



STANDARDIZED EXPANDED NUTRITION SURVEY (SENS) FINAL REPORT

**Mayukwayukwa and Meheba Refugee
Settlements**

Zambia

Data Collected:	November 2017
Preliminary Report:	December 2017
Final Report:	February 2018

UNHCR, WFP, UNICEF, MOH, NFNC and MHA/COR

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ACRONYMS AND ABBREVIATIONS

ACF	Action Contra Faim
ANC	Ante Natal Care
ARRA	Administration for Refugee and Returnee Affairs
BSFP	Blanket Supplementary Feeding Program
CMR	Crude Mortality Rate
CI	Confidence Interval
CHWs	Community Health Workers
CSB	Corn-Soya Blend
CTC	Community-based Therapeutic Care
DEFF	Design effect
ENA	Emergency Nutrition Assessment
EPI	Expanded Programme on Immunization
Epi Info	Name of CDC software for Epidemiological Investigations
FSNAU	Food Security and Nutrition Analysis Unit
GAM	Global Acute Malnutrition
GFR	General Food Ration
HAZ	Height-for-Age z-score
Hb	Haemoglobin
HDDS	Household Dietary Diversity Score
HH	Household
HIS	Health Information System
IMC	International Medical Corps
IPs	Implementing Partners
IYCF	Infant and Young Child Feeding
KCAL	Kilocalorie
LNS	Lipid-based Nutrient Supplement
L/P/D	Litre per person per day
MAM	Moderate Acute Malnutrition
MCH	Maternal and Child Health
MOH	Ministry of Health
MSF	Médecins sans Frontières
MUAC	Middle Upper Arm circumference
NCHS	National Centre for Health Statistics
NFI	Non Food Items
NPW	Non Pregnant Women
OTP	Out-patient Therapeutic Programme
PDM	Post Distribution Monitoring
ProGres	UNHCR registration database for refugees
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SCI	Save the Children International
SD	Standard Deviation
SENS	Standardised Expanded Nutrition Survey
SFP	Supplementary Feeding Programme
SMART	Standardised Monitoring & Assessment of Relief &

	Transitions
TFP	Therapeutic Feeding Programme
U3	Children under 3 years old
U5	Children under 5 years old
U5MR	Under-5 Mortality Rate
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Funds
WASH	Water Sanitation and Hygiene
WAZ	Weight-for-Age z-score
WFH	Weight-for-height
WHZ	Weight-for-Height z-score
WFP	World Food Programme
WHO	World Health Organization

ACKNOWLEDGMENTS

The author would like to provide special thanks to the UNHCR Offices in Lusaka, Nairobi and Public Health Section in Geneva for the steady technical leadership and coordination during the entire period of this work. The guidance and insights provided during the course of the assessment were very much useful.

Special thanks go to Ms. Melody Tendour, Ms. Valerie Gatchell, Dr. Jonathan Calbayan, for their continuous technical, leadership and encouragements from the preparations, resources mobilisation, planning of the survey and executions. The technical review of the report provided by Mr. Naser Mohmand was much appreciated. The author thanks very much Dr. Dieudonne Yiweza, Dr. Asis K. Das and Ms. Caroline Wilkinson for granting the necessary managerial decisions for the author to undertake this work.

The author acknowledges the leadership and high level decisions that were made by the UNHCR Representation Office in Kampala, Uganda (Mr. Bornwell Kantande, Ilham Abdullayev, Monica Lwebandiza and Jeanne Coreke) and UNHCR Representation Office in Lusaka, Zambia (Ms. Pierrine Aylara, Keshab Shrestha, Asaduzzaman Sikder, Tikambenji Munkombwe, and Jane Shimba), the coordination roles played by the following staff members in Zambia was very instrumental for the actualization of the work in the field; Montgomery Mulengeshi, Lubasi Lubinda and Sarah Chisanga.

The author would like to provide special thanks to the Community Health Workers, National Staff from MCDMCH, MHA/COR and the refugee leadership in the settlements for their participation in this exercise.

Finally, the author is grateful for the refugee population in Mayukwayukwa and Meheba refugee settlements for their willingness to participate and allowed the survey teams to interview them and measure their children.

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Photo showing children in Meheba refugee settlement in Zambia @Dr. Jonathan CALBAYAN

EXECUTIVE SUMMARY

In 2017 the prevalence of global acute malnutrition was 6.2% (3.8-10.0 C.I) in Mayukwayukwa and 5.7% (3.8-8.5 C.I) in Meheba. These prevalences (5%-9%) of global acute malnutrition classifies “POOR” level nutrition situation as per WHO classification. The prevalence of stunting was 35.6% (29.8-41.8 C.I) in Mayukwayukwa and 34.6% (30.0-39.5%) in Meheba settlement. The prevalence of stunting is classified as “serious” level as per the WHO “Classification of public health significance for children under 5 years of age cut off threshold of 30-39%”. The prevalence of anaemia among children aged 6-59 months reported 42.4% and 45.8% in Mayukwayukwa and Meheba refugee settlements classified “HIGH” above the 40% of public health significance. The prevalence of anaemia among non-pregnant women aged 15-49 years is 29.1% and 23.7% in Mayukwayukwa and Meheba refugee settlements classified as “MEDIUM” public health significance.

UNHCR in collaboration with WFP and UNICEF and its project partners, Ministry of Community Development Mother and Child Health, MOH and MHA/COR, organised and conducted the nutrition survey in the two refugee settlements of Mayukwayukwa and Meheba, the surveys in the settlements took place between 26th November to 15th December 2017. The main objective of this survey was to assess the overall nutrition and health status of refugee population and establish workable recommendations for appropriate interventions.

Primary objectives:

1. To determine the prevalence of acute malnutrition in children aged 6 - 59 months.
2. To determine the prevalence of stunting in children aged 6 - 59 months.
3. To measure the prevalence of anaemia in children aged 6 - 59 months and in non-pregnant women at reproductive age, 15 - 49 years.
4. To investigate infant and young child feeding practices among children aged 0-23 months.
5. To determine the coverage of measles vaccination among children aged 9 - 59 months.
6. To determine the coverage of vitamin A supplementation in the last 6 months among children aged 6-59 months.
7. To assess the two-week period prevalence of diarrhoea among children aged 6-59 months
8. To determine the extent to which negative coping strategies are used by households.
9. To assess household dietary diversity.
10. To determine the ownership of mosquito nets (all types and LLINs) in households.
11. To determine the coverage and utilisation of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
12. To determine the population’s access to, and use of, improved water, sanitation and hygiene facilities.
13. To assess the proportion of households that use an adequate quantity of water per person per day.

14. To provide recommendations for appropriate formulations of response interventions.

Secondary objective:

15. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.

The Standardized Monitoring and Assessment of Relief and Transitions (ENA for SMART) software version July 9th, 2015 was used to estimate the sample size while adhering to the UNHCR SENS methodology version 2 (2013) procedures. In both settlements, the sample size was calculated based on the “acceptable”, 5% prevalence of global acute malnutrition as per WHO classification of public health significance for children under 5 years. It was agreed that the highest GAM prevalence of the 2013 nutrition survey conducted in the two settlements was too old to be used. The total population, total households, total under 5 years children, average family sizes and the percentage of the children under 5 years were estimated based on the October 2017 updated UNHCR Pro-Gres data. In all settlements, the sample size was increased by 10% in order to account for the non-response from the sampled households. In both locations, simple random sampling approach was used.

In both settlements, cross-sectional surveys were conducted using simple random sampling. To reduce non-response rate and ensure results were representative of people living in the settlements at the time of the survey, unoccupied houses¹, as verified through neighbors and refugee administration leadership were excluded in the sampling frame. The population numbers used for sample size calculation was estimated based on the final Pro-Gres report of the registration / verification exercises completed in October 2017.

Six teams composed of 5 team members (add team members roles) were used to collect data in each settlement. On average, each team sampled 12 to 14 households per day during the survey period. If an individual or an entire household was absent, the teams returned to the household on the same survey day to revisit; when the individual or the household was still absent was recorded as absent and not replaced. Training of enumerators lasted for 5 days where the last day was used for piloting the tools and methodology. Teams were visited once per day by the survey coordinator throughout the survey period. Open Data Kit (ODK) electronic platform using smart phones was used to capture data. Data were then uploaded in excel. The data for anthropometric pertained for 6-59 months children were then transferred, cleaned and analysed using ENA for SMART software (Delta version, July 9th of 2015). The rest of the data for the other modules were transferred to ENA for SMART and Epi Info software where cleaning and analysis were done.

¹ An unoccupied house will be considered an abandoned house; this will be excluded from the nutrition survey if no one was present in that house for the last one month.

Table 1: Summary of Final Survey Results

Surveyed area	Mayukwayukwa Settlement	Meheba Settlement	Classification or target
Survey Date			
Children 6-59 months, % (95% C.I)			
Acute malnutrition (WHO 2006 growth standards)			
N	241	386	Critical if $\geq 15\%$
Global Acute Malnutrition (GAM)	6.2 % (3.8 - 10.0)	5.7 % (3.8 - 8.5)	
Moderate Acute Malnutrition (MAM)	5.4 % (3.2 - 9.0)	5.4 % (3.6 - 8.2)	
Severe Acute Malnutrition (SAM)	0.8 % (0.2 - 3.0)	0.3 % (0.0 - 1.5)	
Oedema	0.4% (0.2-08.)	0.4% (0.2-0.7)	
Mid Upper Arm Circumference (MUAC): (n) % (95% CI)			
N	243	395	
MUAC <125 mm and/or oedema	1.2% (0.4-3.8)	2.0% (1.0-4.0)	
MUAC 115-124 mm	1.2% (0.4-3.8)	1.5% (0.7-3.3)	
MUAC <115 mm and/or oedema	0% (0-0)	0.5% (0.1-2.0)	
Stunting (WHO 2006 growth standards)			
N	239	379	
Prevalence of stunting (<-2 z-score)	35.6 % (29.8 - 41.8)	34.6 % (30.0 - 39.5)	Critical if $\geq 40\%$
Prevalence of moderate stunting (<-2 z-score and ≥ -3 z-score)	30.1 % (24.7 - 36.2)	23.5 % (19.5 - 28.0)	
Prevalence of severe stunting (<-3 z-score)	5.4 % (3.2 - 9.1)	11.1 % (8.3 - 14.6)	
Underweight (WHO 2006 Growth Standards): Children aged 6 - 59 months (n) % (95% CI)			
N	239	393	
Prevalence of underweight (<-2 z-score)	13.4 % (9.6 - 18.3)	12.7 % (9.8 - 16.4)	Critical if $\geq 30\%$
Prevalence of moderate underweight (<-2 z-score and ≥ -3 z-score)	12.1 % (8.6 - 16.9)	11.7 % (8.9 - 15.3)	
Prevalence of severe underweight (<-3 z-score)	1.3 % (0.4 - 3.6)	1.0 % (0.4 - 2.6)	
Programme coverage: (n/N); % (95% CI)			
Measles vaccination with card (9-59 months)	(112/231) 48.5%(42.1-54.9)	(208/369) 56.4%(51.2-61.4)	Target of $\geq 95\%$
Measles vaccination with card or recall (9-59 months)	(209/231) 90.5%(85.9-93.7)	(301/369) 81.6%(77.3-85.2)	Target of $\geq 95\%$
Vitamin A supplementation within past 6 months with card	(120/243) 49.4%(43.1-55.7)	(246/395) 62.3%(57.4-66.9)	Target of $\geq 90\%$
Vitamin A supplementation within past	(223/231)	(359/395)	Target of $\geq 90\%$

Surveyed area	Mayukwayukwa Settlement	Meheba Settlement	Classification or target
6 months with card or recall	91.8%(87.6-94.6)	90.9%(87.6-93.4)	
Diarrhoea: (n/N); % (95% CI)			
Diarrhoea in last 2 weeks	(58/243) 23.9%(18.9-29.7)	(60/395) 15.2%(12.0-19.1)	
Anaemia (6-59 months)			
N	243	395	
Total Anaemia (Hb <11 g/dl)	42.4% (36.3-48.7)	45.8% (41.0-50.8)	High if ≥ 40%
Mild (Hb 10-10.9)	23.0% (18.1-28.8)	30.6% (26.3-35.4)	
Moderate (Hb 7-9.9)	17.3% (13.0-22.6)	14.7% (11.5-18.5)	
Severe (Hb <7)	2.1% (0.9-4.9)	0.5% (0.1-2.0)	
Moderate and Severe Anaemia (Hb<10.0 g/dL)	19.3% (14.8-24.8)	15.2% (12.0-19.1)	
Mean Hb, g/dL (95% CI) [range]	11.3(11.1-11.6) [5.5-20.0]	11.2(11.0-11.3) [6.4-17.6]	
Anaemia in children aged 6 - 23 months: (n) % (95% CI)			
N	86	152	
Total Anaemia (Hb <11 g/dl)	51.2% (40.5-61.7)	52.6% (44.6-60.5)	High if ≥ 40%
Mild (Hb 10-10.9)	24.4% (16.4-34.8)	33.6% (26.4-41.5)	
Moderate (Hb 7-9.9)	22.1% (14.4-32.3)	19.1% (13.5-26.2)	
Severe (Hb <7)	4.7% (1.7-12.0)	0% (0-0)	
Moderate and Severe Anaemia (Hb<10.0 g/dL)	26.7% (18.4-37.2)	19.1% (13.6-26.2)	
Mean Hb, g/dL (95% CI) [range]	11.1(10.5-11.7) [5.5-20.0]	10.9(10.7-11.1) [7.0-15.0]	
Anaemia in children aged 24 - 59 months: (n) % (95% CI)			
N	157	243	
Total Anaemia (Hb <11 g/dl)	37.6% (30.3-45.5)	41.6% (35.5-47.9)	High if ≥ 40%
Mild (Hb 10-10.9)	22.3% (16.4-29.6)	28.8% (23.4-34.9)	
Moderate (Hb 7-9.9)	14.6% (9.9-21.2)	11.9% (8.4-16.7)	
Severe (Hb <7)	0.6% (0.1-4.5)	0.8% (0.2-3.3)	
Moderate and Severe Anaemia (Hb<10.0 g/dL)	15.3% (10.4-21.8)	12.8% (9.1-17.6)	
Mean Hb, g/dL (95% CI) [range]	11.5(11.2-11.8) [6.5-20.0]	11.4(11.2-11.6) [6.4-17.4]	

Surveyed area	Mayukwayukwa Settlement	Meheba Settlement	Classification or target
Children 0-23 months			
IYCF indications : (n/N); % (95% CI)			
Timely initiation of breastfeeding	(75/104) 72.1%(62.7-79.9)	(76/163) 46.6%(39.0-54.4)	
Exclusive breastfeeding under 6 months	(21/34) 61.8%(44.2-76.7)	(13/45) 28.9%(17.3-44.1)	
Continued breastfeeding at 1 year	(14/16) 87.5%(59.0-97.1)	(22/22) 100%	
Continued breastfeeding at 2 years	(6/13) 46.2%(20.7-73.7)	(6/16) 37.5%(16.8-64.1)	
Introduction of solid, semi-solid or soft foods	(5/9) 55.6%(22.7-84.2)	(11/25) 44%(25.4%-64.5)	
Consumption of iron-rich or iron-fortified foods	(56/78) 71.8%(60.7-80.7)	(75/119) 63.0%(53.9-71.3)	
Bottle feeding	(28/112) 25.0%(17.8-33.9)	(13/175) 7.4%(4.3-12.4)	
Women 15-49 years			
Anaemia (non-pregnant)			
N	354	342	
Total Anaemia (Hb <12 g/dl)	29.1% (24.6-34.1)	23.7% (19.5-28.5)	High if ≥ 40%
Mild (Hb 11-11.9)	16.7% (13.1-20.9)	13.5% (10.2-17.5)	
Moderate (Hb 8-10.9)	11.6% (8.6-15.4)	9.4% (6.7-12.9)	
Severe (Hb <8)	0.8% (0.3-2.6)	0.9% (0.3-2.7)	
Mean Hb, g/dL (95% CI) [range]	12.7(12.5-12.8) [7.3-17.1]	12.8(12.6-13.0) [7.4-17.2]	
Programme coverage (pregnant)			
Currently enrolled in ANC programme	(22/34) 64.7%(47.0-79.1)	(38/45) 84.4%(70.3-92.6)	
Currently receiving iron-folic acid pills	(21/34) 61.8%(44.2-76.7)	(37/45) 82.2%(67.8-91.0)	
FOOD SECURITY			
Negative household coping strategies			
Proportion of households reporting using none of the negative coping strategies over the past month	(79/340) 23.2%(19.0-28.0)	(90/330) 27.3%(22.7-32.3)	
Borrowed cash, food or other items <i>with or without interest</i>	31.8% (27.0-36.9)	43.3% (38.1-48.8)	
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	28.5% (24.0-33.6)	31.2% (26.4-36.4)	
Requested increase remittances or gifts as compared to normal	16.2% (12.6-20.5)	7.0% (4.7-10.3)	

Surveyed area	Mayukwayukwa Settlement	Meheba Settlement	Classification or target
Reduced the quantity and/or frequency of meals	51.2% (45.9-56.5)	57.0% (51.5-62.2)	
Begged	45.3% (40.1-50.6)	53.9% (48.5-59.3)	
Engaged in potentially risky or harmful activities	1.8% (0.8-3.9)	2.4% (1.2-4.8)	
Household dietary diversity			
Average HDDS (mean (95%CI or \pm SD)	6.3 (6.0-6.5)	5.6 (5.3-5.8)	
Proportion of households not consuming any vegetables, fruits, meats, eggs, fish/seafood and milk/milk products	(3/340) 0.9%(0.3-2.7)	(21/330) 6.4%(4.2-9.6)	
Proportion of households consuming either a plant or animal source of vit A	(334/340) 98.2%(96.1-99.2)	(307/330) 93.0%(89.7-95.3)	
Proportion of households consuming organ meat/flesh meat, or fish/seafood	(242/340) 71.2%(66.1-75.8)	(190/330) 57.6%(52.2-62.8)	
WASH			
Water quality and storage			
N	340	330	
Proportion of households using an improved drinking water source	(340) 100%(0-0)	(224) 99.7%(97.9-100.0)	
Proportion of households that use a covered or narrow necked container for storing their drinking water	(148) 43.5%(38.3-48.9)	(96) 29.1%(24.4-34.2)	
Water quantity			
Proportion of households that use:			
N	340	330	
≥ 20 lpppd	(236) 69.4%(64.3-74.1)	(181) 54.8%(49.4-60.2)	
15 - <20 lpppd	(36) 10.6%(7.7-14.3)	(43) 13.0%(9.8-17.1)	
<15 lpppd	(68) 20%(16.1-24.6)	(106) 32.1%(27.3-37.4)	
Average water usage in lpppd	36.8 (33.4-40.3)	24.6 (22.6-26.6)	UNHCR target of ≥ 20 lpppd
Safe excreta disposal			
Proportion of households that use:			
An improved excreta disposal facility (improved toilet facility, 1 household)	(86/340) 25.3%(20.9-30.2)	(41/330) 12.4%(9.3-16.5)	
A shared family toilet (improved toilet facility, 2 households)	(25/340) 7.4%(5.0-10.7)	(8/330) 2.4%(1.2-4.8)	
A communal toilet (improved toilet facility, 3 households or more)	(7/340) 2.1%(1.0-4.3)	(9/330) 2.7%(1.4-5.2)	

Surveyed area	Mayukwayukwa Settlement	Meheba Settlement	Classification or target
An unimproved toilet (unimproved toilet facility or public toilet)	(222/340) 65.3%(60.1-70.2)	(272/330) 82.4%(77.9-86.2)	
Proportion of households with children under 3 years of age that dispose of faeces safely	(129/143) 90.8%(84.8-94.6)	(217/237) 91.6%(87.3-94.5)	
MOSQUITO NET COVERAGE			
Mosquito net ownership			
Proportion of total HHs owning at least one mosquito net of any type	(181/340) 53.2%(47.9-58.5)	(76/330) 23.0%(18.8-27.9)	
Proportion of households owning at least one LLIN	(155/340) 45.6%(40.3-50.9)	(61/330) 18.5%(14.6-23.1)	Target of >80%
Average number of persons per LLIN (mean)	2.9	3.4	2 persons per LLIN
Mosquito net utilization			
Proportion of household members (all ages) who slept under a net of any type	(581/708) 82.1%(79.1-84.7)	(258/363) 71.1%(66.2-75.5)	
Proportion of household members (all ages) who slept under an LLIN	(486/708) 68.6%(65.1-72.0)	(207/363) 57.0%(51.9-62.0)	
Proportion of children 0-59 months who slept under a net of any type	(198/244) 81.1%(75.7-85.6)	(98/124) 79.0%(70.9-85.4)	
Proportion of children 0-59 months who slept under an LLIN	(179/244) 73.4%(67.4-78.6)	(70/124) 56.5%(47.5-65.0)	
Proportion of pregnant women who slept under a net of any type	(36/39) 92.3%(78.0-97.6)	(19/21) 90.5%(67.4-97.8)	
Proportion of pregnant women who slept under an LLIN	(29/39) 74.4%(58.0-85.9)	(16/21) 76.2%(52.8-90.1)	

BRIEF INTERPRETATION OF RESULTS

CLASSIFICATION OF PUBLIC HEALTH SIGNIFICANCE ACUTE MALNUTRITION, STUNTING AND ANAEMIA BASED ON WHO CLASSIFICATION

Table 2: Classification of Public Health Significance for Children Under 5 Years of Age

Prevalence %	Critical	Serious	Poor	Acceptable
Low weight-for-height	≥15	10-14	5-9	<5
Low height-for-age	≥40	30-39	20-29	<20
Low weight-for-age	≥30	20-29	10-19	<10

Source: WHO (1995) *Physical Status: The Use and Interpretation of Anthropometry* and WHO (2000) - *The Management of Nutrition in Major Emergencies*

- The prevalence of global acute malnutrition as assessed in Mayukwayukwa and Meheba settlements based on Weight for Height (<-2 Z score) in 2017 is classified as “poor”, it falls within 5-9% based on the WHO classification of public health significance for children aged 6-59 months (Table 1). The prevalence of global acute malnutrition was 6.2% (3.8 - 10.0 C.I), moderate acute malnutrition was 5.4% (3.6 - 8.2 C.I) and severe acute malnutrition was 0.8% (0.2 - 3.0 C.I) in Mayukwayukwa settlement. In Meheba settlement the global acute malnutrition was 5.7% (3.8 - 8.5 C.I), moderate acute malnutrition was 5.4% (3.2 - 9.0 C.I) and severe acute malnutrition was 0.3% (0.0 - 1.5 c.I).
- The prevalence of stunting as defined based on Height for Age (<-2 Z score) in children 6-59 months old in Mayukwayukwa and Meheba settlement was classified “serious” based on the WHO public health significance for children, it falls in the range “30-39%” (Table 1). The prevalence of stunting was 35.6% (29.8 - 41.8 C.I) in Mayukwayukwa while it was 34.6% (30.0 - 39.5 C.I) in Meheba settlement.

Diarrhea

- The prevalence of diarrhea among children aged 6-59 months in the past 2 weeks prior to the survey was assessed based on recall from the mother or caregiver. According to the mothers’ and caregivers’ recall in Mayukwayukwa 23.9% (18.9-29.7 C.I) and in Meheba 15.2% (12.0-19.1 C.I) were reported had diarrhoea 2 weeks before the survey. Mayukwayukwa had the highest prevalence of diarrhoea.

Anaemia

Table 3: Classification of Public Health Significance

Prevalence %	High	Medium	Low
Anaemia	≥40	20-39	5-19

Source: WHO (2000) *The Management of Nutrition in Major Emergencies*

Children aged 6-59 months

- The prevalence of total anaemia (Hb <11 g/dl) among children 6-59 months in the 2 settlements of Mayukwayukwa and Meheba found above the 40% of public health significance (WHO classification), 42.4 % (36.3-48 C.I) in Mayukwayukwa and 45.8 % (41.0-50.8 C.I) in Meheba settlement. The prevalence of severe anaemia reported 2.1% and 0.5% in Mayukwayukwa and Meheba settlements, which requires screening, detection and treatment.
- The prevalence of total anaemia (Hb <11 g/dl) among younger children (6-23 months) was higher when compared to the older children (24-59 months). Among younger children (6-23 months), total anaemia was 51.2% (40.5-61.7 C.I) and 52.6% (44.6-60.5 C.I) in Mayukwayukwa and Meheba respectively while moderate and severe anaemia (Hb < 10.0 g/dL) was 26.7% (18.4-37.2) in Mayukwayukwa and 19.1% (13.6-26.2) in Meheba settlements.
- The Mean Haemoglobin Concentration for the younger children (6-23 months) was 11.1 g/dL (10.5-11.7) with the haemoglobin level ranging from 5.5 to 20.0 g/dL in Mayukwayukwa and 10.9 g/dL (10.7-11.1) with the haemoglobin level ranging from 7.0-15.0 g/dL in Meheba settlement. There was no significant difference of the Mean Hb concentration between the two settlements.
- The prevalence of total anaemia (Hb <11 g/dl) in children aged 24 - 59 months was 37.6% (30.3-45.5 C.I) in Mayukwayukwa classified as “medium” according to the WHO classification of public health significance to children. The total anaemia (Hb <11 g/dl) in children aged 24 - 59 months for Meheba settlement was 41.6% (35.5-47.9 C.I), classified as “high” according to the WHO classification of public health significance to children (≥ 40).

Women of reproductive age (non-pregnant, 15-49 years)

- The prevalence of total anaemia (Hb <12 g/dl) for women of reproductive age, 15-49 years, (non-pregnant) was 29.1% (24.6-34.1 C.I) in Mayukwayukwa and 23.7% (19.5-28.5 C.I) in Meheba settlements. These levels are classified as “medium” according to the WHO classification of public health significance.
- Mild anaemia (Hb 11-11.9) was highest in Mayukwayukwa at 29.1% (24.6-34.1) when to that of Meheba at 13.5% (10.2-17.5) though was not statistically different.
- The Mean Haemoglobin Concentration for the women of reproductive age, 15-49 years, (non-pregnant) was 12.7 g/dL (12.4 – 12.8) with the haemoglobin level ranging from 7.3-17.1 g/dL in Mayukwayukwa and 12.8 g/dL (12.6 – 12.9) with the haemoglobin level ranging from 7.4-17.2 g/dL with the haemoglobin level ranging from 6.4-17.4g/dL in Meheba settlement. There was no significant difference of the Mean Hb concentration between the two settlements.
- The Antenatal care programme was assessed where enrollment and women receiving iron-folic tablets were studied. The study found that pregnant women enrolled in ANC were 64.7% (47.0-79.1 C.I) in Mayukwayukwa and 84.4% (70.3-92.6 C.I) in Meheba settlement. The coverage of iron-folate pills was higher in Meheba at 82.2% (67.8-91.0 C.I) and low in Mayukwayukwa at 61.8% (44.2-76.7 C.I).
- Overall anaemia continues to be a public health concern in Mayukwayukwa and Meheba settlement. The current level is classified as “medium”, the enrolled in ANC program among pregnant women is not 100% and even the distribution of Iron-Folic acid tablets is not evenly provided, a significant number of pregnant women reported that did not receive the Iron-Folic tablets.

