviewed women were mothers of the studied children (98.6%) as shown in the table below.

Information on marital status revealed that 89.2% of the surveyed caregivers were married/ with partner while 5.5% and 4.5 were single and separated respectively. The researcher however had to adjust and purposefully look for households that were occupied as most caregivers were not at home.

2.4 EDUCATION LEVEL OF THE CAREGIVERS

Several research findings have indicated that education is positively associated with caregiver commitment to child care. Almost all of the caregivers surveyed had attended some form of school (97.5%). However, majority had only completed primary education (50.5%). Nearly 31.4% of children’s caregivers had completed secondary education while only 6.5% had completed post-secondary education.

Tab. 8. Caregiver’s characteristics

INDICATOR	FREQUENCY	PERCENT
Mother	682	98.6
Father	8	1.2
Grandparent	2	0.3
Married	617	89.2
separated	31	4.5
single	38	5.5



⁹<http://www.clasp.org/resources-and-publications/states/0086.pdf>



	Widow	6	0.9
	Yes	675	97.5
	No	17	2.5
	No formal education	18	2.6
	Not completed Primary	63	9.1
	Not completed secondary	127	18.4
	Post-secondary Education	45	6.5
	Primary education	222	32.1
	Secondary education	217	31.4

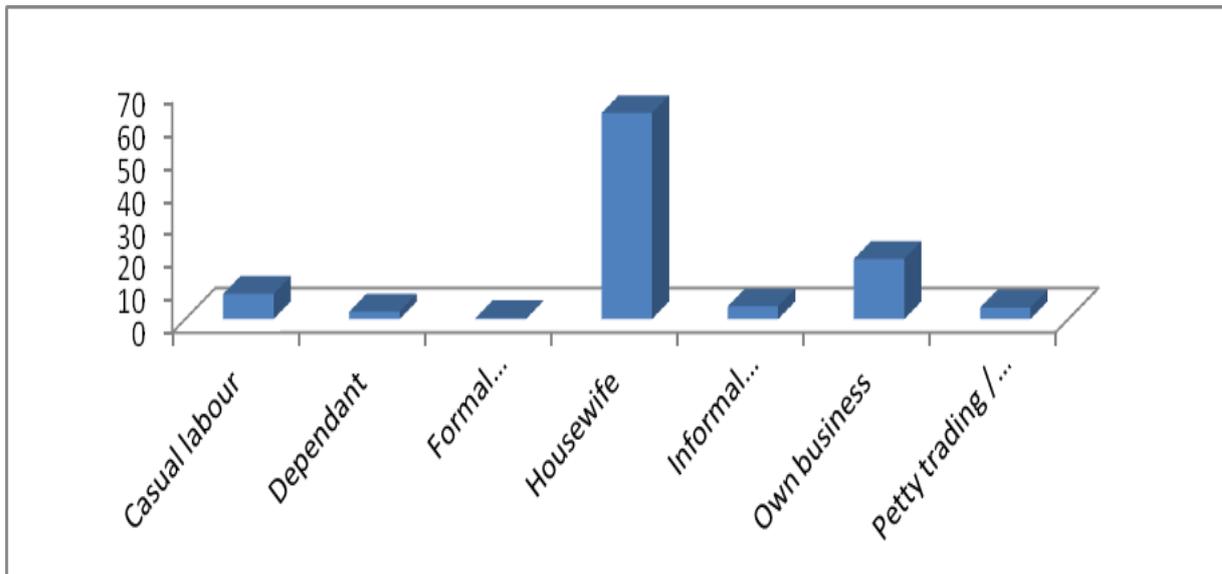
Qualitative data revealed that the level of education ranged from primary school to college, with most of the mothers reporting having left school around class 8. Fathers appeared to be more educated and could use English words during the interviews. None of the women interviewed could speak English; not even the community leaders.

2.4.1 Occupation of the caregiver

The survey results showed that majority of the women surveyed were housewives (63.0%), those who own small business was at (21.9%), casual labor (7.7%), informal employment (3.9%) and only 0.3% were in formal employment. However, from the qualitative enquiries, most women described themselves as main bread winners as most men are drunkards.



Fig. 1. Caregiver occupation



Though quantitative data shows majority of the caregivers were housewives, it is important to note that purposive sampling had to be done since most caregivers were away, The high number of children in the day cares also confirmed that most caregivers were out on employment or businesses. This therefore contradicts the quantitative findings.

Background characteristic of participants in qualitative study

Single parent families (mother/ father only) were represented among the participants. Teenage mothers were found to be a common phenomenon especially among girls born in the urban slums.

The level of education ranged from primary school to college, with most of the mothers reporting having left school around class 8. Fathers appeared to be more educated and could use English words during the interviews. None of the women interviewed could speak English; not even the community leaders.

Most women described themselves main breadwinners as they considered that most men are drunkards. Infact, alcoholism was mentioned as the major cause of domestic violence which is rampant in Mukuru and Viwandani.

"...fighting in homes is common especially on the 15th after we get salary advance and at the end of the month because as men we have to take some alcohol to reward ourselves after hard work or to release stress. The women don't like this so when we get home smelling alcohol, their rude words invite slaps", Men FGD in Kingstone.

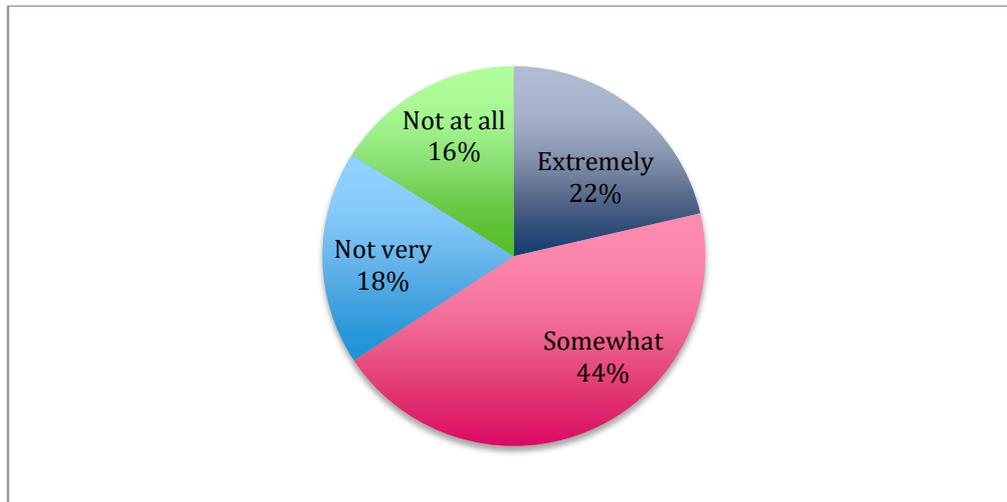
2.5 PERCEIVED SOCIAL CAPITAL

The social capital of slums are usually low and involves a shortage of networks to protect households from shock, weak patronage in the labour market, labelling and exclusion, especially



for the minority group¹⁰. Improved perceived social capital can be linked to positive associations with child's nutritional status across countries¹¹. In this survey we aimed at assessing whether the caregiver felt supported both socially and economically and as the social capital cannot be defined and measurement can be very problematic, the assessment relied on the understanding of the respondents. On an encouraging note, the results of the survey indicate that about 44% of the caregivers felt they were somewhat supported, 22% felt they were extremely supported, 18% not very supported while only 16% felt that they are not at all supported.

Fig. 2. Caregiver perceived social capital



However, although the quantitative survey showed that 66% of respondents felt supported, qualitative enquiries presented a different picture. Here most women interviewed said they felt overburdened because they were single and therefore the breadwinners. Those in marriage described their marriages as insecure and that the men played a minimal role in providing for the families. Most men were lost in alcohol and this further led to domestic violence.

2.6 CAREGIVER WORKLOAD

Workload can make it difficult for caregivers to take care of their children and serve their families effectively. Manageable workloads can make a real difference in the caregiver's ability to care of the child and the entire family at large. On a positive note, finding of the survey indicates that 79.3% of the caregivers felt that their work was not too much to care for their children. Again this contradicts the qualitative findings where the study found children as young as 2 months at the daycare centers. The high population of children at the centers and the long hours the children stayed at the center explains how soon after delivery the mothers have to return to work and also the long hours they have to work in a day to make a living. The difference in the findings may be due to the fact that quantitative surveys were conducted during daytime and most of the respondents were stay at home mothers while the qualitative sample size has a mix of both.



¹⁰ The Challenges of Slums, UN-HABITAT. 2003

¹¹ Maternal social capital and child nutritional status in four developing countries. Mary J. De Silva, Trudy Harpham.2006



3/ UNDERNUTRITION

3.1 ANTHROPOMETRIC RESULTS

During the Link NCA risk factor survey, anthropometric studies were not undertaken since a SMART nutrition survey had already been conducted in 2014. The summary of the SMART Nutrition survey and secondary data are presented in the table below.

Tab. 9. Anthropometric results from the SMART nutrition survey 2014

ANTHROPOMETRIC INDICATORS			
INDICATOR	Overall	Better Off Slums	Worse Off Slums
PREVALENCE OF GLOBAL MALNUTRITION (<-2 Z-SCORE AND/OR OEDEMA)	(53) 5.7% (4.2- 7.6 95% CI)	(20) 4.4% (2.7- 6.9 95% CI)	(33) 6.9% (4.7-10.0 95% CI)
PREVALENCE OF MODERATE MALNUTRITION (<-2 Z-SCORE AND >=-3 Z-SCORE, NO OEDEMA)	(35) 3.7% (2.7- 5.3 95% CI)	(15) 3.3% (1.8- 5.8 95% CI)	(20) 4.2% (2.7- 6.3 95% CI)
PREVALENCE OF SEVERE MALNUTRITION (<-3 Z-SCORE AND/OR OEDEMA)	(18) 1.9% (1.1- 3.2 95% CI)	(5) 1.1% (0.4- 3.0 95% CI)	(13) 2.7% (1.5- 4.9 95% CI)
PREVALENCE OF GLOBAL UNDERWEIGHT	(120) 12.9% (10.5- 15.9 95% CI)	(61) 13.5% (9.7- 18.5 95% CI)	(59) 12.4% (9.4- 16.1 95% CI)



PREVALENCE OF MODERATE UNDERWEIGHT	(100) 10.8% (8.6-13.4 95% CI)	(54) 11.9% (8.5-16.6 95% CI)	(46) 9.7% (7.2-12.8 95% CI)
PREVALENCE OF SEVERE UNDERWEIGHT	(20) 2.2% (1.2- 3.7 95% CI)	(7) 1.5% (0.7- 3.5 95% CI)	(13) 2.7% (1.3- 5.6 95% CI)
PREVALENCE OF GLOBAL STUNTING	(313) 33.5% (30.1-37.2 95% CI)	(154) 33.8% (29.1-39.0 95% CI)	(160) 33.4% (28.3-38.9 95% CI)
PREVALENCE OF MODERATE STUNTING	(201) 21.5% (19.0-24.4 95% CI)	(100) 22.0% (18.2-26.3 95% CI)	(101) 21.1% (17.6-25.0 95% CI)
PREVALENCE OF SEVERE STUNTING	(112) 12.0% (9.7-14.8 95% CI)	(54) 11.9% (8.6-16.2 95% CI)	(59) 12.3% (9.1-16.5 95% CI)
PREVALENCE OF GLOBAL MALNUTRITION (MUAC AND/OR OEDEMA)	(31) 3.3% (2.3- 4.9 95% CI)	(15) 3.3% (2.0- 5.4 95% CI)	(16) 3.3% (1.8- 6.0 95% CI)
PREVALENCE OF MODERATE MALNUTRITION (MUAC)	(17) 1.8% (1.1- 3.1 95% CI)	(9) 2.0% (1.1- 3.6 95% CI)	(8) 1.7% (0.7- 4.1 95% CI)
PREVALENCE OF SEVERE MALNUTRITION (MUAC AND/OR OEDEMA)	(14) 1.5% (0.8- 2.7 95% CI)	(6) 1.3% (0.5- 3.6 95% CI)	(8) 1.7% (0.8- 3.5 95% CI)



Tab. 1. Anthropometric results from the SMART nutrition survey 2014 for the two slums of the study area

SLUM	GAM	STUNTING	UNDERWEIGHT
VIWANDANI	9.4%(8.93 - 9.87)	43.4% (41.23 - 45.57)	9.8%(9.31 - 10.29)
MUKURU	8.6% (8.17 - 9.03%)	31%(29.45 - 32.55)	14.5%(13.78 - 15.23)

Source: SMART Nutrition Survey 2014

Data from the SMART survey 2014 have been used for this study. These data were considered to be enough recent (less than 2 years at the time of the study) and of good quality. It was also considered that no major event had had any significant impact in the study area from this moment.

Moreover, it would have been difficult to obtain representative data from 6-59 months age group in the area via the SMART methodology. Indeed, security conditions do not allow access to the study area in the evenings, and during daytime, most caregivers work and place their children in local kindergardens or close relatives; thus making it difficult to locate the children of a household but also to get consent from the parents.

3.2 LOCAL DEFINITION AND UNDERSTANDING OF GOOD NUTRITION AND MALNUTRITION

Lack of knowledge on the importance of dietary diversity seems to be an issue in the slums. Although the findings revealed that the community in urban slums of Mukuru and Viwandani recognizes lack of balanced diet as the main cause of child under nutrition but for the majority 'balanced diet' only means meals that has protein e.g. fish and meat. On further probing it was also evident that majority of the individual interviewed during the qualitative enquiries and the participants at the rating exercise did not know the various categories of food, e.g., most categorized *Mrenda, kales, managu* and other traditional vegetables as carbohydrate.

Majority were able to recognize some manifestation of acute malnutrition like kwashiorkor and marasmus and its causes as lack of balanced diet and diseases like diarrhea but could not identify chronic malnutrition as a form of malnutrition. They all described malnutrition as a condition that affected both adults and children in the urban slums due to lack of enough food at the household. They described undernourished children as *"...very weak, their face and skin is usually dry and they look old than their actual age. Children have protruding stomachs, and most of them are unhappy and often cry for no apparent reason, and delayed milestones for example when his age mates are walking you find such a child is still crawling, the color of the hair is brown. The adults are usually weak with low self-esteem as they despise themselves."*, Rating exercise at Viwandani



4/ RESULTS BY HYPOTHESIS

4.1 HYPOTHESIS A: NON-OPTIMAL CARE FOR CHILDREN/POORLY MANAGED DAY CARES

Daycare centers are a great necessity in urban slums of Mukuru and Viwandani as they serve as a “safe place” for working parents. The centers operate from as early as 6am to 8pm though on rare occasions they have children staying overnight. Many of the children left at the daycares are from families which have both parents who both have to work to meet family need. However the



parent’s income is very low as most of them are temporarily employed and may go for months without an income. Women are therefore not able to stay at home to take care of the children and are therefore forced to take them to day cares from as early as the age of two months old which often means they discontinue breastfeeding.

The centers also face major challenges that contribute to poor health and nutrition to children under five. All the centers visited in Mukuru and Viwandani did not have qualified staff. The proprietors were either former house girls or grandmothers who are now too old to go and look for employment. They therefore converted their single roomed home into a daycare and charged between 30- 50 shillings a day per child. From observation, it was found that all of the centers were overcrowded with poor ventilation and sanitation system. For example in Gatoto there is Ushindi daycare which operates both as a daycare and a preschool in a room of 20 *10 metres with a total of 60 children and with only one care giver who acts as a teacher and also the in-



charge of the daycare. This means that the caregiver will not have enough time to feed the children, especially the younger one let alone taking care of the hygiene practices. On top of that, all the centers visited lacked hand washing facilities which also indicates the poor hygiene practices in the daycares.

The parents also have to pack food for their children, as can be seen in the illustrative picture, and usually children under 6 months are given tea with milk or maize meal porridge. For children aged 6- 18 months its usually overcooked rice with bean soup/sukuma soup while those between 2-5 years carried black tea with mandazi or rice with beans. Caregivers also lack basic knowledge on recommended feeding practices and are therefore not able to advise parents. When asked about if they would accept breastmilk for younger children, only one caregiver said she would accept breast milk at her facility.

4.2 HYPOTHESIS B: NON-OPTIMAL COMPLEMENTARY FEEDING PRACTICES

Optimal nutrition is vital in ensuring survival of children. WHO and UNICEF recommend early initiation of breastfeeding within one hour of birth; exclusive breastfeeding for the first 6 months of life; and the introduction of nutritionally-adequate and safe complementary (solid) foods at 6 months together with continued breastfeeding up to two years of age or beyond. Appropriate breastfeeding and complementary feeding practices not only play a significant role in improving the health and nutrition of young children, they also confer significant long-term benefits during adolescence and adulthood (WHO, 2011)¹².

Complementary feeding should be timely, and the recommendation from WHO is that infants should be introduced to complementary feeding at the age of six months. During this period, the infant should be introduced to soft foods, semi-solid and solid foods, in addition to the breast milk. Research has shown that infants aged six months and above have increased nutrient demand and hence breast milk alone is not sufficient for optimal growth of the child, hence the need for complementary feeding. As a result, infants are particularly vulnerable during the transition period when complementary feeding begins. Thus to ensure their nutritional needs are met, and then the complementary foods should be timely, adequate, safe and properly feed¹³.



¹²Evidence for Essential Nutrition Actions (WHO, 2011)Draft May 2011)

¹³Global strategy on IYCF



Tab. 2. Complementary feeding

INDICATOR	N	N	PERCENT
Introduction of solid, semi-solid and soft food (6-8 Months)	56	40	71.4
IDDS 6-23 months	263	-	3.5
Proportion of children with minimum IDDS (≥ 4)	263	131	49.8
Proportion of children with correct meal frequency(Overall 6-23 months)	263	175	66.5
Proportion of children with correct meal (2 meals) frequency (BF children 6-8 months)	54	34	63.0
Proportion of children with correct meal(3 meals) frequency (BF children 9-23 months)	164	110	67.1
Proportion of children with correct meal frequency (BF children 6-23 months)	218	144	66.1
Proportion of children with correct meal frequency (Non BF children 6-23 Months)	40	29	72.5

According to the results 71.4% of the sampled children were introduced to solid, semi-solid and soft foods appropriately. Nevertheless it is worth noting that even though about 7 out of 10 eligible children had been introduced to complementary foods, a good number of children had been introduced to complementary foods quite early (most of them by 3 months), thus interfering with exclusive breastfeeding and hence exposing the children to infections and malnutrition.

The research found that weaning process and introduction of complimentary feeding were the most challenging period for parents and caregivers. Although 71% children were introduced to complementary food within the recommended period, due to lack of knowledge, caregivers could not develop a healthy meal plan for the baby and mainly gave porridge made from maize flour or *wimbi*(sorghum). Some caregivers reported that they added bean flour and margarine to the porridge for a six month baby. At eight months the baby is introduced to ugali mixed with vegetable soup, mashed bananas mixed with potatoes and by one year a child can take white rice and beans. Most caregivers don't understand the concept or the importance of dietary diversity. However, men reported that fruits were important and made an effort to provide especially for the young children in the household. However, they reported to have a preference to boys than girls when providing.



All daycare providers interviewed complained of the quality of food packed by the parents. However they too did not have a clear idea on the recommended foods for particular ages. Even the free lunch provided by the school lack diversity as mentioned by one of the headmaster:

“we admit them at the age of 4-5 years in nursery school and we provide food here for the young ones...we give enriched porridge in the morning and maize and beans (githeri) for lunch... the constant meal from January to November”, Head teacher, Gatope primary school

4.3 HYPOTHESIS C: NON-OPTIMAL BREASTFEEDING PRACTICES

Breastfeeding practices

Breastfeeding is one of the most effective ways to ensure child survival and health. WHO actively promotes breastfeeding as the best source of nourishment for infants and young children. Breast milk is the ideal food for newborns and infants. It gives infants all the nutrients they need for healthy development. It is safe and contains antibodies that help protect infants from common childhood illnesses such as diarrhoea and pneumonia, the two primary causes of child mortality worldwide. Breast milk is readily available and affordable, which helps to ensure that infants get adequate nutrition¹⁴. Breastfeeding has also been associated with higher intelligence quotient (IQ) in children. Breastfeeding practices, including initiation and duration, are influenced by multiple factors, which include health, psychosocial, cultural, political, and economic factors (UNICEF, 2006). In this survey, the breastfeeding practices were also assessed.

Tab. 3. Breastfeeding characteristics

INDICATOR	N	N	PERCENT
Ever breastfed	372	377	98.7
Timely initiation to breastfeeding	290	372	77.0
Exclusive breastfeeding(0-5) Months	64	114	56.1
Continued breastfeeding at one year	57	67	85.1
Continued breastfeeding at two years	16	42	38.1

Early initiation of breastfeeding

Provision of mother’s breast milk to infants within one hour of birth is referred to as “early initiation of breastfeeding” and ensures that the infant receives the colostrum, or “first milk”, which is rich



¹⁴WHO, 2014 factfiles-10 facts on breastfeeding)



in protective factors. Current evidence indicates that skin-to-skin contact between mother and infant shortly after birth helps to initiate early breastfeeding and increases the likelihood of exclusive breastfeeding for one to four months of life as well as the overall duration of breastfeeding. Infants paced in early skin-to-skin contact with their mother also appear to interact more with their mothers and cry less¹⁵.

WHO recommends that mothers initiate breastfeeding within one hour of birth. In this survey 98.7% of the caregivers were found to have ever breastfed. Among those who ever breastfed, 76.9 % (72.8-81.1) of the caregivers initiated breastfeeding within one hour after birth as shown in the table above.

Exclusive breastfeeding (EBF)

Exclusive breastfeeding (EBF) means that the infant receives only breast milk. No other liquids or solids are given – not even water – with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals or medicines. Infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Studies have shown that EBF reduce infant mortality rate by 13% and protects against diarrhea, pneumonia, and in the long term, obesity and hence the need to focus on it. Breastfeeding is the foundation of good nutrition and protects children against disease. In this way, breastfeeding allows all children to thrive and develop to their full potential. In this survey the EBF rate for children between the ages of 0-6 months was 56.14% (44.0-68.3) which is below the Kenya national target of 80%.

The qualitative enquiry revealed that all respondents understood the importance of breastfeeding, and the MOH antenatal facilities were mentioned as the main source of information and education. However, practicing exclusive breastfeeding in the first 6 months did not seem practical as most mothers have to return to work as early as 2 weeks after delivery. Babies are mainly breastfed at night only. There is also seems to be some misconception around breastfeeding as in Mukuru, women sited lack of enough food as the major cause for non-exclusive breastfeeding despite understanding the benefits. In Wesinye, low rate of exclusive breastfeeding was attributed to drugs and alcohol abuse among women with some giving the same to children to induce sleep.

Caregivers at the daycare centers were opposed to the idea of giving expressed breast milk to the baby at the centers as they thought it was disgusting which makes it nearly impossible for the working mother of children under 6 month who have to leave their children at daycare center. One of the caregivers response to expressed breastmilk was *“... how am I going to taste the milk to know if it is the right temperature? No, no I cannot accept to touch it”*, caregiver at Kwamadogi.



¹⁵ E-Library of Evidence for Nutrition Actions (eLENA)

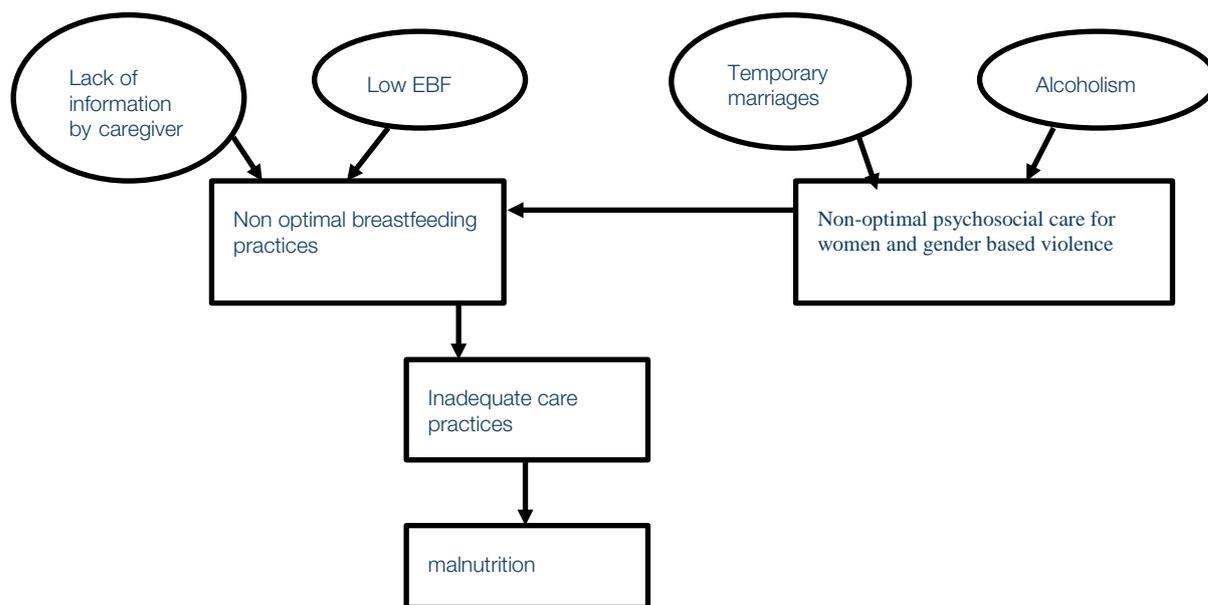


Fig. 3· Non optimal breastfeeding practices

Continued breastfeeding

The world health organization recommends that a child should be breastfed up to 2 years of age or beyond. Science has documented that some immune factors in breast milk that protect the baby against infection are present in greater amounts in the second year of life than in the first. This is, of course as it should be, since children older than a year are generally exposed to more infections than young babies. Further, it has been observed that breast milk still contains special growth factors that help the immune system to mature and which help the brain, gut and other organs to develop and mature.

The results of the survey showed that 85.1% (75.9-94.3) of the children were breastfed at one year. Furthermore the results showed that only 38.1% of the caregivers who reported that they breastfed at two years which shows that more than 6 out of 10 mothers stopped breastfeeding children before they attained the age of 2 years which is contrary to the recommendation that all children should be breastfed for 2 years and beyond.

4.4 HYPOTHESIS D: NON-OPTIMAL MATERNAL HEALTHCARE

Antenatal care for the caregivers

Good care during pregnancy is important for the health of the mother and the development of the unborn baby. Pregnancy is a crucial time to promote healthy behaviors and parenting skills. Good ANC links the woman and her family with the formal health system, increases the chance of using a skilled attendant at birth and contributes to good health through the life cycle. Inadequate care during this time breaks a critical link in the continuum of care, and affects both women and babies. The survey aimed at establishing the percentage of caregivers who managed at least four visits to a health professional. The finding of the survey indicates that 65.2% had proper ANC visits (who saw health professional for at least 4 times). These results compare closely with the results of the KDHS 2008/09 where 60% of women in the urban areas visited the health facilities for ANC at least 4 times. Again on iron folate consumption, the survey aimed at establishing the percentage of caregivers who managed to take iron folate for at least 90 days.



The results of the survey indicate that only 35.8% took iron folate for more than 90 days in their previous pregnancy.

The qualitative inquiry revealed that women in Mukuru and Viwandani were very knowledgeable about the benefits of antenatal care. All respondents in both IDIs and FGDs reported having attended at least 4 ANC visits. They also had their routine laboratory profiles done and received the tetanus vaccine as well as iron supplements. All these services were mostly given at Mukuru health centre and Mareba dispensary. However, this contradicts with the quantitative findings which clearly shows although knowledgeable, women are not complying with the advice as indicated by the low uptake of recommended dose of iron-folates during pregnancy.

Hospital deliveries

Giving birth in a hospital is by far the safest place to deliver. The survey aimed at establishing the percentage of the caregivers who delivered in the hospital with the assistance of a health professional. The findings indicate that 91.2% deliveries took place in the health centre/hospital and with the assistance of a Nurse/Doctor.

The qualitative information revealed that although most of the women received ANC services at Mukuru health centre and Mareba dispensary, these popular facilities do not have delivery services and women are later sent to Pumwani or Mama Lucy hospitals. They opt not to go to these facilities for various reasons namely insecurity and lack of transport in the night, lack of ready finances and therefore they go to the local chemists which are run by nurses and operate 24hrs. Women consider these as skilled labour deliveries but also cited bad experiences including infant deaths at these facilities. The chemists were also preferred because of offering services on credit and were willing to take radios, TVs, and phones as security. The facilities were also preferred because they did not insist on HIV testing.

4.5 HYPOTHESIS E: MICRONUTRIENT DEFICIENCIES AMONG PREGNANT AND LACTATING WOMEN

Pregnant and lactating mothers are aware that they should be keen on their nutritional status. However, women cited lack of money and operating under tight budgets as the reason for not observing a special diet. The only time they ate something different was when they experienced some cravings. Majority had a craving for fruits and stones. The low level of compliance with iron folate supplementation further increases the risk for pregnant women.

4.6 HYPOTHESIS F: NON-OPTIMAL PSYCHOSOCIAL CARE FOR WOMEN AND GENDER BASED VIOLENCE

The quality of care provided to infant and young children is one of the major determinant of growth and well-being. Childcare practices should be provided in a responsive manner, taking into account the child's characteristics, needs and developmental level¹⁶. The United Nations



16 Engle PL Ricciuti H . Psychosocial aspects of care and nutrition . Food Nutr Bull 1995 ; 16 : 356 – 77



Children’s Fund (UNICEF) extended child-care framework¹⁷ highlights caregiver characteristics as important caregiving resources. The qualitative enquiries found that women in urban slums of Mukuru and Viwandani are overworked. Most were found to be single mothers or ‘wives’ in *come we stay* relationships described as marriage. Looking at a typical day of a woman, we established that her day begins around 5am with preparing food to take with the baby to the daycare. By 6am she starts walking to her place of work where she reports at 7am. The earliest she gets home is 6pm after picking the baby and together they shop for the evening meal on their way home. There is hardly any child/parent relationship.

Domestic violence was said to be rampant despite community policing strategies being put in place. FGD with men cited financial issues as the common cause of disagreements and that most fights happen during mid and end month. Feeding patterns are affected at household level as parents withhold food as a form of punishment among the spouses. In the process the children go hungry and in some cases have to drop out of school.

Several studies have confirmed that quality of psychosocial care reflected through caregivers responsiveness, involvement with the child, affection and warmth are linked to a child’s development of mental abilities, and to his or her growth and nutrition status. It is now evident that successful infant and young child feeding not only depends on what the child is fed, but also the quality of interaction between the caregiver and child. Responsive feeding styles have been linked to fewer food refusals and good nutrition status¹⁸. The findings of the risk factor survey indicate that 71.9% of the caregivers were practicing appropriate caregiver-child interaction while 14.5% were practicing inappropriate caregiver-child interactions. This however contradicts the findings from the qualitative findings.

A high level of well-being means in some sense the individual or group’s condition is positive while low well-being is associated with negative happenings¹⁹. From the findings, 29.2% (202) of the caregivers had an index of <13 which is an indication of poor quality of life and therefore exposed to depression. This can impact negatively on the care of children.

Tab. 4. Caregiver - child interaction

SCORE	INTERPRETATION	FREQUENCY	PERCENT
TOTAL < 3	Inappropriate caregiver-child interactions	100	14.5
TOTAL 3-4	Medium caregiver-child interactions	94	13.6
TOTAL ≥ 5	Appropriate caregiver-child interactions	496	71.9



¹⁷ World Health Organization. The importance of caregiver-child interactions for the survival and healthy development of young children: review. Geneva: WHO, 2004. <http://whqlibdoc.who.int/publications/2004/924159134X.pdf> - accessed 30 November 2014.

¹⁸ Aboud FE Shafique S Akhter S . A responsive feeding intervention increases children’s self-feeding and maternal responsiveness but not weight gain . J Nutr 2009 ; 139 : 1738 – 43 .

¹⁹ <https://en.wikipedia.org/wiki/Well-being>



4.7 HYPOTHESIS G: LOW UPTAKE OF FAMILY PLANNING

The practice of controlling the number of children in a family and the intervals between their births is key in enhancing good care of the children. In this survey we endeavored in finding out the percentage of caregivers who were using any form of family planning method (both modern and traditional methods). The result of the survey indicates that 73.1% of the caregivers are using a method of family planning. This was a slight improvement on what was reported in KDHS 2014 (62.6%). The table below shows the distribution of the various methods of family planning.

Tab. 5. Family planning methods

FAMILY PLANNING METHODS	FREQUENCY	PERCENT
INJECTABLE	298	58.9
IMPLANTS	111	21.9
CONTRACEPTIVE PILL	59	11.7
IUD	13	2.6
CALENDAR METHOD	7	1.4
OTHER	7	1.4
MALE/FEMALE CONDOM	6	1.2
LACTATIONAL AMENORRHEA METHOD	2	0.4
WITHDRAWAL METHOD	2	0.4
FEMALE/MALE STERILIZATION	1	0.2
TOTAL	506	100



Knowledge and Uptake of family planning in Mukuru and Viwandani was found to be generally high and accepted by both men and women. FP methods provided at the public health facilities were the most trusted. Unfortunately the FP clinic hours were said to be limited and by the time women working in the industries and nearby residential estates leave work, the facilities are closed, leaving the chemists as the only option. Several women reported having conceived while on the injection given at the chemist. In the event of unplanned pregnancies abortion services were reported as readily available. For example in an interview with the daycare owner of Wesinya, she narrated of how many times she had found aborted babies in her area.

4.8 HYPOTHESIS H: HIGH CASES OF HIV/AIDS AND TB

HIV/AIDS was found to be a very private matter and community members did not have much to say on this. Community outreach such as Lea toto reported having feeding programs for infected children and their families especially those on ART. The Vice Chairman of Wesinya village reported of high cases of HIV and affected households and a low rate of treatment compliance. At Olive hospital, providers attributed their high volumes to the fact that women living with HIV would walk in while in 2nd stage labour and get assistance to have a normal delivery as long as they carried Nevirapine for the baby to prevent mother to child transmission.

Assessment of childhood illnesses was done based on a two-week recall period prior to the survey date. The result of the survey findings indicates that 26.09% (180) of the sampled children had fallen sick within the two weeks recall period which is considered low. Further investigation indicated that 12.5% of the children had diarrhea which was below the cut-off of 20%diarrhea proportion in the past 14 days used to consider whether there is a major water-related diseases issue or not, while 14.49% had ARI cases and 17.68% had fever as shown in the table below.



Tab. 6. Morbidity

ILLNESS	N	N	%
THOSE WHO WERE SICK 2 WEEKS PRIOR TO THE SURVEY	690	180	26.09
PREVALENCE OF ARI		100	14.5
PREVALENCE OF DIARRHEA		86	12.5
PREVALENCE OF FEVER		122	17.7

4.9 HYPOTHESIS I: POOR HEALTH SEEKING BEHAVIOR

Assessment of childhood illnesses was done based on a two-week recall period prior to the survey date. The result of the survey findings indicates that 26.09% (180) of the sampled children had fallen sick within the two weeks recall period which is considered low. Further investigation indicated that 12.5% of the children had diarrhea while 14.49% had ARI cases and 17.68% had fever as shown in the table below.

Tab. 7. Morbidity

ILLNESS	N	N	%
THOSE WHO WERE SICK 2 WEEKS PRIOR TO THE SURVEY	690	180	26.09
PREVALENCE OF ARI		100	14.5
PREVALENCE OF DIARRHEA		86	12.5
PREVALENCE OF FEVER		122	17.7

Families from lower socioeconomic backgrounds have poorer health outcomes. The disparity in health outcomes may largely be attributed to barriers in accessing medical care and poor health seeking behaviour. 43.9% of the caregivers attributed their failure to accessing health facility due to some barriers. Among the main barriers from going to the health center were money (76.3%), transportation means (23.4%), service not good enough (20.4%), time (15.1%) among others as shown in the table below. The findings also indicated that time taken to get to the nearest health facility was on average 22.4 minutes (S.D 15.7) clearly indicating that it was not a matter of distance.



Tab. 8. Barriers to accessing health facilities

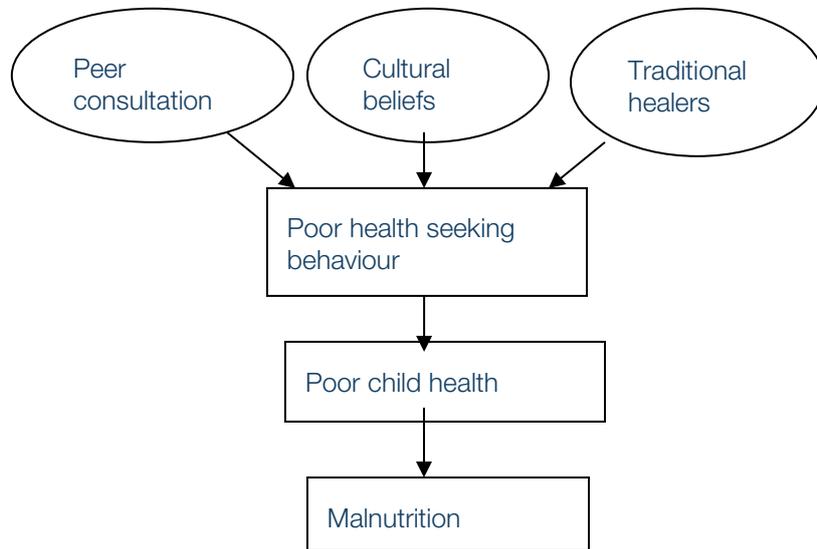
BARRIER	PERCENT
MONEY	76.30%
TRANSPORTATION MEANS	23.40%
SERVICE NOT GOOD ENOUGH	20.4%
TIME	15.10%
GEOGRAPHIC DISTANCE	4.30%
DECISION POWER	2.30%
OTHERS	2.00%

Residents of Mukuru are generally from mixed tribes in Kenya. However, when they meet and live together they adapt a new culture which is a mixture of the different cultural beliefs and practices. From the enquiries, certain practices were predominant and had serious negative effects on the health and nutrition status of children under five years. Removal of plastic teeth was found to be a common practice. This was done when a mother noticed white spots on the gum and the baby was seen to have hands in the mouth often. Removal was done by either rubbing the gum with magadi soda or cutting with a blade and letting the “bad” blood out. This is done as early as 2weeks old. After the exercise, a baby is not able to breastfeed and may develop serious infections. Other beliefs include diarrhea and vomiting being as a result of evil eyes. In this case



if a child is taken to hospital and is injected, community believes he/she will die. We came across many traditional healers who charge exorbitant amounts to provide traditional medicine. Community leaders too believe the same and spoke with a lot of conviction

Fig. 4. Mothers waiting at a health facility





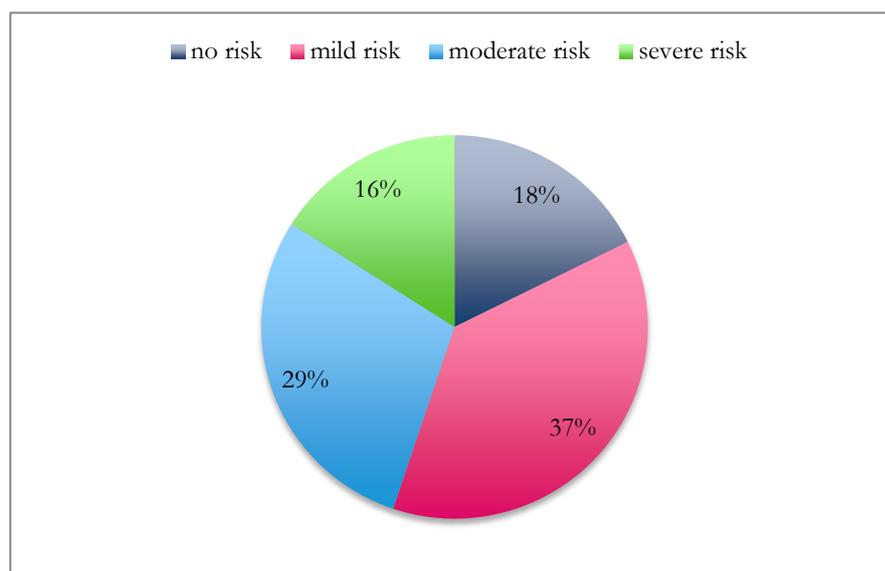
4.10 HYPOTHESIS J: NON-OPTIMAL ACCESS TO SAFE WATER

Access to safe water, adequate sanitation, and proper hygiene education can reduce illness and death from WASH-related disease, leading to better health, poverty reduction, and socio-economic development. However, many countries are challenged to provide these basic necessities to their populations, leaving people at risk for water, sanitation, and hygiene (WASH)-related diseases. Water in the survey area was mainly channeled through pipes which were highly susceptible to contamination due to illegal connection and breakages.

Water source risk

Risk associated with the source was assessed using a series of questions and observation. From the results findings, 84% of the sources of water were either being at mild (37%), moderate (29%) or at severe (18%) risk of contamination while 16% of the water source was not at risk of contamination

Fig. 5. Water source risk



Water management

Good water management at the household level reduces the risk of pollution in the course of handling. From the survey findings, the risk associated with water management is alarming with 51.34% being at severe risk of contamination due to management, 36.35% being at moderate risk while 12.31% being at mild risk of contamination.