Programme coverage

- Measles vaccination coverage for children aged 9-59 months was assessed based on card and recall. In Mayukwayukwa the coverage results of measles vaccination with card or recall (9-59 months) was 90.5% (85.9-93.7 C.I) while that of Meheba settlement was 81.6% (77.3-85.2 C.I). The UNHCR recommended target of $\geq 95\%$ for measles was not met in the two settlements.
- Vitamin A supplementation in the last 6 months was assessed based on both card documentation and mother's recall in Mayukwayukwa and Meheba settlements. In Mayukwayukwa the coverage was 91.8% (87.6-94.6 C.I) and in Meheba, it was 90.9% (87.6-93.4 C.I). As for Vitamin A supplementation the two settlements met the programme target of $>90\%$. However, it is imperative to mention that though there was measles and vitamin A supplementation campaigns few weeks before the survey, both measles and vitamin A documentation (results by card) did not benefit this survey because they did not reach even 65% for both measles and vitamin A supplementation. This shows that health workers did not document adequately the provision of measles and vitamin A in the immunization cards of all the children.

Infant and Young Child Feeding

- Indicators related to infant and young child feeding were assessed. Findings indicated that the proportion of children who were timely initiated on breast feeding were 72.1% (62.7-79.9 C.I) in Mayukwayukwa and quite low in Meheba reported at 46.6% (39.0-54.4 C.I). The proportion of children below 6 months who were exclusively breastfed in Mayukwayukwa was 61.8% (44.2-76.7 C.I) whereas that of Meheba was low only reported at 28.9% (17.3-44.1 C.I).
- Introduction of solid, semi-solid or soft foods was high in Mayukwayukwa at 55.6% (22.7-84.2 C.I) and while it was only 44% (25.4%-64.5 C.I) in Meheba. The consumption of iron-rich or iron-fortified foods was relatively high in Mayukwayukwa at 71.8% (60.7-80.7 C.I) compared to 63.0% (53.9-71.3 C.I) in Meheba settlement.
- Continued breastfeeding at 1 year was 100% in Meheba while it was 87.5% (59.0-97.1 C.I) in Mayukwayukwa settlement. This is an indication that majority of the children are breastfed beyond 1 year in the settlements. However, breastfeeding at 2 years was low in both locations, 46.2% (20.7-73.7 C.I) in Mayukwayukwa and 37.5% (16.8-64.1 C.I) in Meheba settlement. Low prevalence of breastfed children at 2 years is an indication that at that age majority of children would have stopped breastfeeding.

Food security

- The mean household dietary diversity score (HDDS) in the 2 settlement was reported at, 6.3 (6.0-6.5 C.I) in Mayukwayukwa and 5.6 (5.3-5.8 C.I) in Meheba (out of maximum of 12 food groups).
- The proportion of households consuming either a plant or animal source of vitamin A was very high in both locations with the highest reported at 98.2% (96.1-99.2 C.I) in Mayukwayukwa and 93.0% (89.7-95.3 C.I) in Meheba.
- The proportion of the households interviewed reported borrowed cash, food or other items with or without interest in Mayukwayukwa was 31.8% and 43.3% in Meheba settlement. Those who sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.) in Mayukwayukwa were 28.5% while in Meheba it was 31.2%. The proportion of population that requested for increased remittances or gifts as compared to normal was 16.2% in Mayukwayukwa and it was 7.0% Meheba settlement.

Water, Sanitation and Hygiene

- The proportion of households using an improved drinking water source was 100% in Mayukwayukwa settlement and it was 99.7% (97.9-100.0 C.I) in Meheba settlement. However, the proportion of households safely storing the water was below 50% in the two settlements. It was 43.5% (38.3-48.9 C.I) in Mayukwayukwa and 29.1% (24.4-34.2 C.I) in Meheba settlement.
- In Mayukwayukwa, the proportions that used above the target of 20 litres per person per day (lpppd) of water per capita was 69.4% (64.3-74.1 C.I) while in Meheba was reported at 54.8% (49.4-60.2 C.I). The proportions of households that reported using between 15 - <20 litres of water per person per day was 10.6% (7.7-14.3 C.I) in Mayukwayukwa and it was 13.0% (9.8-17.1 C.I) in Meheba settlement.
- Of the interviewed households, 20% (16.1-24.6 C.I) of them in Mayukwayukwa and 32.1% (27.3-37.4 C.I) in Meheba reported using only less than 15 liters of water per person per day. Poor access to adequate water risks general hygiene practices at household level and is a precursor for communicable diseases such as watery diarrhoea.
- The proportion of households using an improved extreta disposal facility (improved toilet facility, 1 household) was only 25.3% (20.9-30.2 C.I) in Mayukwayukwa though higher compared to 12.4% (9.3-16.5 C.I) in Meheba settlement.
- Although the proportion of households with children under 3 years of age that dispose of faeces safely was as high as 90.8% (84.8-94.6 C.I) in Mayukwayukwa and 91.6% (87.3-94.5 C.I) in Meheba settlement, these great reported achievements were diluted by the large majority of the households reported using an unimproved toilet (unimproved toilet facility or public toilet) in the two settlements. In Mayukwayukwa 65.3% (60.1-70.2 C.I) and in Meheba 82.4% (77.9-86.2 C.I) of the households reported using an unimproved toilet facility or public toilet.
- There is an urgent need to follow up on water storage containers that meets the hygiene requirements as per the UNHCR WASH strategy. Hygiene promotion need to be intensified followed up by households' toilet constructions.

Mosquito net ownership and utilisation

- Proportion of total households owning at least one mosquito net of any type was generally found low with 53.2% (47.9-58.5 C.I) in Mayukwayukwa being the higher proportions compared to only 23.0% (18.8-27.9 C.I) in Meheba settlement. The proportion of households owning at least one LLIN was also found low, only at 45.6% (40.3-50.9 C.I) in Mayukwayukwa and 18.5% (14.6-23.1 C.I) in Meheba settlements. The UNHCR is to achieve at least >80% coverage of households owning at least one LLIN.
- The proportion of children 0-59 months who slept under an LLIN was reported high at 73.4% (67.4-78.6 C.I) in Mayukwayukwa and low in Meheba at 56.5% (47.5-65.0 C.I), similarly the study found that the proportion of pregnant women who slept under an LLIN was 74.4%(58.0-85.9 C.I) in Mayukwayukwa and 76.2%(52.8-90.1 C.I) in Meheba settlement.
- Since the general ownership of LLIN was low across the settlements the programme should review the malaria prevention strategy, with considerations to raise the coverage of LLIN to attain at least >80% of the households to own at least 1 LLIN for an average of 2 people.

RECOMMENDATIONS

Immediate term

1. Since currently there is no selective feeding programs; implement standard selective feeding programs as per the UNHCR and WFP guideline. The recommended programs include: targeted supplementary feeding programme for the rehabilitation of moderate acute malnutrition children; in-patient therapeutic feeding programme for severe acute malnutrition with medical complications and out-patient therapeutic feeding programme for severe acute malnutrition without medical complications. Implement blanket supplementary feeding programme for pregnant and lactating women attending maternal and child health programme. The selective feeding programme should include chronic ill cases such HIV and Tuberculosis cases.
2. During the identification process of acute malnourished children below 5 years using MUAC it is important that children 6-59 months identified with 13.5 cm (at-risk of acute malnutrition) are referred to the health facilities for further nutrition assessment. MUAC screening can be organised and conducted every month, this will improve feeding programmes coverage and will assist in monitoring the nutritional status of the children.
3. Enhance the maternal and child health nutrition programme whereby the health and nutrition partners should initiate and intensify case findings through screening of children in order to identify, treat and rehabilitate acute malnourished cases. UNHCR should invite WFP to provide supplementary food (fortified food super-cereals) to moderately acute malnourished children, pregnant and lactating women and UNICEF should be invited to provide services to the severe acute malnutrition cases.
4. UNHCR should consider distribution of food assistance to targeted vulnerable refugee households including fortified food; it is also important to prioritise and implement livelihood activities which have direct benefits to the households in order to improve the household food security.
5. Equip the Community Health Workers with MUAC tapes, provide refresher training, and follow up so that their ability to identify acute malnourished children and refer them to the health facilities for enrolment in the appropriate feeding programme is improved.
6. Support current efforts to promote and protect IYCF practices through community awareness on IYCF, mother to mother support groups, and collaborate with other stakeholders implementing IYCF interventions in the country to further support initiation of breast-feeding, exclusive breastfeeding and provision of complementary feeding practices.
7. Use of breastmilk substitute was reported among households; there is an urgent need to further investigate the magnitude and factors that governs the utilization of the breast milk substitutes and bottle feeding. Design mechanisms to support and promote breastfeeding for mothers with lactation problems in the settlements. Adherence to UNHCR BMS strategy is required.
8. UNHCR jointly with the partner implementing health programmes intensify expanded programme for immunization especially against; measles, polio, BCG and other antigens as per MOH guideline. Further support vitamin A supplementation and de-worming programme in children 6-59 months.

9. UNHCR in close collaboration with the partners implementing WASH programmes should promote hygiene practices through awareness campaigns; digging and use of latrine and its and maintenance; promote hand-washing with soap at household level, schools and at communal places, and ensuring adequate of hygiene promoters to meet the demand.

Medium term

1. UNHCR to conduct annual standardised expanded nutrition surveys (SENS) in all refugee settlements in the country so as to monitor and tract the evolution of the nutritional status of refugees.
2. UNHCR to consider expanding the current cash-based intervention transfer to cover most of the vulnerable households; households with malnourished children, pregnant women and lactating women (infants under 6 months), HIV and Tuberculosis and other chronically ill cases.
3. The UNHCR partner should conduct a study on the perception of health and WASH services in order to establish factors governing the health-seeking behavior of the refugees; findings will be used to design the health strategy in the settlements.
4. The prevalence of anaemia remain high in the settlements; UNHCR should prioritise to establish the country level anaemia prevention and reduction strategy targeting children below 5 years; pregnant and lactating women.
5. Promote hygiene practices such as cleaning of household environment, hand washing practices with soap especially at critical moments and improve coverage and maintenance of toilets.
6. Promote the use of narrow necked water containers to prevent water contaminations, examine and distribute adequate water containers to improve water per capita at household level.

Longer term

7. Promote and support proven livelihood activities that will increase asset status of households in to both non-agricultural employment, and into a wider variety of agricultural employment activities.

BACKGROUND

Zambia is among the signatories of the 1951 Convention on the Status of Refugees and its 1967 Protocol. In Zambia, the Refugee Convention is implemented routinely by the governments, Ministries responsible for refugees, and by UNHCR. Zambia hosts about 33,336 Persons of Concerns (to UNHCR) and maintains two refugee settlements, namely; Meheba (21,364) and Mayukwayukwa (11,972). Meheba settlement covers 720 square kilometres and is away from Solwezi town 75 kilometers. The overall average family size in all settlements was around 6.7 (Source: UNHCR ProGres, October 2017).

The health and nutrition status of the refugees in the settlements remains stable; however, the need to update the available information is pertinent. The last standardized expanded nutrition survey was conducted back in 2013. The global acute malnutrition in Mayukwayukwa settlement was 5.8% (3.6-9.0; C.I 95%) and in Meheba was 4.1% (2.4-7.0; C.I 95%). The prevalence of anaemia among children (6-59 months old) were critical at 54.5% (47.1-61.7 C.I) in Mayukwayukwa and 53.7% (46.3-61.0 C.I) in Meheba. The prevalence of anaemia among non-pregnant women at reproductive age (15-49 years) was 31.8% (25.0-39.2 C.I) in Mayukwayukwa and 38.2% (30.9-45.8 C.I) in Meheba. Refugees in the two settlements are expected to work and earn their daily living. General food distribution was phased out in June 2013.

Current nutrition and health interventions in the refugee settlements

The refugee programme in Zambia in partnership with Government's line Ministries, such as the Ministry of Health (MOH), Ministry of Community Development and Social Welfare, Ministry of Agriculture, and Department of Water Affairs supports range of activities including health, cashed-based interventions, agriculture/livestock/fisheries, income generation activities, and water, sanitation and hygiene.. The MOH, with support from UNHCR, provides comprehensive primary health care in the settlements of Mayukwayukw and Meheba. Crude mortality rate have remained at 0.04 deaths per 1000 population per month, under 5 years mortality had remained at 0.2 deaths per 1000 under 5 population. Malaria is among the leading causes of morbidity accounting for 18% of the consultations. A supplementary feeding programme for moderate acute malnutrition in the two settlements using locally available foods is supported but affected by yearly budget cut of UNHCR.

Demography

At the end of June 2017, the UNHCR Pro-Gres report indicated that the settlements were hosting 33,336 populations of refugee and people of concern to UNHCR. The total number of children below 5 years for each settlement was obtained from the October 2017 Pro-Gres report where in Meheba the percent for children is 18.2% and that of Mayukwayukwa is 18.2%. Therefore, the reported total number of children is 3,155 for Meheba and, 2034 for Mayukwayukwa settlements.

Table 4: Total Population, Households, <5 Children and Average Family Size in Meheba and Mayukwayukwa Refugee Settlements - June 2017

Settlement	Population	HHs	U5 Children	Average HH Size	Avg # of U5yrs/HH	% of <5 children
Mayukwayukwa	11,972	3,487	2,178	6.7	1.1	18.2%
Meheba	21,364	6,160	3,888	6.7	1.1	18.2%
Total	33,336	9,647	5,189			

Objectives of the Survey

- a. To determine the prevalence of acute malnutrition in children aged 6 - 59 months.
- b. To determine the prevalence of stunting in children aged 6 - 59 months.
- c. To measure the prevalence of anaemia in children aged 6 - 59 months and in non-pregnant women at reproductive age, 15 - 49 years.
- d. To investigate infant and young child feeding practices among children aged 0-23 months.
- e. To determine the coverage of measles vaccination among children aged 9 - 59 months.
- f. To determine the coverage of vitamin A supplementation in the last 6 months to children aged 6-59 months.
- g. To assess the two-week period prevalence of diarrhoea to children aged 6-59 months
- h. To determine the extent to which negative coping strategies are used by households.
- i. To assess household dietary diversity.
- j. To determine the ownership of mosquito nets (all types and LLINs) in households.
- k. To determine the coverage and utilisation of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
- l. To determine the population's access to, and use of, improved WASH facilities.
- m. To assess the proportion of households using an adequate quantity of water per person per day.
- n. To provide recommendations for appropriate formulations of response interventions.

Secondary Objectives:

- a. To determine enrolment into Antenatal Care clinic and coverage of iron-folic acid supplementation in pregnant women.

Methodology

In both settlements, this cross-sectional survey was conducted using simple random sampling. Following the completion of the verification / registration exercise where the Pro-Gres demographic data and the release of the household lists in each settlement, houses to be sampled were pre-identified in each block. To reduce non-response rate and ensure results were representative of people actually living in the settlements at the time of the survey, unoccupied houses², as verified through neighbors and refugee administration structure were not included in the sampling frame. The population numbers used for sample size calculation was based from the final Pro-Gres report of the registration / verification exercises completed in October 2017.

The definition of the household used in the recent registration / verification exercise in Zambia was as follows (definition of household in ProGres): A household denotes a group of people living as one family. This group eat and sleep in one house or closely related quarters, may or may not be related by blood but access protection and other durable solutions through one assigned number (household number) and have one person all regard as the head of the household. The classic definition of the household usually used in nutrition surveys is as follows: a group of people who live together and routinely eat out of same pot. For the present SENS surveys in Zambia, it was concluded that the definition of the household used during the counting exercise and the classic definition used in nutrition surveys match. This means that the demographic data derived from the counting exercise was used in the sample size calculation as such and the required number of

² An unoccupied house will be considered an abandoned house; this will be excluded from the nutrition survey if no one was present in that house for the last one month.

children was derived with minimal risk of over- or under- sampling children.

Sample Size

The Standardized Monitoring and Assessment of Relief and Transitions (ENAs for SMART) software was used to estimate the sample size while adhering to the UNHCR SENS methodology version 2 (2013) procedures. In both settlements, the sample size was calculated based on the “acceptable”, 5% prevalence of acute malnutrition as per WHO classification of public health significance for children under 5 years. It was agreed that the highest GAM prevalence rate of the 2013 nutrition survey conducted in the two settlements was too old to be used. The total population, total households, total under 5 years children, average family sizes and the percentage of the children under 5 years were estimated based on the October 2017 UNHCR Pro-Gres data. The sample size was increased by 10% in order to account for the non-response.

Table 5: Sample Size Calculation: Anthropometry for Meheba and Mayukwayukwa Settlements

	Meheba	Mayukwayukwa
Estimated prevalence (%) (SENS Dec 2013)	5.0	5.0
± Desired precision (%) (UNHCR SENS guidelines)	2.5	2.5
Design effect		
Average household size (Pro-Gres 2017)	6.7	6.7
U5 population (%)	18.2%	18.2%
Non-response households (%)	10	10
Total settlement population (Pro-Gres 2017)	21,364	11,972
Children to be included	292	292
Households to be included for Anthropometry and Health module (ENA for SMART)	296	296

In this survey therefore, the total number of households to be visited during the data collection for the anthropometric household sample sizes was 296 in Meheba and 296 in Mayukwayukwa settlements. A sub sample of women will be assessed for anaemia in all settlements.

Table 6: Calculated Sample Size for All Modules

	Meheba			Mayukwayukwa		
Modules	Planned	Actual sampled	Percents achieved	Planned	Actual sampled	Percents achieved
Expected number of children for anthropometry, Anaemia and Health module (6-59 months)	292	395	135%	292	243	83.2%
Households to be included for Food Security	296	330	111%	296	340	114.8%
Households to be included for WASH module	296	330	111%	296	340	114.8%
Household to be included for mosquito net coverage	296	330	111%	296	340	114.8%

Nb: It was during the trainings of the survey teams in both settlements to sample all households for all modules included in the assessment.

Sampling procedure: Selecting households and sample subjects

Using the most recent list generated from the physical counting and confirmed houses in the settlements, a sampling interval for each camp was determined by dividing the total number of verified and confirmed households by the calculated sample. On average, each team sampled 12 to 14 households per day during the survey period. If an individual or an entire household was absent, the teams returned to the household or revisited the absent individual once on the same survey day.

When were unsuccessful, the individual or the household was recorded as absent and not replaced.

When an individual or entire household refused to participate was considered a refusal, their decision was respected and the individual or the entire household was not replaced. When a selected child was disabled with a physical deformity preventing certain anthropometric measurements, the child was included in the assessment of other indicators. When it was determined that a selected household did not have any eligible children, the other questionnaires from other modules were still administered to the household and any eligible women in the household.

Questionnaire, Training and Supervision

Questionnaires

The complete questionnaires are annexed at appendix 1; the UNHCR SENS questionnaires from the website in English, Kinyarwanda and Congo Swahili versions were used. All questionnaires were pre-tested prior to the start of the actual survey. The UNHCR SENS six module questionnaires covered the following thematic areas and the following measurements:

Module 1: Children 6-59 months:

This included questions and measures on children aged 6-59 months. Individual measurements and information were collected on children anthropometric status, oedema, immunisation (measles), and vitamin A supplementation in last six months and episodes of diarrhoea in the last 2 weeks before the survey.

Module 2: Anaemia: Children 6-59 months and women at reproductive age (15-49 years)

All children assessed for anthropometric measurements had their haemoglobin levels measured. For women at reproductive age (15 – 49 years): Information about their pregnancy status, attendance to antenatal care and coverage of iron-folic acid pills, was assessed and haemoglobin measurement for non-pregnant women were assessed.

Module 3: Infant and Young Child Feeding

This module included questions on infant and young child feeding practices for children aged 0 - 23 months. The SENS module on IYCF was used which is in line with the WHO safe and appropriate infant and young child feeding, by protecting, promoting and supporting exclusive breastfeeding for the first six months of life and continued breastfeeding for two years or beyond, with timely and correct use of adequate complementary foods.

Module 4: Food Security

This module included questions on food consumptions from various food sources and negative coping mechanisms used by household members and household dietary diversity.

Module 5: Mosquito net coverage

This module was assessed and the focus was on the ownership of mosquito nets, determination of the utilisation rate of mosquito nets. The set of questions in this module were asked at the household level.

Module 6: WASH

This module looked into water, sanitation and hygiene. Questions were framed to understand the coverage of improved and unimproved drinking water sources and improved and unimproved

excreta disposal. Upon analysis the core quantitative indicators for monitoring WASH programmes at the household level were presented.

Measurement Methods

Household-Level Indicators

Food security: The standard questionnaire from the UNHCR's Standardised Expanded Nutrition Survey Guidelines for Refugee Populations Version 2 (2013) was used.

Water, sanitation and hygiene: The questionnaire used was obtained from the UNHCR's Standardised Expanded Nutrition Survey Guidelines for Refugee Populations Version 2 (2013).

Mosquito net coverage: The questionnaire used was from UNHCR's Standardised Expanded Nutrition Survey Guidelines for Refugee Populations Version 2 (2013).

Individual-Level Indicators

Sex of children

Gender was recorded as male or female.

Birth date or age in months for children 0-59 months;

The exact date of birth (day, month, and year) was recorded from either child health card or birth notification if was available. If no reliable proof of age was available, age was estimated in months using a local event calendar or by comparing the selected child with a sibling whose age was known, and recorded in months on the questionnaire. If the child's age was not absolutely determined by using a local events calendar or by probing, the child's length/height was used as criteria to include the child in the study; children measured between 65 cm and 110 cm had their measurement assessed. Other documents were not used to determine the age of the children including the UNHCR manifest owing to the fact that they do not reflect the correct birthdate.

Age of women 15-49 years

Reported age was recorded in years.

Weight of children 6-59 months:

Measurements were taken to the closest 100 grams using an electronic scale (SECA scale). Children were weighed nude and only very light underwear were allowed. In some instances, weight was taken inside the houses where the floor was much more levelled and allowed for privacy. The mother-baby option of weighing the young children was applied when young children were unable to stand on their own and unable to follow the instructions.

Height/Length of children 6-59 months

Children's height or length were measured to the closest millimetre using a wooden height board (Shorr Productions). In situations where documents showing the age of the child were not available, height was used to include the child in the survey. Children less than 87cm were measured lying down, while those greater than or equal to 87cm were measured standing up.

Oedema in children 6-59 months

Bilateral oedema in children was assessed by applying gentle thumb pressure on to the tops of both feet of the child for an estimated period of three seconds and thereafter observing for the presence

or absence of an indent. All oedema cases reported by the survey teams were verified by the survey supervisors and were referred immediately to the nearest health facility for further management.

Measles vaccination in children 6-59 months

Measles vaccination was assessed by checking for the measles vaccine on the EPI card if available; where EPI cards were not available caregivers were asked to recall if the child had previously received measles shot. All children aged 6-59 months were assessed for measles and its analysis was limited on children aged 9-59 months.

Vitamin A supplementation in last 6 months in children 6-59 months.

This was assessed and recorded from the EPI card where the card was available. In a situation where the card was not available caregivers were subjected into a recall interview. In the process a vitamin A capsule image was shown by the team to the caregivers to assist with recall.

Haemoglobin concentration in children 6-59 months and women 15-49 years

Hb concentration was taken from a fingertip through a capillary blood sample and recorded to the closest gram per decilitre by using the portable HemoCue Hb 301 Analyser. Children found with < 7.0 Hb and women found with < 8.0 Hb reading were referred to the nearest health facility for further managements as such cases are considered suffering from severe anaemia.

Diarrhoea in last 2 weeks in children 6-59 months

For the purposes of this study an episode of diarrhoea was defined as three loose stools or more in 24 hours. Caregivers were asked if their child had suffered episodes of diarrhoea in the past two weeks.

ANC enrolment, iron and folic acid pills coverage

Pregnant women found during the survey were assessed whether were enrolled in the ANC programme and were asked if had received iron-folic acid pills. To assist respondents to remember and respond appropriately, an iron-folic acid pill image were shown to them when asked to recall.

Infant and young child feeding practices in children 0-23 months

Infant and young child feeding practices were assessed based on UNHCR Standardised Expanded Nutrition Survey Guidelines for Refugee Populations (2013).

Referrals

Children aged 6-59 months were referred to the nearest health facilities when MUAC was < 12.5 cm, when WHZ was < -2 z-score and when had oedema, or when haemoglobin was < 7.0 g/dl. Women of reproductive age were also referred to the nearest health facility when haemoglobin was < 8.0 g/dl.

Malnutrition in children 6-59 months

Acute malnutrition is defined using WFH index values or the presence of oedema and classified as show in the table below. Main results are reported after analysis using the WHO 2006 Growth Standards.

Table 7: Definitions of Acute Malnutrition Using Weight-For-Height And/Or Oedema In Children 6–59 Months

Categories of acute malnutrition	Z-scores (NCHS Growth Reference 1977 and WHO Growth Standards 2006)	Bilateral Oedema
Global acute malnutrition	< -2 z-scores	Yes/No
Moderate acute malnutrition	< -2 z-scores and \geq -3 z-scores	No
Severe acute malnutrition	> -3 z-scores	Yes
	< -3 z-scores	Yes/No

Stunting, also known as chronic malnutrition is defined using height-for-age index values and is classified as severe or moderate based on the cut-offs shown below. Main results are reported according to the WHO Growth Standards 2006.