Fig. 6. Water sterilization in Mukuru

Tab. 9. Water management risks

WATER MANAGEMENT SCORE	CONTAMINATION RISK ASSOCIATED WITH WATER MANAGEMENT	%	HOH
0	No Risk	0.00	0
1-2	Mild Risk	12.31	87
3-4	Moderate Risk	36.35	257
5-7	Severe Risk	51.34	363

Water use

WHO recommends a minimum of 7.5 liters per capita per day as the minimum to meet the requirements of most people under most conditions. This water needs to be of a quality that represents a tolerable level of risk. However, in an emergency situation, a minimum of 15 liters is required. A higher quantity of about 20 liters per capita per day should be assured to take care of basic hygiene needs and basic food hygiene. Laundry/bathing might require higher amounts unless carried out at source. Majority (98.59%) of the surveyed households met the minimum requirement for basic needs, however, only 2.97% met the minimum based on Fanta measurement.

Tab. 10. Fanta and Sphere standard measurement of water use

FANTA MEASUREMENT	
BASIC NEEDS	Target values for the corresponding need



DRINKING WATER	5 liters per capita per day (lcd)
BATHING	15 lcd
FOOD PREPARATION	10 lcd
HYGIENE AND SANITATION	20 lcd
TOTAL BASIC USES	50 lcd
SPHERE PROJECT	
SURVIVAL NEEDS: WATER INTAKE (DRINKING AND FOOD)	2.5 - 3 liters per capita per day (lcd)
BASIC HYGIENE PRACTICES	2 – 6 lcd
BASIC COOKING NEEDS	3 – 6 lcd
TOTAL BASIC WATER NEEDS	7.5 – 15 lcd

Tab. 11. Water Use

MEASUREMENT	BASED ON FANTA MEASUREMENT	BASED ON SPHERE STANDARD
% MEETING BASIC NEEDS	2.97	98.59
% MEETING DRINKING NEEDS	2.97	16.27
% MEETING BATHING NEEDS	1.13	91.23
% MEETING FOOD NEEDS	2.12	44.27



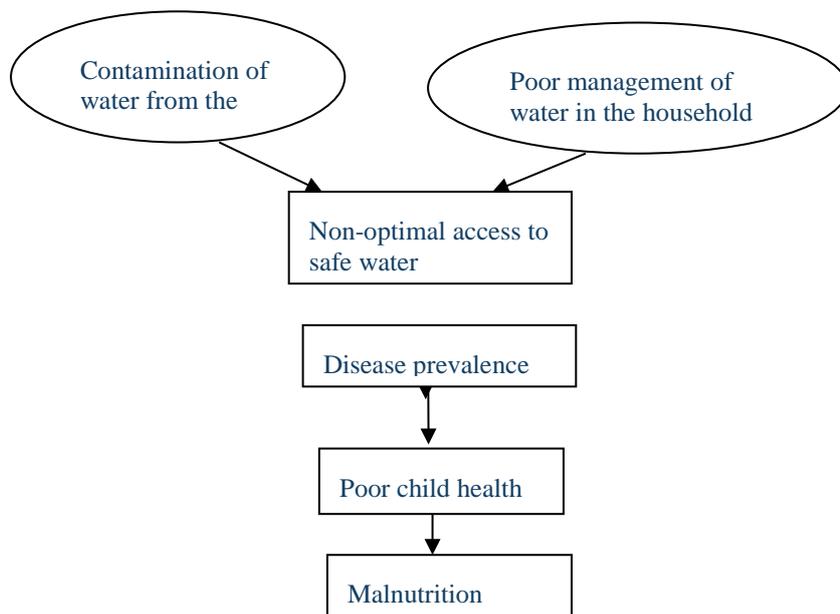
% MEETING HYGIENE/SAN NEEDS	5.37	5.37
------------------------------------	------	------

Drinking water in Mukuru and Viwandani is highly contaminated and is the major cause of diarrheal diseases. There are many water selling points operating 24hrs a day. The water vendors make a monthly payment to the government to operate the business. They sell the water at 5sh per 20litre can. The water is provided by the County government and it is clean and treated. However, clean water pipes run on the surface along the roadside where open drainages run too. Illegal connections are made on these pipes thus contaminating the water in the process.

“...I have been in the water business for many years. I repair the pipes during the day but people cut them at night because they don’t want to pay for water. They leave the pipes open and the dirty water goes in, getting all people sick. This is the reason we have cholera in Mukuru”, Frustrated water vendor and community leader, Wesinye.

An interview with a community nurse providing outreach health services in Kingston confirmed that diarrheal diseases were the most common ailments affecting children and adults. Innovative practices were observed in a school where children put their drinking water in plastic bottles out in the sun for sterilization

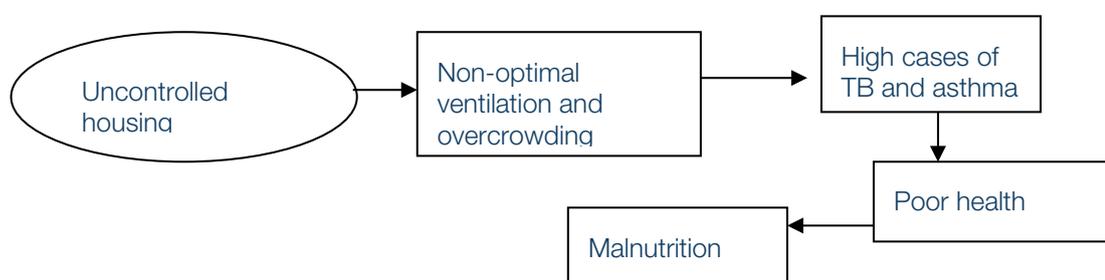
Fig. 7. Water management



4.11 HYPOTHESIS K: NON-OPTIMAL VENTILATION AND OVERCROWDING IN HOUSES

Poor ventilation contributes to poor health and respiratory diseases in Mukuru and Viwandani. From observation, most the housed are made of iron sheets with no provision for a window. 10-15 houses make one plot with all of them opening at the centre of the plot with one main door. The slums are surrounded by many factories that release strong fumes into the air. Air pollution is therefore a contributing factor. Respondents reported that TB and asthma were common among the adults while children suffered from pneumonia. This was confirmed by the health providers interviewed as key informants. Lack of control in housing construction is a key problem. Land owners are now constructing storey iron sheet houses.

Fig. 8. Non-optimal ventilation and overcrowding in houses



4.12 HYPOTHESIS L: NON-OPTIMAL SANITATION FACILITIES

Hygienic and safe sanitation

Sanitation and hygiene are critical to health, survival, and development. Basic sanitation is described as having access to facilities for the safe disposal of human waste (faeces and urine), as well as having the ability to maintain hygienic conditions, through services such as garbage collection, industrial/hazardous waste management, and water treatment and disposal. On the latrine use, the result indicates that about half (50.6%) of the population in the survey area were accessing latrines. Among the population where latrine was accessed, again only 88.7% were making use of the sanitation facility. Further investigation again on the use of safe and hygienic latrines indicates that only 1.3% of the population is using safe and hygienic latrines. On child's faeces disposal, the findings indicate that 43.7% of the caregivers were practicing safe disposal of child's stools.

Tab. 12. Hygienic and safe sanitation

INDICATOR	FREQUENCY	PERCENTAGE
LATRINE USE	358	50.6
PEOPLE USING SANITATION FACILITY WHERE LATRINE IS IN USE	1048	88.7
SAFE AND HYGIENIC LATRINES	9	1.3
SAFE DISPOSAL OF CHILD'S STOOLS(BELOW 36 MONTHS)	217	43.7

Caregiver hand-washing practices



Studies have indicated that washing hands with soap and water for 15 seconds reduces bacterial counts by about 90%. Appropriate hands washing behaviors involves washing your hands with soap and water, and dry them thoroughly. The survey revealed that only 46.1% of the population is using the appropriate hand washing procedures.

On the presence of soap for washing utensils, the findings indicate that about three quarters (75%) of the population in the study area were able to claim and proof of the presence of the soap.

Sanitation facilities are seriously lacking in Mukuru and Viwandani and are a major determinant of cost of housing in the slums, A plot that has a toilet within the compound goes for 3500sh and this is only found in very few plots in Kingstone while a plot without any provision goes for 1500sh, This is the common scenario. Various organizations have made attempts to try and mitigate on the issue. Respondents from both IDIs and FGDs gave an example of buckets that had been donated by Oxfam. Residents could not use them as they had to be stored in the single room used for cooking and sleeping. The use of the bucket also interfered with personal privacy when relieving themselves. Another challenge was the disposal of waste. There were no strategies put in place and women would have to wake up early to empty the bucket at the Ngong river.



“...Sometimes when the toilets block and your parent has have no money to pay for a public toilet, you have to use the bucket which she disposes at ‘Ndombolo’ or in the trenches and later cleans the bucket.

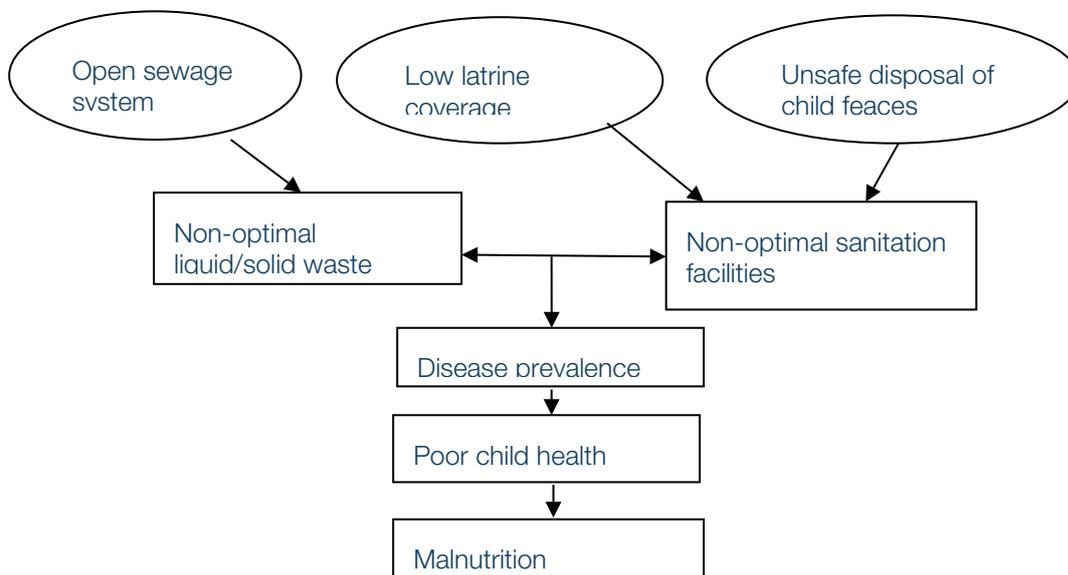
P4: I am in agreement that it is possible to use the bucket because in our case, the gate to where our toilets are located is usually locked at night and we do not have spare keys. So we have to use the bucket at night and dispose in the morning.”, Children FGD Kingstone.

The current and more viable project is one known as fresh life toilets where members pay 5sh to use and at the end of the week it is emptied by a company for use in fertilizer manufacturing.

4.13 HYPOTHESIS N: NON-OPTIMAL LIQUID/ SOLID WASTE MANAGEMENT AND HYPOTHESIS M: INADEQUATE HYGIENE PRACTICES

Poor liquid and solid waste management contribute to poor sanitation. The findings reveal that waste management and garbage collection systems had been put in place by the National Youth Service (NYS) where every household was expected to pay 20sh per month. However, this has not been reinforced and community members put their garbage in plastic bags and throw it in the Ngong river or in an open places along the road.

Fig. 9. Non-optimal liquid/solid waste management





4.14 HYPOTHESIS 0: LIMITED ACCESS TO FOOD DUE TO ECONOMIC PROBLEMS

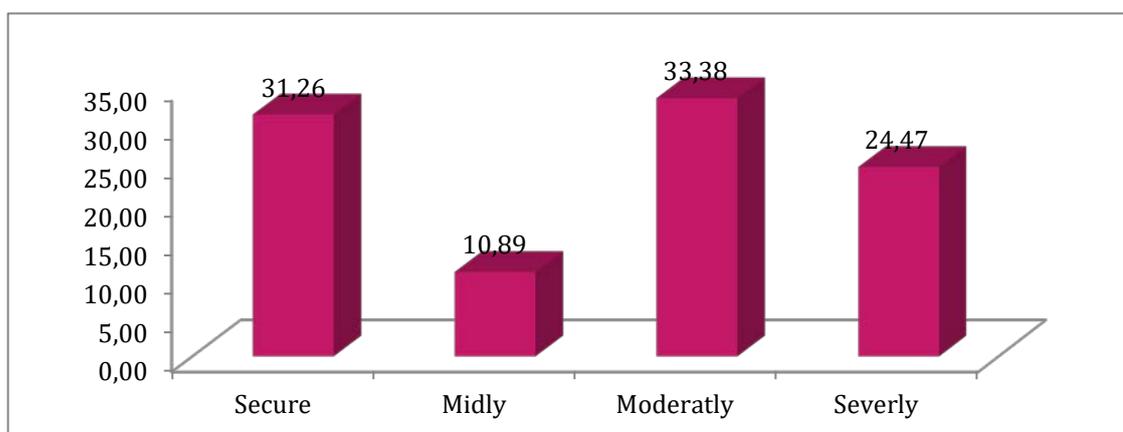
Household food insecurity access scale (HFIAS)

Household food insecurity access scale assess whether households have experienced problems with accessing food during the last 30 days. On average, residents of Mukuru and Viwandani earn between 200- 300 shillings a day. Fluctuation of food prices in the local market and unavailability of daily job opportunities limits accessibility of food at household level even though there is a wide variety of food sold in the slums. For example a bunch of kales remains Kshs. 5 but the number of leaves depends on the season.

“Other times you find when our parents do not have enough money to buy flour, maybe she only has fifty shillings that money is not enough to buy flour, kerosene and vegetables, so she gives the us money to go and eat at the hotel even if at twenty or ten shillings each. We eat Githeri or one chapatti and soup or buy two chapattis and have them put the soup inside.”,Quote from a child on their source of food.

Ugali and sukuma wiki was found to be the common meal for most households due affordability. A packet of 2kg maize flour that has been ground at the local mill costs 100sh and is believed to be balanced. This is prepared using water and is eaten with sukuma wiki worth 20sh for a family of five.

Fig. 10. F Household food insecurity access scale

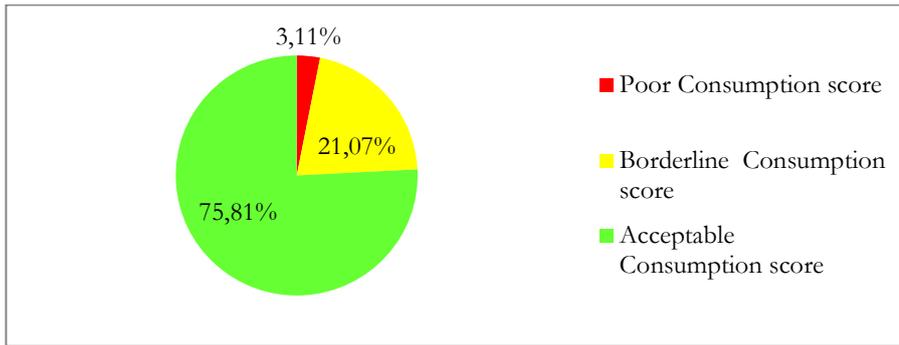


The prevalence above indicates that only 31.26% of households were food secure. The results also indicate that 33.38% of the households were moderately insecure while 24.47% were severely insecure.

Food Consumption Score

The food consumption score is an acceptable proxy indicator to measure caloric intake and diet quality at household level, giving an indication of food security status of the household. It's a composite score based on dietary diversity, food frequency and relative nutritional importance of different food groups.

Fig. 11. Food consumption score

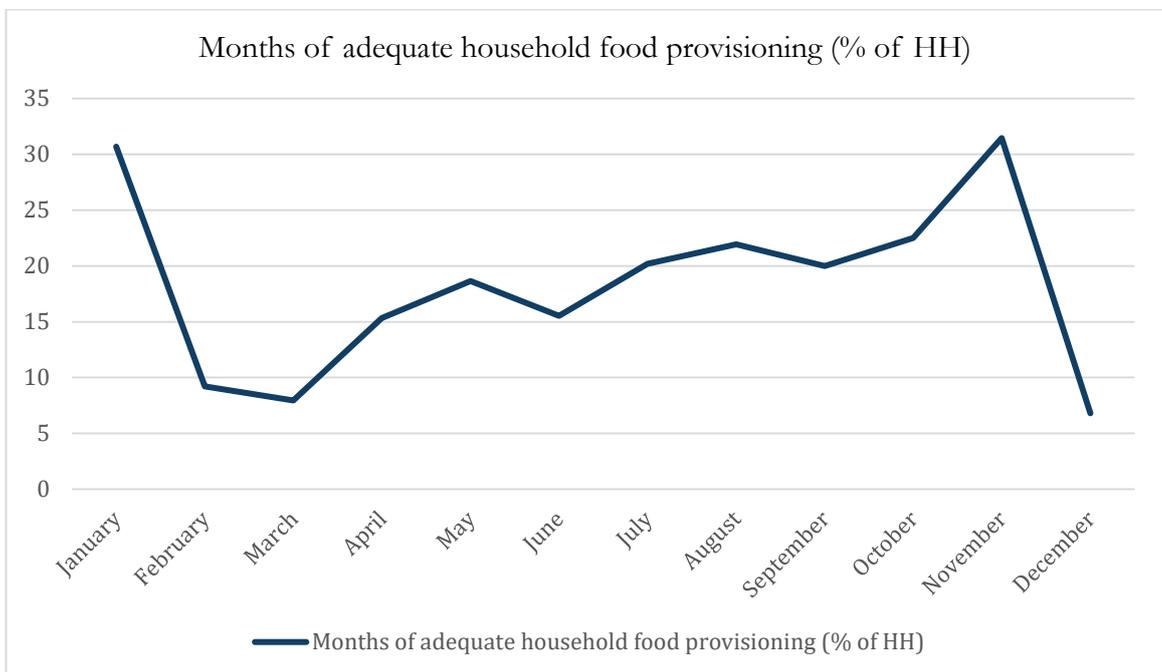


The survey found that 3.1% (n=22) of the households were classified as having poor food consumption while 21.1% (n=149) were found to be at the borderline food consumption. This implies that approximately 3.1% of the households were having low dietary diversity and meal frequency. Encouraging is the fact that majority of the households (75.8%) were found to be having an acceptable food consumption score.

Months of adequate household food provisioning

Only about 27% of households that were able to provide for their household food needs throughout the entire year. Those households that were unable to adequately provide for the household (about 73%) went ahead and identified in which months (during the past 12 months) they did not have access to sufficient food to meet their household needs. From the result it was evident that the months of November and January were the major months in which there was limited access to food regardless of the source of the food.

Tab. 13. Months of adequate household food provisioning



Coping strategy Index

The Coping Strategies Index (CSI) is an indicator of household food security that is relatively simple and quick to use, straightforward to understand, and correlates well with more complex measures of food security. A series of questions about how households manage to cope with a shortfall in food for consumption results in a simple numeric score. In its simplest form, monitoring changes in the CSI score indicates whether household food security status is declining or improving.



The CSI is based on the many possible answers to one single question: “What do you do when you don’t have adequate food, and don’t have the money to buy food?”²⁰

The results showed that 57.0% (n=403) reported to apply a reducing coping strategy to handle the critical shortage of food within the household. Among the reducing coping strategies reported by the households, the most common include relying on less expensive food/cheap food (93.6%, n=377), purchase food on credit (81.9%, n=330), limiting the portion size of food (56.6%, n=228), reducing the number of daily meals (51.6%, n=208), borrowing/kind ship support (44.4%, n=179), restrict adult consumption for children (44.2%, n=178) and finally (10.9%, n=44) skip entire day without food. Coping strategy index was found to be at 34.2.

Though restricting adult consumption for children and skipping entire day without food scored low, they are indicators of more severe situation of food crisis in the household level. In situations when one doesn’t have a job, respondents said they were comfortable eating at the neighbours with the understanding that everyone can be in the same situation. Taking food on credit at the shopkeepers and vegetable vendors was found to be a common practice.

Tab. 14. Copping strategies score

COPING STRATEGIES MECHANISMS	N	%
RELY ON LESS PREFERRED/CHEAP FOOD	377	93.55%
PURCHASE FOOD ON CREDIT	330	81.89%
BORROWING/KIND SHIP SUPPORT	179	44.42%
LIMIT PORTION SIZE	228	56.58%
RESTRICT ADULT CONSUMPTION FOR CHILDREN	178	44.17%
REDUCE NUMBER OF DAILY MEALS	208	51.61%
SKIP ENTIRE DAY WITHOUT FOOD	44	10.92%
SEND HOUSE MEMBER TO BEG	15	3.72%
COPING STRATEGY INDEX	32.4	



²⁰Coping Strategies Index: Field Methods Manual. Copyright © 2008 Cooperative for Assistance and Relief Everywhere, Inc. (CARE). Used by permission.