Table 8: Definitions of Stunting Using Height-For-Age In Children 6–59 Months

Categories of stunting	Z-scores (WHO Growth Standards 2006 and NCHS Growth Reference 1977)
Stunting	<-2 z-scores
Moderate stunting	<-2 z-score and \geq -3 z-score
Severe stunting	<-3 z-scores

Underweight is defined using the weight-for-age index values and was classified as severe or moderate based on the following cut-offs. Main results are reported according to the WHO Growth Standards 2006

Table 9: Definitions Of Underweight Using Weight-For-Age In Children 6–59 Months

Categories of underweight	Z-scores (WHO Growth Standards 2006 and NCHS Growth Reference 1977)
Underweight	<-2 z-scores
Moderate underweight	<-2 z-scores and \geq -3 z-scores
Severe underweight	<-3 z-scores

Mid Upper Arm Circumference (MUAC) values is used to define malnutrition according to the following cut-offs in children 6-59 months:

Table 10: Low MUAC Values Cut-Offs In Children 6-59 Months

Categories of low MUAC values
<12.5 cm
\geq 11.5 cm and <12.5 cm
< 11.5 cm

Infant and young child feeding practices in children 0-23 months

Infant and young child feeding practices were assessed as follows based on the UNHCR SENS IYCF module (Version 2 (2013)) that are based on WHO recommendations (WHO, 2007 as follows:

Timely initiation of breastfeeding in children aged 0-23 months

Proportion of children 0-23 months who were put to the breast within one hour of birth

$$= \frac{\text{Children 0 – 23 months who were put to the breast within one hour of birth}}{\text{Children 0 – 23 months of age}}$$

Exclusive breastfeeding under 6 months

Proportion of infants 0–5 months of age who are fed exclusively with breast milk: (including expressed breast milk or from a wet nurse, ORS, drops or syrups (vitamins, breastfeeding minerals, medicines)

$$= \frac{\text{Infants 0– 5 months of age who received only breast milk during the previous day}}{\text{Infants 0– 5 months of age}}$$

Continued breastfeeding at 1 year

Proportion of children 12–15 months of age who are fed breast milk

$$= \frac{\text{Children 12– 15 months of age who received breast milk during the previous day}}{\text{Children 12– 15 months of age}}$$

Introduction of solid, semi-solid or soft foods

Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods

$$= \frac{\text{Infants 6– 8 months of age who received solid, semi – solid or soft foods during the previous day}}{\text{Infants 6– 8 months of age}}$$

Children ever breastfed

Proportion of children born in the last 24 months who were ever breastfed

$$= \frac{\text{Children born in the last 24 months who were ever breastfed}}{\text{Children born in the last 24 months}}$$

Continued breastfeeding at 2 years

Proportion of children 20–23 months of age who are fed breast milk

$$= \frac{\text{Children 20– 23 months of age who received breast milk during the previous day}}{\text{Children 20– 23 months of age}}$$

Consumption of iron rich or iron fortified foods in children aged 6-23 months

Proportion of children 6–23 months of age who receive an iron-rich or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home.

$$= \frac{\text{Children 6– 23 months of age who received an iron – rich food or a food that was specially designed for infants and young children and was fortified with iron, or a food that was fortified in the home with a product that included iron during the previous day}}{\text{Children 6– 23 months of age}}$$

Bottle feeding

Proportion of children 0-23 months of age who are fed with a bottle

$$= \frac{\text{Children 0– 23 months of age who were fed with a bottle during the previous day}}{\text{Children 0– 23 months of age}}$$

Anaemia in children 6-59 months and women of reproductive age

Anaemia is classified according to the following cut-offs in children 6-59 months and non-pregnant women of reproductive age. Anaemia cut-offs for pregnant women should be adjusted depending on the stage of pregnancy (gestational age). Pregnant women are not included in routine UNHCR nutrition surveys for the assessment of anaemia due sample size issues (usually a small number of pregnant women is found) as well as the difficulties in assessing gestational age in pregnant women.

Table 11: Definition of Anaemia (WHO 2000)

Age/Sex groups	Categories of Anaemia (Hb g/dL)			
	Total	Mild	Moderate	Severe
Children 6 - 59 months	<11.0	10.9 - 10.0	9.9 - 7.0	< 7.0
Non-pregnant adult females 15-49 years	<12.0	11.9 - 11.0	10.9 - 8.0	< 8.0

Classification of public health problems and targets

Anthropometric data

UNHCR's target for the prevalence of global acute malnutrition (GAM) for children 6-59 months of age by camp, country and region is < 10% and the target for the prevalence of severe acute malnutrition (SAM) is <2%. The table below shows the classification of public health significance of the anthropometric results for children under-5 years of age according to WHO.

Table 12: Classification of Public Health Significance for Children Under 5 Years of Age

Prevalence %	Critical	Serious	Poor	Acceptable
Low weight-for-height	≥20	15-19	10-14	<10
Low height-for-age	≥40	30-39	20-29	<20
Low weight-for-age	≥30	20-29	10-19	<10

Measles vaccination coverage

UNHCR recommends target coverage of 95% for measles as recommended by Sphere Standards.

Vitamin A Supplementation Coverage in Children

UNHCR Strategic Plan for Nutrition and Food Security (2008-2012) states that the target for vitamin A supplementation coverage for children aged 6-59 months by camp, country and region should be >90%.

Anaemia data

UNHCR Strategic Plan for Nutrition and Food Security (2008-2010) states that the targets for the prevalence of anaemia in children 6-59 months of age and in women 15-49 years of age should be low i.e. <20%. The severity of the public health situation should be classified according to WHO criteria as shown in the table below.

Table 13: Classification of Public Health Significance (WHO 2000)

Prevalence %	High	Medium	Low
Anaemia	≥40	20-39	5-19

Survey Teams, Training and Supervisions

The survey was coordinated from the outset of planning to finalization by the UNHCR nutrition survey coordinator in the two settlements, Mayukwayukwa and Meheba with full participation of staff from the MCDMCH in each settlement. The technical staff supervised and monitored the entire process and offered technical support to the teams where ever it was required. Training was organized and coordinated by UNHCR and MCHN in each settlement.

The training session's lasted for five days covering the objectives of the nutrition survey; anthropometrical measurements: height/length, weight and MUAC techniques and precautions on taking measurements; age assessment: use of local calendar and how to use local calendar to assist mother to recall the age of their children; assessment of health status of the child (illness), immunization, IYCF and mortality data; hemoglobin measurement, use of a blood analyzer machine (HemoCue); standardization exercise for anthropometric and hemoglobin measurements; assessment for food security, mosquito nets and WASH; data collection and interview techniques, procedures and data recording procedure in the smartphones, verification of recorded information and precautions ethical considerations of assessment and sampling procedures.

A total of 64 enumerators and supervisors participated in the data collection in the 02 assessed settlements. Each settlement had its team of 30 enumerators and 2 supervisors. Each team had 1 team leader, who was also responsible for recording measurements, 2 assistants measured height and weights, 1 laboratory technician or medical staff was responsible for haemoglobin measurements and 1 member of the team was responsible for asking questions at household level (WASH, Food security, and Mosquito nets). The translator(s), community health worker served as community mobilisers for each village or block. In addition, joint supervision and coordination were done daily by UNHCR and MCDMCH.

Data Analysis

The UNHCR SENS questionnaires were programmed and were uploaded in the smartphones with an Android platform compatible with the Open Data Kit which were used to capture the data during the surveys. On a daily basis data from the phones were transferred through a secure network to a UNHCR server. Active mobile network connection was required to collect and save data. Data checks and skip patterns were built in the smartphones that allowed quality data collections. In the absence of cards, teams discussed with the mother to determine the age of the child using a calendar of local events. Anthropometric data for children 6-59 months were later uploaded in excel, transferred to ENA for SMART software version July 9th, 2015 cleaned, converted into z-scores and analysed. Later, all data was aggregated into EPIINFO, cleaned and analysed for the rest of the modules. Plausibility Reports were generated for each settlement in order to check the quality of the anthropometric data. A summary of the key quality criteria was annexed to the report.

Ethical Consideration and Community Consent

During community mobilisation the population and the community leaders were informed of the different procedures during the survey. Due to the comprehensive nature of the survey and taking of peripheral blood, consent was sought prior start of interviews from the parents of the child or adults. All concerned population members were informed about the reason for taking blood and measurement of haemoglobin. The team informed the HHs members that their children would not

be at risk of harm while being measured and the information were kept confidentially. The participants/ HHs were informed that they could withdraw from the assessment at any time from the very beginning without giving reason.

LIMITATIONS

- a. **Survey Expectations:** Some heads of households or respondents did not consent for some modules to be assessed to their family members i.e. on hemoglobin measurements. Religious reasons were mentioned. Households were assured that the shared information would be kept with confidentiality and would remain only with the survey teams.
- b. **Recall bias:** This is an important consideration in any assessment involving recall questions for example; one month's and seven days recall period on food security related questions.
- c. **The infant and young child feeding (IYCF)** module resulted with smaller number of children or infants (sub-sample) that were included in the analysis. Indicators such as "introduction of complementary food at age 6-8 months", and "continued breastfeeding at 1 year" and the "continued breastfeeding at 2 years" indicators, the number of children were small hence findings may have been skewed, hence should be interpreted with cautiously.
- d. **Cross sectional nature of the study:** the scope of this study limited itself in establishing prevalence levels of various indicators and not establish the causal factors. For example, the longitudinal studies would be important for the IYCF to track IYCF practices from birth to 24 months of the child this would make possible to link practices, care and child growth patterns.

RESULTS

Demographic Information

The demographic information indicates that survey teams surpassed the planned number of households to be samples by 15% for Mayukwayukwa and 11% for Meheba settlement. The total number of population surveyed was 708 in Mayukwayukwa and 363 in Meheba. The survey teams were able to reach 243 in Mayukwayukwa and 395 in Meheba children aged 6-59 months, this was equivalent to 83.1% and 135% of the planned figures. The possible reasons for these variations could be the much more spartial geographical distribution of households and probably the due to the farming season some household members were not available during the survey this was more apparent in Mayukwayukwa settlement while in Meheba the possible explanation could be the population waited for the survey teams following the mass campaign which was conducted informing about the nutrition survey, families waited for the survey teams before going to the farms.

Table 14: Demographic Characteristics of the Study Population, Zambia, November 2017

Host Community	Total HHs planned	Total House hold Surveyed	% of HHs surveyed	Total Under 5 planned	Total Under 5 Surveyed	% of U5
Mayukwayukwa	296	340	115%	292	243	83.1%
Meheba	296	330	111%	292	395	135%

Results: Mayukwayukwa Settlement

Anthropometric results (based on WHO Growth Standards 2006)

The coverage of age documentation was 100% (children having an exact birth date). All children had their birthcards and age was documented; stunting and underweight are reliably estimated.

Table 15: Distribution of age and sex - Mayukwayukwa Settlement, Zambia, November 2017

	Boys		Girls		Total		Ratio
AGE (mo)	No.	%	No.	%	No.	%	Boy:Girl
6-17	31	55.4	25	44.6	56	23.0	1.2
18-29	35	56.5	27	43.5	62	25.5	1.3
30-41	29	50.9	28	49.1	57	23.5	1.0
42-53	27	67.5	13	32.5	40	16.5	2.1
54-59	14	50.0	14	50.0	28	11.5	1.0
Total	136	56.0	107	44.0	243	100.0	1.2

Table 16: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex- Mayukwayukwa Settlement, Zambia, November 2017

	All n = 241	Boys n = 136	Girls n = 105
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(15) 6.2 % (3.8 - 10.0 95% C.I.)	(12) 8.8 % (5.1 - 14.8 95% C.I.)	(3) 2.9 % (1.0 - 8.1 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(13) 5.4 % (3.2 - 9.0 95% C.I.)	(10) 7.4 % (4.0 - 13.0 95% C.I.)	(3) 2.9 % (1.0 - 8.1 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(2) 0.8 % (0.2 - 3.0 95% C.I.)	(2) 1.5 % (0.4 - 5.2 95% C.I.)	(0) 0.0 % (0.0 - 3.5 95% C.I.)

The prevalence of oedema is 0.4 %. Overall boys were more likely to be malnourished

Table 17: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema- Mayukwayukwa Settlement, Zambia, November 2017

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	56	1	1.8	2	3.6	52	92.9	1	1.8
18-29	62	0	0.0	2	3.2	60	96.8	0	0.0
30-41	56	0	0.0	5	8.9	51	91.1	0	0.0
42-53	39	0	0.0	2	5.1	37	94.9	0	0.0
54-59	28	0	0.0	2	7.1	26	92.9	0	0.0
Total	241	1	0.4	13	5.4	226	93.8	1	0.4

Children aged 30-41 months (8.9%) followed by 54-59 months (7.1%) were more likely to be moderate acute malnourished compared to the other age groups.

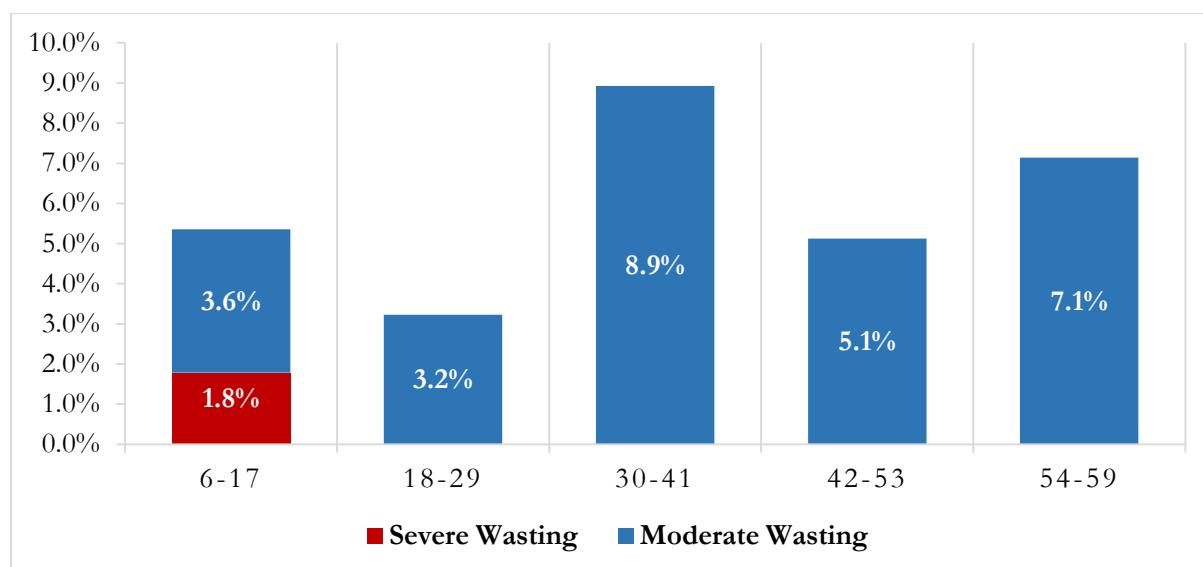


Figure 1: Trends in the Prevalence of Wasting By Age in Children 6-59 Months, Mayukwayukwa Settlement, Zambia, November 2017

Table 18: Distribution of Severe Acute Malnutrition and Oedema Based on Weight-For-Height Z-Scores- Mayukwayukwa Settlement, Zambia, November 2017

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 1 (0.4 %)
Oedema absent	Marasmic No. 1 (0.4 %)	Not severely malnourished No. 239 (99.2 %)

There was one case of oedema detected during the assessment in Mayukwayukwa settlement.

Figure 2: Distribution of Weight-For-Height Z-Scores (Based on WHO Growth Standards; the Reference Population is Shown in Green) Of Survey Population Compared to Reference Population Mayukwayukwa Settlement, Zambia, November 2017

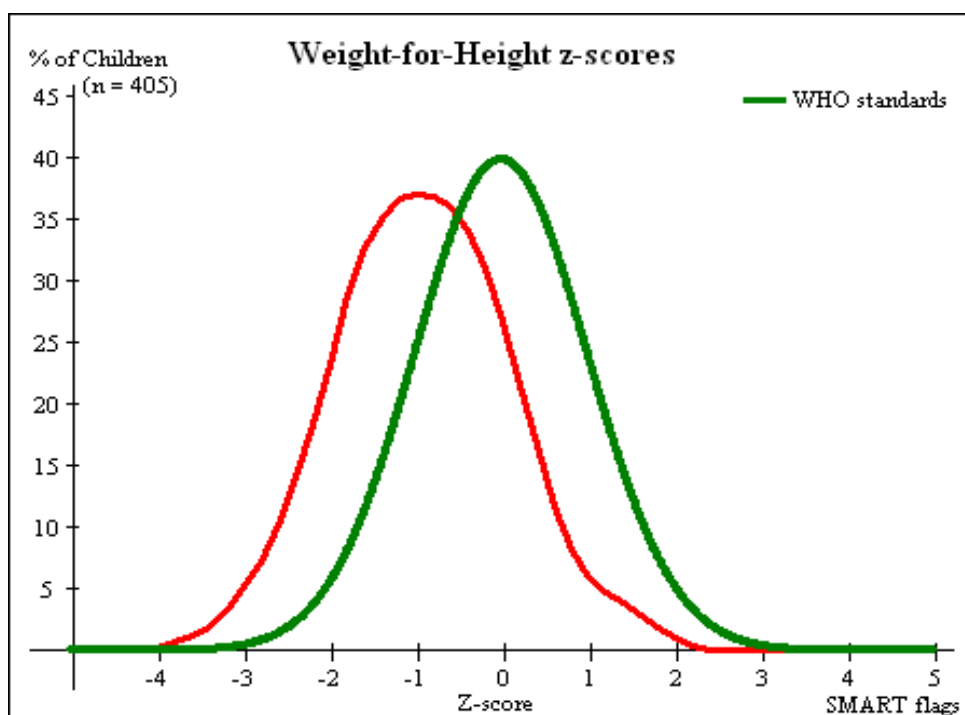


Table 19: Prevalence of Stunting Based on Height-For-Age Z-Scores and By Sex- Mayukwayukwa Settlement, Zambia, November 2017

	All n = 239	Boys n = 133	Girls n = 106
Prevalence of stunting (<-2 z-score)	(85) 35.6 % (29.8 - 41.8 95% C.I.)	(51) 38.3 % (30.5 - 46.8 95% C.I.)	(34) 32.1 % (24.0 - 41.5 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(72) 30.1 % (24.7 - 36.2 95% C.I.)	(45) 33.8 % (26.3 - 42.2 95% C.I.)	(27) 25.5 % (18.1 - 34.5 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(13) 5.4 % (3.2 - 9.1 95% C.I.)	(6) 4.5 % (2.1 - 9.5 95% C.I.)	(7) 6.6 % (3.2 - 13.0 95% C.I.)

Table 20: Prevalence of Stunting by Age Based on Height-For-Age Z-Scores- Mayukwayukwa Settlement, Zambia, November 2017

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	55	1	1.8	16	29.1	38	69.1
18-29	59	7	11.9	21	35.6	31	52.5
30-41	57	2	3.5	19	33.3	36	63.2
42-53	40	3	7.5	11	27.5	26	65.0
54-59	28	0	0.0	5	17.9	23	82.1
Total	239	13	5.4	72	30.1	154	64.4

Children aged 18-29 months (47.5%) were more likely to be stunted than another age group in Mayukwayukwa settlement.

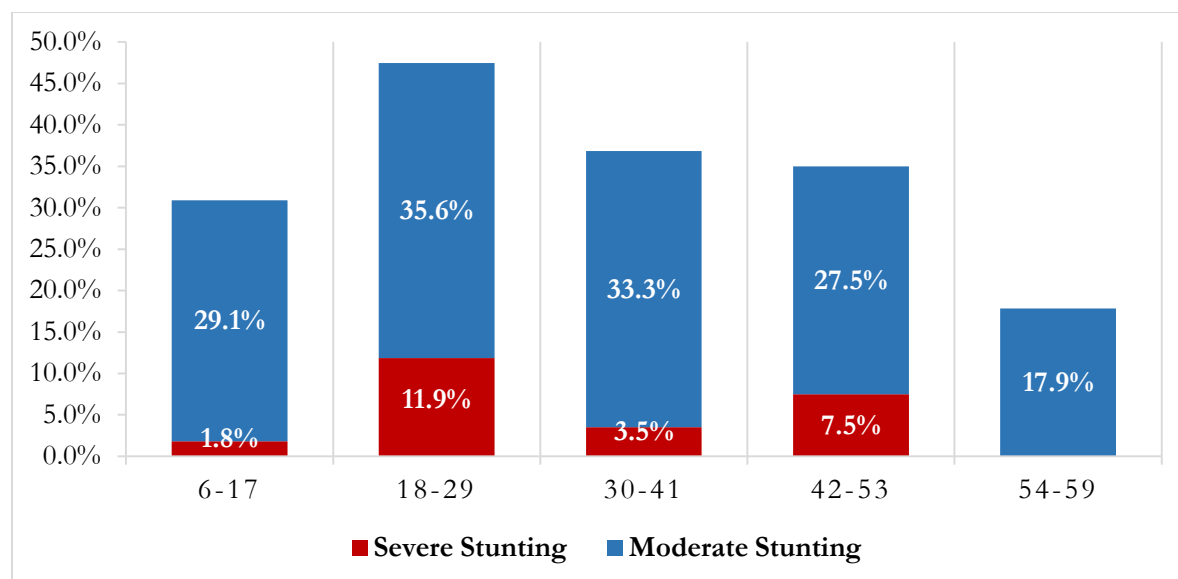


Figure 3: Trends in the prevalence of Stunting by age in children 6-59 months, Mayukwayukwa Settlement, Zambia, November 2017

Table 21: Prevalence of Underweight Based on Weight-For-Age Z-Scores by Sex- Mayukwayukwa Settlement, Zambia, November 2017

	All n = 239	Boys n = 133	Girls n = 106
Prevalence of underweight (<-2 z-score)	(32) 13.4 % (9.6 - 18.3 95% C.I.)	(20) 15.0 % (10.0 - 22.1 95% C.I.)	(12) 11.3 % (6.6 - 18.8 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(29) 12.1 % (8.6 - 16.9 95% C.I.)	(18) 13.5 % (8.7 - 20.4 95% C.I.)	(11) 10.4 % (5.9 - 17.6 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(3) 1.3 % (0.4 - 3.6 95% C.I.)	(2) 1.5 % (0.4 - 5.3 95% C.I.)	(1) 0.9 % (0.2 - 5.2 95% C.I.)

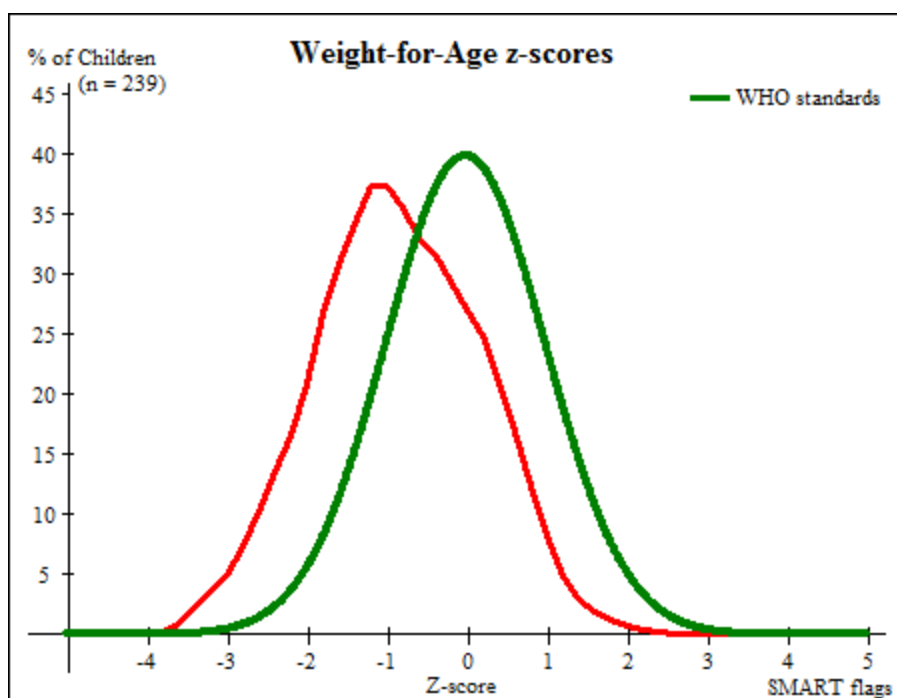


Figure 4: Distribution of Weight-For-Age Z-Scores (Based on WHO Growth Standards; the Reference Population is Shown in Green) of Survey Population Compared to Reference Population - Mayukwayukwa Settlement, Zambia, November 2017

Table 22: Mean Z-Scores, Design Effects and Excluded Subjects - Mayukwayukwa Settlement, Zambia, November 2017

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	240	-0.17 \pm 1.00	1.00	1	2
Weight-for-Age	239	-0.86 \pm 1.00	1.00	1	3
Height-for-Age	239	-1.38 \pm 1.24	1.00	0	4

* contains for WHZ and WAZ the children with edema.