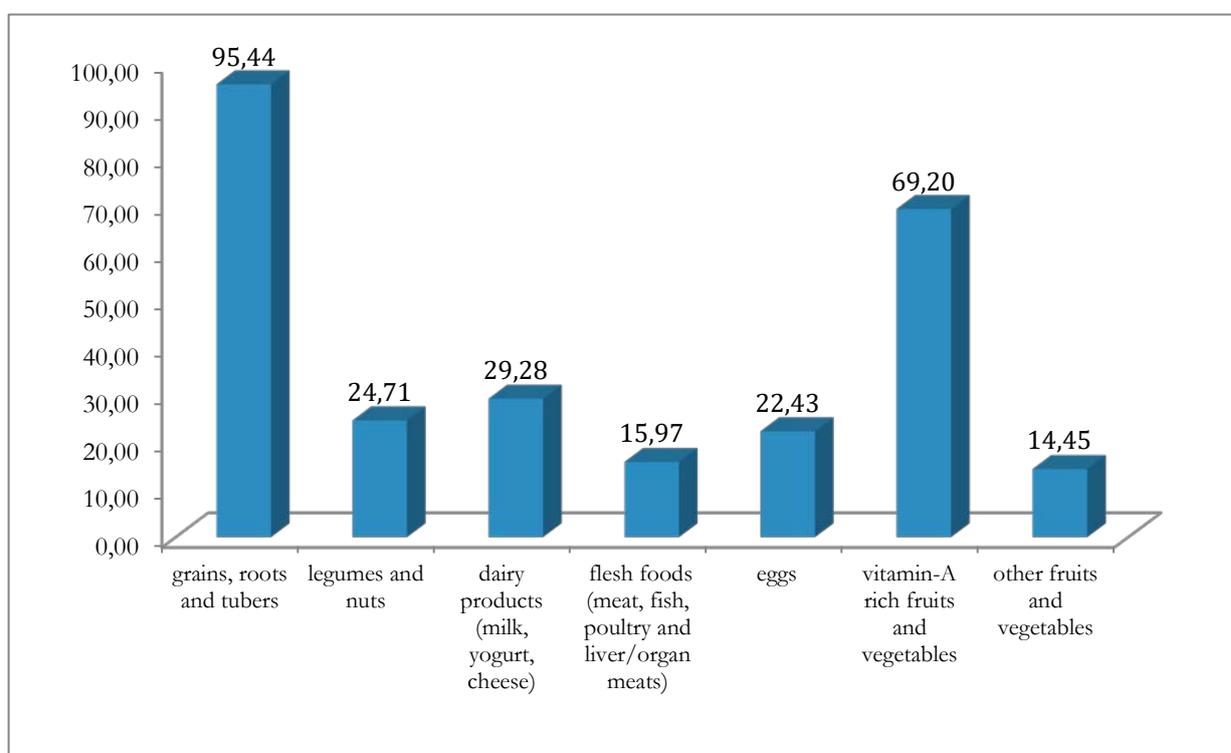


4.15 HYPOTHESIS P LIMITED KNOWLEDGE ON FOOD GROUP

Dietary diversity was also assessed for the children surveyed. The analysis summarized children's intake of seven food groups: 1) grains, roots and tubers; 2) legumes and nuts; 3) dairy products (milk, yogurt, cheese); 4) flesh foods (meat, fish, poultry and liver/organ meats); 5) eggs; 6) vitamin-A rich fruits and vegetables; 7) and, other fruits and vegetables²¹.

The results showed that 49.8.7% (n=131,) of the children consumed 4 or more of the food groups mentioned above. The mean number of food groups consumed was 3.5 (CI: 3.2-3.8).

Fig. 12. Consumption of food as per food groups by children



²¹ Indicators for assessing infant and young child feeding practices



5/ SEASONALITY, HISTORICAL EVENT AND SHOCKS

5.1 SEASONAL CALENDAR

Tab. 15. Seasonal calendar

SEASONAL VARIATIONS	J	F	M	A	M	J	J	A	S	O	N	D
SEASONAL VARIATIONS OF HUNGER												
LOW AVAILABILITY OF FOOD	x	x									x	x
CHARACTERISTICS OF EACH SEASON												
RAINY SEASON			x	x	x				x	x	x	
COLD SEASON							x	x				
HOT SEASON	x	x										
WATER AVAILABILITY	x	x	x	x	x	x	x	x	x	x	x	x
FESTIVE SEASON				x					x			x
HARVEST OF STAPLE FOOD (MAIZE, BEANS ETC.)								x				
HARVEST OF FRUITS/VEGETABLE (SUKUMA WIKI, CABBAGE)					x	x	x	x	x	x		



HIGH MARKET FUEL PRICE	x	x									x	x
HIGH MARKET FOOD PRICE	x	x									x	x
EMPLOYMENT OPPORTUNITIES	x	x										
SEASONAL OCCURRENCE OF CLIMATE-RELATED HAZARDS												
DROUGHTS	x											x
FLOODS				x						x		
SEASONAL OCCURRENCE OF OTHER HAZARDS												
DIARRHEA				x	x					x	x	
CHICKENPOX								x				
MALARIA		x										
TYPHOID				x	x							
MEASLES								x				
SEASONAL ACTIVITIES FOR THE MAIN LIVELIHOOD STRATEGIES IN THE COMMUNITY												
CASUAL LABOR IN THE COMMUNITY/INDUSTRIES	x	x	x	x	x	x	x	x	x	x		
HOLIDAY/FESTIVALS												
WEDDINGS								x				
ELECTIONS								x				



SCHOOLING PERIOD/SCHOOL FEES	x				x				x			
OTHER												

5.2 HISTORICAL EVENTS AND SHOCKS

Tab. 16. Historical calendar

YEAR	EVENT
1997	<p>El nino rain that wrecked havoc in the area causing massive destruction of house hold and line of communication many families were left homeless , some lost their life as they were swept away by flood.</p> <p>Food shortages were experienced and extremely poor sanitation</p>
1999	<p>Illicit drink killed many people in the area and some were left blind. A crackdown was done by the area chief and those responsible were arrested and prosecuted</p>
2004	<p>Two policemen on patrol were killed by thugs in Mukuru. The police set a manhunt in the area and movement was restricted. Residents of Sinai were terrorized with women and girls being raped in the process. Families went for days without food .</p>
2010	<p>The Sinai fire tragedy which lead to the death of residents was caused by leaking pipeline and as people were siphoning the oil, someone accidentally light a cigarette which ignited the fire. There were no paths big enough to provide access for the fire engines and within hours the most of Mukuru had been destroyed. Residents rebuilt soon after but ensured that they left access roads. Fire accidents have continued happening but are easily contained.</p>
2015	<p>Cholera outbreak in the area lead to death of children and adults. This was due to drinking contaminated water. The problem still persists and the ministry of health is always on the alert</p>



Tab. 17. Historical calendar - Mukuru

YEAR	EVENT
1973	<p>Mukuru area was began by a white man called Reuben, by then it was a grazing land. He left the country because Kenya had received its independence. Hilllocks Country club was his homestead.</p> <p>Mutiso was from Kamba land was his heard man assisted by tumbo and Ndunda, and was left with more than 200 cows. He left Nairobi with his cows since the government declared that no cows should be in Nairobi and took the cows to Mitaboni and Lukenya.</p> <p>Also there was a lady named Gatoto which was named after the primary school. Charles Mutua was a secretary and JeremiaGitau was the chairman then Ngugi.</p> <p>Houses were made of cartons and nylon paper sometimes there houses would be demolished it was not a place for faint hearted.</p> <p>There were no schools, however Evans Omondi was a youth who was learned had reached form 6 and came from Mombasa. He would build homes and later the women contributed for him to go to South Africa to study Community and later returned back to the country where he is doing social responsibility.</p>
1987	Started mabati construction
1990	People increased and people had their first MP for Embakasi known as Ruhui who supported the kijiji
1992	Elected David Mwenje and played a big role in speaking for the residents for 3*5=15 years. He blocked demolishers along Mombasa Road and got president’s support.
1994	Went as a village to parliament to protest demolition of their houses Ngugi was a worker for Mbara Pauline
1996	Moi’s escort began building many houses which encouraged others as they felt secure
1997	It opened their eyes on how to build houses because there were no access roads for fire extinguishers and no one would recognize their house when the place burnt During Muthuri’s time, the whole of Gatope got burnt which guided people on how to build with a plan to control future disaster. They started a project for construction of Gateway, railway and Kosovo zone
1997/8	Elnino



2002	Some members from Western and Nyanza moved to start Wesinya and that is where the origin of the name came from
2003	1st Counsellor of Mukuru Patrick Mulei. Mutune Secretary George Anangwe they wanted to kill him, was put in a coffin for several days but didn't die Also Charles Rama, Charles Minya as a leader Election of Chairlady of the women ward EshtherMunyiva
2004	Construction of Mukuru Health Centre. 1 st School Reuben as parents used to take their children very far for example Nile Road primary Buruburu, Schools along Jogoo Road
2007	Community unity to prevent chaos during post-election clashes that happened in other parts of the country. Prices of food went up. During post-election there were no effect
2011	Sinai fire disaster caused by petrol/ pipeline

6/ COMMUNITY RATING

6.1 INTRODUCTION

Two rating activities were conducted. One was conducted on 22nd December 2016 for two clusters in Viwandani while the other happened on 23rd January 2017 with two clusters from Mukuru. The participant were drawn from their respective clusters mainly those who had participated in the focus group discussions and indepth interviews. These were men, women and youth as well as community leaders and NGOs/FBO representatives in the community.

The objective of the exercise was:

- To understand the community definition of malnutrition
- Present the most relevant hypothesis related to undernutrition raised during the enquiries
- Provide an opportunity for the community members to debate and agree on the major risk factors



Definition of various terms that the community member in both Sinai and king stone unanimously agreed on.

Malnutrition is due to:

- Lack of enough food and balanced diet.
- Not having appropriate food especially fish and meat
- Lack of variety member of the community lack variety of food most of them feed on ugali and potatoes.

Malnutrition affects both adults and children:

If the household has enough food both parents and children will have good health, however when there isn't enough food, both will be affected but the children are most affected as compared to adults.

Signs of someone who is malnourished:

A child has a protruding stomach, and mostly unhappy and often cry for no apparent reason. Malnourished children have stunted growth. The adults are usually weak; they also have low self-esteem.

All participants felt malnutrition can be treated

The causes of malnutrition:

Lack of varieties of food

Poverty

Lack of information, people don't know the various variety of food categories, the issue of balance diet was taught in primary school however most people in the community don't put what they were taught into practice, there is also a fallacy within the community that those who are wealthy are the ones supposed to eat balance diet.

What is a balanced diet?

Its food that has protein e.g. fish and meat

Question was asked about those who took balanced diet only 4 people raised their hand that they had balance diet the previous night. It was also evidence that majority of the individual present in the meeting didn't know the various classes of food some categories the following food Mrenad, managu and other traditional kales was categorized as carbohydrate, only a few were able to categories sweet potatoes and ugali as carbohydrate.

Malnutrition can lead to death:

If a child has other opportunistic infections and is below five years.

Depending on the stress that one is already undergoing

Depending on the type of work someone is doing if someone is doing heavy work and he is malnourished the chances are he can die very fast.

If a child is malnourished, he will die.

Types of food that most people in this community eat:

Ugali, rice, potatoes, kales

There was an argument on issue of maize flour grade 1(industrial packaged) and 2 (grounded at the local mill) Most argued that grade2 is a balanced diet by itself.

Total cost of meals in a household consisting of 5 people



Other charges

The team agreed that the normal spending for most families ranged from 250 to 350 shillings, arguing that food expenses depended on family income. Other daily expenses include 30/- for adult toilets and buying water 10/-

6.2 RATING CAUSES OF MALNUTRITION

Every cluster discussed at length the causes of malnutrition in their respective area and using pebbles, participants came up with the following risk factors rating from the major to the minor factors causing under nutrition in children in under 5years.

Kingston

- Lack of knowledge on food varieties
- Poor management of day care-low knowledge of daycare workers
- Diarrhea and vomiting
- Poor health systems
- No access to safe water
- Poor solid waste management
- Non adherence exclusive breastfeeding- working mothers
- Cultural practice- plastic teeth
- Family planning- unsafe sources-chemists
- HIV/STI- self medication and stigma
- Poor ventilation- storey buildings

Sinai

- Lack of knowledge on food varieties
- No access to safe water
- Poor solid waste management
- Diarrhea and vomiting
- HIV/STI
- Poor health system
- Poor management of daycare
- Family planning- Facility operating hours
- Domestic violence due to economic stain
- No psychosocial support- no counseling services
- Non adherence to exclusive breastfeeding- mothers' working hours
- Cultural practice- evil eye and plastic teeth

Gatope

- Unsafe drinking water
- Lack of Knowledge on feeding practices
- Poor planning- overcrowding



- No Waste Management
- Poor Leadership- corruption
- No exclusive breast feeding- working hours
- Alcoholism- teenage mothers
- Diseases-HIV/STIs
- No toilet
- Cultural beliefs-plastic teeth, evil eyes
- Poor management of baby care
- Betting in the casino

Wesinya

- Lack of knowledge on food variety
- Lack of health facility
- Poor Leadership
- Contaminated drinking water
- Inadequate maternal health services-Many Prenatal Clinics but no delivery Services
- Overcrowding and air pollution
- Poor sanitation-disease outbreaks
- Unreliable FP services -fake FP Injection
- Lack of Social Support- domestic violence

6.3 ISSUES THAT EMERGED DURING THE DISCUSSION THAT DID NOT COME OUT WHEN CONDUCTING QUALITATIVE DATA

- Most of the participants did not know that TB affects the community, the facility in charge at Mareba mentioned that the cases of TB are common in the area most of them due to ignorance. The spread of the disease was attributed to overcrowding and poor ventilation in most household.
- During our qualitative data collection participants mentioned that most of the mothers use pills and injection to control birth however it was noted they usually make use of available chemist, where they are given injection but still conceive leading to unwanted pregnancy. This mostly affects women working in factories since they do not have time to access government facilities where the services are offered for free. The chemists provide services for 24hours.



Tab. 18. General risk factors

RISK FACTORS	COMMUNITY RATING EXERCISE	INTERPRETATION
HYPOTHESIS A: NON-OPTIMAL CARE FOR CHILDREN/POORLY MANAGED DAY CARES	++	major
HYPOTHESIS B: NON-OPTIMAL COMPLEMENTARY FEEDING PRACTICES	+++	major
HYPOTHESIS C: NON-OPTIMAL BREASTFEEDING PRACTICES	++	major
HYPOTHESIS D: NON-OPTIMAL MATERNAL HEALTHCARE.	+	minor
HYPOTHESIS E: MICRONUTRIENT DEFICIENCIES AMONG PREGNANT AND LACTATING WOMEN	+	important
HYPOTHESIS F: NON-OPTIMAL PSYCHOSOCIAL CARE FOR WOMEN AND GENDER BASED VIOLENCE	++	important
HYPOTHESIS G: LOW UPTAKE OF FAMILY PLANNING	+	minor
HYPOTHESIS H: HIGH CASES OF HIV/AIDS AND TB	+	minor
HYPOTHESIS I: POOR HEALTH SEEKING BEHAVIOR	++	major
HYPOTHESIS J: NON-OPTIMAL ACCESS TO SAFE WATER	+++	major
HYPOTHESIS K: NON-OPTIMAL VENTILATION AND OVERCROWDING IN HOUSES	++	major
HYPOTHESIS L: NON-OPTIMAL SANITATION FACILITIES	+++	major
HYPOTHESIS M: INADEQUATE HYGIENE PRACTICES	+++	major



HYPOTHESIS N: NON-OPTIMAL LIQUID/ SOLID WASTE MANAGEMENT	+++	major
HYPOTHESIS O: LIMITED ACCESS TO FOOD DUE TO ECONOMIC PROBLEMS	+++	major
HYPOTHESIS P LIMITED KNOWLEDGE ON FOOD GROUP	+++	major

6.4 FINAL RATING BY THE ANALYST AND EXPERT

Tab. 19. Source of risk factor information

SOURCE OF INFORMATION	NOTES
Prevalence of risk factor from secondary data	<p>–</p> <p>below prevalence where considered a nutrition/public health issue</p> <p>+</p> <p>similar prevalence where considered a nutrition/public health issue</p> <p>++</p> <p>higher prevalence than when considered a nutrition/public health issue</p> <p>+++</p> <p>Much higher prevalence than when considered a nutrition/public health issue</p>
Prevalence of risk factor from Risk Factor Survey	<p>–</p> <p>below prevalence where considered a nutrition/public health issue</p> <p>+</p> <p>similar prevalence where considered a nutrition/public health issue</p> <p>++</p> <p>higher prevalence than when considered a nutrition/public health issue</p> <p>+++</p> <p>Much higher prevalence than when considered a nutrition/public health issue</p>



Tab. 20. Risk factor rating

SOURCE OF INFORMATION	NOTES
<p>Strength and consistency across contexts of association between the risk factor and under-nutrition (from the Pathways to Under-nutrition Module)</p>	<p>NOTE: This category is not applicable for risk factors that do not appear in the Pathways to Under-nutrition Module. Also note that the criteria assume statistical significance of the association.</p> <p style="text-align: center;">-</p> <p>Weak association has been demonstrated in at least a few contexts.</p> <p style="text-align: center;">+</p> <p>Medium strength association has been demonstrated in at least a few contexts.</p> <p style="text-align: center;">+ +</p> <p>Strong associations demonstrated in at least a few contexts or an association demonstrated in the particular context of the Link NCA.</p>
<p>Seasonality and medium-term trends of risk factor related to seasonality and medium-term trends of under-nutrition (applies mainly for wasting)</p>	<p style="text-align: center;">-</p> <p>The seasonal variation and medium-term trends of the prevalence of the risk factor do not correspond to the seasonal variation and medium-term trends of the under-nutrition outcome considered.</p> <p style="text-align: center;">+</p> <p>Seasonal variation and medium term trends in risk factor prevalence sometimes correspond to the seasonal variation and medium term trends in under-nutrition outcome considered.</p> <p style="text-align: center;">+ +</p> <p>The seasonal and medium term trends in prevalence of the risk factor match the seasonal and medium term trends in the under-nutrition outcome considered.</p>
<p>Participatory rating exercise with community</p>	<p style="text-align: center;">-</p> <p>The risk factor is rarely or never mentioned in the rating exercise.</p> <p style="text-align: center;">+</p> <p>The risk factor is irregularly mentioned as one of the top 5 risk factors.</p> <p style="text-align: center;">+ +</p> <p>The risk factor is regularly mentioned as one of the top 5 risk factors.</p>



Tab. 21. : Risk factor evaluation from various perspectives.

RISK FACTORS	PREVALENCE FROM SECONDARY DATA/LITERATURE REVIEW (QUANTITATIVE)	PREVALENCE FROM THE RISK FACTOR SURVEY	STRENGTH OF ASSOCIATION WITH UNDER-NUTRITION FROM LITERATURE REVIEW	SEASONALITY OF RISK FACTOR	FINDINGS FROM THE QUALITATIVE SURVEY	COMMUNITY RATING EXERCISE	INTERPRETATION
HYPOTHESIS A: NON-OPTIMAL CARE FOR CHILDREN/POORLY MANAGED DAY CARES	+++	N/A	N/A	+++	+++	++	major
HYPOTHESIS B: NON-OPTIMAL COMPLEMENTARY FEEDING PRACTICES	++	++	++	+++	+++	+++	major
HYPOTHESIS C: NON-OPTIMAL BREASTFEEDING PRACTICES	+++	+++	++	+++	+++	++	major
HYPOTHESIS D: NON-OPTIMAL MATERNAL HEALTHCARE.	+	+	n/a	+	+	+	minor
HYPOTHESIS E: MICRONUTRIENT DEFICIENCIES AMONG PREGNANT AND LACTATING WOMEN	+	+	++	+	+	+	important
HYPOTHESIS F: NON-OPTIMAL PSYCHOSOCIAL CARE FOR WOMEN AND GENDER BASED VIOLENCE	+	+	n/a	++	++	++	important
HYPOTHESIS G: LOW UPTAKE OF FAMILY PLANNING	+	+	n/a	+	+	+	minor
HYPOTHESIS H: HIGH CASES OF HIV/AIDS AND TB	++	-	+	+	+	+	minor
HYPOTHESIS I: POOR HEALTH SEEKING BEHAVIOR	++	++	+	++	+++	++	major
HYPOTHESIS J: NON-OPTIMAL ACCESS TO SAFE WATER	+++	+++	+	+++	+++	+++	major



HYPOTHESIS K: NON-OPTIMAL VENTILATION AND OVERCROWDING IN HOUSES	+++	++	n/a	+++	+++	++	major
HYPOTHESIS L: NON-OPTIMAL SANITATION FACILITIES	+++	+++	+	+++	+++	+++	major
HYPOTHESIS M: INADEQUATE HYGIENE PRACTICES	+++	+++	+	+++	+++	+++	major
HYPOTHESIS N: NON-OPTIMAL LIQUID/ SOLID WASTE MANAGEMENT	+++	+++	+	+++	+++	+++	major
HYPOTHESIS O: LIMITED ACCESS TO FOOD DUE TO ECONOMIC PROBLEMS	+++	+++	+	+++	+++	+++	major
HYPOTHESIS P LIMITED KNOWLEDGE ON FOOD GROUP	n/a	n/a	n/a	+++	+++	+++	major

7/ CAUSAL MODEL

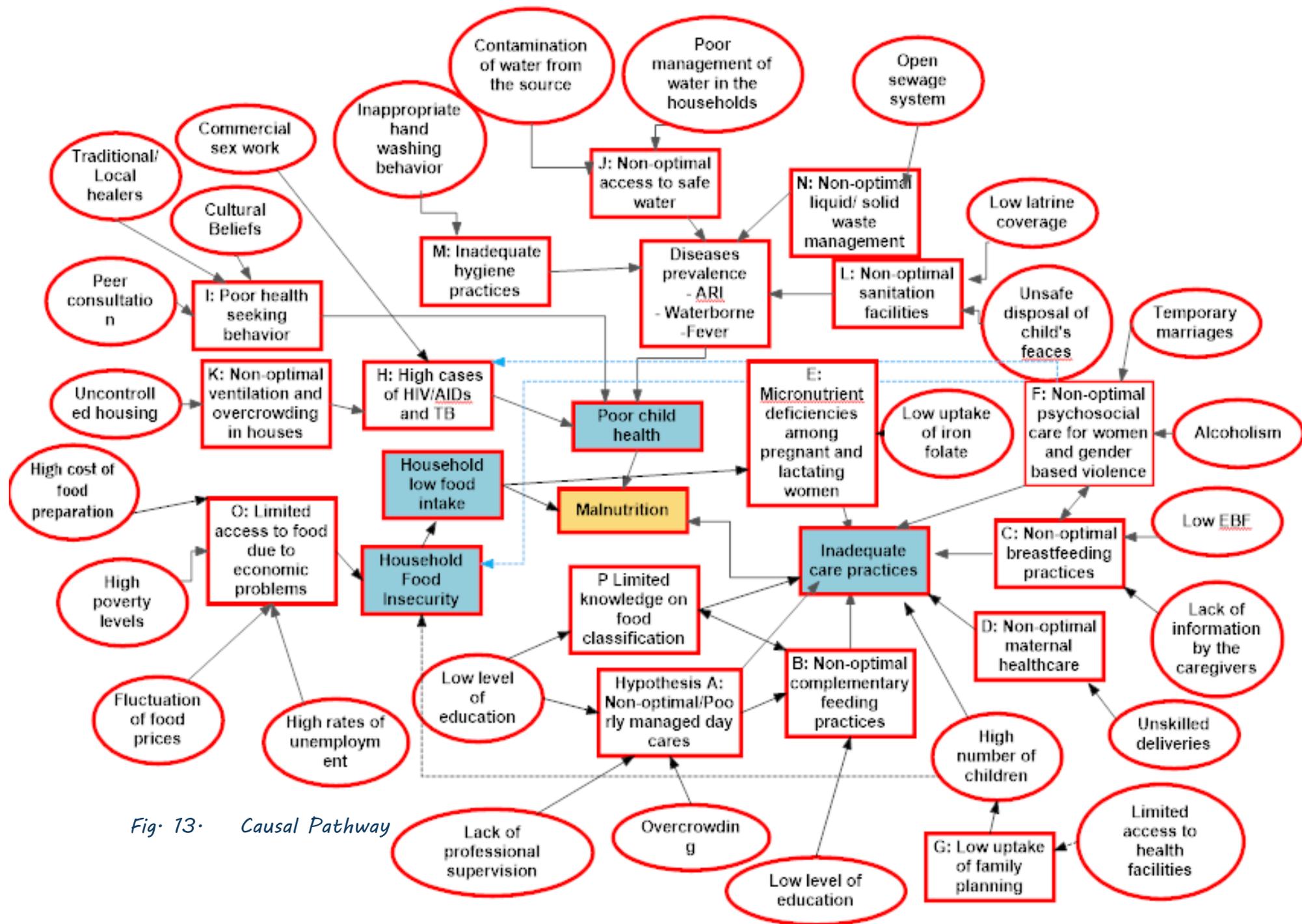


Fig. 13. Causal Pathway



SECTION III RECOMMENDATIONS AND LESSONS LEARNT

1/ GENERAL PROGRAMME AND POLICY RECOMMENDATIONS

Essentially the study was carried out smoothly. However a number of general recommendations that can be made to ensure that future Link NCAs are undertaken more effectively. Adequate time needs to be set aside to engage with gatekeepers at various levels. The study sites were in Nairobi County which is under the jurisdiction of the County government and specifically the County health management team. Adequate planning with the county health management team would have enabled significant allocation of resources to ensure that the study went on adequately. Further, the study would have been prioritized to ensure that no other major surveys were taking place around the same time. Further policies around nutrition services are formulated at the national level. Whilst the Human Nutrition and Dietetics Unit within the Division of Family Health in the Ministry of Health was adequately engaged competing activities prevented the staff to participate fully during the survey. At the community level, adequate engagement and appropriate timing would have ensured greater success. The survey took place immediately after a SMART survey and the members of the community at some point required additional caution during consent seeking to differentiate the two exercises. In addition, the chronological proximity of the two studies may have resulted to 'fatigue bias'. Additionally, an overarching recommendation is the inclusion of all caregivers (mothers, fathers, grandmothers, possibly adolescent siblings) for sessions to ensure secondary caregivers are also adequately aware of the recommendations given during the survey and/or the focused group discussions. There is need to consider the income generating activities of the respondent to ensure maximum participation. Scheduling focused group discussions during the time when the care givers were unlikely to be either working or seeking health services would ensure greater participation and diversity. Caregivers, who worked in industries as casual laborers or in small businesses like Hair Salons, Vegetable kiosks, hotels etc. were not easily available if the FGDs were scheduled during the day. Some FGDs scheduled later in the day were more successful. Finally insecurity within the urban informal settlement was rife. However, engagement with the community health volunteers (CHVs) and Chiefs as well as following the organizational protocol ensured that there was no adverse security incidence.



Specifically, interrogation of the risk factors is critical to deriving valuable recommendations. The table below presents recommendations from the analyst for programme activities and the risk factors addressed through these activities.

RECOMMENDATION	RISK FACTOR	BENEFICIARY	COMMUNITY RATING EXERCISE	INTERPRETATION
FORMULATION OF NATIONAL AND/OR COUNTY LEVEL STANDARD OPERATING PROCEDURES TO REGULATE THE SET UP AND OPERATION OF THE DAY CARE CENTERS	Hypothesis A: Non-optimal care for children/Poorly managed day cares	Care Giver	++	major
DEVELOPMENT OF SBCC MATERIALS TO PROMOTE PROPER WEANING FOODS AND DIETARY DIVERSITY		Care Giver	+++	major
INTEGRATION OF NUTRITIONAL COUNSELLING SERVICES WITH CHILD WELFARE SERVICES AT THE HEALTH FACILITY LEVEL AND IN THE COMMUNITY		Care Giver		
PROMOTION OF INNOVATIVE AND EASILY EFFECTIVE METHODS TO EXPRESS AND STORE BREAST MILK FOR WORKING MOTHERS TO ENSURE EXCLUSIVE BREASTFEEDING				
PROMOTION OF THE BENEFITS OF CONTINUED BREASTFEEDING UP TO 2 YEARS AND FAMILY PLANNING TO ENSURE ADEQUATE CHILD SPACING.				
PROMOTION OF THE IMPORTANCE OF 4 ANC VISITS, SKILLED DELIVERY AND IFAS DURING PREGNANCY AT THE HEALTH AND COMMUNITY LEVEL	Hypothesis D: Non-optimal maternal healthcare.	Care Giver	+	minor
ROUTINE AND REGULAR CAMPAIGNS TO SUPPLEMENT PREGNANT MOTHERS' DIETS E. MALEZI BORA	Hypothesis E: Micronutrient deficiencies among pregnant and lactating women	Community, PLW	+	important



<p>ENFORCEMENT OF THE GBV SERVICES AND REGULATIONS AND PROMOTION OF OPENNESS ON GENDER VIOLENCE E.G. "SITAKIMYA"(I WONT KEEP QUIET CAMPAIGN</p>	<p>Hypothesis F: Non-optimal psychosocial care for women and gender based violence</p>	<p>Community</p>	<p>++</p>	<p>important</p>
<p>IMPROVEMENT OF FP CLINIC OPERATING TIMES TO CATER FOR THE WORKING WOCBA</p>	<p>Hypothesis G: Low uptake of family planning</p>	<p>Community</p>	<p>+</p>	<p>minor</p>
<p>ADAPTATION OF NATIONAL GUIDELINES ON EMTCT, HIV, TB IN THE INFORMAL SETTLEMENTS</p>	<p>Hypothesis H: High cases of HIV/AIDs and TB</p>	<p>Community</p>	<p>+</p>	<p>minor</p>
<p>FULL SUBSIDIZATION(ZERO-RATING) OF PRIMARY CARE SERVICES IN INFORMAL SETTLEMENTS; COMMUNITY AWARENESS ON IMPROPER HEALTH PRACTICES E.G. REMOVAL OF PLASTIC TEETH</p>	<p>Hypothesis I: Poor health seeking behavior</p>	<p>Community</p>	<p>++</p>	<p>major</p>
<p>DISTRIBUTION OF WATER TREATMENT AGENTS; AWARENESS CREATION OF WATER STERILIZATION TECHNIQUES; SUBSIDIZATION OF WATER SOURCES</p>	<p>Hypothesis J: Non-optimal access to safe water</p>	<p>Community</p>	<p>+++</p>	<p>major</p>
<p>USE OF SIMPLE CONSTRUCTION TECHNIQUES TO ENSURE ADEQUATE VENTILATION; HOUSING REGULATION ENFORCEMENT</p>	<p>Hypothesis K: Non-optimal ventilation and overcrowding in houses</p>	<p>Community</p>	<p>++</p>	<p>major</p>
<p>BUILDING OF LATRINES AND WATER DISPOSAL PITS; FACILITATION OF SANITATION AND HYGIENE COMMITTEES, TO INCLUDE CLEARING COMMUNITIES OF RUBBISH FROM COMMUNAL AREAS, AND PROMOTION OF CONSTRUCTION OF LATRINES AND HAND-WASHING POINTS</p>	<p>Hypothesis L: Non-optimal sanitation facilities</p>	<p>Community</p>	<p>+++</p>	<p>major</p>
<p>HANDWASHING STATIONS MADE FROM LOCALLY AVAILABLE RESOURCES (E.G. HAND WASHING STATIONS)</p>		<p>Community</p>		
<p>PROMOTION OF SOAP USE FOR BATHING TO INCREASE SOAP CONTACT POINTS</p>		<p>Community</p>		



<p>IMPROVED GARBAGE COLLECTION SERVICES;</p> <p>MICRO GARDENS, HYDROPONIC FARMING; USE OF CHEAP BUT NUTRITIOUS ALTERNATIVES</p> <p>NUTRITION COUNSELLING; USE OF SCORE CARDS</p>	Hypothesis N: Non-optimal liquid/ solid waste management	Community	+++	major
	Hypothesis O: Limited access to food due to economic problems	Community	+++	major
	Hypothesis P Limited knowledge on food group	Community	+++	major

1.1 RESPONSE ANALYSIS

Response analysis is a process that is focused on identification, examination and selection of a set of appropriate and feasible response options based on certain predefined technical and operational criteria. Most commonly, it is understood as a step or phase linking an *assessment* or *situation analysis* phase with a *program design* or *programming* phase. It is an *integral part of a comprehensive study process*, generating accountability for results and ensuring their translation into strategies and actions that have an impact on the ground.

While the term *response analysis* implies that response choices involve an evidence-based, analytical process, many additional factors in fact drive response choices. These include organisational capacity, mandate and culture; knowledge and experience of programme staff as well as a host of external factors such as donor resources and policy; host government policies; capacity of partner organisations; logistics, costs of compliance and security and access issues.

The Link NCA method has been designed to yield a high quality evidence-based situation analysis. With the Link NCA, stakeholders agree as a group on the situation analysis. Any gaps in this situation analysis – such as severity, magnitude, target groups, gap and risk analysis, forecasting – are further plugged in the initial stage of the response analysis. More information can be founded to the specific report related to the response analysis.

Multisectorial response plan

The bellow tables are representing the agreed multisectorial response plan agreed during the response analysis worksh



RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME- BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			Training caregivers on handwashing			
			Installation of handwashing facility in the daycare centers			
			Training the daycare caregivers on YCN			
			Sensitize the caregivers on dangers of overcrowding			
			Installation of sanitation facilities in the daycares			



RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			IFAS supplementation for all pregnant women			
			Vitamin A supplementation for postpartum women within 4 weeks			
			Deworming for pregnant women from the second trimester			
			Sensitization of HHs with PLWs on dietary diversity and micronutrient supplementation			



		sensitized on dietary diversity and consumption of micronutrient supplementation.				
--	--	---	--	--	--	--

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			Sensitization on treatment adherence			
			Linkage to livelihood and food security program			



		<p>food security program.</p> <p>Proportion of peopl living with HIV/TB belonging to support group.</p>	Linkage to support groups			
--	--	---	---------------------------	--	--	--

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
NON OPTIMAL SANITATION FACILITY	Increase the number of villages triggered and followed up through UCLTS 2020	<p>Increase the number of villages triggered and followed up.</p> <p>Proportion of HHS using improved sanitation facilities</p>	Trigger villages through UCLTS	<p>Ministry of Public Service, Youth and Gender affairs</p> <p>MoH</p> <p>Afya Jijini</p> <p>KIWASH</p> <p>CRS</p>	GoK USAID	MoH



RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS S)	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			Link vulnerable populations to livelihood and food security programmes			
			Create awareness to HHs on urban farming and small animal production			
			Link HHs to VSLGs/self-help groups			



RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			Training health care workers, CHV's and caregivers on complementary feeding			
			Setting up demonstration centres for urban farming			
			Formation of support/care groups per ward			
			Carry out demonstration on appropriate food recipes for complementary feeding (monthly or quarterly			



		<p>To carry out 2 demonstration on appropriate food recipes for complementary feeding (monthly or quarterly) in the formed support/care groups by 2017/2020 FY.</p> <p>To Train mothers in the support/care groups on IGA's, table banking and VSLG by 2017/2020 FY.</p>	<p>Training households on IGA's, table banking and VSLG</p>			
--	--	---	---	--	--	--

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
-------------	---	--	------------------	--------------	--	----------------------



NON-OPTIMAL PSYCHOSOCIAL CARE FOR WOMEN AND GENDER BASED VIOLENCE	Improved psychosocial care for women and GBV survivors	To Train CHV's and households on rights, IGA's, table banking and VSLG by 2017/2020 FY. To develop common results framework with different sectors by 2017/2018 FY.	Training CHV's and households on rights , IGA's, table banking and VSLG	MoH MoALF Concern Worldwide Feed the children Afya Jijini AMREF KRC Community MSF- France	USAID UNICEF WFP DFID EU	MoH MoALF
			Develop common results framework with different sectors			
			Psychological counselling on the effects of Alcohol and drugs abuse			
			Identify male champions			
			Strengthen reporting structures			

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
-------------	---	--	------------------	--------------	--	----------------------



POOR HEALTH SEEKING BEHAVIOURS	Improved health seeking behaviours	To train CHV's , support/care groups and on health seeking behaviours by 2017/2020 FY.	Training of CHV's , support groups and caregivers on behaviour change	MoH MoALF Concern Worldwide Feed the children Afya Jijini AMREF KRC Community.	USAID UNICEF WFP DFID EU	MoH
		To conduct formative research on health seeking behaviours by 2017/2018 FY	Conduct formative research			

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			To train CHV's and caregivers through the formed support groups			



	Hygiene practices	<p>hygiene practices through the formed support groups 2017/2020 FY.</p> <p>To trigger community health unit using Urban Led Total Sanitation methodology by 2017/2020 FY.</p>	To trigger community health unit on Urban Led Total Sanitation	<p>Concern Worldwide</p> <p>Feed the children</p> <p>Afya Jijini</p> <p>AMREF</p> <p>KRC</p> <p>Community.</p>	<p>WFP</p> <p>DFID</p> <p>EU</p>	

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			Train CHV's and caregivers on different food groups as per WHO recommendation			



	by 2017/2020 FY.	Set up demonstration sites to carry out food recipes	Afya Jijini AMREF KRC Community.	EU	
	To set up 2 demonstration sites to carry out food recipes by 2017/2020 FY.	Integrate nutritional counselling at the point care in the health facilities (MCH and consultation rooms)			
	To integrate nutritional counselling at the point of care in the health facilities (MCH and consultation rooms) by 2017/2020 FY.	Build capacities of health workers at the different points of care			
	To build capacities of health workers on food groups at the different points of care by 2017/2020 FY.				



RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME- BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			<p>Counselling mothers on positioning and attachment of the breast, benefits of EBF and psychosocial issues</p> <p>Educating mothers on kangaroo care</p> <p>Sensitize the community on bad cultural practices and retaining good ones</p> <p>Encouraging spousal support on breastfeeding</p> <p>Formation of support/ care groups</p>			



			Capacity building of HCWs and CHVs on relevant knowledge and skills on BFCI,MIYCN			
--	--	--	---	--	--	--

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			Educating community on importance of early ANC care through trained CHVs			
			Create youth friendly health services and other support groups to promote ANC visits			



RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
			Health education to community on FP services through trained CHV's Male involvement in promotion of FP uptake			

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE	RESPONSIBLE AGENCIES
-------------	-------------------------------------	--	------------------	--------------	---	----------------------



BOUND TARGETS)			ANNUAL BUDGET)			
		Educating the community on safe methods of treating water Provision of water treatment methods				

RISK FACTOR	OBJECTIVE (WITH INDICATOR AND TIME-BOUND TARGETS)	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	RESPONSE OPTIONS	STAKEHOLDERS	FUNDING (SOURCES AND YEARS) (INDICATIVE ANNUAL BUDGET)	RESPONSIBLE AGENCIES
-------------	---	--	------------------	--------------	--	----------------------



<p>NON-OPTIMAL LIQUID /SOLID WASTE MANAGEMENT</p>	<p>To Improved liquid /solid waste management by 2020</p>	<p>Education on proper liquid and solid waste disposal practices</p>	<p>County and national government Communities NGOs Feed the children Concern Worldwide Afya Jijini</p>	<p>Government UNICEF USAID Communities Private sector</p>	<p>MoH Ministry of Public works Ministry of Water</p>
		<p>Provision of affordable waste disposal mechanisms</p>			
		<p>Use of innovative waste disposal/recycling methods /technologies e.g use of waste in production of biogas</p>			



2/ NEXT STEPS

Implementation of recommendations: A taskforce comprising of representatives from the County departments of health, agriculture, social services and implementing partners will be charged with the responsibility of ensuring that the recommendations are implemented within the required timelines. The multi-stakeholders present in the workshop emphasized on the importance of each one taking a role in implementing the identified interventions.

In addition, one member from Concern Worldwide and one member from the MoH will monitor the implementation of the response analysis road map.

Conduct countywide Link NCA: It will also be essential to mobilize resources to conduct a Link NCA in the rest of the County so as to ensure an overall picture of the County and come up with responses relevant to the local context.



CONCLUSION

Findings from the NCA highlighted three major factors contributing to the high stunting: (a) Increasing number of non optimal day care centers (b) lack of knowledge on the food diversification by the caregivers and (c) unhealthy environment leading to high rates of morbidity. The findings further revealed that important contributory factors were non-optimal psychosocial care for women and gender based violence impacting heavily on the maternal health and the care of infant and young children.

The Link NCA methodology allows various actors to contribute to the exploration of the problem and also in coming up with different and non traditional approach to a problem. The methodology also appreciates the voice of the affected/ target population while engaging them in the rating exercise.

From the study, we observed a high level of diffusion of cultural beliefs and practices-“ Mukuru tribe” The amalgamation of all the tribes in Kenya to form a community that draws from every single tribe was of interest. The new community shares values and traditional practices thus influencing their health seeking behavior both positively and negatively.

Programs can take advantage of this phenomena since diffusion of new ideas would not take much effort.

The study also observed strong social networks among the slum population. The people are their brother's keepers and provide the first solution for coping strategies.

Overcrowding needs to be addressed as a matter of urgency. There is need to reinforce the existing policies that controls and limits the number of houses constructed in a given area.