Anaemia Results

Table 23: Prevalence of Anaemia and Haemoglobin Concentration in Children 6-59 Months of Age - Mayukwayukwa Settlement, Zambia, November 2017

Anaemia – Children 6-59 months		n = 243
Total Anaemia (Hb<11.0 g/dL)	(103) 42.4%(36.3-48.7)	
Mild Anaemia (Hb 10.0-10.9 g/dL)	(56) 23.0%(18.1-28.8)	
Moderate Anaemia (7.0-9.9 g/dL)	(42) 17.3%(13.0-22.6)	
Severe Anaemia (<7.0 g/dL)	(5) 2.1%(0.9-4.9)	
Mean Hb (g/dL)	11.3 g/dL (2.2SD) [5.5 min,20.0 max]	

Table 24: Prevalence of Anaemia by age- Mayukwayukwa Settlement, Zambia, November 2017

	6-59 Months (n=243)	6-23 Months (n=86)	24-59 Months (n=157)
Total Anaemia (Hb <11 g/dl)	(103) 42.4%(36.3-48.7)	(44) 51.2%(40.5-61.7)	(59) 37.6%(30.3-45.5)
Mild (Hb 10-10.9)	(56) 23.0%(18.1-28.8)	(21) 24.4%(16.4-34.8)	(35) 22.3%(16.4-29.6)
Moderate (Hb 7-9.9)	(42) 17.3%(13.0-22.6)	(19) 22.1%(14.4-32.3)	(23) 14.6%(9.9-21.2)
Severe (Hb <7)	(5) 2.1%(0.9-4.9)	(4) 4.7%(1.7-12.0)	(1) 0.6%(0.1-4.5)
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(47) 19.3%(14.8-24.8)	(23) 26.7%(18.4-37.2)	(24) 15.3%(10.4-21.8)

Programme Coverage

Vaccination and Vitamin A Supplementation Coverage Results

Measles Vaccination Coverage

Table 25: Measles Vaccination Coverage for Children Aged 9-59 Months - Mayukwayukwa Settlement, Zambia, November 2017

	Measles (with card) n=112	Measles (with card <u>or</u> confirmation from mother) n=209
YES	48.5%(42.1-54.9)	90.5%(85.9-93.7)

Vitamin A Supplementation Coverage

Table 26: Vitamin A Supplementation for Children Aged 6-59 Months Within Past 6 Months- Mayukwayukwa Settlement, Zambia, November 2017

	Vitamin A capsule (with card) n=120	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=223
YES	49.4%(43.1-55.7)	91.8%(87.6-94.6)

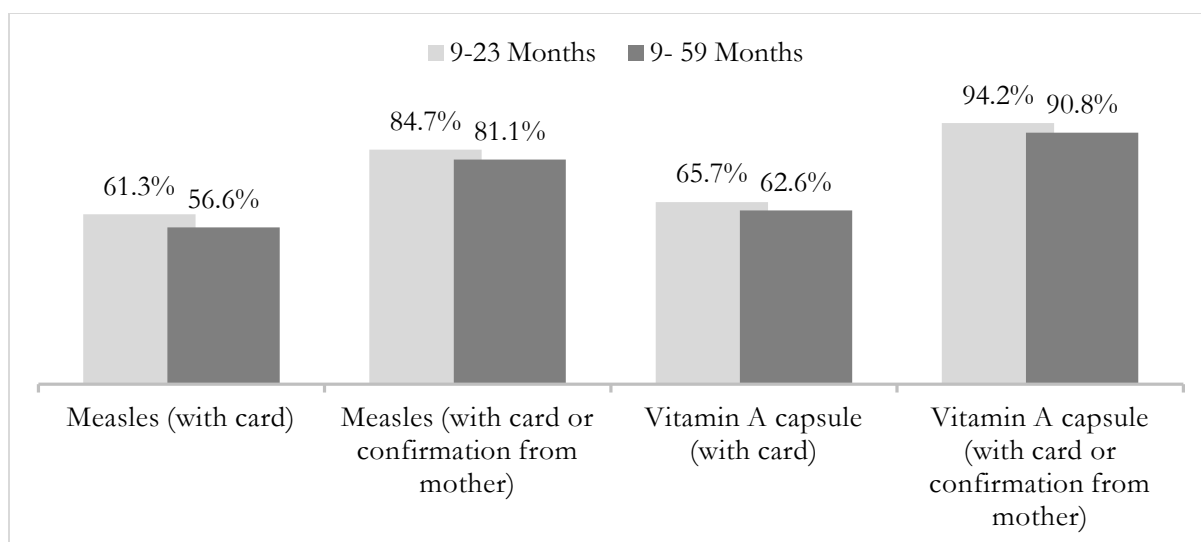


Figure 5: Measles Vaccination Coverage and Vitamin A Supplementation Coverage; Mayukwayukwa Settlement, Zambia, November 2017

Table 27: Prevalence of Diarrhoea in Children 6-59 Months Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Diarrhoea last two weeks (6-59 months)	58/243	23.9%(18.9-29.7)

Children 0-23 Months- Mayukwayukwa Settlement, Zambia, November 2017

Table 28: Prevalence of Infant and Young Child Feeding Practices Indicators- Mayukwayukwa Settlement, , Zambia, November 2017

Indicator	Age Range	Number/ Total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	75/104	72.1%	(62.7-79.9)
Exclusive breastfeeding under 6 months	0-5 months	21/34	61.8%	(44.2-76.7)
Continued breastfeeding at 1 year	12-15 months	14/16	87.5%	(59.0-97.1)
Continued breastfeeding at 2 years	20-23 months	6/13	46.2%	(20.7-73.7)
Introduction of solid, semi-solid or soft foods	6-8 months	5/9	55.6%	(22.7-84.2)
Children bottle fed	0-23 months	28/112	25.0%	(17.8-33.9)
Consumption of iron rich or iron fortified foods	6-23 months	56/78	71.8%	(60.7-80.7)

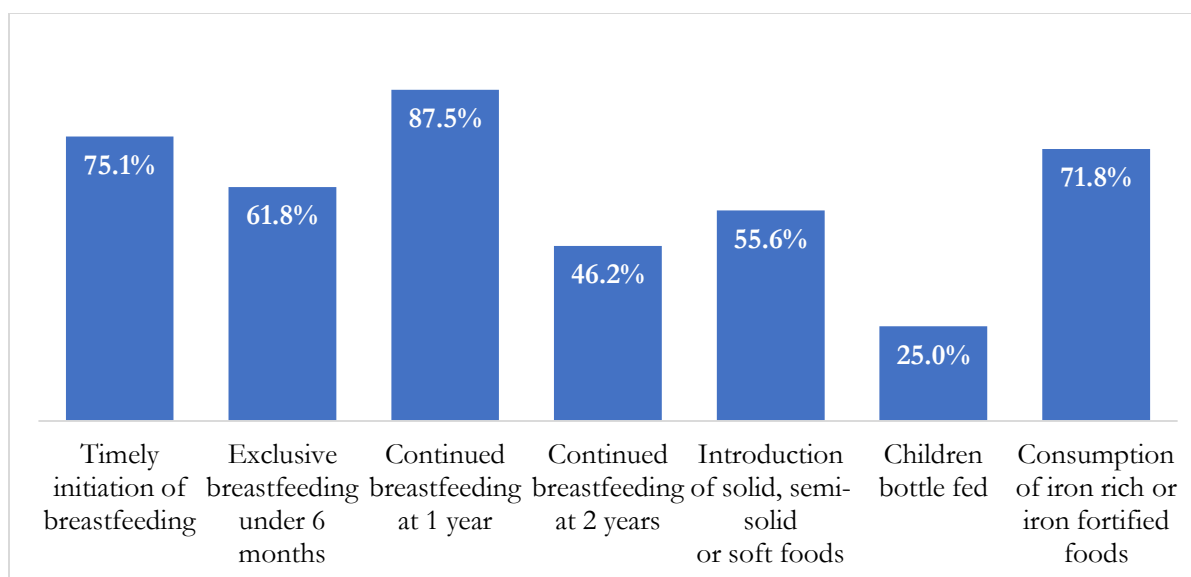


Figure 6: Prevalence of Key Infant and Young Child Feeding Practices in Mayukwayukwa Settlement, Zambia, November 2017

Prevalence of Intake Infant Formula

Table 29: Infant Formula Intake in Children Aged 0-23 Months, Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	39/112	34.8%(26.5-44.2)

Fortified Blended Foods

Table 30: CSB+ Intake in Children Aged 6-23 Months, Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB	21/78	26.9%(18.2-37.9)

Table 31: CSB++ Intake in Children Aged 6-23 Months, Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	18/78	23.1%(15.0-33.8)

Women 15-49 Years - Mayukwayukwa Settlement, Zambia, November 2017

Table 32: Women Physiological Status and Age - Mayukwayukwa Settlement, Zambia, November 2017

Physiological Status	Number/Total	%
Non-Pregnant	354/388	91.2%
Pregnant	34/388	8.8%
Mean Age (Range)	28.3 years (15-49)	

Table 33: Prevalence of Anaemia And Haemoglobin Concentration in Non-Pregnant Women of Reproductive Age (15-49 Years) - Mayukwayukwa Settlement, Zambia, November 2017

Anaemia – Non-pregnant women of reproductive age 15-49 years	All n = 354
Total Anaemia (<12.0 g/dL)	(103) 29.1%(24.6-34.1)
Mild Anaemia (11.0-11.9 g/dL)	(59) 16.7%(13.1-20.9)
Moderate Anaemia (8.0-10.9 g/dL)	(41) 11.6%(8.6-15.4)
Severe Anaemia (<8.0 g/dL)	(3) 0.8%(0.3-2.6)
Mean Hb (g/dL)	12.7g/dL (1.6SD) [7.3min, 17.1max]

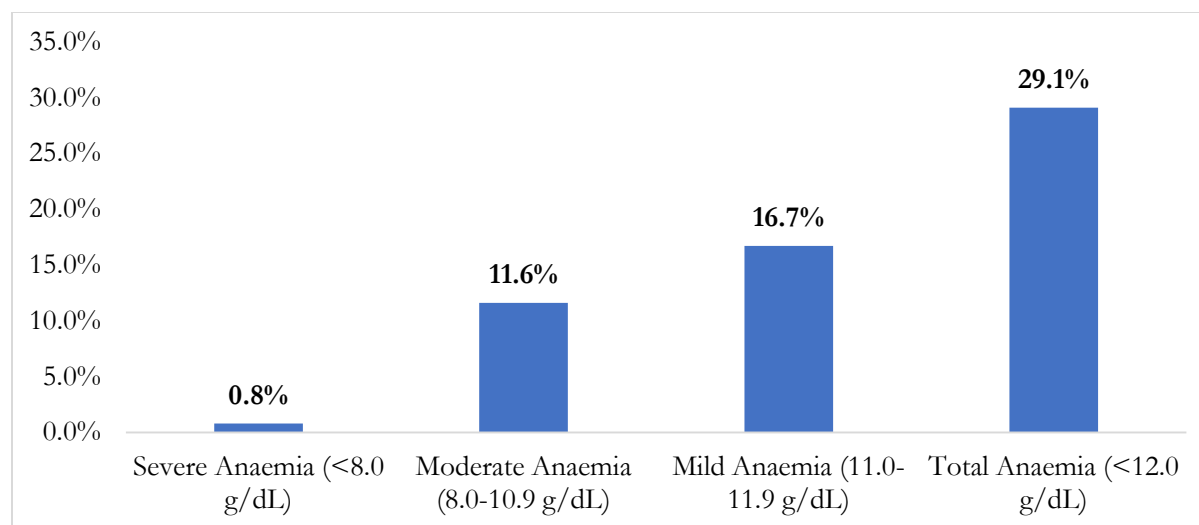


Figure 7: Anaemia Categories in Women of Reproductive Age, Mayukwayukwa Settlement, Zambia, November 2017

ANC Enrolment and Iron-Folic Acid Supplementation Coverage

Table 34: ANC Enrolment and Iron-Folic Acid Pills Coverage Among Pregnant Women (15-49 Years) - Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Currently enrolled in ANC programme	22/34	64.7%(47.0-79.1)
Currently receiving iron-folic acid pills	21/34	61.8(44.2-76.7)

HOUSEHOLD-LEVEL INDICATORS: Water, Sanitation, Hygiene and Food Security, Mayukwayukwa Settlement, Zambia, November 2017

The table below shows the different indicators and the total number of households that were sampled for each household-level indicator. All households were considered whether or not they had eligible individuals for the individual-level measurements.

Table 35: Target Sample Size and Actual Number Captured During the Survey- Mayukwayukwa Settlement, Zambia, November 2017

Indicator	Target Sample Size	Household Interviewed During the Study	% of the Target
WASH	296	340	104.6%
Food security	296	340	104.6%
Mosquito net	296	340	104.6%

Water- Mayukwayukwa Settlement, Zambia, November 2017

Table 36: Water Quantity: Amount of Litres of Water Used Per Person Per Day- Mayukwayukwa Settlement, Zambia, November 2017

Proportion of households that access:	Number/Total	% (95% CI)
≥ 20 litres	236/240	69.4%(64.3-74.1)
15 – <20 litres	36/240	10.6%(7.7-14.3)
<15 litres	68/340	20%(16.1-24.6)

The average water usage in lpppd: 36.8 lpppd

Table 37: Satisfaction with Water Supply- Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	146/340	42.9%(37.8-48.3)

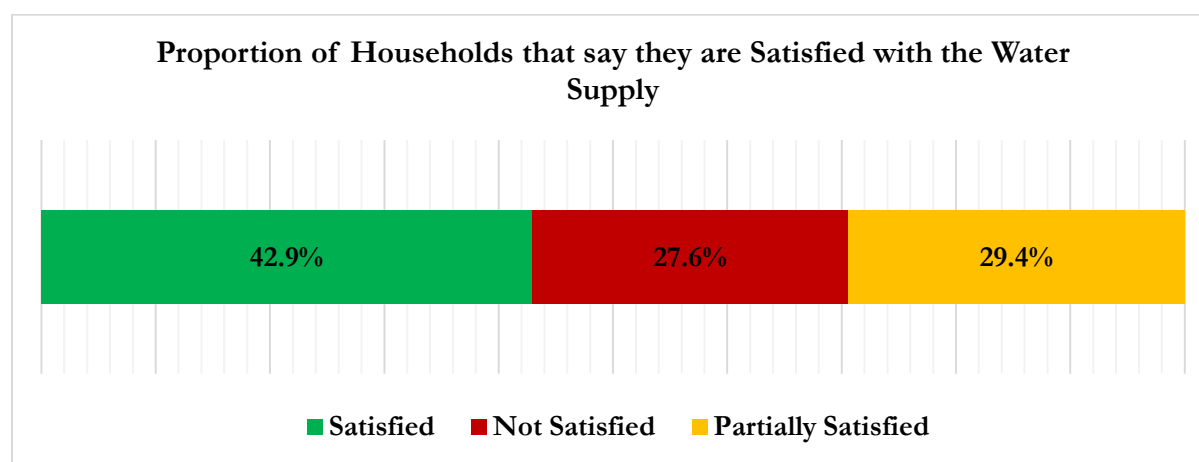


Figure 8: Proportion of Households that Say they are Satisfied with the Water Supply, Mayukwayukwa Settlement, Zambia, November 2017

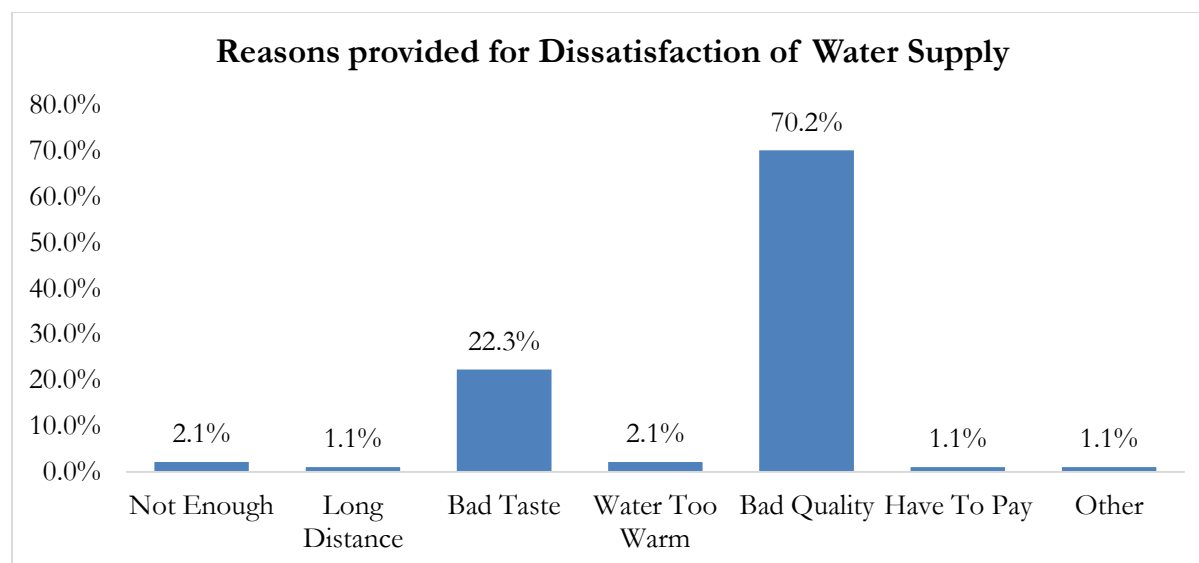


Figure 9: Reasons Provided for Dissatisfaction of Water Supply, Mayukwayukwa, Zambia, November 2017

Water Quality

Table 38: Proportion of Households on Water Quality Indicators, Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95 C.I)
Proportion of households using an improved drinking water source	340/340	100%
Proportion of households that use a covered or narrow necked container for storing their drinking water	148/340	43.5%(38.3-48.9)

Safe Excreta Disposal

Table 39: Safe Excreta Disposal, Mayukwayukwa Settlement, Zambia, November 2017

Proportion of Households That Use	%(95 C.I)
Improved toilet facility, 1 household(n=86)	25.3%(20.9-30.2)
Improved toilet facility, 2 households(n=25)	7.4%(5.0-10.7)
Communal improved toilet facility, 3 households or more (n=7)	2.1%(1.0-4.3)
An unimproved toilet or Public toilet(n=222)	65.3%(60.1-70.2)

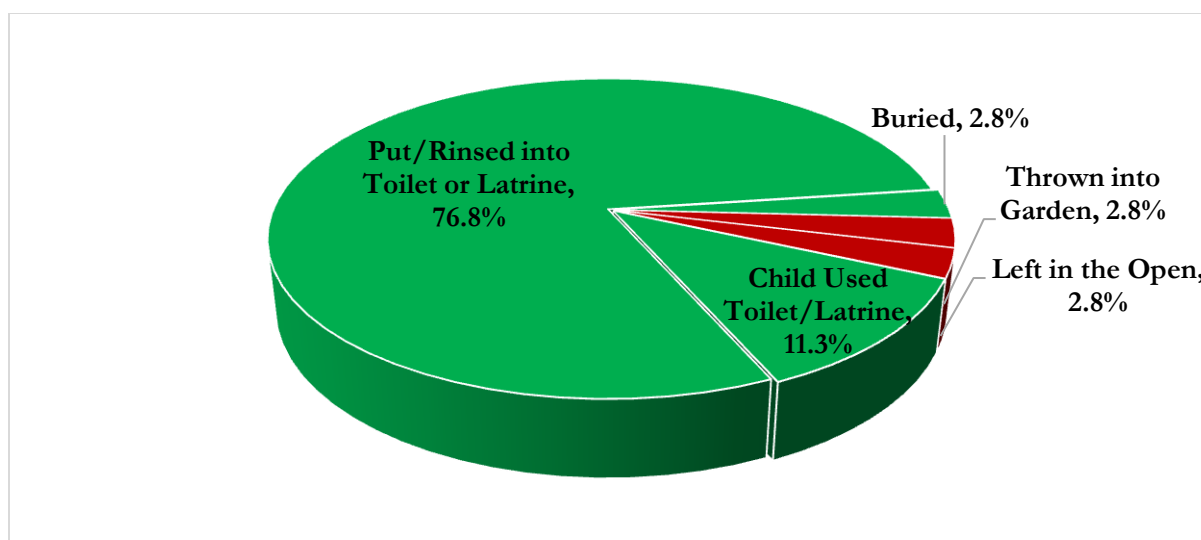


Figure 10: Proportion of HH With Children Under the Age Of 3 Years Old Whose (Last) Stools Were Disposed Off Safely, Mayukwayukwa Settlement, Zambia, November 2017

Table 40: Proportion of Households with Children Under Three Years Old that Dispose Off Faeces Safely, Mayukwayukwa Settlement, Zambia, November 2017

Number/Total	% (95 C.I)
129/143	90.8%(84.8-94.6)

FOOD SECURITY

Negative Household Coping Strategies

Table 41: Coping Strategies Used by The Surveyed Population Over the Past Month- Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Borrowed cash, food or other items <i>with or without interest</i>	108/340	31.8(27.0-36.9)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	97/340	28.5(24.0-33.6)
Requested increase remittances or gifts as compared to normal	55/340	16.2(12.6-20.5)
Reduced the quantity and/or frequency of meals	174/340	51.2(45.9-56.5)
Begged	154/340	45.3(40.1-50.6)
Engaged in potentially risky or harmful activities	6/340	1.8(0.8-3.9)
Proportion of households reporting using none of the coping strategies over the past month	79/340	23.2(19.0-28.0)

Household Dietary Diversity

Table 42: Average Household Diet Diversity Score- Mayukwayukwa Settlement, Zambia, November 2017

Average HDDS	Mean/ (Standard deviation)
	6.3(2.5)

Table 43: Micronutrient Rich Foods by Households- Mayukwayukwa Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	43/340	12.6%(9.5-16.61)
Proportion of households consuming either a plant or animal source of vitamin A	279/340	82.1%(77.6-85.8)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	180/340	52.9%(47.6-58.2)

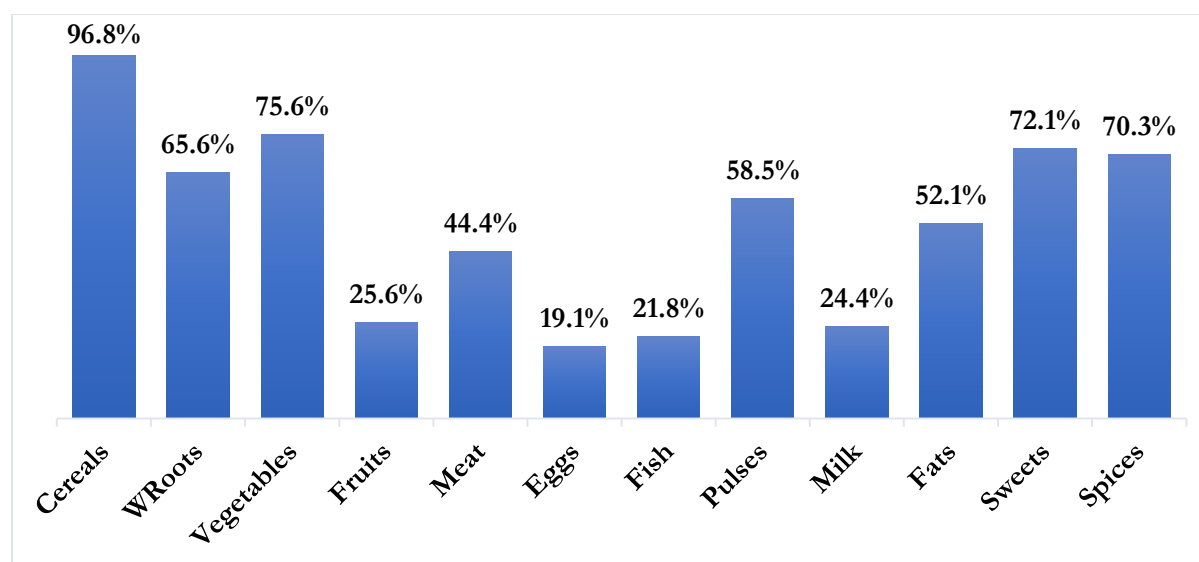


Figure 11: Proportion of Households Consuming Different Food Groups, Mayukwayukwa Settlement, Zambia, November, 2017

MOSQUITO NET COVERAGE

Table 44: Proportion of Total Households Owning At Least One Mosquito Net of Any Type, Mayukwayukwa Settlement, Zambia, November 2017

Number/Total	%(95 C.I)
181/340	53.2%(47.9-58.5)

Table 45: Proportion of Total Households Owning At Least One LLINT, Mayukwayukwa Settlement, Zambia, November 2017

Number/Total	%(95 C.I)
135/340	45.6%(40.3-50.9)

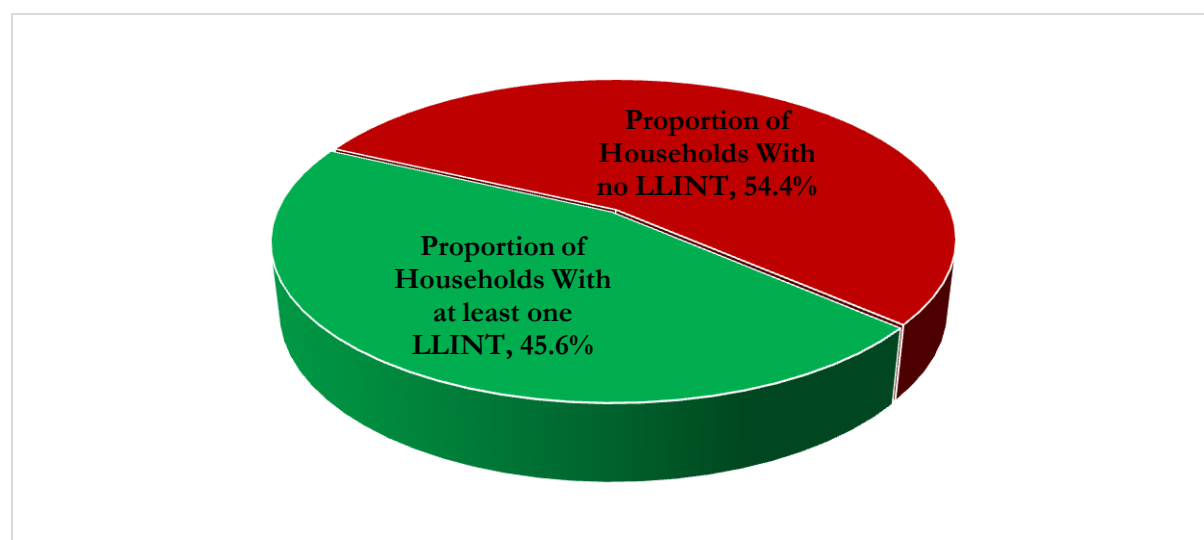


Figure 12: Household that have At Least One LLIN, Mayukwayukwa Settlement, Zambia, November 2017

Table 46: Slept Under Any Type Of Net, Mayukwayukwa Settlement, Zambia, November 2017

Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
Total No	%(95 C.I)	Total No	%(95 C.I)	Total No	%(95 C.I)
581	82.1%(79.1-84.7)	198	81.1%(75.7-85.6)	36	92.3%(78.0-97.6)

Table 47: Slept under LLIN of net, Mayukwayukwa Settlement, Zambia, November 2017

Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
Total No	%(95 C.I)	Total No	%(95 C.I)	Total No	%(95 C.I)
486	68.6%(65.1-72.0)	179	73.4%(67.4-78.6)	29	74.4%(58.0-85.9)

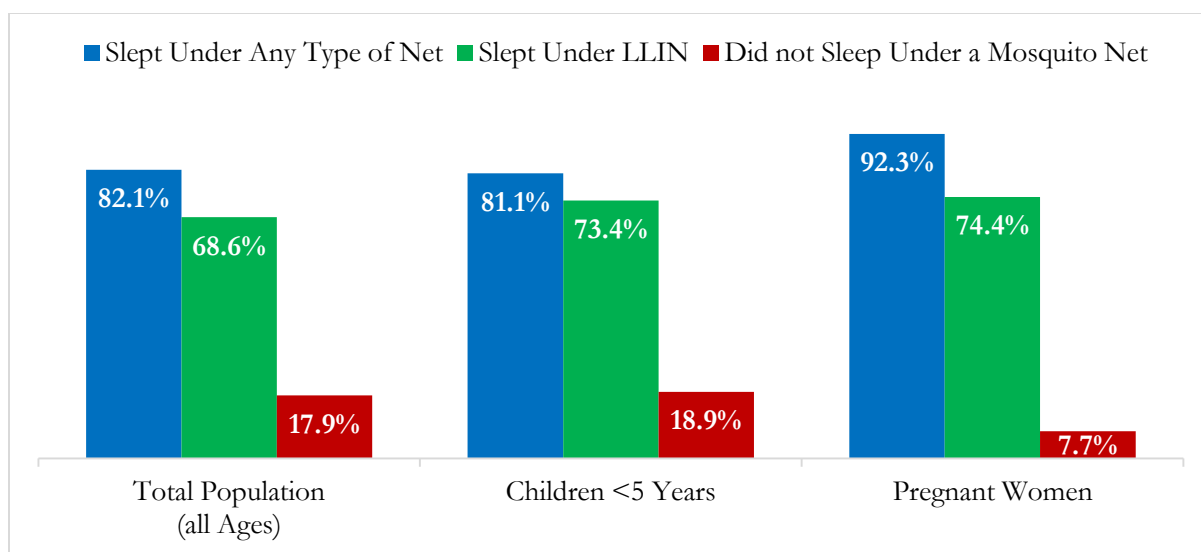


Figure 4: Mosquito Net Utilization by Sub Group, Mayukwayukwa Settlement, Zambia, November 2017

Table 48: Number Of Nets, Mayukwayukwa Settlement, Zambia, November 2017

Average number of LLINTs per household	Average number of persons per LLINT
1.5	2.9

Results: Meheba Settlement

Anthropometric results (based on WHO Growth Standards 2006)

The coverage of age documentation was 98% (children having an exact birth date). All children had their birthcards and age was documented; stunting and underweight are reliably estimated.

Table 49: Distribution of Age and Sex of Sample-Meheba Settlement, Zambia, November 2017

	Boys		Girls		Total		Ratio
AGE (mo)	No.	%	No.	%	No.	%	Boy:Girl
6-17	58	50.4	57	49.6	115	29.1	1.0
18-29	37	46.3	43	53.8	80	20.3	0.9
30-41	44	46.8	50	53.2	94	23.8	0.9
42-53	37	48.1	40	51.9	77	19.5	0.9
54-59	9	31.0	20	69.0	29	7.3	0.4
Total	185	46.8	210	53.2	395	100.0	0.9

Sex ratio is presented equally among boys and girls (normal range 0.8 – 1.2).

Table 50: Prevalence of Acute Malnutrition Based on Weight-For-Height Z-Scores (And/Or Oedema) And by Sex- Meheba Settlement, Zambia, November 2017

	All n = 386	Boys n = 181	Girls n = 205
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(22) 5.7 % (3.8 - 8.5 95% C.I.)	(17) 9.4 % (5.9 - 14.5 95% C.I.)	(5) 2.4 % (1.0 - 5.6 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >= -3 z-score, no oedema)	(21) 5.4 % (3.6 - 8.2 95% C.I.)	(16) 8.8 % (5.5 - 13.9 95% C.I.)	(5) 2.4 % (1.0 - 5.6 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(1) 0.3 % (0.0 - 1.5 95% C.I.)	(1) 0.6 % (0.1 - 3.1 95% C.I.)	(0) 0.0 % (0.0 - 1.8 95% C.I.)

The prevalence of oedema is 0.3 %. To note also GAM is significantly higher among boys

Table 51: Prevalence of Acute Malnutrition by Age, Based on Weight-For-Height Z-Scores And/Or Oedema- Meheba Settlement, Zambia, November 2017

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	109	0	0.0	7	6.4	102	93.6	0	0.0
18-29	79	0	0.0	8	0.1	71	89.9	0	0.0
30-41	93	0	0.0	3	3.2	89	95.7	1	1.1
42-53	76	0	0.0	1	1.3	75	98.7	0	0.0
54-59	29	0	0.0	2	6.9	27	93.1	0	0.0
Total	386	0	0.0	21	5.4	364	94.3	1	0.3

There was one case of oedema detected in Meheba settlement

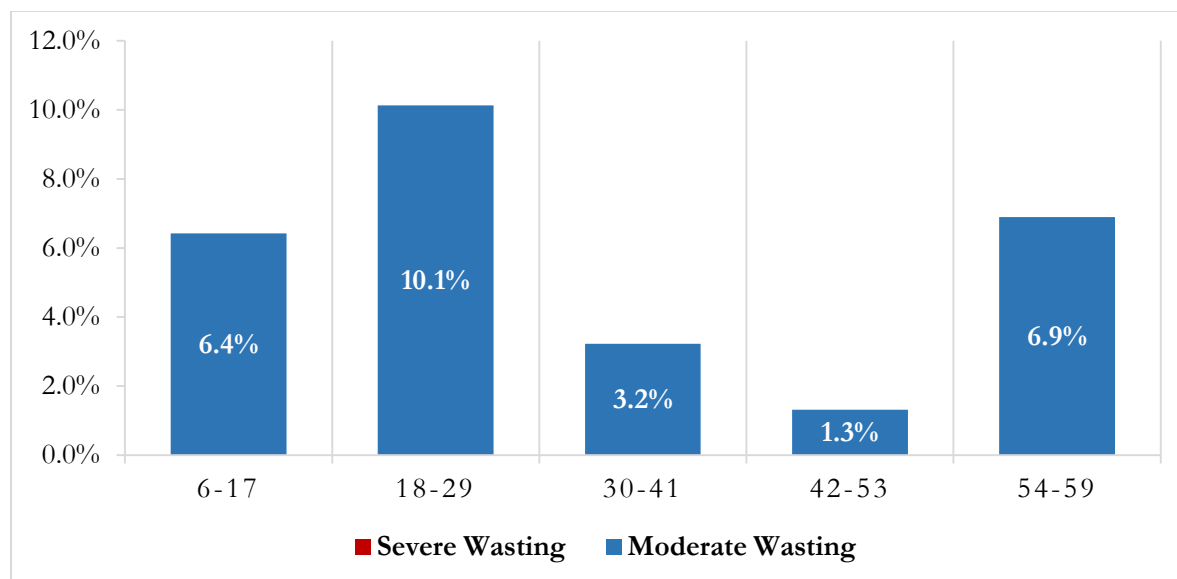


Figure 14: Trends in The Prevalence of Wasting by Age in Children 6-59 Months, Meheba Settlement, Zambia, November 2017

Table 52: Distribution of Severe Acute Malnutrition and Oedema Based on Weight-For-Height Z-Scores- Meheba Settlement, Zambia, November 2017

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 1 (0.3 %)
Oedema absent	Marasmic No. 0 (0.0 %)	Not severely malnourished No. 385 (99.7 %)

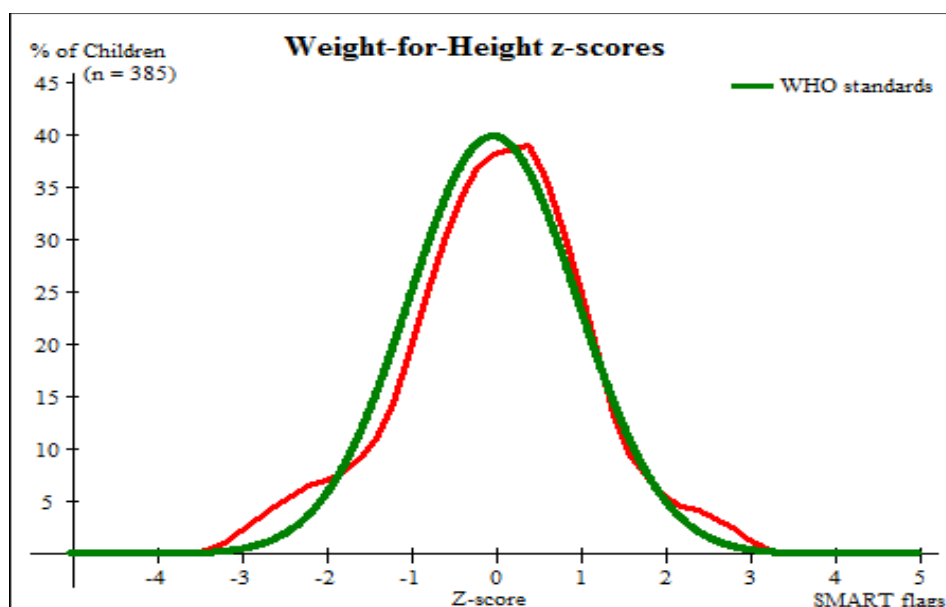


Figure 15: Distribution of Weight-For-Height Z-Scores (Based on WHO Growth Standards; the Reference Population is Shown in Green) Of Survey Population Compared to Reference Population- Meheba Settlement, Zambia, November 2017

Table 53: Prevalence of Stunting Based on Height-For-Age Z-Scores and By Sex- Meheba Settlement, Zambia, November 2017

	All n = 379	Boys n = 178	Girls n = 201
Prevalence of stunting (<-2 z-score)	(131) 34.6 % (30.0 - 39.5 95% C.I.)	(72) 40.4 % (33.5 - 47.8 95% C.I.)	(59) 29.4 % (23.5 - 36.0 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and ≥ -3 z-score)	(89) 23.5 % (19.5 - 28.0 95% C.I.)	(48) 27.0 % (21.0 - 33.9 95% C.I.)	(41) 20.4 % (15.4 - 26.5 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(42) 11.1 % (8.3 - 14.6 95% C.I.)	(24) 13.5 % (9.2 - 19.3 95% C.I.)	(18) 9.0 % (5.7 - 13.7 95% C.I.)

Table 54: Prevalence of Stunting by Age Based on Height-For-Age Z-Scores- Meheba Settlement, Zambia, November 2017

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-17	107	8	7.5	15	14.0	84	78.5
18-29	76	11	14.5	23	30.3	42	55.3
30-41	90	10	11.1	23	25.6	57	63.3
42-53	77	10	13.0	20	26.0	47	61.0
54-59	29	3	10.3	8	27.6	18	62.1
Total	379	42	11.1	89	23.5	248	65.4

Note: Stunting was found higher among boys aged 18-29 months

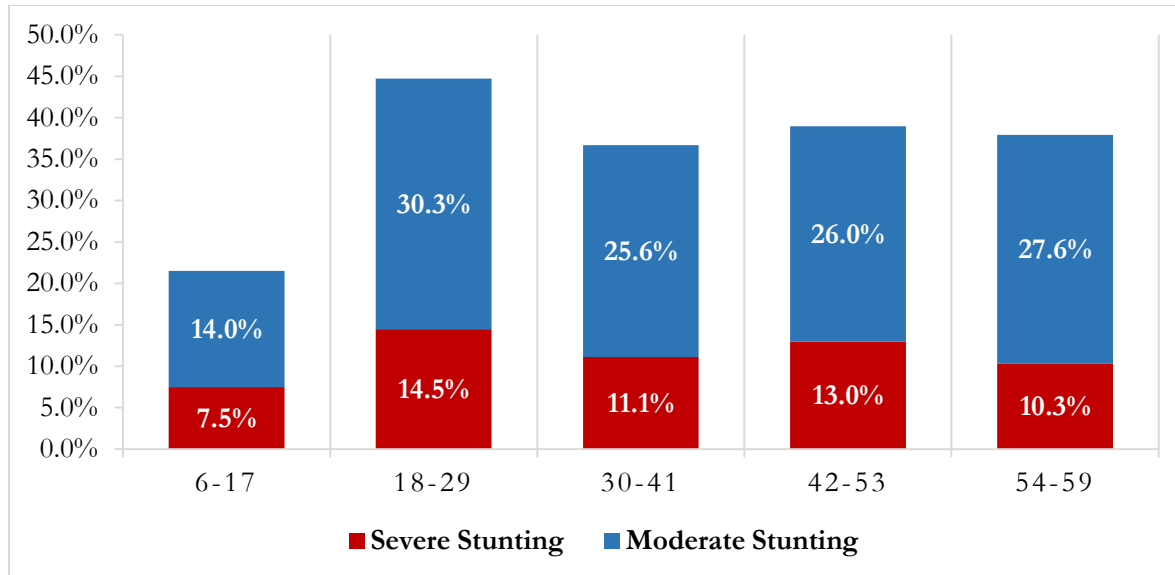


Figure 5: Trends in The Prevalence of Stunting by Age in Children 6-59 Months, Meheba Settlement, Zambia, November 2017

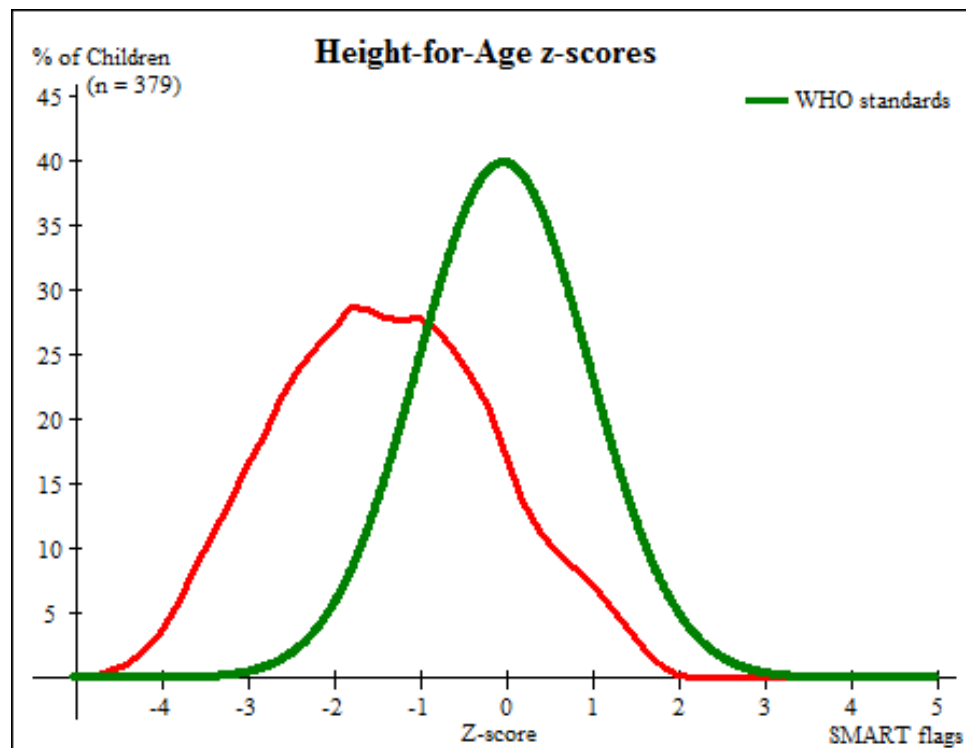


Figure 6: Distribution of Weight-For-Age Z-Scores (Based on WHO Growth Standards; the Reference Population is Shown in Green) Of Survey Population Compared to Reference Population- Meheba Settlement, Zambia, November 2017

Table 55: Prevalence of Underweight Based on Weight-For-Age Z-Scores by Sex- Meheba Settlement, Zambia, November 2017

	All n = 393	Boys n = 183	Girls n = 210
Prevalence of underweight (<-2 z-score)	(50) 12.7 % (9.8 - 16.4 95% C.I.)	(28) 15.3 % (10.8 - 21.2 95% C.I.)	(22) 10.5 % (7.0 - 15.4 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(46) 11.7 % (8.9 - 15.3 95% C.I.)	(26) 14.2 % (9.9 - 20.0 95% C.I.)	(20) 9.5 % (6.2 - 14.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(4) 1.0 % (0.4 - 2.6 95% C.I.)	(2) 1.1 % (0.3 - 3.9 95% C.I.)	(2) 1.0 % (0.3 - 3.4 95% C.I.)

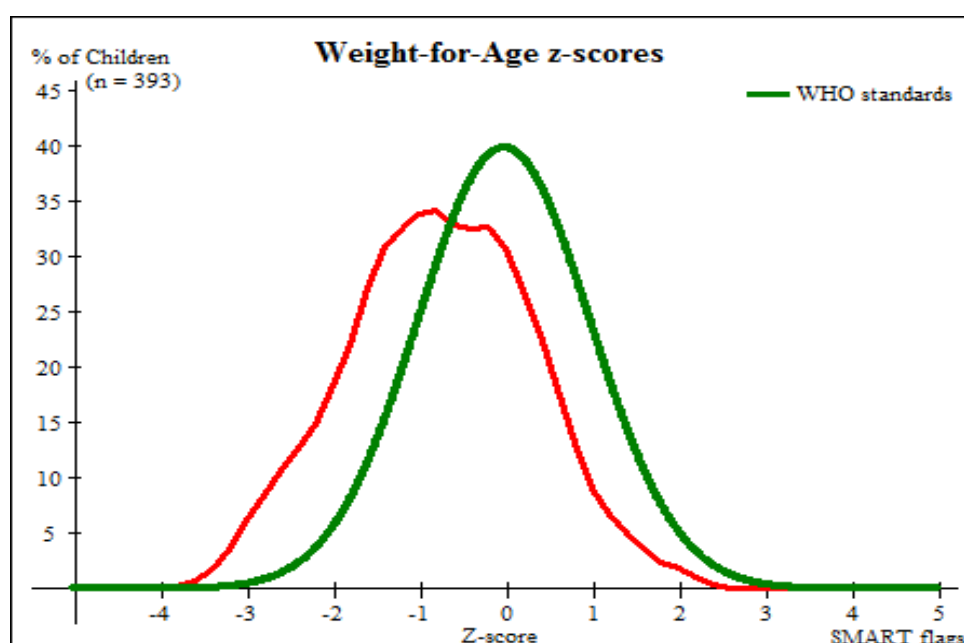


Figure 7: Distribution of Weight-For-Age Z-Scores (Based on WHO Growth Standards; the Reference Population is Shown in Green) of Survey Population Compared to Reference Population - Meheba Settlement, Zambia, November 2017

Table 56: Mean Z-Scores, Design Effects and Excluded Subjects - Meheba Settlement, Zambia, November 2017

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	385	0.01 \pm 1.08	1.00	1	9
Weight-for-Age	393	-0.76 \pm 1.06	1.00	1	1
Height-for-Age	379	-1.39 \pm 1.23	1.00	0	16

* contains for WHZ and WAZ the children with edema.

Anaemia Results

Table 57: Prevalence of Anaemia and Haemoglobin Concentration in Children 6-59 Months of Age - Meheba Settlement, Zambia, November 2017

Anaemia – Children 6-59 months	All n =395
Total Anaemia (Hb<11.0 g/dL)	(181) 45.8%(41.0-50.8)
Mild Anaemia (Hb 10.0-10.9 g/dL)	(121) 30.6%(26.3-35.4)
Moderate Anaemia (7.0-9.9 g/dL)	(58)14.7%(11.5-18.5)
Severe Anaemia (<7.0 g/dL)	(2) 0.5%(0.1-2.0)
Mean Hb (g/dL)	11.3 g/dL (2.2SD) [5.5 min,20.0 max]

Table 58: Prevalence of Anaemia by Age- Meheba Settlement, Zambia, November 2017

	6-59 Months (n=243)	6-23 Months (n=86)	24-59 Months (n=157)
Total Anaemia (Hb <11 g/dl)	(181) 45.8%(41.0-50.8)	(80) 52.6%(44.6-60.5)	(101) 41.6%(35.5-47.9)
Mild (Hb 10-10.9)	(121) 30.6%(26.3-35.4)	(51) 33.6%(26.4-41.5)	(70) 28.8%(23.4-34.9)
Moderate (Hb 7-9.9)	(58) 14.7%(11.5-18.5)	(29)19.1%(13.5-26.2)	(29) 11.9%(8.4-16.7)
Severe (Hb <7)	(2) 0.5%(0.1-2.0)	(0) 0%(0-0)	(2) 0.8%(0.2-3.3)
Moderate and Severe Anaemia (Hb<10.0 g/dL)	(60) 15.2%(12.0-19.1)	(29) 19.1%(13.6-26.2)	(31) 12.8%(9.1-17.6)

Programme coverage

Vaccination and Vitamin A Supplementation Coverage results

Measles vaccination coverage

Table 59: Measles Vaccination Coverage for Children Aged 9-59 Months - Meheba Settlement, Zambia, November 2017

	Measles (with card) n=208	Measles (with card <u>or</u> confirmation from mother) n=301
YES	56.4%(51.2-61.4)	81.6%(77.3-85.2)

Vitamin A supplementation coverage

Table 60: Vitamin A Supplementation for Children Aged 6-59 Months Within Past 6 Months- Meheba Settlement, Zambia, November 2017

	Vitamin A capsule (with card) n=246	Vitamin A capsule (with card <u>or</u> confirmation from mother) n=359
YES	62.3%(57.4-66.9)	90.9%(87.6-93.4)

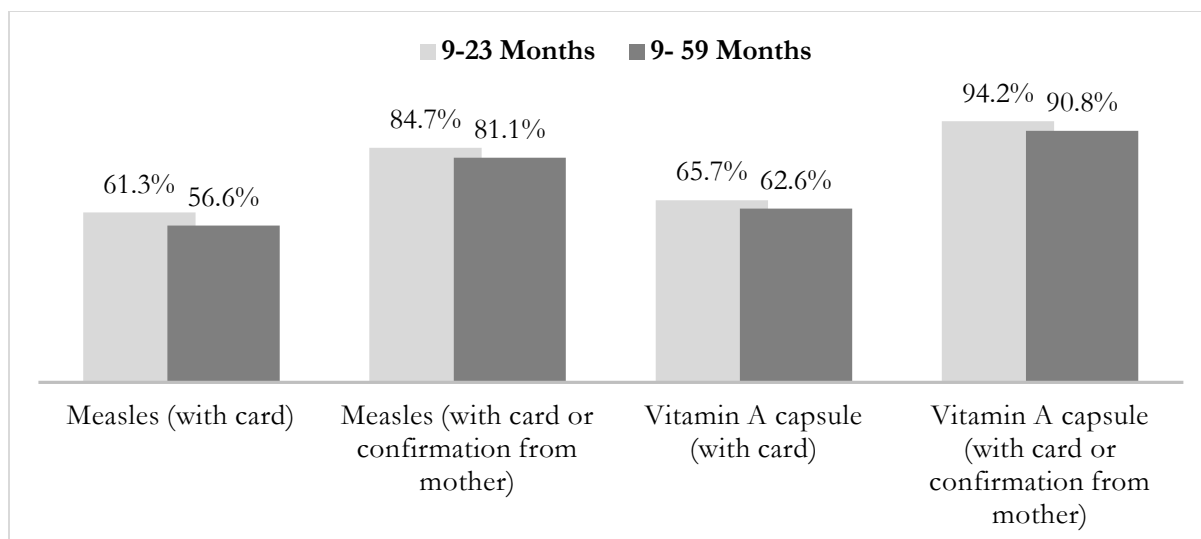


Figure 8: Measles Vaccination Coverage and Vitamin A Supplementation Coverage; Meheba Settlement, Zambia, November 2017

Table 61: Prevalence of Diarrhoea in Children 6-59 Months, Zambia, November 2017

	Number/total	% (95% CI)
Diarrhoea last two weeks (6-59 months)	60/395	15.2%(12.0-19.1)

Children 0-23 Months- Meheba Settlement, Zambia, November 2017

Table 62: Prevalence of Infant and Young Child Feeding Practices Indicators- Meheba Settlement, , Zambia, November 2017

Indicator	Age Range	Number/ Total	Prevalence (%)	95% CI
Timely initiation of breastfeeding	0-23 months	76/163	46.6%	(39.0-54.4)
Exclusive breastfeeding under 6 months	0-5 months	13/45	28.9%	(17.3-44.1)
Continued breastfeeding at 1 year	12-15 months	22/22	100.0%	(0.0-0.0)
Continued breastfeeding at 2 years	20-23 months	6/16	37.5%	(16.8-64.1)
Introduction of solid, semi-solid or soft foods	6-8 months	11/25	44.0%	(25.4-64.5)
Children bottle fed	0-23 months	13/175	7.4%	(4.3-12.4)
Consumption of iron rich or iron fortified foods	6-23 months	75/119	63.0%	(53.9-71.3)

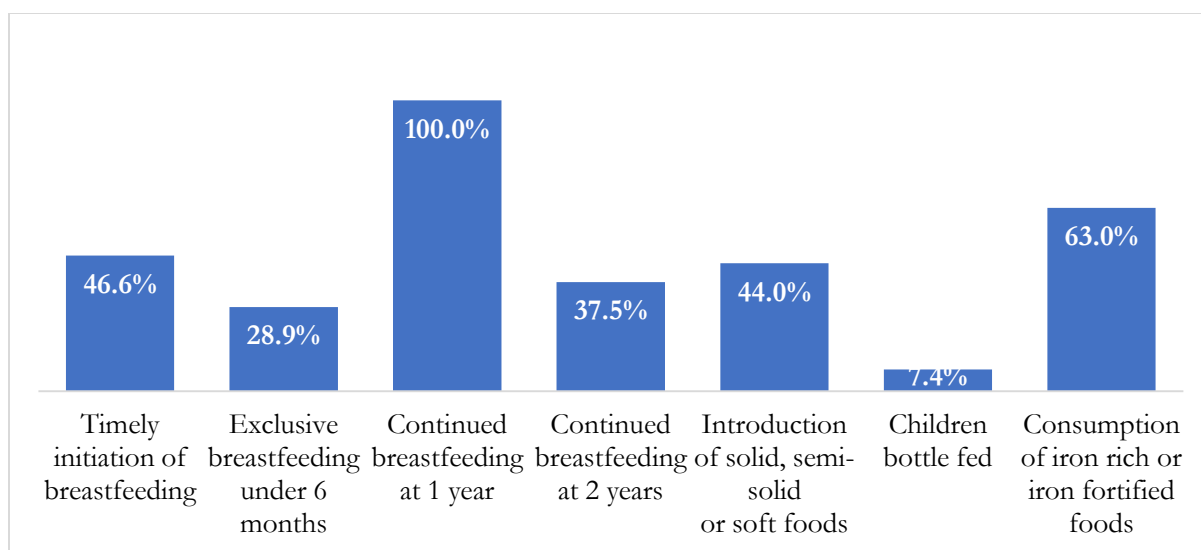


Figure 9: Prevalence of Key Infant and Young Child Feeding Practices in Meheba Settlement, Zambia, November 2017

Prevalence of Intake

Infant Formula

Table 63: Infant Formula Intake in Children Aged 0-23 Months, Meheba Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Proportion of children aged 0-23 months who receive infant formula (fortified or non-fortified)	30/175	17.1%(12.2-23.5)

Fortified Blended Foods

Table 64: CSB+ Intake in Children Aged 6-23 Months, Meheba Settlement, Zambia, November 2017

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB	54/119	45.4%(36.6-54.5)