ANNEXES

ANNEXES TABLE

1/ QUESTIONNAIRES	99
2/ COMMUNITY LEADERS AND LOCAL KEY INFORMANTS	116
3/ CONSENT FORMS	119
4/ FGD MALNUTRITION, FOOD SECURITY, SEASONAL CALENDAR	120
5/ FGD WASH, HEALTH, CARE PRACTICES, GRAND-MOTHERS	125
6/ FGD WITH MOTHERS AND GRAND-MOTHERS	128
7/ DAY 5 – INTERVIEWS, FGD MEN, LIFE STORIES	132
8/ LIFE STORIES OF POSITIVE DEVIANT CHILD AND SAM/MAM/CURED-SAM CHILD	134
9/ RISK FACTORS INDICATORS	136

1/ QUESTIONNAIRES

Main caregiver questionnaire

Code	Question	Answer
ID.210	Number of the	
ID.220	Number of the cluster (1 to 32)	
ID.230	Team ID number (1 to 8)	
ID.240	Household number	



Now I would like to ask you questions about yourself			
HoH.40	What is your relationship with the child?	1 = Mother 2 = Father 3 = Grandparent 4 = Other	
HoH.50	What is your occupation?	1 = Housewife 2 = Formal Employment 3 = Informal employment / jua kali 4 = Casual labour 5 = Own business 6=Petty trading / hawking 7=Dependant 6 = Other Specify	
HoH.60	What is your marital status?	1 = Married/In an union 2 = Separated 3 = Single 4 = Widow	
NUT.10	Did you take any nutrient supplementation during your last pregnancy, such as multivitamin?	Yes 1	No 0
NUT.20	Did you take any nutrient supplementation during your last pregnancy, such as iron and folic acid?	Yes 1	No 0
CG.10	Did you go to school? If no, ask question CG.50	Yes 1	No 0
CG.20	What grade or level have you completed?	Not completed Primary-1 completed Primary = 2 Not completed secondary- 3 Completed secondary-4 Certificate/Diploma-5 Bachelor = 6 Master = 7 Doctorate= 8	
CG.30	Do you feel supported? Include all kind of support such as financial, social etc. Do not probe, this question is left to the understanding of the mother	Extremely.....1 Somewhat.....2 Not very.....3 Not at all.....4	
CG.40	Do you feel you have too much work to take care of your child?	Yes 1	No 0



Now, I would like to ask you some questions related to family planning

For women from 15 to 49 years old married or in an union

RH.10 Couples use various ways or methods to delay or avoid a pregnancy. Are you currently doing something or using any method, including sterilization, to delay or avoid getting pregnant? Yes 1 No 0 Not ApplicableX

If no, ask RH.40

RH.20 If yes. What are you doing to delay or avoid a pregnancy?
Do not probe
Multiple answers can be accepted

1 = Female/male sterilization
 2 = IUD
 3 = Injectable
 4 = Implants
 5 = Foam/gelly
 6 = Contraceptive Pill
 7 = Male/female condom
 8 = Diaphragm
 9 = Lactational amenorrhea method
 10 = Withdrawal method
 11 = Calendar method
 12 = Other (specify)

RH.40 How old were you when you gave birth for the first time? _ _ years

H.10 Did you see anyone for Antenatal care for your last pregnancy?
 If no, tick 5 “no one”, then ask H.80
 If yes, “Whom did you see?” Probe “Anyone else?” till the respondent answer “no one else”
 Probe for the type of person seen and tick all answers given.

1 = Health professional (Doctor, nurse/midwife, auxiliary midwife)
 2 = Traditional birth attendants, traditional healer, Community health worker
 3 = Relative/friend
 4 = Other (specify)
 5 = No one

H.20 How many times did you see someone for Antenatal care? Number of times: |_|_|

What are your main barriers from going to the health centre when someone is sick? Do not probe, multiple answers accepted		Yes	No
H.31	Money/cost	1	0
H.32	Time	1	0
H.33	Transportation means	1	0
H.34	Geographical distance	1	0
H.35	Decision power	1	0
H.36	The service is not good enough	1	0
H.37	Culture (specify)	1	0



H.38	Other (specify)	1	0
H.39	No barriers	1	0
H.40	How long does it take you to go to the nearest health center?	_ _ minutes	
H.50	Where did you go for your last delivery?	1 = Health centre or hospital 2 = Home (Your home/Other home) 3 = Other	
WORM.30	During your last pregnancy, did you get dewormed?	Yes 1	No 0



V. Child Questionnaire

Fill this part for each child under 59months old in the HoH. To find the age, use the event calendar.

Fill part A and B for child 0-23 months.

Fill part B for child 0-59 months.

Code	Questions	Answers
ID.100	Name of selected child	
ID.120	Number of the cluster (1 to 32)	
ID.130	Team ID number (1 to 8)	
ID.140	Household number	
ID.141	Number of the children	
ID.200	Birth date <u>If the birth date is not known, ask question ID.210</u>	Birth date __/__/____ Don't know X
ID.210	<u>Calculate immediately in months, if the birth date is known</u> <u>Otherwise use the event calendar to define the age</u>	___ Months
ID.220	Source for obtaining age	Birth certificate = 1 Event Calendar = 2
ID.230	Sex of selected child	Male = 1 Female = 2

A. Child 0-23 months

Now I would like to ask some question about your child.				
CP.10	Has (name) ever been breastfed? <u>If No or don't know, skip to question CP.21</u>	Yes 1	No 0	Don't know X
CP.11	How long after birth did you first put (name) to the breast?(Probe) <u>If respondent reports she put the infant to the breast immediately after birth, circle '000' for 'immediately'.</u> <u>If less than one hour, circle '1' for hours and record '00' hours.</u> <u>If less than 24 hours, circle '1' and record number of completed hours, from 1 to 23.</u> <u>Otherwise, circle '2' and record number of completed days.</u>	Immediately.....000 Or: Hours:.....1 _ _ Or: Days.....2 _ _		
CP.20	Was (name) breastfed yesterday during the day or at night?	Yes 1	No 0	Don't know X



CP.21	Sometimes babies are fed breast milk in different ways, for example by spoon, cup or bottle. This can happen when the mother cannot always be with her baby. Sometimes babies are breastfed by another woman, or given breast milk from another woman by spoon, cup or bottle or some other way. This can happen if a mother cannot breastfeed her own baby. Did (name) consume breast milk in any of these ways yesterday during the day or at night?	Yes 1	No 0	Don't know X
Next, I would like to ask you about some liquids that (name) may have had yesterday during the day or at night. Did (name) have any:		Yes	No	Don't know
CP.50	Plain water?	1	0	X
CP.51	Infant formula such as Nutristat, Nani etc?	1	0	X
CP.52	Milk such as tinned, powdered, or fresh animal milk?	1	0	X
CP.53	Juice or juice drinks?	1	0	X
CP.54	Clear broth?	1	0	X
CP.55	Yogurt?	1	0	X
CP.56	Thin porridge?	1	0	X
CP.57	Local herbs	1	0	X
CP.58	Honey	1	0	X
CP.59	Coffee, Tea	1	0	X
CP.510	Sugar/Salt solution	1	0	X
How many times yesterday during the day or at night did (name) consume any (item from list)?				
CP.60	Infant formula such as Nutristat?			Times B: _ _
CP.61	Milk such as tinned, powdered, or fresh animal milk?			Times C: _ _
CP.62	Thin porridge?			Times F: _ _
CP.70	Did (name) eat any solid, semi-solid, or soft foods yesterday during the day or at night?	Yes 1	No 0	Don't know X
CP.71	How many times did (name) eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night?	Number of times: _ _ _ Don't know = X		
<p>Please describe everything that (name) ate yesterday during the day or at night, whether at home or outside the home. Please, think about when (name) eat yesterday from the time he/she woke up yesterday morning, till the time he/she woke up that morning, at home or outside.</p> <p>Think about the time he/she woke up yesterday. Did (name) eat anything when he/she woke up? IF YES: Tell me everything (name) ate at that time. <u>Continue till the person answers "nothing else".</u></p>				



What did (name) do after that? Did he/she eat something at that time?

IF YES: What did (name) eat at that time? Anything else?

Continue till the person answers “nothing else”. Repeat the question until the respondent says the child went to sleep until the next day (this morning weak up).

If the participant mentions mix dishes, like porridge, sauce, stew.... ask: “what ingredients were in that (mixed dish)? Anything else?” Tick all the food category related to the mix dishes. If the food is not listed in any of the food groups below, write the food in the box labelled “other foods”. If foods are used in small amounts for seasoning or as a condiment, include them under the condiment food group.

Once the respondent finishes recalling foods eaten, read each food group where “1” was not circled, ask the following question and circle “1” if respondent says yes, “0” if no and “X” if don’t know.

Yesterday, during the day or night, did (name) drink/eat any (food group items)?		Yes	No	Don't know
IDDS.210	Porridge, bread, rice, noodles, or other foods made from grains/cereals such as rice, millet etc.	1	0	X
IDDS.220	Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside	1	0	X
IDDS.230	White potatoes, white yams, manioc, cassava or any other foods made from roots	1	0	X
IDDS.240	Any dark green leafy vegetables as spinach, bean greens...	1	0	X
IDDS.250	Ripe mangoes, ripe papayas, or (insert other local Vitamin A-rich fruits)	1	0	X
IDDS.260	Any other fruits or vegetables?	1	0	X
IDDS.270	Liver, kidney, heart or other organ meats?	1	0	X
IDDS.280	Any meat, such as beef, pork, lamb, goat, chicken, or duck	1	0	X
IDDS.290	Eggs	1	0	X
IDDS.300	Fresh or dried fish, shellfish, or seafood	1	0	X
IDDS.310	Any foods made from beans, peas, lentils, nuts or seeds	1	0	X
IDDS.320	Cheese, yogurt or other milk products	1	0	X
IDDS.330	Any oil, fats, butter, or foods made with any of these	1	0	X
IDDS.340	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits?	1	0	X
IDDS.350	Condiments for flavour, such as chillies, spices, herbs, fish powder?	1	0	X
H.10	Has (name) received DPT3 immunization before his/her first birthday?	1	0	X
H.11	Specify the source	On statement = 1		

Checked on health record = 2



B. Child 0-59 months

CP.100	Does anyone help (name) to eat?	Yes 1	No 0	Don't know X
CP.110	What do you do when (name) refuses to eat? <u>Categorize answer into the positive, negative or no reaction</u>	1 = Nothing (the child is left alone) 2 = Other (coax, play with, change food) 3 = Force		
UE.80	The last time (name) passed stool, where did he/she defecate? If UE.80 answer is 7, 8, or X skip to H.40	1 = Used potty 2 = Used washable diaper 3 = Used disposable diapers 4 = Went in his/her clothes 5 = Went in house/yard 6 = Went outside the premises 7 = Used own sanitation facility 8 = Used public latrine 9 = Other X = Don't know		
UE.90	The last time (name) passed stool, where were his/her faeces disposed?	1 = Dropped into toilet facility 2 = Buried 3 = Solid waste/trash 4 = In yard 5 = Outside premises 6 = Public latrine 7 = Into sink or tub 8 = Thrown into waterway 9 = At the well 10 = Thrown elsewhere (ask to specify) 11 = Washed/rinsed away (ask to specify) X = Not applicable		

H.30	Has (name) had diarrhoea (more than 3 loose or watery stools in a 24-hour period) in the past two weeks?	Yes 1	No 0	Don't know X
H.40	Has (name) had an illness with a cough (trouble breathing or breathe faster than usual with short, quick breaths) in the past two weeks?	Yes 1	No 0	Don't know X
H.50	Has (name) had fever in the past 14 days?	Yes 1	No 0	Don't know X

Ask this question, only if the children is aged more than 11 months



WORM.10	Did your child take any deworming in the past year?	Yes 1	No 0	Don't know X
WORM.20	How many times did <i>(name)</i> take deworming in the past year?	--		
Now I would like to ask you some question regarding your relation with <i>(name)</i>				
MC.10	In the past 3 days, did you or any household member over 15 years of age engage in storytelling, singing or playing with <i>(name)</i> ?	Yes 1	No 0	Don't know X
MC.20	Do you leave <i>(name)</i> alone or in the care of other children younger than 12 years of age?	Yes 1		No 0
MC.30	If yes, how often?	1 = Every day 2 = Several times a week 3 = Less than once a week X = Not applicable		

OBSERVATIONS Child 0-59 months

To be filled at the end of the questionnaire

Caregiver-child interaction observation:		Yes	No
OC.10	Caregiver tends to keep the child within visual range and looks at the child quite often	0	1
OC.20	Caregiver talks to the child during the course of the visit	0	1
OC.30	Caregiver interacts with child to promote development and learning	0	1
OC.40	Caregiver smiles at the child, laughs with the child, caresses, kisses or hugs the child	0	1
OC.50	Caregiver spanked or hit the child during the visit, or shouted or yelled at him/her.	1	0



Risk Factor Household questionnaire

I. Identification

To be filled before the interview, before entering in the household

ID.10 -Date of the survey (day/month/year) __/__/____

ID.20 - Number of the cluster (1 to 32):

ID.30 -Team ID number (N° 1 to 8):

ID.40 -Household number:

ID.50 -Starting time of the interview:

ID.60 – Comments

Read the consent form

ID.70 -Does the household accept the interview?

1=Yes

0=No

ID.80 – If no, what is the reason?

II. Introduction

Code	Question	Answer
IN.10	Size of the Household	_ _
IN.20	Does a child from 0 to 59 months present in the household? If no, go to the next household	1=Yes 0=No

IN.30	Is the head of household present?	1=Yes 0=No
IN.40	Is the mother or the caregiver of the 0-59months child present?	1=Yes 0=No
IN.50	If no to IN.40 I would like to ask few questions to the caregiver of the child, at what time could we come back?	__:__:__ AM/PM

Now, I would like to ask you some questions regarding the household head		
HoH.10	Who is the household head of your household?	Mother = 1 Father = 2 Grand-parent = 3 Other = 4
HoH.20	How old is he/she?	__ Years



HoH.30	What is his/her occupation?	1 = Housewife 2 = Formal Employment 3 = Informal employment / jua kali 4 = Casual labour 5 = Own business 6=Petty trading / hawking 7=Dependant 6 = Other Specify.....
--------	-----------------------------	---

PHP.10	How much did your household earn in the past 30 days?	----- Shs
PHP.20	Out of your HH monthly expenditure, how much was allocated to <u>food purchases</u> ? (Kindly convert the amount in percentage)	----- %
PHP.30	Out of your HH monthly expenditure, how much was allocated to <u>waterpurchases</u> ? (Kindly convert the amount in percentage)	----- %

III. Food Security and Livelihood (FSL)

Household Dietary Diversity Score (HDDS)

Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night. Since yesterday morning till this morning what are the food eaten in your household?		Yes	No
HDDS.10	Any maize, rice, wheat, porridge, sorghum, bread, spaghetti/pasta, anjera or other foods made from grains?	1	0
HDDS.20	White potatoes, white yams, cassava, or any other foods made from roots?	1	0
HDDS.30	Any dark green vegetables? (Examples: spinach, Bagal, Raasuw lettuce e.t.c)	1	0
HDDS.40	Ripe mangoes, papayas, pawpaw guava (yellow or orange on the inside of fruit)	1	0
HDDS.50	Any other fruits or vegetables?	1	0
HDDS.60	Liver, kidney, heart or other organ meats?	1	0
HDDS.70	Any fresh or dried fish or shellfish?	1	0
HDDS.80	Any meat such as beef, lamb, goat, chicken?	1	0
HDDS.90	Any eggs?	1	0
HDDS.100	Any foods made from beans, peas, lentils, or nuts?	1	0
HDDS.110	Any cheese, yogurt, milk or other milk products?	1	0
HDDS.120	Any foods made with oil, fat or butter?	1	0



HDDS.130	Any sugar or honey?	1	0
HDDS.140	Any other foods, such as condiments, coffee, tea?	1	0

Food Consumption Score (FCS)

Now I would like to ask you about how many time that you or anyone else in your household ate during the last 7 days: Code the consumption from 0 to 7 according to the answer. Any consumption frequency greater than 7 should be coded as 7. Example: "Fruits was eaten 3 times in the last 7 days", code 3. " Milk was drunk 12 times in the last 7 days", code 7.		0-7	>7
FCS.10	Maize, rice, millet, wheat, sago, bread, other cereals, potatoes, sweet potatoes, cassava, other tubers, plantains		
FCS.20	Beans, jack beans, lentils, groundnuts, cashew nuts, any nuts		
FCS.30	Leaves and vegetables		
FCS.40	Fruits		
FCS.50	Beef, goat, poultry, pork, horse, snake, egg, fish, prawn, seashell and other meat/fish		
FCS.60	Milk, yogurt and other dairy		
FCS.70	Sugar and sugar products, honey		
FCS.80	Oil, fat or butter		
FCS.90	Spices, tea, coffee, salt, fish powder, fish/prawn paste, small amounts of milk for coffee		

Household Food Insecurity Access Scale (HFIAS)

1 = Rarely (once or twice in the past 4 weeks)

2 = Sometimes (3 to 10 in the past 4 weeks)

3 = Often (more than 10 times in the past 4 weeks)

I would like to ask you what the food available to your household was for the past four weeks. To answer this question, please think about the last four weeks.

If the answer is no pass to the next question (ex. HFIAS.10 no, pass to HFIAS.20)

HFIAS.10	1. Did you worry that your household would not have enough food?	Yes 1	No 0
HFIAS.11	How often did this happen in the past four weeks?	1	2 3
HFIAS.20	2. Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	Yes 1	No 0
HFIAS.21	How often did this happen in the past four weeks?	1	2 3
HFIAS.30	3. Did you or any household member have to eat a limited variety of foods due to a lack of resources?	Yes 1	No 0
HFIAS.31	How often did this happen in the past four weeks?	1	2 3



HFIAS.40	4. Did you or any household member have to eat some foods that you really did not want to eat because of lack of resources to obtain other types of food?	Yes 1	No 0
HFIAS.41	How often did this happen in the past four weeks?	1	2 3
HFIAS.50	5. Did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	Yes 1	No 0
HFIAS.51	How often did this happen in the past four weeks?	1	2 3
HFIAS.60	6. Did you or any household member have to eat fewer meals in a day because there was not enough food?	Yes 1	No 0
HFIAS.61	How often did this happen in the past four weeks?	1	2 3
HFIAS.70	7. Was there ever no food to eat of any kind in your household because of lack of resources to get food?	Yes 1	No 0
HFIAS.71	How often did this happen in the past four weeks?	1	2 3
HFIAS.80	8. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	Yes 1	No 0
HFIAS.81	How often did this happen in the past four weeks?	1	2 3
HFIAS.90	9. In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	Yes 1	No 0
HFIAS.91	How often did this happen in the past four weeks?	1	2 3

Copping strategy index (CSI)

If HFIAS.10, HFIAS.20 HFIAS.30, HFIAS.40, HFIAS.50, HFIAS.60, HFIAS.70, HFIAS.80 or HFIAS.90 is 1, the ask the following question if 0 skip

In the past 7 days, if there have been times when you did not have enough food or money to buy food, how many days has your household had to:

Frequency:
 Number of days out of the past seven:
 (Use numbers 0 – 7 to answer number of days; Use NA for not applicable)

- a. Rely on less preferred and less expensive foods?
- b. Borrow food, or rely on help from a friend or relative?
- c. Limit portion size at mealtimes
- d. Restrict consumption by adults in order for small children to eat
- e. Reduce number of meals eaten in a day?
- f. Skip entire days without eating?
- g. Send household members to beg?
- h. Purchase food on credit?



Months of Adequate Food Provisioning (MAHFP)

DO NOT READ THE LIST OF MONTHS ALOUD.

Use a seasonal calendar if needed to help respondent remember the different months.

Probe to make sure the respondent has thought about the entire past 12 months.

If MAHFP.10 answer is No, then No to MAHFP.20 to MAHFP.130

MAHFP.10 Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months, from now to the same time last year.

Were there months, in the past 12 months, in which you did not have enough food to meet your family's needs? Yes 1 No

If yes, which were the months in the past 12 months during which you did not have enough food to meet your family's needs?

This includes any kind of food from any source, such as own production, purchase or exchange, food aid or borrowing.