Table 65: CSB++ Intake in Children Aged 6-23 Months, Meheba Settlement, Zambia, November 2017

	Number/total	% (95% CI)
Proportion of children aged 6-23 months who receive CSB++	51/119	42.9%(34.2-52.0)

Women 15-49 Years - Meheba Settlement, Zambia, November 2017

Table 66: Women Physiological Status and Age - Meheba Settlement, Zambia, November 2017

Physiological Status	Number/total	%
Non-Pregnant	342/387	88.4%
Pregnant	45/387	11.6%
Mean age (Range)	26.1 years (15-49)	

Table 67: Prevalence of Anaemia and Haemoglobin Concentration in Non-Pregnant Women of Reproductive Age (15-49 Years) - Meheba Settlement, Zambia, November 2017

Anaemia – Non-pregnant women of reproductive age 15-49 years	All n = 342
Total Anaemia (<12.0 g/dL)	(81) 23.7%(19.5-28.5)
Mild Anaemia (11.0-11.9 g/dL)	(46) 13.5%(10.2-17.5)
Moderate Anaemia (8.0-10.9 g/dL)	(32) 9.4%(6.7-12.9)
Severe Anaemia (<8.0 g/dL)	(3) 0.9%(0.3-2.7)
Mean Hb (g/dL)	12.8g/dL (1.6SD) [7.4min, 17.2max]

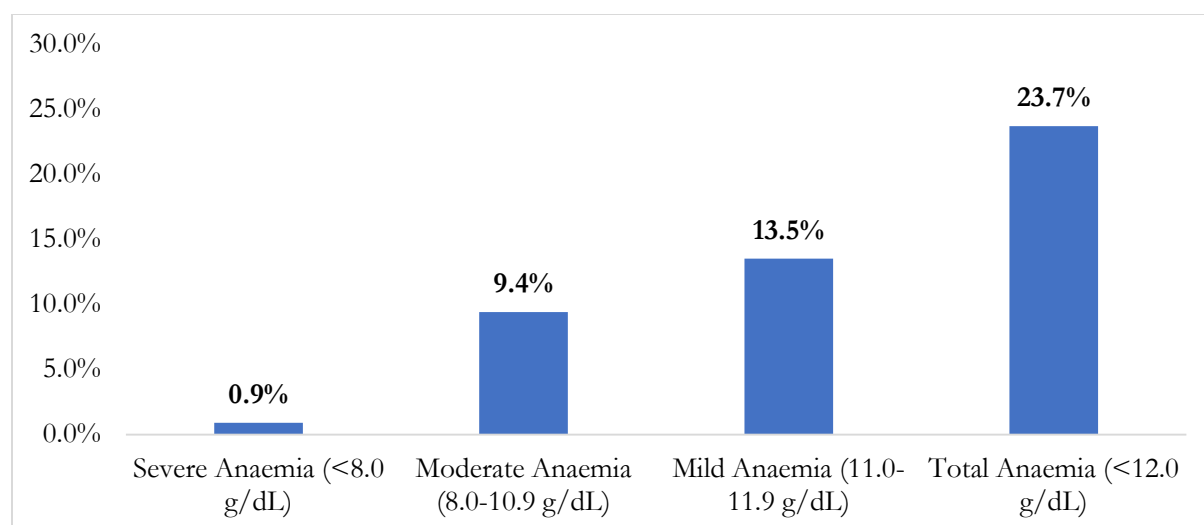


Figure 10: Anaemia Categories in Women of Reproductive Age, Meheba Settlement, Zambia, November 2017

ANC Enrolment and Iron-Folic Acid Supplementation Coverage

Table 68: ANC Enrolment and Iron-Folic Acid Pills Coverage Among Pregnant Women (15-49 Years) - Meheba Settlement, Zambia, November 2017

	Number/total	% (95% CI)
Currently enrolled in ANC programme	38/45	84.4%(70.3-92.6)
Currently receiving iron-folic acid pills	37/45	82.2%(67.8-91.0)

HOUSEHOLD-LEVEL INDICATORS: Water, Sanitation, Hygiene and Food Security, Meheba Settlement, Zambia, November 2017

The table below shows the different indicators and the total number of households that were sampled for each household-level indicator. All households were considered whether or not they had eligible individuals for the individual-level measurements.

Table 69: Target Sample Size and Actual Number Captured During the Survey- Meheba Settlement, Zambia, November 2017

Indicator	Target sample size	Household interviewed during the study	% of the target
WASH	296	330	104.6%
Food security	296	330	104.6%
Mosquito nets	296	330	104.6%

Water- Meheba Settlement, Zambia, November 2017

Table 70: Water Quantity: Amount of Litres of Water Used Per Person Per Day-Meheba Settlement, Zambia, November 2017

Proportion of households that access:	Number/Total	% (95% CI)
≥ 20 litres	181/330	54.8%(49.4-60.2)
15 – <20 litres	43/330	13.0%(9.8-17.1)
<15 litres	106/330	32.1%(27.3-37.4)

The average water usage in lpppd: 24.6 lpppd

Table 71: Satisfaction with Water Supply- Meheba Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Proportion of households that say they are satisfied with the drinking water supply	224/340	67.9%(62.6-72.7)

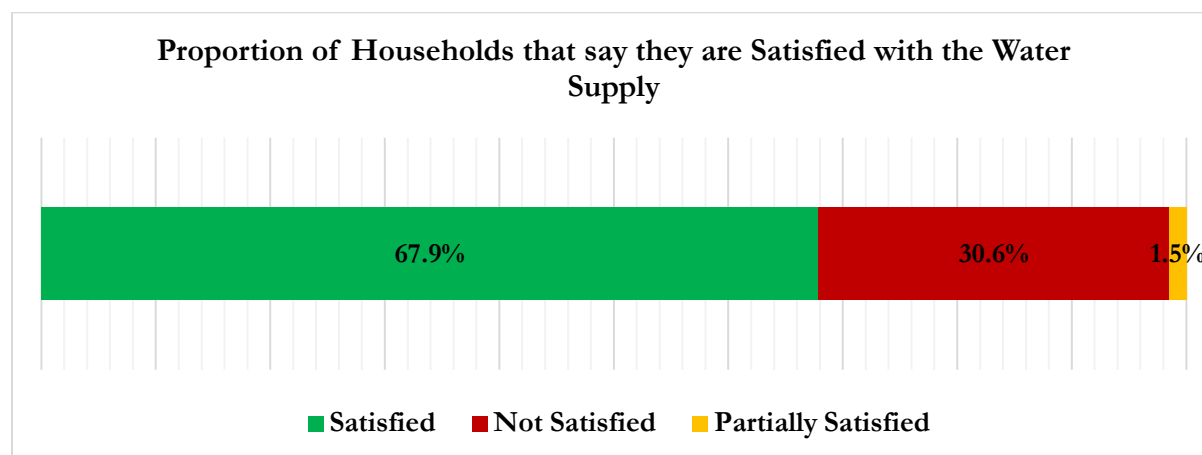


Figure 11: Proportion of Households that Say they are Satisfied with the Water Supply, Meheba Settlement, Zambia, November 2017

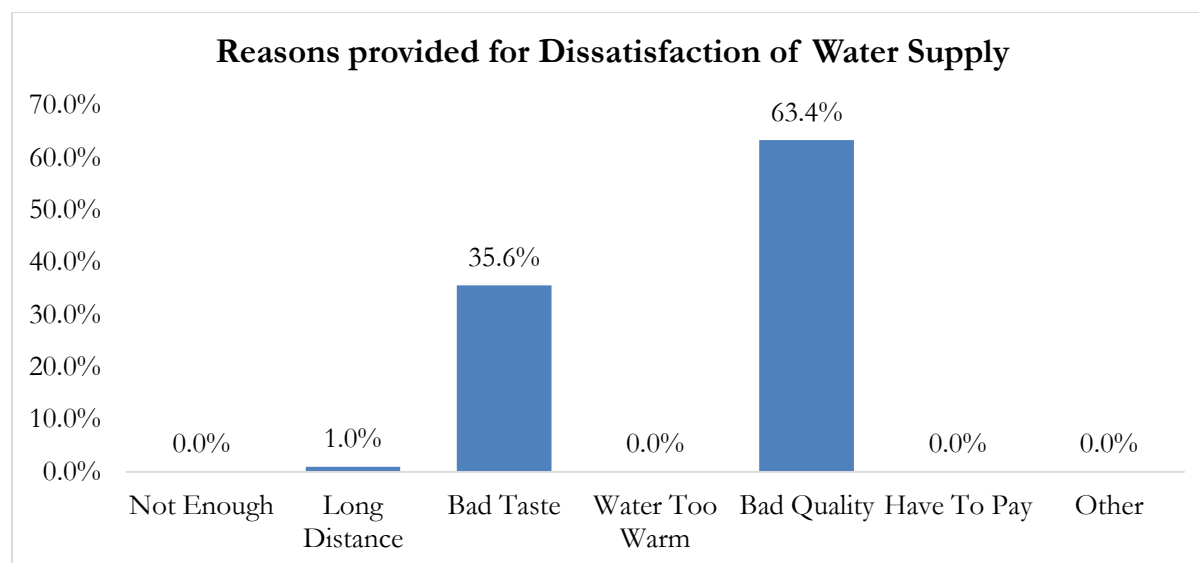


Figure 12: Reasons Provided for Dissatisfaction of Water Supply, Meheba, Zambia, November 2017

Water Quality

Table 72: Proportion of Households on Water Quality Indicators, Meheba Settlement, Zambia, November 2017

	Number/Total	% (95 C.I)
Proportion of households using an improved drinking water source	329/330	99.7%(97.9-100.0)
Proportion of households that use a covered or narrow necked container for storing their drinking water	96/330	29.1%(24.4-34.2)

Safe Excreta disposal

Table 73: Safe Excreta Disposal, Meheba Settlement, Zambia, November 2017

Proportion of Households That Use	%(95 C.I)
Improved toilet facility, 1 household (n=41)	12.4%(9.3-16.5)
Improved toilet facility, 2 households (n=8)	2.4%(1.2-4.8)
Communal improved toilet facility, 3 households or more (n=9)	2.7%(1.4-5.2)
An unimproved toilet or Public toilet (n=272)	82.4%(77.9-86.2)

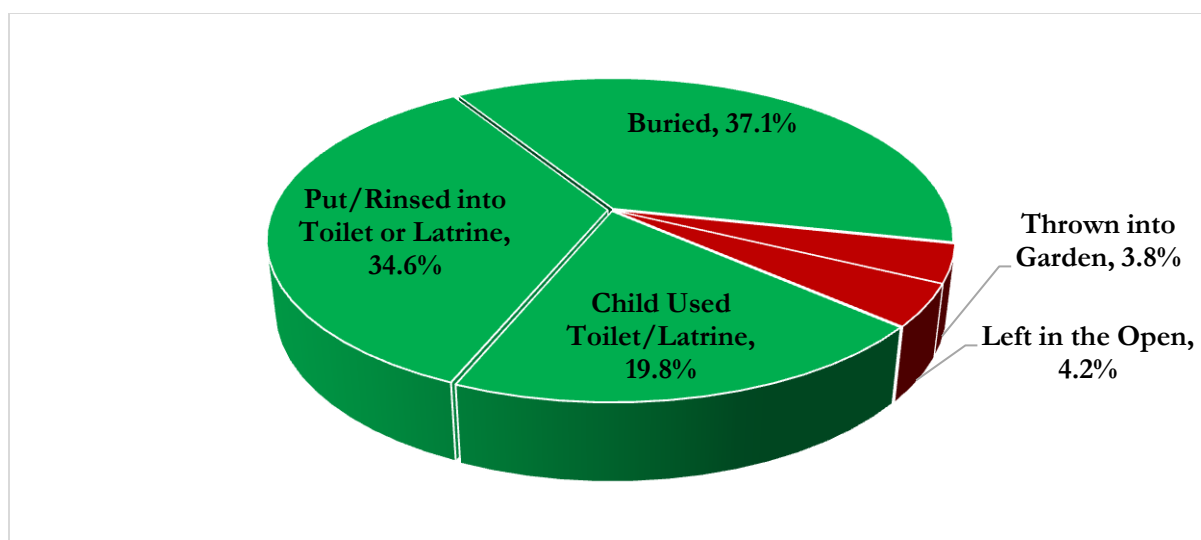


Figure 13: Proportion of HH With Children Under the Age Of 3 Years Old Whose (Last) Stools Were Disposed Off Safely, Meheba Settlement, Zambia, November 2017

Table 74: Proportion of Households with Children Under Three Years Old that Dispose Off Faeces Safely, Meheba Settlement, Zambia, November 2017

Number/Total	% (95 C.I)
217/237	91.6%(87.3-94.5)

FOOD SECURITY

Negative Household Coping Strategies

Table 75: Coping Strategies Used by The Surveyed Population Over the Past Month- Meheba Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Borrowed cash, food or other items <i>with or without interest</i>	143/330	43.3% (38.1-48.8)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	103/330	31.2% (26.4-36.4)
Requested increase remittances or gifts as compared to normal	23/330	7.0% (4.7-10.3)
Reduced the quantity and/or frequency of meals	188/330	57.0% (51.5-62.2)
Begged	178/330	53.9% (48.5-59.3)
Engaged in potentially risky or harmful activities	8/330	2.4% (1.2-4.8)
Proportion of households reporting using none of the coping strategies over the past month	90/330	27.3% (22.7-32.3)

Household Dietary Diversity

Table 76: Average Household Diet Diversity Score, Meheba Settlement, Zambia, November 2017

Average HDDS	Mean/ (Standard deviation)
	5.6(2.4)

Table 77: Micronutrient Rich Foods by Households, Meheba Settlement, Zambia, November 2017

	Number/Total	% (95% CI)
Proportion of households <i>not consuming any</i> vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products	48/330	14.5%(11.1-18.8)
Proportion of households consuming either a plant or animal source of vitamin A	272/330	82.4%(77.9-86.2)
Proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron)	169/330	51.2%(45.8-56.6)

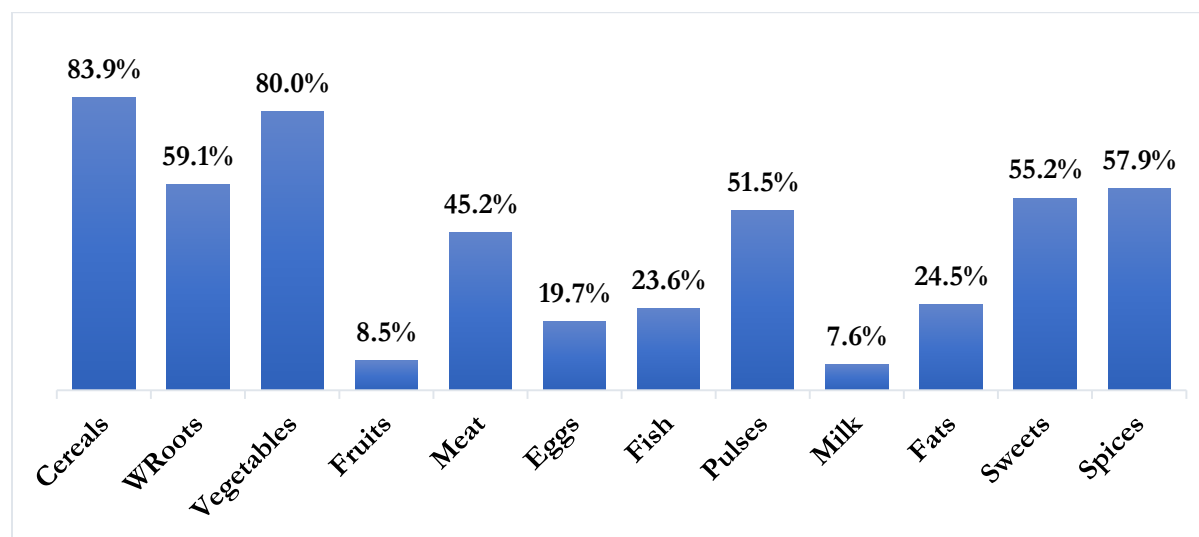


Figure 14: Proportion of Households Consuming Different Food Groups, Meheba Settlement, Solwezi, (November, 2017)

MOSQUITO NET COVERAGE

Table 78: Proportion of Total Households Owning At Least One Mosquito Net of Any Type, Meheba Settlement, Zambia, November 2017

Number/Total	%(95 C.I)
76/330	23.0%(18.8-27.9)

Table 79: Proportion of Total Households Owning At Least One LLINT, Meheba Settlement, Zambia, November 2017

Number/Total	%(95 C.I)
49/330	18.5%(14.6-23.1)

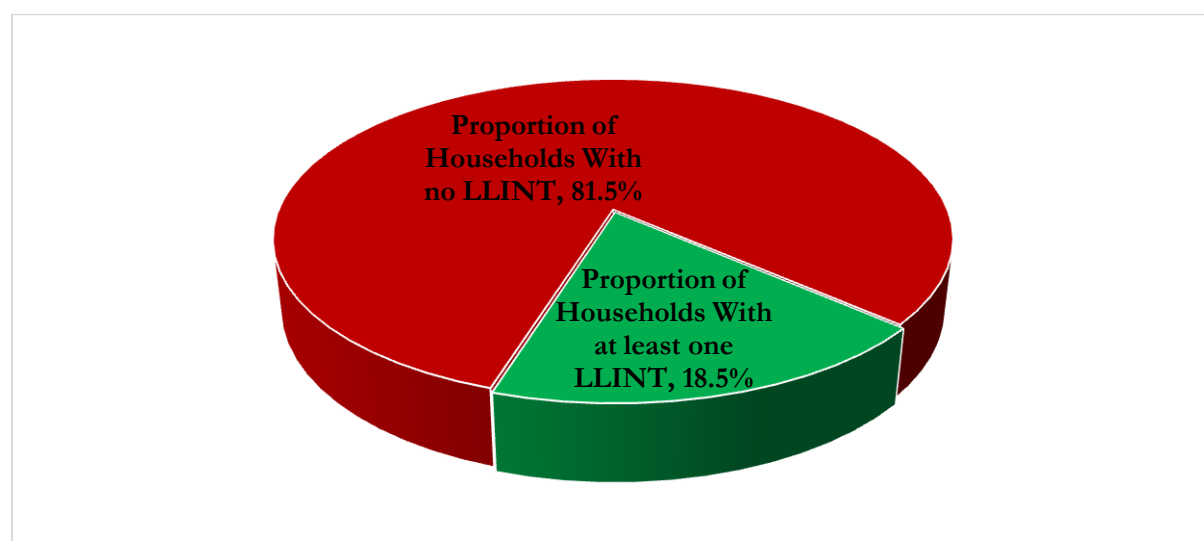


Figure 15: Household that have At Least One LLIN, Meheba Settlement, Zambia, November 2017

Table 80: Slept Under Any Type of Net, Meheba Settlement, Zambia, November 2017

Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
Total No	%(95 C.I)	Total No	%(95 C.I)	Total No	%(95 C.I)
258	71.1%(66.2-75.5)	98	79.0%(70.9-85.4)	19	90.5%(67.4-97.8)

Table 81: Slept Under LLIN of Net, Meheba Settlement, Zambia, November 2017

Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
Total No	%(95 C.I)	Total No	%(95 C.I)	Total No	%(95 C.I)
207	57.0%(51.9-62.0)	70	56.5%(47.5-65.0)	16	76.2%(52.8-90.1)

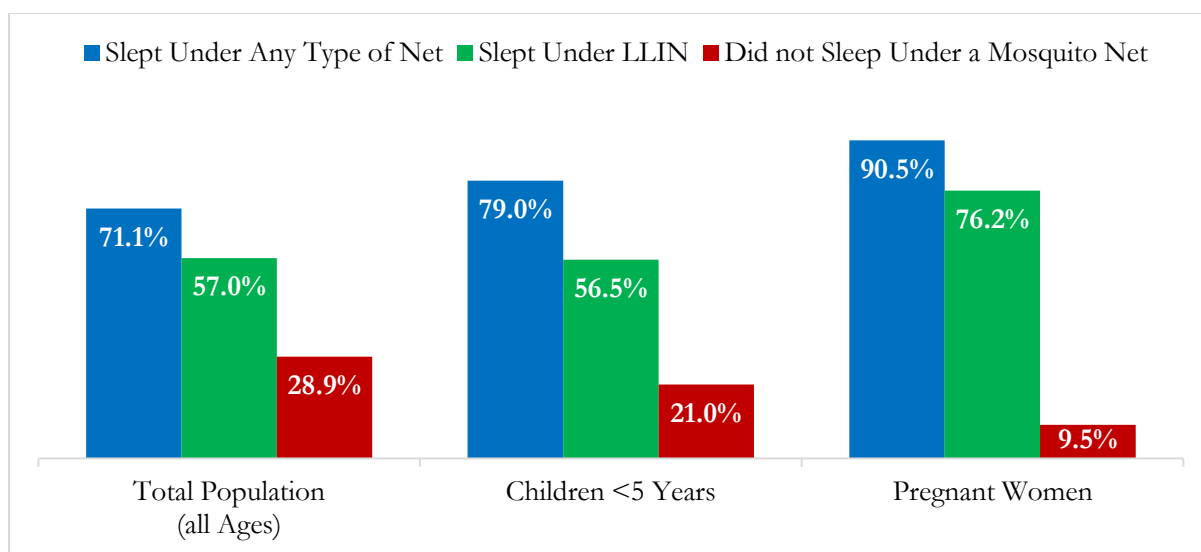


Figure 16: Mosquito Net Utilization by Sub Group, Meheba Settlement, Zambia, November 2017

Table 82: Number of Nets, Meheba Settlement, Zambia, November 2017

Average number of LLINTs per household	Average number of persons per LLINT
1.6	3.4

DISCUSSION

Nutritional status of young children and health

The prevalence of global acute malnutrition was assessed in Mayukwayukwa and Meheba settlements based on Weight for Height (<-2 Z score) in 2017 according to the findings the situation was classified as “poor”, it felt within 5-9% based on the WHO classification of public health significance for children aged 6-59 months. The prevalence of global acute malnutrition was 6.2% (3.8 - 10.0), moderate acute malnutrition was 5.4% (3.6 - 8.2) and severe acute malnutrition was 0.8% (0.2 - 3.0) in Mayukwayukwa settlement. In Meheba settlement the global acute malnutrition was 5.7% (3.8 - 8.5), moderate acute malnutrition was 5.4% (3.2 - 9.0) and severe acute malnutrition was 0.3% (0.0 - 1.5).

A significant difference in the GAM was noticed by sex; it was found that boys had higher prevalence of acute malnutrition compared to girls in both settlements. In Meheba settlement, the prevalence of global acute malnutrition (<-2 z-score and/or oedema) among boys was 9.4% (5.9 - 14.5) compared to girls who had a global acute malnutrition of 2.4 % (1.0 - 5.6). Similarly, in Mayukwayukwa, the global acute malnutrition for boys was 8.8% (5.1 - 14.8) compared to refugee girls which was 2.9% (1.0 - 8.1).

The prevalence of stunting as defined based on Height for Age (<-2 Z score) in children 6-59 months old in Mayukwayukwa and Meheba settlement was classified as “serious” based on the WHO public health significance for children, it felt in the “30-39%” categorisation. The prevalence of stunting was 35.6% (29.8 - 41.8) in Mayukwayukwa while it was 34.6% (30.0 - 39.5) in Meheba settlement.

As it was the case for Mayukywayukwa, in Meheba settlement, a significant difference between boys and girls was noted, with a higher prevalence of stunting found among boys 40.4% (33.5 - 47.8) than girls 29.4% (23.5 - 36.0). Similarly, in Mayukwayukwa boys were more stunted at 38.3 % (30.5 - 46.8) compared to girls at 32.1 % (24.0 - 41.5). A significant difference between the sexes was noted from the acute malnutrition and stunting in the two settlements which would be interested to closely follow up to see if there are potential reasons for these findings or it was by chance.

The surveys collected data on diarrhoea which is closely linked to nutritional status. The period prevalence was calculated based on caregivers’ recall period of two weeks. The prevalence of diarrhea in the past 2 weeks prior to the survey was assessed based on recall from the mother or caregiver during study. Many children were reported to have suffered from diarrhoea. According to the mothers’ and caregivers’ recall in Mayukwayukwa 23.9% (18.9-29.7) and in Meheba 15.2% (12.0-19.1) were reported had diarrhoea 2 weeks before the survey. Mayukwayukwa had the highest prevalence of diarrhoea. Diarrhoea is associated with insufficient water quality and poor hygiene practices and general environmental health aspects.

Programme coverage in young children

A total of 243 children aged 6-59 months had the measles status assessed by the survey teams in Mayukwayukwa settlement. the final analysis included only children aged 9-59 months. Results show that; confirmation of measles by card was only 48% (42.1-54.9). In Meheba confirmation of measles vaccination by card was 56.4%(51.2-61.4).

The measles vaccination coverage was obtained by summing up the results of measles with card and confirmation of measles vaccination from mother for children aged 9-59 months. In Mayukwayukwa the coverage results of measles vaccination with card or confirmation by mother (9-59 months) was 90.5% (85.9-93.7) while that of Meheba settlement was 81.6% (77.3-85.2). Both settlement felt short of the UNHCR recommended target of $\geq 95\%$ for measles.

Vitamin A supplementation in the last 6 months was assessed based on both card documentation and mother's confirmation in Mayukwayukwa and Meheba settlements. The vitamin A capsule coverage by card was 49.4% (43.1-55.7) in Mayukwayukwa settlement while it was 62.3% (57.4-66.9) in Meheba settlement.

In Mayukwayukwa the coverage was 91.8% (87.6-94.6) and in Meheba, it was 90.9% (87.6-93.4). As for Vitamin A supplementation the two settlements met the programme target of $>90\%$. There was measles and vitamin A supplementation campaigns in the settlements few weeks before the survey, from the findings it seems that documentation on the child health cards for both measles and vitamin A supplementation could not take place adequately that is why findings suggest that confirmation by mother are higher than the one from the child health cards. This shows that health workers did not document adequately the provision of measles and vitamin A in the card immunization cards of all the children.

Anaemia in young children aged 6-59 months

Anaemia among children aged 6-59 months was assessed in Mayukwayukwa and Meheba. The prevalence of total anaemia (Hb <11 g/dl) among children 6-59 months in the 2 settlements was found above the 40% of public health significance (WHO classification); 42.4% (36.3-48) in Mayukwayukwa and 45.8% (41.0-50.8) in Meheba settlement. The prevalence of severe anaemia was found at 2.1% and 0.5% in Mayukwayukwa and Meheba settlements respectively. These levels are higher hence requires screening, detection and treatment.

The prevalence of total anaemia (Hb <11 g/dl) among younger children (6-23 months) was higher when compared to the older children (24-59 months). Among younger children (6-23 months), total anaemia was 51.2% (40.5-61.7) and 52.6% (44.6-60.5) in Mayukwayukwa and Meheba respectively while moderate and severe anaemia (Hb < 10.0 g/dL) was 26.7% (18.4-37.2) in Mayukwayukwa and 19.3% (13.6-26.2) in Meheba settlements.

Comparing the 2013 and 2017 total anaemia among children; in Meheba; total anaemia among children has reduced from 53.7% (46.3-61.0) in 2013 to 45.8% (41.0-50.8) in 2017 though not statistically different. In Mayukwayukwa also the prevalence of total anaemia among children has reduced from 54.4% (47.1-61.7) in 2013 to 42.4% (36.3-48) in 2017. The Mean Haemoglobin Concentration for the younger children (6-23 months) was 11.1 g/dL (10.5-11.7) with the haemoglobin level ranging from 5.5 to 20.0 g/dL in Mayukwayukwa and 10.9 g/dL (10.7-11.1) with the haemoglobin level ranging from 7.0-15.0 g/dL in Meheba settlement. There was no significant difference of the Mean Hb concentration between the two settlements.

The prevalence of total anaemia (Hb <11 g/dl) in children aged 24 - 59 months was 37.6% (30.3-45.5) in Mayukwayukwa classified as "medium" according to the WHO classification of public health significance to children. The total anaemia (Hb <11 g/dl) in children aged 24 - 59 months for Meheba settlement was 41.6% (35.5-47.9), classified as "high" according to the WHO classification

of public health significance to children (≥ 40). The prevalence of Mild (Hb 10-10.9) was 22.3% (16.4-29.6) in Mayukwayukwa and 28.8% (23.4-34.9) in Meheba. The prevalence of combined moderate and severe anaemia among children 24-59 months was 15.3% (10.4-21.8) in Mayukwayukwa and it was 12.8% (9.1-17.6) in Meheba.

This decrease in anaemia prevalence among children could be the result of the ongoing efforts to reduce and prevent high levels of anaemia that include: the increased expanded programme for immunization, vitamin A supplementation and deworming programme.

Women of reproductive age (non-pregnant, 15-49 years)

388 in Mayukwayukwa and 387 in Meheba women at reproductive age were assessed for their participations in the maternal and child health programme. The survey teams reached 354 (91.2%) non-pregnant women and 34 (8.8%) pregnant women in Mayukwayukwa while in Meheba reached 342 (88.4%) non-pregnant women and 45 pregnant women. Their mean age was 28.3 years in Mayukwayukwa and 26.1 years in Meheba. Haemoglobin concentration was assessed in 354 women in Mayukwayukwa and 342 in Meheba with the purposes of establishing their total anaemia status.

The prevalence of total anaemia (Hb < 12 g/dl) for women of reproductive age, 15-49 years, (non-pregnant) was 29.1% (24.6-34.1) in Mayukwayukwa and 23.7% (19.5-28.5) in Meheba settlements. These levels are classified as “medium” according to the WHO classification of public health significance. Mild anaemia (Hb 11-11.9) was highest in Mayukwayukwa at 29.1% (24.6-34.1) while it was 13.5% (10.2-17.5) in Meheba; however, the two findings were not statistically different.

The 2013 and 2017 prevalence of anaemia among non-pregnant women are comparable. It was found that in Mayukwayukwa total anaemia (< 12.0 g/dL) has reduced from 31.8% (25.0-39.2) in 2013 to 29.1% (24.6-34.1) in 2017. Similarly, total anaemia (< 12.0 g/dL) has reduced in Meheba from 38.2% (30.9-46.8) in 2013 to 23.7% (19.5-28.5) in 2017.

The Mean Haemoglobin Concentration for the women of reproductive age, 15-49 years, (non-pregnant) was 12.7 g/dL (12.4 – 12.8) with the haemoglobin level ranging from 7.3-17.1 g/dL in Mayukwayukwa and 12.8 g/dL (12.6 – 12.9) with the haemoglobin level ranging from 7.4-17.2 g/dL in Mayukwayukwa and 6.4-17.4g/dL in Meheba settlement. There was no significant difference of the Mean Hb concentration between the two settlements. The standard deviation was 1.6. The minimum and maximum haemoglobin measurement was 7.3 g/dL and 17.1 g/dL respectively.

The Antenatal care programme was assessed where enrollment and women receiving iron-folic tablets were studied. In Mayukwayukwa the study found that pregnant women enrolled in ANC were 22 out of the 34 pregnant women reached by the teams; this was equivalent to 64.7% (47.0-79.1). Similarly in Meheba the teams reached 45 pregnant women whereby of them 38 which is equivalent to 84.4% (70.3-92.6) were found enrolled in the ANC programme. The coverage of iron-folate pills was higher in Meheba at 82.2% (67.8-91.0) and low in Mayukwayukwa where of the 34 pregnant women only 21 of them reported to have received Iron-Folic acid tablets which was equivalent to 61.8% (44.2-76.7).

Overall anaemia continues to be a public health concern in Mayukwayukwa and Meheba settlement. The current levels is classified as “medium”, the enrolled in ANC program among pregnant women is not 100% and even the distribution of Iron-Folic acid tablets is not evenly provided, a significant number of pregnant women reported that did not receive the Iron-Folic tablets.

Infant and Young Child Feeding Indicators

Indicators related to infant and young child feeding were assessed. Findings indicated that the proportion of children who were timely initiated on breast feeding were 72.1% (62.7-79.9) in Mayukwayukwa and quite low in Meheba reported at 46.6% (39.0-54.4). The proportion of children below 6 months who were exclusively breastfed in Mayukwayukwa was 61.8% (44.2-76.7) whereas that of Meheba was low only reported at 28.9% (17.3-44.1). this study did not look into factors affecting timely initiation and exclusive breastfeeding; however, during focus discussions with community health workers in the settlements, it was mentioned that some of the factors affecting the two indicators included; belief that the infants gets thirsty so water would be given and minimal support given by health workers in health facility and belief that infant formula are better than breastmilk this could be due to promotion of infant formula.

Inappropriate provisions of complementary feeding to children aged 6-8 months results into poor growth and development which is linked to chronic malnutrition, childhood infections and diarrhoea. Introduction of solid, semi-solid or soft foods was high in Mayukwayukwa at 55.6% (22.7-84.2) and while it was only 44% (25.4%-64.5) in Meheba. The consumption of iron-rich or iron-fortified foods was relatively high in Mayukwayukwa at 71.8% (60.7-80.7) compared to 63.0% (53.9-71.3) in Meheba settlement.

Continued breastfeeding at 1 year was 100% in Meheba while it was 87.5% (59.0-97.1) in Mayukwayukwa settlement. This is an indication that majority of the children are breastfed beyond 1 year in the settlements. However, breastfeeding at 2 years was low in both locations, 46.2% (20.7-73.7) in Mayukwayukwa and 37.5% (16.8-64.1) in Meheba settlement. Low prevalence of breastfed children at 2 years is an indication that at that age majority of children would have stopped breastfeeding.

Since more than 15% of the children in the two settlements were reported to have suffered from diarrhoea in the last two weeks before the survey it is important to improve on the breastfeeding, feeding practices and child care when the child is suffering from diarrhoea. Increased breastfeeding and feeding frequencies leads to early recovery of the child.

Food security indicators

Food insecurity is one of the causes of malnutrition due to insufficient dietary intake results into malnutrition and is related to inadequate access to and utilisation of food. This study assessed refugee households their levels on dietary diversity scores and their use of the negative coping strategies. The study did not look into access to food assistance and duration of the general food ration because there is no general food distribution in the two settlements studied. As informed earlier the general food distribution was phased out in June 2013. A set of standard questions related to food security was asked to households referring to the simple count of food groups that a household or an individual had consumed over the past 24 hours that preceded the survey day. Prior to scoring of the HDDS some food groups in the dietary diversity questionnaire were combined to a maximum of 12 foodgroups as recommended in the UNHCR SENS.

The combinations of the food groups was done at three levels as follows: The vegetable food group was created from a combination of vitamin A rich vegetables and tubers, dark green leafy vegetables and other vegetables; the second combination was of the fruit group that combined vitamin A rich fruits and other fruits and the third combination as based on the meat group combined of organ meat and flesh meat. From the study the mean household dietary diversity score (HDDS) in the 2

settlement was calculated. The study found that the mean HDDS in Mayukwayukwa was 6.3 (6.0-6.5) this was relatively higher than that of Meheba which was reported at 5.6 (5.3-5.8).

The study found that the proportion of households consuming either a plant or animal source of vitamin A was very high in both locations with the highest reported at 98.2% (96.1-99.2) in Mayukwayukwa and 82.4% (77.9-86.2) in Meheba. In Meheba, the proportion of households consuming organ meat/flesh meat, or fish/seafood (food sources of haem iron) was 51.2% (45.8-56.6) while in Mayukwayukwa it stood at 52.9% (47.6-58.2). Also the study found that the proportion of the households interviewed reported using none of the negative coping strategies over the past month preceded the survey in Mayukwayukwa was 23.2% (19.0-28.0) and it was in Meheba 27.3% (22.7-32.3). The found that in Meheba the proportion of households *not consuming any* vegetables, fruits, meat, eggs, fish/seafood, and milk/milk products was 14.5% (11.1-18.8) while in Mayukwayukwa it was 12.6% (9.5-16.61).

The study looked into food security at households' level where households were asked on the different coping mechanisms household used. When there is food inadequacy at household households utilises mainly four types of food consumption coping mechanisms. First, households may resort to the cheaper, less preferred substitutes but affordable food items. Second, households use short-term mechanisms such as borrowing, or getting food on debts, begging, collecting and eating wild foods, at the extreme households eat seed stocks for the next farming season. Third, coping mechanism households reduces the number of people by sending other members to other relatives or neighbours so that fewer people can be fed at home. Fourth, households reduce food portion and frequencies of meals this may also include skipping of meals in some instances. In this study in Meheba majority of the households employed the fourth option where by 57.0% (51.5-62.2) of the sampled households reduced the quantity and/or frequency of meals; this was followed by begging whereby 53.9% (48.5-59.3) of the households use this coping mechanism. In Mayukwayukwa, 51.2% (45.9-56.5) of the households reported to have reduced the quantity and/or frequency of meals in order to cope with food insecurity. As it the case for Meheba the second most coping mechanisms households used was begging which was reported by 45.3% (40.1-50.6) households sampled.

Water, Sanitation and Hygiene indicators

Improved and unimproved drinking water sources in the two settlements were assessed with an intention to establish the sources of water refugees were collecting water for drinking at household level. The study considered the following water sources to be "improved" water sources: a piped water supply into the home or a yard/plot, a public tap/standpipe, a tube well/borehole (with pump), a protected dug well, a protected spring and rainwater collection. While the following were considered "unimproved" water sources: unprotected spring, an unprotected dug well, a small water vendor (e.g. cart with a small tank / drum), a water tanker-truck and surface water (e.g. river, pond).

The study found that the proportion of households using an improved drinking water source was 100% in Mayukwayukwa settlement and it was 99.7% (97.9-100.0) in Meheba settlement. However, the proportion of households safely storing the water was below 50% in the two settlements. It was 43.5% (38.3-48.9) in Mayukwayukwa and 29.1% (24.4-34.2) in Meheba settlement.

In Mayukwayukwa, the proportions that used above the target of 20 litres per person per day (lppd) of water per capita was 69.4% (64.3-74.1) while in Meheba was reported at 54.8% (49.4-

60.2). The proportions of households that reported using between 15 - <20 litres of water per person per day was 10.6% (7.7-14.3) in Mayukwayukwa and it was 13.0% (9.8-17.1) in Meheba settlement.

Comparing the 2013 and 2017 proportion of the population that utilised equal and / or above 20 litres per person per day of water as per UNHCR standard of drinking water; it is evidence that the proportion of households using ≥ 20 liters per person per day has increased from 30% (22.8-38.0) in 2016 to 54.8% (49.4-60.2) in 2017 in Meheba. Similarly, it has increased from 49.1% (41.2-57.0) in 2013 to 69.4% (64.3-74.1) in 2017 in Mayukwayukwa settlement. Of the interviewed households, 20% (16.1-24.6) of them in Mayukwayukwa and 32.1% (27.3-37.4) in Meheba reported using only less than 15 liters of water per person per day. Poor access to adequate water risks general hygiene practices at household level and is a precursor for communicable diseases such as watery diarrhoea.

The study also assessed the coverage of the toilet facilities; where it considered that “improved” toilet was that hygienically separates human excreta from human contact. The types of toilets referred here are included: flush to piped sewer system; flush to septic tank; pour flush to pit; composting toilet; VIP latrine; pit latrine with a floor / slab. The type of toilets that the study considered unimproved are: flush / pour flush to an open drain; pit latrine without a closed slab or with an open pit; bucket; and a hanging toilet.

The study found that the proportion of households using an improved excreta disposal facility (improved toilet facility, 1 household) was only 25.3% (20.9-30.2) in Mayukwayukwa though higher compared to 12.4% (9.3-16.5) in Meheba settlement. Although the proportion of households with children under 3 years of age that dispose of faeces safely was as high as 90.8% (84.8-94.6) in Mayukwayukwa and 91.6% (87.3-94.5) in Meheba settlement, these great reported achievements were diluted by the large majority of the households reported using an unimproved toilet (unimproved toilet facility or public toilet) in the two settlements. In Mayukwayukwa 65.3% (60.1-70.2) and in Meheba 82.4% (77.9-86.2) of the households reported using an unimproved toilet facility or public toilet. The use of improved excreta disposal facility (improved toilet facility, 1 household) has not changed from 12.0% (7.3-18.3) in Meheba in 2013 to 12.4% (9.3-16.5) in 2017 in Meheba; while in Mayukwayukwa the situation has improved from 14.1% (9.2-20.4) in 2013 to 25.3% (20.9-30.2) in Mayukwayukwa settlement.

There is an urgent need to follow up on water storage containers that meets the hygiene requirements as per the UNHCR WASH strategy. Hygiene promotion need to be intensified followed up by households toilet constructions.

Mosquito net ownership and utilisation

From the primary data collected during the survey, mosquito net ownership and utilization was assessed. The use of the Long-Lasting Insecticide Treated Nets was prime outcome with an intention to see if in the settlements; children under 5 years, pregnant women and total household members slept under LLITN the previous night the survey was conducted.

This analysis indicates that the proportion of total households owning at least one mosquito net of any type was generally found low with 53.2% (47.9-58.5) in Mayukwayukwa being the higher proportions compared to only 23.0% (18.8-27.9) in Meheba settlement. The proportion of households owning at least one LLIN was found low, only at 45.6% (40.3-50.9) in Mayukwayukwa

and 18.5% (14.6-23.1) in Meheba settlements. The UNHCR target is to achieve at least >80% coverage of households owning at least one LLIN.

The proportion of children 0-59 months who slept under an LLIN was reported high at 73.4% (67.4-78.6) in Mayukwayukwa and low in Meheba at 56.5% (47.5-65.0), similarly the study found that the proportion of pregnant women who slept under an LLIN was 74.4%(58.0-85.9) in Mayukwayukwa and 76.2%(52.8-90.1) in Meheba settlement.

If the findings are generalized to the whole population, as the sampled households were drawn from the two settlements, this implies that the refugee population in Mayukwayukwa and Meheba are far less from achieving the recommended LLIN universal coverage of above 80%. From the findings, generally ownership of LLIN was found low across the 2 settlements; the programme should review the malaria prevention strategy, with considerations to raise the coverage of LLIN to attain at least >80% of the households to own at least 1 LLIN for an average of 2 people.

CONCLUSION

In conclusion, the refugee programme in Mayukwayukwa and Meheba requires closer attention as it is the case for many protracted refugee settlements. As per the results of SENS 2017, the prevalence of GAM 6.2% and 5.7% in Mayukwayukwa and Meheba classifies “POOR” level nutrition situation. The prevalence of anaemia among children aged 6-59 months being 42.5% and 45.8% in Mayukwayukwa and Meheba classifies “HIGH” level above the 40% of public health significance as per the WHO classification. Mentioned situation requires attention to strengthen preventive and curative nutrition and food security interventions along with health care, livelihood in the refugee settlements. Generally, the current quality of life remains dire. It requires critical planning, resources mobilization and re-designing of the livelihood interventions so that are able to support meaningfully the basic life needs and rights to food, water, shelter, non-food items, education and health. Though refugees reported consuming varieties of food such as meat, vegetables, eggs, fish, fruit and dairy products the quantity eaten would not suffice the minimum required quantities. Concerted integrated efforts will be required to bring the GAM levels to the WHO acceptable level of <5% because of the multifactorial nature of malnutrition.

During the training sessions and group discussions with the community health workers prior to the surveys it was found that the community recommends food support to vulnerable individuals and households so as to improve on food intake in terms of quality and quantity (food quantity, diet diversification). Improving on livelihood opportunities will improve on their income levels. During the discussions with refugee women it became evident that households’ lacks complementary food to children aged 6-23 months; the community recommended provision of appropriate age specific complementary food to young children. Refugee women mentioned that some of the children are developing malnutrition, and this was proved by relatively increased prevalence of malnutrition in the settlements. Introduction of standard selective feeding programmes would benefit identified malnourished children.

Immediate measures are required to ameliorate the children health and nutritional status considering the reported global acute malnutrition, significantly high prevalence of anaemia and high rate of diarrhoea among children. The programme is required to further promote hygiene and sanitation

interventions to meet minimum UNHCR recommended standards to the population; WASH indicators are related to the reported diarrhoea trends in the settlements.

RECOMMENDATION

Immediate term

- a. Since currently there is no selective feeding programs; implement standard selective feeding programs as per the UNHCR and WFP guideline. The recommended programs include: targeted supplementary feeding programme for the rehabilitation of moderate acute malnutrition children; in-patient therapeutic feeding programme for severe acute malnutrition with medical complications and out-patient therapeutic feeding programme for severe acute malnutrition without medical complications. Implement blanket supplementary feeding programme for pregnant and lactating women attending maternal and child health programme. The selective feeding programme should include chronic ill cases such HIV and Tuberculosis cases.
- b. During the identification process of malnourished children below 5 years using MUAC it is important that children 6-59 months identified with 13.5 cm (at-risk of malnutrition) are referred to the health facilities for further assessment. MUAC screening can be organised and conducted every 2 months, this will improve feeding programmes coverage and will assist in monitoring the nutritional status of the children.
- c. Enhance the maternal and child health nutrition programme whereby the health and nutrition partners should initiate and intensify case findings through screening of children in order to identify, treat and rehabilitate cases. UNHCR should invite WFP to provide supplementary food to moderately malnourished children, pregnant and lactating women and UNICEF should be invited to provide services to the severe acute malnutrition cases.
- d. UNHCR should consider distribution of food assistance to targeted vulnerable refugee households; it is also important to prioritise and implement livelihood activities which have direct benefits to the households in order to improve the household food security.
- e. Equip the Community Health Workers with MUAC tapes so that their ability to identify malnourished children and refer them to the health facilities for enrolment in the appropriate feeding programme is improved.
- f. Support current efforts to promote and protect IYCF through community awareness on IYCF, mother to mother support groups, and collaborate with other stakeholders implementing IYCF interventions in the country to further support initiation of breastfeeding, exclusive breastfeeding and provision of complementary feeding practices.
- g. Use of breastmilk substitute was reported among households; there is an urgent need to further investigate the magnitude and factors that governs the utilization of the breast milk substitutes and bottle feeding. Design mechanisms to support and promote breastfeeding for mothers with lactation problems in the settlements.
- h. UNHCR jointly with the partner implementing health programmes intensify expanded programme for immunization especially against; measles, polio, BCG and other antigens

as per MOH guideline. Further support vitamin A supplementation and de-worming programme in children 6-59 months.

- i. UNHCR in close collaboration with the partners implementing WASH programmes should promote hygiene practices through awareness campaigns; digging and use of latrine and its and maintenance; promote hand-washing with soap at household level, schools and at communal places, and ensuring adequate of hygiene promoters to meet the demand.

Medium term

- a. UNHCR to conduct annual standardised expanded nutrition surveys in all refugee settlements in the country so as to track the evolution of the nutritional status of refugees.
- b. UNHCR to consider expanding the current cash-based intervention transfer to cover most of the vulnerable households; households with malnourished children, pregnant women and lactating women (infants under 6 months), HIV and Tuberculosis and other chronically ill cases.
- c. The UNHCR partner should conduct a study on the perception of health and WASH services in order to establish factors governing the health-seeking behavior of the refugees; findings will be used to design the health strategy in the settlements.
- d. The prevalence of anaemia remain high in the settlements; UNHCR should prioritise to establish the country anaemia prevention and reduction strategy targeting children below 5 years; pregnant and lactating women.
- e. Promote hygiene practices such as cleaning of household environment, hand washing practices with soap especially at critical moments and improve coverage and maintenance of toilets.
- f. Promote the use of narrow necked water containers to prevent water contaminations, examine and distribute adequate water containers to improve water per capita at household level.

Longer term

- a. Promote and support proven livelihood activities that will increase asset status of households in to both non-agricultural employment, and into a wider variety of agricultural employment activities.

APPENDIX 1: Plausibility Check: MAYUKWAYUKWA Refugee Settlement

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Missing/Flagged data (% of in-range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	0 (0.8 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<0.000	2 (p=0.063)
Overall Age distrib (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<0.000	0 (p=0.370)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20	2 (6)
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20	4 (11)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	0 (1.00)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	0 (-0.47)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	0 (0.14)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	0 (p=)
Timing	Excl	Not	determined	yet			
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	8 %

At the moment the overall score of this survey is 8 %, this is good

APPENDIX 2: Plausibility Check: MEHEBA Refugee Settlement

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Missing/Flagged data (% of in-range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	0 (2.3 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<0.000	0 (p=0.208)
Overall Age distrib (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<0.000	4 (p=0.014)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20	2 (6)
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20	2 (10)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	0 (1.08)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	0 (-0.22)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	0 (0.31)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	0 (p=)
Timing	Excl	Not	determined	yet			
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	8 %

At the moment the overall score of this survey is 8 %, this is good.

Appendix 3:

UNHCR STANDARDIZED EXPANDED NUTRITION SURVEY IN MAYUKWAYUKWA AND MEHEBA SETTLEMENTS; NOVEMBER – DECEMBER 2017 AGE CALENDER

	SEASONS	2012	2013	2014	2015	2016	2017
JANUARY	Main planting season		58 New Year	46 New Year	34 New Year	22 New Year	10 New Year
FEBRUARY	Tobacco harvesting and curing		57	45	33	21	9
MARCH	Tobacco harvesting and curing		56 Equinox	44 Equinox	32 Equinox	20 Equinox	8 Equinox
APRIL	Tobacco harvesting and curing; Maize harvesting		55	43	31	19	7
MAY	Tobacco harvesting and curing; Wheat planting; Maize harvesting		54 African freedom day	42 African freedom day	30 African freedom day	18 African freedom day	6 African freedom day
JUNE	Wheat planting, Maize harvesting		53	41	29	17	5
JULY	Cotton picking and sale		52 Hero's day	40 Hero's day	28 Hero's day	16 Hero's day	4 Hero's day
AUGUST	Cotton picking and sale. Wheat harvest		51 Farmers day	39 Farmers day	27 Farmers day	15 Farmers day	3 Farmers day
SEPTEMBER	Land preparation; Wheat harvest		50 Equinox	38 Equinox	26 Equinox	14 Equinox	2 Equinox
OCTOBER	Land preparation		49 Independence day	37 Independence day	25 Independence day	13 Independence day	1 Independence day
NOVEMBER	Land preparation and Farming	60	48	36	24	12	
DECEMBER	Main planting season	59	47	35	23	11	

Appendix 4

UNHCR Standardised Expanded Nutrition Survey (SENS) Questionnaire

Greeting and reading of rights:

THIS STATEMENT IS TO BE READ TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSE BEFORE THE INTERVIEW. DEFINE HEAD OF HOUSEHOLD AS MEMBER OF THE FAMILY WHO MANAGES THE FAMILY RESOURCES AND IS THE FINAL DECISION MAKER IN THE HOUSE.

Hello, my name is _____ and I work with *[organisation/institution]*. We would like to invite your household to participate in a survey that is looking at the nutrition and health status of people living in this camp.

- UNHCR is sponsoring this nutrition survey.
- Taking part in this survey is totally your choice. You can decide to not participate, or if you do participate you can stop taking part in this survey at any time for any reason. If you stop being in this survey, it will not have any negative effects on how you or your household is treated or what assistance you receive.
- If you agree to participate, I will ask you some questions about your family and I will also measure the weight and height of all the children in the household who are older than 6 months and younger than 5 years. In addition to these assessments, I will test a small amount of blood from the finger of the children and women to see if they have anaemia.
- Before we start to ask you any questions or take any measurements, we will ask you to give us your verbal consent. Be assured that any information that you will provide will be kept strictly confidential.
- You can ask me any question that you have about this survey before you decide to participate or not.
- If you do not understand the information or if your questions were not answered to your satisfaction, do not declare your consent on this form. Thank you.

Note that in some camps, the words 'block' and 'section' may not be used and other words may be used for these. Adapt the wording accordingly.

CAPITAL LETTERS refer to instructions for the surveyors and should not be read to the respondent.

CHILDREN 6-59 MONTHS ANTHROPOMETRY, HEALTH AND ANAEMIA: 1 questionnaire per cluster / zones / sections (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO ALL CHILDREN BETWEEN 6 AND 59 MONTHS OF AGE)

Section code / number: _____ Block code / number: _____

Date of interview (dd/mm/yyyy): _ _ / _ _ / _ _ _ _ _ _					Cluster Number (<i>in cluster survey only</i>) _ _ _						Team number _ _			
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15
ID	HH	Consent given 1=Yes 2=No 3=Absent	Sex (m/f)	Birthdate* dd/mm/yyyy	Age** (months)	Weight (kg) ±100g	Height (cm) ±0.1cm	Oedema (y/n)	MUAC (mm)	Child enrolled 1=SFP 2=TFP 3=None	Measles 1=Yes card 2=Yes recall 3=No or don't know	Vit. A in past 6 months (SHOW CAPSULE) 1=Yes card 2=Yes recall 3=No or don't know	Diarrhoea in past 2 weeks 1=Yes 2=No 3=Don't know	Hb (g/L or g/dL)
01				/ /										
02				/ /										
03				/ /										
04				/ /										
05				/ /										
06				/ /										
07				/ /										
08				/ /										
09				/ /										
...				/ /										

*The exact birth date should only be taken from an age documentation showing day, month and year of birth. It is only recorded if an official age documentation is available; if the mother recalls the exact date, this is not considered to be reliable enough. **Leave blank if no official age documentation is available.**

**If no age documentation is available, estimate age using local event calendar. If an official age documentation is available, record the age in months from the date of birth.