MAHFP.20	October	1	0
MAHFP.30	September	1	0
MAHFP.40	August	1	0
MAHFP.50	July	1	0
MAHFP.60	June	1	0
MAHFP.70	May	1	0
MAHFP.80	April	1	0
MAHFP.90	March	1	0
MAHFP.100	February	1	0
MAHFP.110	January	1	0
MAHFP.120	December	1	0
MAHFP.130	November	1	0

IV. Unhealthy environment

All these questions are for domestic use of water and do not include water for animals

UE.10	<p>What is the main source of drinking water for members of your household?</p> <p><u>(Present a map with the different water points that have been assessed)</u></p> <p><u>Coding key: to be determined according to the setting and map. Circle 1 to 5 and write the letter code</u></p>	<p>1 = Groundwater: open well, well/borehole with hand-pump, well/borehole with motorized pump system</p> <p>2 = Protected spring</p> <p>3 = Roof rainwater</p> <p>4 = Water trucking</p> <p>5 = Piped supply</p> <p>6 = Sealed bottled water</p> <p>7 = Surface water as river</p>
-------	--	---



		For answer 1 to 5, letter code of the source _
--	--	--

What do you usually do to make the water safer to drink? <u>Probe:</u> <u>Anything else? (record all items mentioned)</u>		Quoted	Not quoted
UE.20	Boil	1	0
UE.21	Add bleach/chlorine	1	0
UE.22	Use water filter (ceramic, sand, composite etc.)	1	0
UE.23	Solar disinfection	1	0
UE.24	Strain it through a cloth	1	0
UE.25	Let it stand and settle	1	0
UE.26	Other	1	0

UE.30	How many litre of water do you collect every day? <u>If not able to answer write 00 and ask UE.31 Otherwise, go to UE.40</u>	Number of litre _ _
UE.31	How many 20 litres buckets do you collect every day?	Number of 20 litres bucket _ _
UE.40	How many litres do you and other household members use for drinking?	_ _ Litres
UE.41	How many litres do you and other household members use for food preparation?	_ _ Litres
UE.42	How many litres do you and other household members use for bathing/showering?	_ _ Litres
UE.43	How many litres do you and other household members use for hygiene and sanitation?	_ _ Litres
UE.44	How many litres do you and other household members use for other purposes?	_ _ Litres

Now I would like to ask some questions about sanitation.			
UE.50	Is there a toilet or latrine in the household? <u>If no, skip to UE.52</u>	Yes = 1	No = 0
UE.51	Do you use this toilet/latrine? <u>If yes: May I see it please? (refer to the observation part) and skip to UE.60</u>	Yes = 1	No = 0
UE.52	Where do you usually relieve yourself? <u>If answer is 1 or 2: May I see it please? (refer to the observation part)</u>	1 = Relatives' latrines/toilets 2 = Public latrines/toilets 3 = No facilities	



UE.60	How many people, aged more than 12 months, of your HoH are using the toilet/latrine?	--
UE.61	How many people are aged more than 12 months in your HoH?	--

Now I would like to know when and how you usually wash your hands. When do you wash your hands? (<u>DO NOT PROBE</u>)		Quoted	Not quoted
UE.100	After defecation	1	0
UE.110	After cleaning babies' bottom	1	0
UE.120	Before food preparation	1	0
UE.130	Before eating	1	0
UE.140	Before feeding children (including breastfeeding)	1	0

Would you explain and show me what you do when you wash your hands? <u>Ask the participant to show how he/she wash his/her hands.</u>		Do	Don't
UE.200	Uses water	1	0
UE.210	Uses soap or ashes	1	0
UE.220	Washes both hands	1	0
UE.230	Rubs hands together at least three times	1	0
UE.240	Dries hands hygienically by air-drying or using a clean cloth	1	0

UE.300	Do you have any soap in your household for washing hands?	Yes = 1	No = 0
UE.400	If yes: Can you please show it to me?	Not able to show = 1 Bar soap = 2 Detergent (powder/liquid/paste) = 3 Liquid soap = 4	



V. Observations hygiene/sanitation facilities

		Individual sanitation Observation	Yes	No
SAN.10	Are the faeces well isolated from the environment? (No leaks, cracks) *		1	0
SAN.20	Is the outlet safe? (Not leading to open sewer, river, sea water...) *		1	0
SAN.30	Presence of any anal cleaning item/material (paper, water...)		1	0
SAN.40	Is there a hand washing station inside the latrine or within 10 paces of the latrine?		1	0
SAN.50	Is there a cleansing agent at this hand washing station inside/near the latrine? <u>Yes includes soap, detergent and ash, whereas no include mud, sand and other</u>		1	0
SAN.60	Presence of flies or other insects entering or exiting the pit		0	1
SAN.70	Presence of excreta on the ground or around the pit or seat		0	1

		Water management Observation	Yes	No
WAT.10	Is the container used to carry water left uncovered during transportation?		1	0
WAT.20	Is the container used to carry water dirty?		1	0
WAT.30	Is the water storage left open/uncovered?		1	0
WAT.40	Is there a water cleaning system visible (filter, boiling container, chlorine tablets...)?		0	1
WAT.50	While serving water to drink, is there a risk of water contamination? (do the fingers touch the water? Or is the scooping container used dirty?)		1	0

		Food hygiene Observation	Yes	No
FH.10	Are there cooking utensils or food leftovers left on the ground or uncovered?		1	0

		Animal waste Observation	Yes	No
Waste.10	Are there any animal excreta in or near the compound/playground/surroundings?		1	0



2/ COMMUNITY LEADERS AND LOCAL KEY INFORMANTS

Community leaders: Initial meeting

1 - Our names are Hannah Wambua and Mercy Wahome. We are consulting for Concern Worldwide and Nairobi County Nutrition Department.

We are doing a research project to learn more about the causes of child malnutrition in communities of Mukuru and Viwandani.

To learn more about Undernutrition we need to conduct several FGD and idepth interviews and we would like to invite your community to participate to this study.

I will explain the study and if you want to ask any questions, please ask at any time.

We expect that this study will help to improve the understanding of under-nutrition for you, your community, local authorities and other agencies in order to reduce under-nutrition in the future. As a community leader, you are in a position to provide us with insight into the situation, and we would appreciate it if we could interview several community members and make observations in your area.

To do so, we would like to visit a cluster in your village for 5 days during the coming weeks. We will organize FGD where we will debate about nutrition, health, care practices, community beliefs, sanitation and undernutrition.

We would like to come (present the calendar with the days in color). Each day we will speak about one subject, and we will hold several FGD with 10 participants in each. You will also guide us on the people to interview individually. For the all survey we will provide healthy snacks and water to the women who are participating and the last day we will share a meal together.

Do you agree to let us do this survey among your village? Do you have any question?

2 – For today, we would like to ask your help to find a community mobilizer. This person will help us to identify the potential participants to the FGD. We are looking for someone from the village. Ideally this person will help us to have a list of households that fit the selection criteria and of person who may wish to participate to the FGD. It can be a CHV.

3- We would like also to interview some key informants as teachers, local doctors, owners of day care centres and religious leaders. Can you help us to meet them today?

4- The participants we would like to participate to the FGD are mothers with children under 5 years old, teenage mothers, single mothers, parents with SAM or cured-SAM children under five years old. We would also like to do some FGD with the fathers of the same children. Ideally we would like to have approx. 40 participants, tribes, migrants and non-migrants. If we can welcome mother from different financial background (very poor, poor, not poor) and different background (migrants, non migrants), it could be very helpful for our study. You can also advise on other groups and individuals to interview.

It will be very good if we can have also some mothers with positive deviant children (well-nourished, healthy but from the same community).

Can you help us? Thank you so much Sir!

Meeting with stakeholders

NGO staff, gvt representatives, local leaders, health workers, teachers, religious leaders, owners of day care centers...

1 1 - Our names are Hannah Wambua and Mercy Wahome. We are consulting for Concern Worldwide and Nairobi County Nutrition Department.

We are doing a research project to learn more about the causes of child malnutrition in communities of Mukuru and Viwandani.



To learn more about Undernutrition we need to conduct several FGD and idepth interviews and we would like to invite your community to participate to this study.

I will explain the study and if you want to ask any questions, please ask at any time.

We would like to ask you some question to obtain an “orientation” to key facets of the culture: beliefs, norms concerning gender roles, motherhood, fatherhood, and life cycle. And we also would like to ask for your help to identify mothers of malnourished and positive deviant children.

We have 3 objectives: develop a local definition of malnutrition, characterize food security, health and care in your community, understand your perceptions of the causes and consequences of poor food security, health and care in relation to malnutrition.

Do you agree to discuss a while about those subjects with us?

2 – Local definition/understanding of malnutrition

What means for you undernutrition?

Do you know the different forms of undernutrition? If yes, what are they?How do you recognize a children suffering of undernutrition? How would you describe this child?

How do you define malnutrition?

What are the causes of malnutrition? Any behaviour, practices?

Are there any children that are more likely to suffer from malnutrition? Who are they? And why?

Do all the children of the same age that you know growth at the same rate? If no, what do you think? Why don't they growth in the same way?

Can anyone be affected by malnutrition? Who can?

Is malnutrition a disease? If yes, is it contagious?

Do some mothers suffer from malnutrition? Most likely which one? Is there any link with their age? If yes, what is it?

Is malnutrition a big problem in you village?

What do you do if you see a malnourished child? And how can you avoid that?

Are all the children/mother malnourished? If no, how do they manage to be healthy?

What is your definition of food security?

What are the livelihoods in your village?Is it easy to go to the market? What can you buy from the market? Are people coming inside to the village to sell food? If yes, what kind of food?Is there any shop in the village? What does it sell? Do people have livestock here? (which animals?)

Do families migrate from here?? Why? Does the entire household migrating?

Where do they go? Do you know what they do there? Where they live? If they can find food easily?

Do you know who prepares the food at home? Who is choosing the food to buy and go to buy it?

Do all the family eat together or there is any kind of order? If yes, who eats first? Do you think the family give more food to boys/girls/both same?

What kind of food do the children eating?

Does any one give advice on child's diet?

Is there any special items given only to the children?

Does anyone give advice to the father and the mother regarding the children, who?

What is the role of the mother in law regarding the new baby?

At what age do the mother/father get married? First baby? How many children per family? It is better to have many children or to have few children? Why?

Do you think mother are working too much?

Do they come back to work soon after delivery? Why?

If a child is sick, what does the family do first?

Where do they go?Who take care of the sick child?



Is some child sick because of bad spirits? If yes, what do you do?

How do we recognize a healthy child?

What does the family do if the sick child doesn't get better? Are some traditional treatments available at the village? What kind? Who gives advice to use this kind of treatments?

Is immunization done at the health centres? Is it a good or a bad thing?

Who get more sick girls or boys, or same? Why girls/boys get more sick?

Who is taking care of the babies?

Do the fathers take care of the children?

When a baby is born, what does she/he eat first? And during the first 6 months? And after?

Do the mums breastfeed their children? Are there mothers who don't breastfeed their child? Why?

Is breastfeeding a good thing?

When a baby is born, does the mother stay with her husband or does she come back to her family?

Is it same to have a baby girl or a baby boy?

Is there any belief regarding breastfeeding?

Do the children eat the same food all year round?



3/ CONSENT FORMS

Oral Consent Form

Our names are Hannah Wambua and Mercy Wahome. We would like to invite you to participate in a study carried out by Nairobi County and Concern Worldwide with an aim to increase the access to healthcare and to improve the management of acute malnutrition. I will first explain the study, and then ask if you would like to participate. If you want to ask any questions, please ask at any time.

The purpose of this research project is to learn more about the causes of child malnutrition in communities of Mukuru and Viwandani. We expect that this study will help to improve the understanding of under-nutrition for you, your community, local authorities and other agencies in order to reduce under-nutrition in the future. As a community member, you are in a position to provide us with insight into the situation, and I would appreciate it if we could interview you during several focus group discussions.

PROCEDURES:

If you decide to participate in the study, we will discuss some questions about different possible causes of malnutrition, including about your household's health, water access, sanitation, and food-related practices. To do so, we will hold several focus group discussions during four days. Each group will welcome approx. 10 persons and will not last more than 30 minutes. In the same day, you will be expected to attend several FGD.

Our team will provide you healthy snacks and water. On the last day we will organize a lunch with all the participants.

CONFIDENTIALITY AND RISK:

If you agree to participate in this research, we will take notes on your responses to our questions. We will record your father's name, however your answers will not be connected to you or your family. Your name or your father's name will not be reported in any publication; only information that does not identify you will be used for this study. We do not expect any foreseeable risk or harm to come to you from your participation in this study – in no way will your responses affect your eligibility for benefits from current or future programs.

WITHDRAWAL OF PARTICIPATION:

The decision whether to be in this study is entirely up to you. You are free to refuse to participate. If any question I ask makes you uncomfortable, you do not need to answer. You can stop participating in this study at any moment you want. Your decision to stop will not affect your relationship with any institution, either now or in the future. Your decision to participate or not to participate in this study does not affect your eligibility for any current or future program benefits from any agency.

REQUEST FOR MORE INFORMATION:

If you have additional questions or concerns about this research at any point after you participate in this study, you can contact my fellow researcher or me.

CONSENT

Do you have any questions about this study including about what I've just described to you?

Are you willing to participate in this study?



4/ FGD MALNUTRITION, FOOD SECURITY, SEASONAL CALENDAR

FGD MALNUTRITION

1 - TOOL PHOTO

I will show you some pictures; can you identify the children suffering from malnutrition? How did you see that this child is suffering from malnutrition? (One marasmus child/one kwashiorkor child)

For you, there are any other sign?

You told me this baby is fine, why?

2 - Is malnutrition a big problem in your community?

3 – Do you think an adult can suffer from malnutrition?

4 – TOOL PHOTO (one healthy and one SAM children)

In your village, there are some mothers/children affected by malnutrition and some are not. What do you think they do differently?

5 - For you, what are the causes of malnutrition? (if no answer: comportment/ practices?)

6 - TOOL PHOTO (one SAM children)

If you think you child is malnourished, what do you do?

FGD FOOD SECURITY

1 - What are your livelihoods?

Some of you told that you are daily labor workers. Are you doing this job all the year?

2 - How many of you are seasonally migrating for work? When did you leave your village to come to mukuru/viwandani? Do you migrate with your family? From Where?

What job are you doing here? And when you are in your village?

Identify who are the migrants if mix group

3- Do you have NHIF cards? If yes, do you use it? If no, why?

4 - Sometimes, you can face a lack of income. What do you do if you need extra money?

If credits/debts, to who do you ask them? Do you ask for it often?

5 – *Question only for migrants*

When you are in migration, do you have food every day? Enough for the all family? How did you get this food? What kind of food? Do you like it?

6 - What are market day in your village? Do you get enough food for the week? (probe veg/fruit, pulse, rice, non veg items)

If you need something else during the other day, where do you get/buy it?

Do you think it easy to buy food? If no, why?

9 - TOOL FOOD ITEMS



Can you put some stones on the items you usually buy?

Can you now put some stones on the items you prefer to it?

Do you grow your own food. Looking at the picture(food security) is this a common practice?

10 - Do you eat any food from the market? If yes, what/when/how?

11 - Are you facing long drought period/flood often? This week you just have little money, what do you buy from the market first? *(if answer is "grocery", precise the items)*

12 – At home, how do you preserve the food you bought and the leftover?

13- When do you cook? What fuel do you use to cook

14- TOOL food preparation – what do you think about the picture on food preparation? Is this common?

15 - Do you know any bad food for kid? Do you cook specially for your children?

Who give you advice regarding your baby diet?/Who told you what to give to your baby?
What do you give to your child?

Every one is giving regular meal (Ugali/rice/veg/meat, eggs) to her baby. Does someone give a different meal? If yes, why?

16 - *Pregnant women*

Do you change your food habit? Can you tell us a usual meal you take?

SEASONAL CALENDAR

TOOL SEASON + STONES

1 - Can you put two stones when you get enough.... /one stone when you get a small amount/ nothing when it is not available *Use a different kind of stone by item*

Vegetables

Fruits

eggs/meat

2 – *Open question*

When do you get not enough food?

When the market price is more ice?

ANNUAL CALENDAR

Grandmothers FGD only (the mother are too young to remember)

In the past years, when did you get a big problem to grow food? Why?

When did you get a big problem to get food? Why?When did you get difficulty to find daily labor occupation/migration job?

Did one year the market prices went very high?



NIGER

DISTRICT SANITAIRE DE MAYAHI, REGION DE MARADI
NOVEMBRE 2016 – MARS 2017
LINK NCA / RAPPORT FINAL

ANNEXES /
FGD MALNUTRITION, FOOD SECURITY, SEASONAL CALENDAR

Tool Q1

Tool Q4

Tool Q6



Available foods and their costs





Food security





5/ FGD WASH, HEALTH, CARE PRACTICES, GRAND-MOTHERS

FGD WASH

1. What are the different sources of water you use?
2. Calendar
What are the seasons you get enough/less water?
3. Source of water: Are you using the same source for drinking/animal/hygiene?
4. How long per day do you need to collect water? (go/queue/take/back)
Is it all year the same? Do you go with your kids? What do you use to collect water?
5. Is the water free? If not, how much do you pay for a 20 litre jerrican?
6. Is the water good? How do you know?
7. What is going to happen if you drink a “non good” water?
8. Do you drink directly the water? Do you do something before? What? (if confusion probe “filter/ boil/ put chlorine)
9. How do you store the water? If unable to answer, use a tool: one pot + one plate. Show the items and ask: this is your pot of water, how do you keep it safe all the day? If, plate is mentioned, then ask: do you do that at your home?
10. Is everyone able to drink the quantity of water one wants? 11. Where do you go to relieve yourself (toilet)?
Note: People will often answer for defecation. Ask then, and for urinate? For women, it is not always at the same location.
12. Do you carry water with you? (if yes, we can assume it is for cleaning). What do you do after? (accordingly to the group ask, what for do you use the water?). Do you wash your hand? When? Where?
13. Do you use the same place as the man? Where do the children go? At what age? What is the distance for you/children?
14. About how many households use common latrines on your area? Do you have to pay and how much? who?
15. What do you consider as good/bad hygiene practices for your child?
16. What are the major hygiene/water constraints you are facing? (example: price of soap, security in the open defecation location...)

FGD HEALTH

1. What is a healthy child? How do you know your child is healthy?
2. Does a girl and boy grow the same way? (size/weight)
3. What are the challenges to maintain your child healthy? What are the practices to do so?
4. What are the most common child illness in your village? At what season? If the disease is not clear or if there is no English translation, we may think it is coming from superstition, then ask the symptoms/treatment to clear out.



MIGRATION

5. Do you find your child more/same/less healthy in migration? Do you know why?
 6. What do you do if your child is sick? Who gives you advice? And what do you do if your child's health gets worst?
 7. . **TOOL:** picture of the SAM child with superstition items around his neck (picture from XXX district,)
 I notice a child with xxxxxx. I don't know what is it for. Can you please explain me?
 Do you use the same practices? If yes, do you use only this practice?
 If no, why?
 If no, in what order do you go to the superstition healer and the doctor? Why?
 Do you think it is fine to use only this practice? What do you do if your child is not getting better?
 8. . Do you buy medicine at the local pharmacies (self-medication)? What kind? Do you use any herbs? What kind? Where and when do you find it? What do you do if your child is crying too much/gets a fever?
 9. . **Grand-mothers.** In the past years, did you notice any change regarding child treatment? What kind? Why does it change?
 - 10.. What kind of treatment can you get from CHV? Advices from CHV
 11. . What do you think about immunization? It is a good/bad thing? Why? Are your children vaccinated?
 12. . **Lactating/Pregnant women.** Do you eat less/more/different food? Why? Who gave you advice? Do you have time to eat? If no, why?
 13. . According to you, what is a better age to get a first baby?
 14. . Do you think you got your baby too young? How many children do you have?
 15. If you want no more children, what do you do? If you want to wait before two children, what do you do?
- You told me you useDid you take this decision by yourself? Does your husband know/your in-laws?¹

FGD CARE PRACTICES

1. At home, who is taking care of your child? And when you are on the field? It is the same when you are travelling/migrating?
2. Remember when your baby was just born? How did you feed her/him the first time? Or what was his/her food? When? Why?
 If not breastfeed on the first hour, what did you give? For how long? Why?
 Did you get any problem to breastfeed your child? What solution did you find?
3. Up to 6 months, what did your baby eat? Anything else?
4. When did you give her/him a different food the first time? What (chapatti, water rice Ugali). When did you give her/him the first time a solid food? What was it ? What frequency?



¹ Most of the time the husband knows and the women ask why he will not know, prepare a short brief about why you are asking this question. Most of the time, women will ask a lot of precision regarding contraception, be ready to answer on the technical common aspects. Do not forget to repeat that you are not a doctor and they have to ask advices to a doctor and do not take anything without a medical legal prescription.



5. When do you stop breastfeeding? What kind of food did you give at this time? How did your child react? If not good response ask: then what did you do?/what did you give?
 6. When do you feed your child? Who feeds your child? In migration, when do you feed and who feeds your child?
 7. When is a baby able to eat alone?
 8. When is a baby able to eat the exact same food as her/his parents? Do you cook specially for your baby? Is it the exact same food? Does your baby eat spicy food?¹
 9. At what age did you change the quantity of the food that your child is eating?
 10. Who gives you advice regarding your child's diet? Who decide what your child will eat? You? Someone else?
 11. What do you consider as good/bad care practices? If not able to answer, give some example of situation: baby is crying too much, baby is disturbing me....
- Are you facing any constraint to take care of your child? (focus on migration and field labor workers)
13. Do older siblings feed your child? What age?
 14. Do you give the same quantity of food to boys and girls?
 15. Do the teenagers go to school? If not, what do they do?
 16. How much time do you spend with your child each day? Is it same all year ? What are your constraints regarding the time you spend with him/ her? Do you think you spend enough time? What are the consequences of this lack of time?
 17. Did you take your child to the daycare? At what age? What foods did you pack? How many hours in a day was the baby at the centre

GRAND-MOTHERS

Ask 1, 3, 4, 6, 7, 8, 9, 11 (first part), 13, 14, 15

2. How did your daughter-in-law first feed her baby? What do you think about it? Did you give her any advice? What kind of advice?
5. What was the first solid food your grand-daughter/son ate? How did she/he react? What did you do?
10. Did you give any advice to your daughter-in-law regarding her baby's diet? What kind of advice?
16. Do you think your daughter-in-law is spending enough time with her child? If no, what are the reasons and consequences?
17. Did you notice any change regarding the care practices and the breastfeeding practices this past years? What kind of change? Why did it change?



¹ Usually the mothers will start to say if they are cooking with salt and spice and why



6/ FGD WITH MOTHERS AND GRAND-MOTHERS

FGD MENTAL HEALTH (MOTHERS)

- 1 – How would you describe the workload of women? At home/at work?
- 2 – Do you think you have too much work to do? If you need to stop working for a while, how would you manage? Who would make the decision (you/someone else)? Do you feel supported on your work? By who?
- 3 - Are lactating/pregnant women given different responsibilities?
- 4 – If you were able to work less, what will be your first priority? (rest, take more care of children...)
- 5 – Are you sometimes feeling tired because you have too much work with your different children?
- 6 – How do you feel if your child is too active/cries too much? Do you feel supported?
- 7 - **Migration:** Where is your home town? How long have you lived here? Can you describe your living condition in Mukuru/viwandani? More work? Less time for you? Housing same, worst, better? Isolated from your family? Less supported?
Most of you go upcounty for holiday, how do you feel at this time?
- 8 – Did you go to school? If no, why?
If yes, up to what class? Why did you stop?
Who took this decision? How did you feel at this moment?
- 9 - Last time we discussed about contraception (pills, I.U.D., sterilization). Who makes the decision?
Are you feeling supported on this decision? Who disagreed and what did you do then?
Who decides when to have another child? You alone? With your husband? Someone else?
- 10 – When you got pregnant, did you see a health worker? A doctor/nurse TBA? If yes to the last question, how did s/he help you?
If no, where did you go or what did you do
- 11 – What types of resources do women have and their access to the resource?
- 12 – How are responsibilities shared within your household? Who takes majority of the decision? How do you feel?
- 13 – Do you feel free to take your own decision?
If yes, do you feel supported? By who?
If no, why?
- 14 – How are your relationships with your in-laws? Do you feel supported by them? If you disagree with them, what happens?
- 15 – In every couple, fight can occur. What kind of conflicts can occur between a wife and her husband? And what are the reasons (child education, contraception, interference of in-laws, consumption of alcohol/drugs, gambling...)? How can this conflict used to be resolved?
- 16 – There are men who treat their wives well and some who don't. There are women who treat their husband well and some women who don't. Can you give me some examples?
What type of physical and emotional abuse can happen? For the bad treatment examples, why does it happen?



Do you think it does happen too much in your community? Why? How do you feel regarding that?

Who do you think will be the right person(s) to help women who are in abusive relationships?

FGD MENTAL HEALTH (SINGLE MOTHERS)

1 – How would you describe the workload of a single women? At home/at work?

2 – Do you think you have too much work to do as compared to married women? If you need to stop working for a while, how would you manage? Who would make the decision (you/someone else)? Do you feel supported on your work? By who?

3 - Are lactating/pregnant single women given different responsibilities?

4 – If you were able to work less, what will be your first priority? (rest, take more care of children...)

5 – Are you sometimes feeling tired because you have too much work with your different children and responsibilities as the head of your home?

6 – How do you feel if your child is too much active/too much crying? Do you feel supported and by who?

7 - **Migration:** Where is your home town? How long have you lived here? How will you describe your living condition in Mukuru/viwandani? More work? Less time for you? Housing same, worst, better? Isolated from your family? Less supported?

Do you go upcountry for holiday, how do you feel at this time?

8 – Did you go to school? If no, why?

If yes, up to what class? Why did you stop? Who took this decision? How did you feel at this moment?

9 - Last time we discussed about contraception (pills, I.U.D., sterilization). Who makes the decision? Do you feel supported on this decision and by who? Who disagreed and what did you do then?

Who decides when to have another child? You alone? Someone else?

10 – When you got pregnant, did you see a health worker? A doctor/nurse or a TBA? If yes to the last question, how did he/she help you?

If no, what did you do?

11 – What types of resources do single women have and their access to these resource?

12 – How are responsibilities shared within your household? Who makes majority of the decision? How do you feel?

13 – Do you feel free to make your own decision?

If yes, do you feel supported? By who?

If no, why?

14 – What are your relationships with other single women/ married women? Do you feel supported by them? If you disagree with them, what happens?

15 – In every community fights can occur. What kind of conflicts can occur between you and other community members as a single mother? And what are the reasons (child education, contraception, consumption of alcohol/drugs, gambling...)? How can this conflict be resolved?

16 – There are men who treat their single women well and men who don't. Can you give me some examples? What type of physical and emotional abuse can happen? For the bad treatment examples, why does these happen?

Do you think it is happening too much in your community? Why? How do you feel regarding that?

Who do you think will be the right person(s) to help single women ?



FGD MENTAL HEALTH (GRAND-MOTHERS)

1 – How would you describe the workload of women? At home/on the field?

2 – Do you think your daughter-in-law has too much work to do? If she needs to stop working for a while, is it possible? If no, why? Who makes the decision (you/someone else)?

3 - Are lactating/pregnant women given different responsibilities?

4 – If your daughter-in-law is feeling too tired or a bit depressed, what do you do?

5 – You have many grandchildren, some of them are girls, and some of them are boys. Do you think both of them should go to school? Do you think it is a good thing for girls to complete their studies? Why? Who will decide if they can complete their education?

In the past years, did you notice any modification on the access to education?

6¹ – If a women want to take any contraception, is she able to take her decision by herself?

Do you know who will decide when to have another child? Is it discussed at family level?

7– When your daughter-in-law got pregnant, did she see a health worker? A doctor? A superstition person? Did you give her any advices? What type of?

8 – What types of resources do women have and are they independent access them?

9 – How responsibilities are shared within the household? Who is taking the majority of the decision? What do you think about it?

In the past years, did you notice any change regarding decision making at household level?

10 – What are your relationships with your daughter-in-laws? If you disagree with them, what happens?

11 – In every couple, fight can occur. What kind of conflicts can occur between a wife and her husband? And what are the reasons (child education, contraception, interference of in-laws, consumption of alcohol/drugs, gaming...)? How can this conflict be resolved?

Do you think it is happening too much in your communities? Why? What do you think about this kind of fight?

RATING EXERCISE

Remember to the participants a short, easy-understandable and correct definition of undernutrition: disease resulting from not getting the correct nutriments regarding what the body needs.

Propose a definition of undernutrition designed accordingly to the communities' thoughts:

It is a non-contagious disease; the child is weak and does not act as normal child. He/She is not eating properly anymore, and not playing and interactingf as he/she does. It can affect the child as well as the mother. It is like but can be cured. Child can easily die if nothing is done.

Do you agree with this definition? (Debate if not, to design a more close definition to their thoughts).



¹ According to the group, this question will be asked or will not. Some of the grandmothers can find this question to much inappropriate. Some of them can also think that her daughter-in-laws say something against them and it can be a problem for the mother. Ask this question, only if the discussion is favourable to it.



Present the most relevant hypothesis related to undernutrition raised during the FGD. Provide black board to the participants, explain the exercise and ask “if you agree that it is one of the main and major cause of undernutrition in your community, please draw a cross; otherwise draw a single line”.¹

1 – Low income

2 – Poor diet diversity

3 – Access to food

4 – Lack of toilets

5 – Shortage of safe water in shot/raining season

6 – Introduction of BF (not in the 1st day and/or not exclusive BF up to 6 months: child is feed with jiggery water/dhal water/roti/any other food)

7 – Complementary Feeding (frequency and item not appropriate regarding the age of the child)

8 – Lack of transport to the nearest health center (too expensive to go/stay and security at night)

9– LBW

10 – Workload

11 – Reproduction Health (undesired pregnancy, too many child, early first pregnancy)

12 – Decision Power (lack of decision power for the mother)

13 – Going to traditional healer (use local names) instead of going to the doctor²



¹In a perfect rating exercise, the participants will rate from 0 to 10 the hypothesis. In this context, the population is illiterate and not able to understand enough quickly the exercise. For this reason, a more simple exercise was designed. This exercise is also quite difficult to understand for them (average of 15 minutes), but easier for them. The “yes” answer will count for one, “no” for 0. Answers getting the maximum scores will be considered as relevant for the communities, answers with less than half of respondents will be considered as rejected by the participants.

²Take note of all the debate raised during the exercise, especially for the point 14. Indeed, most of the participants can reject it as they don't go only too the traditional healer meanwhile some will reject it as they think traditional healer helps more.



7/ DAY 5 – INTERVIEWS, FGD MEN, LIFE STORIES

VILLAGERS RANDOMLY INTERVIEWS

- What do you understand by malnutrition?
- What are the differences between a sick and a healthy child?
- Where do you get clean water?
- Do you have livestock? What kind of? Use of?
- Is there sufficient food available for your family?
- Do you know about the government skims like NHIF and free maternity care?
- Do you get some government facilities like education (i.e. scholarship)?
- Who makes you aware about government policies?
- Can you tell me what are the common diseases of the village?
- Do you think girl education is a good thing for the village?

FGD FATHERS / MALE PARTNERS AND GRANDFATHERS OF CHILD <5

Questions

Remind the participants of a short, easy-understandable and correct definition of undernutrition: disease resulting from not getting the correct nutrients regarding what the body needs.

Malnutrition: What do you understand by malnutrition? (TOOL: Picture of the SAM child) Is malnutrition a big problem in your community?

Do you think an adult can suffer from malnutrition?

ESL: What are your livelihoods?

WASH: Where do you go for toilet? What do you do after?

Health: Have you heard about NHIF and free maternity? What do you know/think about it?

CP: Do you take care of your child? What kind of care (feeding, bathing)? What do you do before feeding and after feeding them?

MH: How would you describe the workload of women/men (at home/on the field)? Do you think you have too much work to do? And your wife?

Who is making the majority of the decision? How do you feel regarding that? How does your wife feel regarding that?

Calendar

Ask to the participants to put stones in the seasonal tools for:



Period of migration
Period with enough/less water. Water availability
Rainy season
Hunger season
Availability of certain foods, fruits, and vegetables
High food market prices
Malaria/Acute Respiratory infection/Diarrhea
Security issues
Social events (expenses)

Rating exercise

Remind the participants of a short, easy-understandable and correct definition of undernutrition: disease resulting from not getting the correct nutrients regarding what the body needs.

Propose a definition of undernutrition designed accordingly to the communities' thoughts:

It is a non-contagious disease; the child is weak and does not act as normal child. He/She is not eating properly anymore, and not playing and interacted as he/she does. It can affect child as well as mother. It is like sookharog but can be cured. Child can easily die if nothing is done.

Do you agree with this definition? (Debate if not, to design a more close definition to their thoughts).

Present the most relevant hypothesis related to undernutrition raised during the FGD. Provide black board to the participants, explain the exercise and ask "if you agree that it is one of the main and major cause of undernutrition in your community, please draw a cross; otherwise draw a single line".

- 1 – Low income
- 2 – Poor diet diversity
- 3 – Access to food
- 4 – Lack of toilets
- 5 – Shortage of clean water in hot/raining season
- 6 – Introduction of BF (not in the 1st day and/or not exclusive BF up to 6 months: child is fed with cowmilk, water/porridge or any other food)
- 7 – Complementary Feeding (frequency and item not appropriate regarding the age of the child)
- 8 – Lack of transport to the nearest health center (too expensive to go or insecurity at night)
- 9 – LBW
- 10 – Workload
- 11 – Reproduction Health (undesired pregnancy, too many child, early first pregnancy)
- 12 – Decision Power (lack of decision power for the mother)
- 13 – Going to traditional healer (use local names) instead of going to the doctor
- 14- Self medication/buying drugs over the counter



8/ LIFE STORIES OF POSITIVE DEVIANT CHILD AND SAM/MAM/CURED-SAM CHILD

Introduction of the surveyors and of the NCA, short explanation of the aim of the interview and oral consent form.

How old is your baby and how old are you?

Did you plan to be pregnant of (name)?

When you discovered you were pregnant of (name), how did you feel (happy, sad, no special feeling)?

Did you consult a doctor, TBA, CHV and/or a midwife during your pregnancy? What kind of advices did you get from them? How many times did you see them? Did you get advices from someone else? What kind of advices?

Did you take any specific medicine during your pregnancy? Did you change your food intake?

Till when did you work before delivery? How did you feel regarding your pregnancy?

Where (name) was born?

Did (name) see a doctor when she/he born?

What was the first food she/he take and when? If no BF, why? Till when?

Many people have explained to us how difficult it is to go to health centre because of costs and distance. I was wondering what you do to overcome these barriers/challenges?

Many people told us they consult a traditional healers when their child got sick from evil eye and plastic teeth. Has any of your children ever suffered from any of these? What do you do when your child is sick? What do you think about these beliefs?

From what kind of sickness you child can suffer? How did you see your child get sick? What do you do when (name) get sick?

Many people told us their children suffer from diarrhoea and vomiting. Is it happening often to your child? Do you know why? What do you do when your child suffer from diarrhoea.

After (name) born, when did you go back to work?

At this time, who took care of (name)? How did you manage to feed (name) at this time?

And now, what is your daily schedule? Who is taking care of (name)? How do you manage to feed her/him?

Do you feel sometime, too much tired to take care of (name)? How do you manage at this time?

What are the main issues you are facing to raise (name)? How are you facing to these issues?

Migrants: same question in migration.

What kind of food do you give to your child? Are you cooking specially for her/him? How do you feed him/her? What do you do if she/he refuses to eat? How do you know what kind of food is good for him and her? Can you explain me when you change the diet of your child? For what kind of food?

Are you able to take decision by yourself regarding the health and education of your child? What are the issues you are facing regarding that? How do you manage?

If the child is the last born: Do you want more children after (name)? If no, do you do something to avoid a new pregnancy? Did you take this decision by yourself? If yes, do you want an other child now or later? If later, how do you manage to space pregnancies? Did you take this decision by yourself? Who give you advice on temporary contraception/sterilization? Between (name) and his elder sibling, did you do anything to space pregnancies?



If the child has younger sibling: did you do something special to space both pregnancies? Who gave you advice to do that? Did you take this decision by yourself?

Violence between men and women is said to be a big problem and we are told that every night there are screams coming from various homes especially at the end of the month. Is it happening to you? How do you feel? What do you do then? Do you know why it is happening?



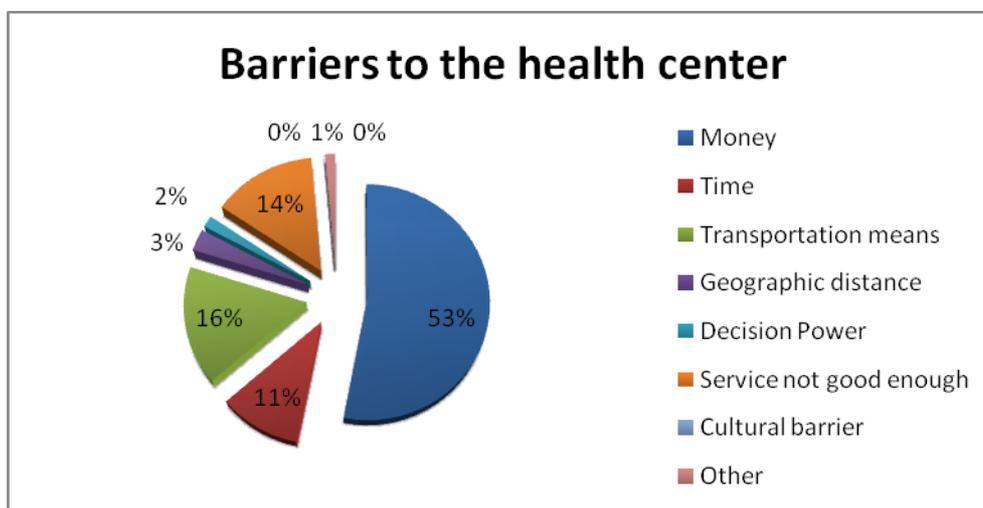


9/ RISK FACTORS INDICATORS

Core Indicators	Sample N	Positive answers n	Mean or proportion	Lower confidence interval -95%	Upper confidence interval -95%
<i>Household composition</i>					
Household size	707	-	4	3.9	4.1
<i>Food Security and Livelihoods (FSL)</i>					
HDDS	707	-	7.2	6.9	7.5
HFIAS	707	-	5.9	5.3	6.5
HFIAP Secure	707	221	31.3	25.6	36.9
HFIAP Mildly	707	77	10.9	7.6	14.2
HFIAP Moderately	707	236	33.4	28.7	38.1
HFIAP Severely	707	173	24.5	20.1	28.8
MAHFP	707	-	10.4	10.26	10.53
<i>WASH</i>					
Safety of main water source					
No risk	707	125	17.7	12.7	22.7
Mild risk	707	265	37.5	30.7	44.3
Moderate risk	707	204	28.9	22.5	35.2
Severe risk	707	113	16.0	9.0	23.0
Water management score	707		4.4	4.3	4.6
Mild risk	707	87	12.3	9.5	15.1
Moderate risk	707	257	36.4	32.4	40.3
Severe risk	707	363	51.3	47.0	55.7
Water Needs		Fanta	Sphere		
% meeting basic needs		2.97	98.59		
% meeting drinking needs		2.97	16.27		
% meeting bathing needs		1.13	91.23		
% meeting food needs		2.12	44.27		
% meeting hygien/san needs		5.37	5.37		
Latrines					
Use of latrines	707	358	50.6	41.2	60.0



Use of safe latrines	707	7	1.3	0.1	2.5
Safe disposal of child feces	523	230	44.0	39.1	48.9
Caregiver hand-washing good behavior	707	326	46.1	41.6	50.7
Use of soap	707	530	75.0	70.6	79.4
<i>Children health (0-59 months)</i>					
ARI in the past 14 days	690	100	14.5	11.4	17.5
Diarrhea in the past 14 days	690	86	12.5	9.3	15.6
<i>Access to health services</i>					
DPT3 immunization coverage at one year	633	600	94.8	92.6	96.9
DPT3 immunization coverage (health record)	633	178	28.1	23.2	33.1
ANC Caregivers who saw a health professional At least for 4 times	692	451	65.2	61.3	69.1



<i>IYCF</i>					
Adequate initiation of breastfeeding (<1 hour)	377	290	76.9	72.8	81.1
Exclusive breastfeeding (0-6 months)	114		56.1	44.0	68.3



Continued breastfeeding at 1 year	67		85.1	75.9	94.3
Complementary feeding (6-8 months) Correct introduction of complementary feeding Proportion of children with IDDS>1			71.4	59.4	83.4
IDDS 6-23 months	263	-	3.5	3.2	3.8
Proportion of children with minimum IDDS (≥4)	263		49.8	41.5	58.2
Proportion of children with correct meal frequency(Overall)	263	175	66.5	61.6	71.5
Proportion of children with correct meal frequency (BF children)	218	144	66.1	60.6	71.5
Proportion of children with correct meal frequency (Non BF children)	40	29	72.5	58.2	86.8
Child feeding behavior Caregivers helping their child to eat (>9 months) Behavior adopted by the caregiver when the child doesn't want to eat	353	215	60.9	54.9	66.9
Forcing	353	61	17.3	12.7	21.9
Other (play, coax etc.)	353	100	28.3	23.4	33.3
Nothing	353	192	54.4	48.2	60.5
<i>Children psychosocial care</i>					
Child-caregiver interaction score	690	-	5.3	5.1	5.5
Children with appropriate child-caregiver interaction (>4)	690	496	71.9	67.0	76.8
<i>Care of women</i>					
Food intake during last pregnancy More than usual	692	289	41.8	37.4	46.1
Less as usual	692	228	32.9	29.1	36.8
Same as usual	692	175	25.3	21.1	29.4
Average level of education					
Illiteracy	692	675	97.5	95.7	99.4



Level of education	Cf. Diaphragm				
Perceived social capital. Mothers who feel supported					
Mothers who feel they have too much work to take care of their child	692	143	20.7	16.2	25.1
Mothers at risk of depression WHO 5<13	692	203	29.3	24.7	33.9

A total of 707 households were visited and caregivers interviewed during the survey period resulting in a response rate of 99.2%. The response rate was above 80% and hence the sample size had met the minimum threshold for the response rate.

Link NCA

SYSTEMS ANALYSIS



The Link NCA methodology was developed by Action Against Hunger – France with technical support from our scientific committee including multi-sectorial experts and eminent scientists from Tufts University | Friedman School of Nutrition Science and Policy, the French Institute for Development Research (IRD), and World Food Program (WFP).

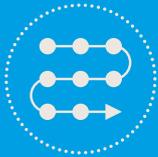
Its development was made possible by the funding provided by:



USAID
FROM THE AMERICAN PEOPLE



More information on www.linknca.org



**link
nca**

NUTRITION CAUSAL ANALYSIS



Author : **Mercy Wahome**, *Link NCA Expert*



Pour plus d'informations concernant la conception ou la mise en œuvre d'une Link NCA, visitez notre site internet :

www.linknca.org

Pour prendre contact avec un expert concernant toute question sur la Link NCA :

linknca@actioncontrelafaim.org