WOMEN ANAEMIA: 1 questionnaire per cluster / zones / sections (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO ALL WOMEN AGED BETWEEN 15 AND 49 YEARS IN THE SELECTED HOUSEHOLD)

Section code / number: _____ Block code / number: _____

Date of interview (dd/mm/yyyy):				Cluster Number (<i>in cluster survey only</i>)		Team number	
_ _ _ / _ _ / _ _ _ _ _ _ _ _				_ _ _ _		_ _ _	
WM1	WM2	WM3	WM4	WM5	WM6	WM7	WM8
ID	HH	Consent given 1=Yes 2=No 3=Absent	Age (years)	Are you pregnant? 1=Yes 2=No (GO TO HB) 8=Don't know (GO TO HB)	Are you currently enrolled in the ANC programme? 1=Yes 2=No 8=Don't know	Are you currently receiving iron-folate pills (<i>SHOW PILL</i>)? 1=Yes (STOP NOW) 2=No (STOP NOW) 8=Don't know (STOP NOW)	Hb (g/L or g/dL)
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
...							

IYCF: 1 questionnaire per child 0-23 months (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE MOTHER OR THE MAIN CAREGIVER WHO IS RESPONSIBLE FOR FEEDING THE CHILD AND THE CHILD SHOULD BE BETWEEN 0 AND 23 MONTHS OF AGE)

Section code / number: _____ Block code / number: _____ Consent : yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (<i>in cluster survey only</i>)	
_ _ _ / _ _ _ / _ _ _ _ _ _ _	_ _ _ _	
Team Number	ID Number	HH Number
_ _	_ _ _ _	_ _ _ _

No	QUESTION	ANSWER CODES	
SECTION IF1			
IF1	Sex	Male.....1 Female2	_ _
IF2	Birthdate RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION.	Day/Month/Year. _ _ _ _ / _ _ _ _ / _ _ _ _ _ _ _	
IF3	Child's age in months	IF AGE DOCUMENTATION NOT AVAILABLE, ESTIMATE USING EVENT CALENDAR. IF AGE DOCUMENTATION AVAILABLE, RECORD THE AGE IN MONTHS FROM THE DATE OF BIRTH.	_ _ _
IF4	Has [NAME] ever been breastfed?	Yes.....1 No2 Don't know.....8	_ _ IF ANSWER IS 2 or 8 GO TO IF7
IF5	How long after birth did you first put [NAME] to the breast?	Less than one hour.....1 Between 1 and 23 hours2 More than 24 hours3 Don't know.....8	_ _
IF6	Was [NAME] breastfed yesterday during the day or at night?	Yes.....1 No2 Don't know.....8	_ _
SECTION IF2			

IF7	<p>Now I would like to ask you about liquids that [NAME] may have had yesterday during the day and at night. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] receive any of the following?</p> <p>ASK ABOUT EVERY LIQUID. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOES NOT KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE.</p> <p>REPLACE AND ADAPT THE TEXT HIGHLIGHTED IN GREY TO THE CONTEXT.</p> <p>THE TEXT IN <i>ITALICS</i> NEEDS TO BE DELETED FROM THE FINAL SURVEY QUESTIONNAIRE – THE LIST THAT IS PROVIDED BELOW IS AN EXAMPLE.</p> <div style="text-align: right;">Yes No</div> <div style="text-align: center;">DK</div>		
	7A. Plain water	7A.....1	2 8
	7B. Infant formula, for example [INSERT LOCALLY AVAILABLE BRAND NAMES OF INFANT FORMULA, <i>ALL TYPES</i>]	7B.....1	2 8
	7C. Milk such as tinned, powdered, or fresh animal milk, for example [INSERT LOCALLY AVAILABLE BRAND NAMES OF TINNED AND POWDERED MILK]	7C.....1	2 8
	7D. Juice or juice drinks, for example [INSERT LOCALLY AVAILABLE BRAND NAMES OF JUICE DRINKS]	7D.....1	2 8
	7E. Clear broth	7E.....1	2 8
	7F. Sour milk or yogurt, for example [INSERT LOCAL NAMES]	7F.....1	2 8
	7G. Thin porridge, for example [INSERT LOCAL NAMES]	7G.....1	2 8
	7H. Tea or coffee with milk	7H.....1	2 8
	7I. Any other water-based liquids, for example [INSERT OTHER WATER-BASED LIQUIDS AVAILABLE IN THE LOCAL SETTING AND USE LOCAL NAMES] (e.g. <i>sodas, other sweet drinks, herbal infusion, gripe water, clear tea with no milk, black coffee, ritual fluids</i>)	7I.....1	2 8
IF8	Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food?	Yes.....1 No.....2 Don't know.....8	___

SECTION IF3			
IF9	Did [NAME] drink anything from a bottle with a nipple yesterday during the day or at night?	Yes.....1 No.....2 Don't know.....8	__
SECTION IF4			
IF10	IS CHILD AGED 6-23 MONTHS? REFER TO IF2 / IF3	Yes.....1 No.....2	__ IF ANSWER IS 2 STOP NOW
IF11	<p>Now I would like to ask you about some particular foods [NAME] may eat. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] consume any of the following?</p> <p>ASK ABOUT EVERY ITEM. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOES NOT KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE.</p> <p>REPLACE AND ADAPT THE TEXT HIGHLIGHTED IN GREY TO THE CONTEXT.</p> <p>THE TEXT IN <i>ITALICS</i> NEEDS TO BE DELETED FROM THE FINAL SURVEY QUESTIONNAIRE – THE LIST THAT IS PROVIDED BELOW IS AN EXAMPLE.</p> <p>IF A CATEGORY OF IRON-RICH FOOD (11A-11H) IS NOT AVAILABLE IN THE SETTING, DELETE IT FROM THE QUESTIONNAIRE BUT KEEP THE ORIGINAL QUESTION NUMBERS AND DO NOT CHANGE.</p>		
			Yes No DK
	11A. [INSERT COMMON MEAT, FISH, POULTRY AND LIVER/ORGAN FLESH FOODS USED THE LOCAL SETTING] (<i>e.g. beef, goat, lamb, mutton, pork, rabbit, chicken, duck, liver, kidney, heart</i>)	11A.....1 2 8	
	11B. [INSERT FBF AVAILABLE IN THE LOCAL SETTING AND USE LOCAL NAMES] (e.g. CSB+, WSB+)	11B.....1 2 8	
	11C. [INSERT FBF++ AVAILABLE IN THE LOCAL SETTING AND USE LOCAL NAMES] (<i>e.g. CSB++, WSB++</i>)	11C.....1 2 8	
	11D. [INSERT RUTF PRODUCTS AVAILABLE IN THE LOCAL SETTING AND USE LOCAL NAMES] (<i>e.g. Plumpy'Nut®</i> , <i>eeZeePaste™</i>) (SHOW SACHET)	11D.....1 2 8	
	11E. [INSERT RUSF PRODUCTS AVAILABLE IN THE LOCAL SETTING AND USE LOCAL NAMES] (<i>e.g. Plumpy'Sup®</i>) (SHOW SACHET)	11E.....1 2 8	

	11F. [INSERT LNS PRODUCTS AVAILABLE IN THE LOCAL SETTING AND USE LOCAL NAMES] (e.g. <i>Nutributter®</i> , <i>Plumpy'doz®</i>) (SHOW SACHET / POT)	11F.....1 2 8	
	11G. [INSERT LOCALLY AVAILABLE BRAND NAMES OF IRON FORTIFIED INFANT FORMULA ONLY] (e.g. <i>Nan</i> , <i>S26 infant formula</i>)	11G.....1 2 8	
	11H. [INSERTST ANY IRON FORTIFIED SOLID, SEMI-SOLID OR SOFT FOODS DESIGNED SPECIFICALLY FOR INFANTS AND YOUNG CHILDREN AVAILABLE IN THE LOCAL SETTING THAT ARE DIFFERENT THAN DISTRIBUTED COMMODITIES AND USE LOCALLY AVAILABLE BRAND NAMES] (e.g. <i>Cerelac</i> , <i>Weetabix</i>)	11H.....1 2 8	
IF12	In a setting where micronutrient powders are used: Yesterday, during the day or at night, did [NAME] consume any food to which you added a [INSERT LOCAL NAME FOR MICRONUTRIENT POWDER OR SPRINKLES] like this? (SHOW MICRONUTRIENT POWDER SACHET)	Yes.....1 No.....2 Don't know.....8	—

WASH: 1 questionnaire per household (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE MAIN CARETAKER OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD)

Section code / number: _____ Block code / number: _____ Consent : yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (<i>in cluster survey only</i>)
_ _ _ / _ _ _ / _ _ _ _ _ _ _	_ _ _
Team Number	HH Number
_ _	_ _ _ _ _

No	QUESTION	ANSWER CODES	
SECTION WS1			
WS1	How many people live in this household and slept here last night?	_ _ _	
WS2	What is the main source of drinking water for members of your household? <div style="background-color: #e0e0e0; padding: 5px;"> ADAPT LIST TO LOCAL SETTING BEFORE SURVEY. WHEN ADAPTING THE LIST, KEEP THE ORIGINAL ANSWER CODES AND DO NOT CHANGE. </div> DO NOT READ THE ANSWERS SELECT ONE ONLY	Piped water.....01 Public tap/standpipe02 Tubewell/borehole (& pump).....03 Protected dug well.....04 Protected spring.....05 Rain water collection06 UNHCR Tanker07 Unprotected spring08 Unprotected dug well09 Small water vendor.....10 Tanker truck.....11 Bottled water.....12 Surface water (e.g. river, pond)13 Other96 Don't know98	_ _ _
WS3	Are you satisfied with the water supply? THIS RELATES TO THE DRINKING WATER SUPPLY	Yes1 No2 Partially.....3 Don't know8	_ _ IF ANSWER IS 1, 3 OR 8 GO TO WS5

WS4	<p>What is the main reason you are not satisfied with the water supply?</p> <p>ADAPT LIST TO LOCAL SETTING BEFORE SURVEY.</p> <p>DO NOT READ THE ANSWERS</p> <p>SELECT ONE ONLY</p>	<p>Not enough 01</p> <p>Long waiting queue..... 02</p> <p>Long distance..... 03</p> <p>Irregular supply..... 04</p> <p>Bad taste..... 05</p> <p>Water too warm..... 06</p> <p>Bad quality 07</p> <p>Have to pay 08</p> <p>Other 96</p> <p>Don't know 98</p>	<p> __ __ </p>
WS5	<p>What kind of toilet facility does this household use?</p> <p>ADAPT LIST TO LOCAL SETTING BEFORE SURVEY.</p> <p>WHEN ADAPTING THE LIST, KEEP THE ORIGINAL ANSWER CODES AND DO NOT CHANGE.</p> <p>DO NOT READ THE ANSWERS</p> <p>SELECT ONE ONLY</p>	<p>Flush to piped sewer system..... 01</p> <p>Flush to septic system..... 02</p> <p>Pour-flush to pit 03</p> <p>VIP/simple pit latrine with floor/slab..... 04</p> <p>Composting/dry latrine..... 05</p> <p>Flush or pour-flush elsewhere..... 06</p> <p>Pit latrine without floor/slab..... 07</p> <p>Service or bucket latrine 08</p> <p>Hanging toilet/latrine 09</p> <p>No facility, field, bush, plastic bag..... 10</p>	<p> __ __ </p> <p>IF ANSWER IS 10 GO TO WS7</p>
WS6	<p>How many households share this toilet?</p> <p>THIS INCLUDES THE SURVEYED HOUSEHOLD</p>	<p>RECORD NUMBER OF HOUSEHOLDS IF KNOWN (RECORD 96 IF PUBLIC TOILET OR 98 IF UNKNOWN)</p> <p>SUPERVISOR SELECT ONE ONLY</p> <p>Not shared (1 HH) 1</p> <p>Shared family (2 HH)..... 2</p> <p>Communal toilet (3 HH or more)..... 3</p> <p>Public toilet (in market or clinic etc.) 4</p> <p>Don't know 8</p>	<p> __ __ </p> <p>Households</p> <p> __ </p>
WS7	<p>Do you have children under three years old?</p>	<p>Yes 1</p> <p>No..... 2</p>	<p> __ </p> <p>IF ANSWER IS 2 GO TO WS9</p>
WS8	<p>The last time [NAME OF YOUNGEST CHILD] passed stools, what was done to dispose of the stools?</p> <p>DO NOT READ THE ANSWERS</p> <p>SELECT ONE ONLY</p>	<p>Child used toilet/latrine 01</p> <p>Put/rinsed into toilet or latrine 02</p> <p>Buried..... 03</p> <p>Thrown into garbage 04</p> <p>Put/rinsed into drain or ditch 05</p> <p>Left in the open 06</p> <p>Other 96</p> <p>Don't know 98</p>	<p> __ __ </p>

SECTION WS2 Observation Based Questions (<i>done after the initial questions to ensure the flow of the interview is not broken</i>)					
No	OBSERVATION / QUESTION	ANSWER			
WS9	CALCULATE THE TOTAL AMOUNT OF WATER USED BY THE HOUSEHOLD PER DAY THIS RELATES TO ALL SOURCES OF WATER (DRINKING WATER AND NON-DRINKING WATER SOURCES)	Please show me the containers you used yesterday for collecting water ASSIGN A NUMBER TO EACH CONTAINER	Capacity in litres Number of journeys made with each container Total litres SUPERVISOR TO COMPLETE HAND CALCULATION		
		1 E.g. jerry can	25 L	1 x	25
		2 E.g. jerry can	10 L	2 x	20
		3 E.g. jerry can	5 L	2 x	10
		4 E.g. jerry can	5 L	1 x	5
		5 E.g. bucket	50 L	1 x	50
		6			
		7			
		8			
		9			
		10			
		Total litres used by household			110
		WS10	Please show me where you store your drinking water. ARE THE DRINKING WATER CONTAINERS COVERED OR NARROW NECKED?	All are.....1 Some are 2 None are 3	—

FOOD SECURITY: 1 questionnaire per household (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE MAIN CARETAKER WHO IS RESPONSIBLE FOR COOKING THE MEALS)

Section code / number: _____ Block code / number: _____ Consent : yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (<i>in cluster survey only</i>)
_ _ _ / _ _ _ / _ _ _ _ _ _ _	_ _ _
Team Number	HH Number
_ _	_ _ _ _

No	QUESTION	ANSWER CODES	
SECTION FS1			
FS1	Does your household have a ration card?	Yes.....1 No2	_ _ IF ANSWER IS 1 GO TO FS3
FS2	Why do you not have a ration card?	Not given one at registration 1 Lost card..... 2 Traded/sold card 3 Not registered but eligible 4 Not eligible (not in targeting criteria) 5 Other.....6	_ _ GO TO FS5
FS3	Does your household receive full or reduced ration? (OPTIONAL)	Full.....1 Half.....2 Other.....6	_ _ IF ANSWER IS 2 OR 6 GO TO FS5
FS4	How many days did the food from the general food aid ration from the [INSERT] cycle of [INSERT MONTH] last?	RECORD THE NUMBER OF DAYS IF KNOWN (RECORD 98 IF UNKNOWN)	_ _ _
FS5	In the last month, have you or anyone in your household borrowed cash, food or other items with or without interest?	Yes.....1 No2 Don't know.....8	_ _
FS6	In the last month, have you or anyone in your household sold any assets that you would not have normally sold (furniture, seed stocks, tools, other NFI, livestock etc.)?	Yes.....1 No2 Don't know.....8	_ _
FS7	In the last month, have you or anyone in your household requested increased remittances or gifts as compared to normal?	Yes.....1 No2 Don't know.....8	_ _

FS8	In the last month, have you or anyone in your household reduced the quantity and / or frequency of meals and snacks?	Yes.....1 No2 Don't know.....8	__
FS9	In the last month, have you or anyone in your household begged?	Yes.....1 No2 Don't know.....8	__
FS10	In the last month, have you or anyone in your household engaged in: [ADD LIST OF POTENTIALLY RISKY OR HARMFUL ACTIVITIES SUCH AS LOCAL ILLEGAL ACTIVITIES] or any other risky or harmful activities?	Yes.....1 No2 Don't know.....8	__

SECTION FS2

FS11	<p>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. I am interested in whether you or anyone else in your household had the item even if it was combined with other foods. I am interested in knowing about meals, beverages and snacks eaten or drank inside or outside the home.</p> <p>READ THE LIST OF FOODS AND DO NOT PROBE. PLACE A ONE IN THE BOX IF ANYONE IN THE HOUSEHOLD ATE THE FOOD IN QUESTION, PLACE A ZERO IN THE BOX IF NO ONE IN THE HOUSEHOLD ATE THE FOOD.</p> <p>REPLACE AND ADAPT THE TEXT HIGHLIGHTED IN GREY TO THE CONTEXT.</p> <p>THE TEXT IN <i>ITALICS</i> NEEDS TO BE DELETED FROM THE FINAL SURVEY QUESTIONNAIRE – THE LIST THAT IS PROVIDED BELOW IS AN EXAMPLE.</p>		
	1. Any [INSERT CEREALS LOCALLY AVAILABLE] (e.g. <i>wheat, corn/maize, corn soy blend, barley, buckwheat, millet, oats, rice, rye, sorghum, teff</i>) or any foods made from these such as [INSERT LOCAL FOODS] (e.g. <i>bread, porridge, noodles, ugali, nshima, paste</i>)	1.....	__ -
	2. Any [INSERT WHITE ROOTS AND TUBERS LOCALLY AVAILABLE] (e.g. <i>green bananas, lotus root, parsnip, taro, plantains, white potatoes, white yam, white cassava, white sweet potato</i>) or any foods made from roots such as [INSERT LOCAL FOODS]	2.....	__
	3A. Any [INSERT VITAMIN A RICH VEGETABLES AND TUBERS LOCALLY AVAILABLE] (e.g. <i>carrot, pumpkin, squash, or sweet potato that are orange inside, red sweet pepper</i>)	3A.....	__
	3B. Any [INSERT DARK GREEN LEAFY VEGETABLES LOCALLY AVAILABLE INCLUDING WILD FORMS AND VITAMIN A RICH LEAVES] (e.g. <i>amaranth, arugula, cassava leaves, kale, spinach</i>)	3B.....	__
	3C. Any [INSERT ANY OTHER VEGETABLES LOCALLY AVAILABLE] (e.g. <i>bamboo shoots, cabbage, green pepper, tomato, onion, eggplant, zucchini</i>)	3C.....	__
	4A. Any [INSERT VITAMIN A RICH FRUITS LOCALLY AVAILABLE], and 100% fruit juice made from these (e.g. <i>mango (ripe, fresh and dried), cantaloupe melon</i>)	4A.....	__

	(ripe), apricot (fresh or dried), ripe papaya, passion fruit (ripe), dried peach)	
	4B. Any [INSERT ANY OTHER FRUITS LOCALLY AVAILABLE INCLUDING WILD FRUITS], and 100% fruit juice made from these (e.g. apple, avocados, banana, coconut flesh, lemon, orange)	4B..... ____
	5A. Any [INSERT ORGAN MEAT OR BLOOD-BASED FOODS LOCALLY AVAILABLE] (e.g. liver, kidney, heart)	5A..... ____
	5B. Any [INSERT FLESH MEAT LOCALLY AVAILABLE] (e.g. beef, goat, lamb, mutton, pork, rabbit, chicken, duck, cane rat, guinea pig, rat, agouti frogs, snakes, insects)	5B..... ____
	6. Any eggs from [INSERT EGGS LOCALLY AVAILABLE] (e.g. eggs from chicken, duck, guinea fowl)	6..... ____
	7. Any [INSERT FRESH, DRIED OR CANNED FISH OR SHELLFISH LOCALLY AVAILABLE] (e.g. anchovies, tuna, sardines, shark, whale, roe/fish eggs, clam, crab, lobster, crayfish, mussels, shrimp, octopus, squid, sea snails)	7..... ____
	8. Any [INSERT LEGUMES, NUTS AND SEEDS LOCALLY AVAILABLE] (e.g. dried peas, dried beans, lentils, nuts, seeds) or any foods made from these such as [INSERT LOCAL FOODS] (e.g. hummus, peanut butter)	8..... ____ -
	9. Any [INSERT MILK AND MILK PRODUCTS LOCALLY AVAILABLE] (e.g. milk, infant formula, cheese, kiefel, yogurt)	9..... ____
	10. Any [INSERT OILS AND FATS LOCALLY AVAILABLE] added to food or used for cooking (e.g. vegetable oil, ghee or butter)	10..... ____ -
	11. Any [INSERT SWEETS, SWEETENED SODA OR JUICE DRINKS AND SUGARY FOODS LOCALLY AVAILABLE] (e.g. sugar, honey, soda drinks, chocolates, candies, cookies, sweet biscuits and cakes)	11..... ____
	12. Any [INSERT SPICES, CONDIMENTS AND BEVERAGES LOCALLY AVAILABLE] (e.g. black pepper, salt, chillies, soy sauce, hot sauce, fish powder, fish sauce, ginger, herbs, magi cubes, ketchup, mustard, coffee, tea, beer, alcoholic beverages like wine, hard spirits)	12..... ____

MOSQUITO NET COVERAGE: 1 questionnaire per household (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD).

Section code / number: _____ Block code / number: _____ Consent : yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (<i>in cluster survey only</i>)
_ _ _ / _ _ _ / _ _ _ _ _ _	_ _ _
Team Number	HH Number
_ _	_ _ _ _

No	QUESTION	ANSWER CODES			
SECTION TN1					
TN1	How many people live in this household and slept here last night? INSERT NUMBER	_ _ _			
TN2	How many children 0-59 months live in this household and slept here last night? INSERT NUMBER	_ _ _			
TN3	How many pregnant women live in this household and slept here last night? INSERT NUMBER	_ _ _			
TN4	Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past I_ _ I months? (OPTIONAL)	Yes..... 1 No 2	_ _		
TN5	Do you have mosquito nets in this household that can be used while sleeping?	Yes..... 1 No 2	_ _ IF ANSWER IS 2 STOP NOW		
TN6	How many of these mosquito nets that can be used while sleeping does your household have? INSERT NUMBER	IF MORE THAN 4 NETS, ENTER THE NUMBER AND USE ADDITIONAL NET QUESTIONNAIRE SHEETS ENTERING THE NUMBER OF THE NETS SEQUENTIALLY AT THE TOP.			_ _ Nets
TN7	ASK RESPONDENT TO SHOW YOU THE NET(S) IN THE HOUSEHOLD. IF NETS ARE NOT OBSERVED → CORRECT TN6 ANSWER	NET # _ _	NET # _ _	NET # _ _	NET # _ _
TN8	OBSERVE NET AND RECORD THE BRANDNAME OF NET ON THE TAG. IF NO TAG EXISTS OR IS				

	UNREADABLE RECORD 'DK' FOR DON'T KNOW.				
TN9	For surveyor/supervisor only (not to be done during interview): WHAT TYPE OF NET IS THIS? BASED ON THE TAG INDICATE IF THIS IS A LLIN OR OTHER TYPE OF NET OR DK.	1=LLIN 2=Other/DK __	1=LLIN 2=Other/DK __	1=LLIN 2=Other/DK __	1=LLIN 2=Other/DK __
TN10	For surveyor/supervisor only (not to be done during interview): RECORD THE TOTAL NUMBER OF LLINs IN HOUSEHOLD BY COUNTING THE NUMBER OF '1' IN TN9.				__ LLINs

SECTION TN2							
Line no	Household members	Sex	Age	Pregnancy status	Slept under net	Which net	Type of net
#	COL1	COL2	COL3	COL4	COL5	COL6	COL7
	Please give me the names of the household members who live here and who slept here last night	Sex m/f	Age years	FOR WOMEN 15-49 YEARS, ASK: Is (NAME) currently pregnant? (CIRCLE NOT APPLICABLE OR N/A*99 IF FEMALE <15- >49 YEARS OR MALE) Yes No/DK N/A	Did (NAME) sleep under a net last night? Yes No/DK	ASK THE RESPONDENT TO PHYSICALLY IDENTIFY WHICH OF THE OBSERVED NETS THEY SLEPT UNDER. WRITE THE NUMBER CORRESPONDING TO THE NET THEY USED.	For surveyor/supervisor only: BASED ON THE OBSERVED NET BRANDNAME RECORDED (TN8), INDICATE IF IT IS AN LLIN OR OTHER / DON'T KNOW (DK). LLIN OTHER/DK
01		m f	<5 ≥5	1 0 99	1 0	__	1 2
02		m f	<5 ≥5	1 0 99	1 0	__	1 2
03		m f	<5 ≥5	1 0 99	1 0	__	1 2
04		m f	<5 ≥5	1 0 99	1 0	__	1 2
05		m f	<5 ≥5	1 0 99	1 0	__	1 2
06		m f	<5 ≥5	1 0 99	1 0	__	1 2
07		m f	<5 ≥5	1 0 99	1 0	__	1 2
08		m f	<5 ≥5	1 0 99	1 0	__	1 2
09		m f	<5 ≥5	1 0 99	1 0	__	1 2
10		m f	<5 ≥5	1 0 99	1 0	__	1 2
11		m f	<5 ≥5	1 0 99	1 0	__	1 2
12		m f	<5 ≥5	1 0 99	1 0	__	1 2
13		m f	<5 ≥5	1 0 99	1 0	__	1 2
14		m f	<5 ≥5	1 0 99	1 0	__	1 2
15		m f	<5 ≥5	1 0 99	1 0	__	1 2
Mosquito net summary (for surveyor / supervisor only, not to be done during interview)							
	Total household members		Total <5		Total Pregnant		
Slept under a net of any	Count the number of '1' in COL5	TN11 __ __	For children < 5 (COL3 is '<5'), count the number	TN13 __ __	For pregnant women (COL4 is '1'), count the number of '1' in	TN15 __ __	

type			of '1' in COL5		COL5	
Slept under an LLIN	Count the number of '1' in COL7	TN12 __ __	For children <5 (COL3 is '<5'), count the number of '1' in COL7	TN14 __ __	For pregnant women (COL4 is '1'), count the number of '1' in COL7	TN16 __ __



Map of Zambia at a glance: Mayukwayukwa to the West, and Meheba to the North-West