AFGHANISTAN

Integrated Nutrition, Health, WASH and FSL SMART Survey

Final Report

Kunar Province, Afghanistan

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Abbreviations

AAH/ACF	Action Against Hunger/Action Contre La Faim
AIM-WG	Assessment Information Management Working Group
AHDS	Afghan Health and Development Services
AfDHS	Afghanistan Demographic and Health Survey
AOG	Army Opposition Group
BCG	Bacillus Calmette Guerin
BHC	Basic Health Center
BPHS	Basic Package of Health Services
CDR	Crude Death Rate
CHC	Comprehensive Health center
CSO	Central Statistics Organization
CHW	Community Health Worker
ENA	Emergency Nutrition Assessment
EPHS	Essential Package of Health Services
DH	District Hospital
ERM	Emergency Response Mechanism
FCS	Food consumption Score
FSL	Food Security and livelihoods
GAM	Global Acute Malnutrition
HSC	Health Sub Center
IYCF	Infant and Young Child Feeding

MOPH	Ministry of Public Health
MHT	Mobile Health Team
PPHD	Provincial Public Health Directorate
PENTA	Pertussis, Diphtheria, Tetanus, Hepatitis B and Hemophilia's influenza type B
PU-AMI	Première Urgence–Aide Médicale Internationale
PND	Public Nutrition Department
PH	Provincial Hospital
MUAC	Mid Upper Arm Circumference
MW	Mean Weight
NNS	National Nutrition Survey
N2KL	Nuristan, Nangarhar, Kunar and Laghman Provinces
PPS	Proportional Population Size
RC	Reserve Cluster
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SMART	Standardized Monitoring and Assessment of Relief and Transition
U5DR	Under five Death Rates
U5	Under five
UNICEF	United Nation Children's Fund
WFP	World Food Program
WASH	Water, Sanitation and Hygiene
WHZ	Weight for Height Z score
W/H	Weight for Height
WHO	World Health Organization

Table of Contents

1. Executive summary 10

1.1. Summary Findings 10

2. Introduction 13

3. Survey objectives 14

2.1. Broad objective 14

2.2. Specific objective 14

2.3. Justification 14

4. Methodology 15

4.1. Sample Size 15

4.2. Sampling Methodology 17

4.3. Training, team composition and supervision 19

4.4. Data analysis 20

4.5. INDICATORS: DEFINITION, CALCULATION and INTERPRETATION 20

4.3. Health 22

4.4 WASH 23

4.5 Infant and Young Child Feeding (IYCF) Practices Indicators 23

4.6. Maternal Health and Nutrition 24

5. Limitation of the survey 25

6. Survey findings 25

6.1. Demography 25

6.2 Description of sample 26

6.3 Data quality 27

6.4 Undernutrition 28

6.4.1 Prevalence of Global Acute Malnutrition (GAM) 29

6.4.2 Prevalence of chronic malnutrition (stunting) 32

6.4.3 Prevalence of underweight 34

6.4.5 Women health and nutrition status 35

6.5 Crude and Under 5 Years Death Rate 36
6.6 Child Health and Immunization 37
6.6.1 Morbidity 37
6.6.2 Child Health and Immunization 37
6.6.3 Vitamin A Supplementation for children 38
6.6.4 Deworming of children aged 24-59 months 38
6.7 Infant and Young Child Feeding (IYCF) Practices 39
6.8 WASH 40
6.8.1 Water Availability and Consumption 40
6.8.2 Houesholds Waters Sources and Treatment 40
6.8.3 Caregiver's Hand washing practice 42
6.9 Households Food Security and Livelihoods (FSL) 42
6.9.1 Food Consumption Scores and Food Based Coping Strategies 42
6.9.2 Food security situation 44
6.9.3 Reduced Coping Strategy Index 44
6.9.4 Food Consumption Score: 45
6.9.5 Food stock 47
6.9.6 Food main sources 47
7. Conclusion 47
7.1. Undernutrition 47
7.2 Mortality rates 49
7.3 Maternal nutritional status 49
7.4 Child Health and Immunization 49
8. Recommendations 50
9. ANNEXES 52
10. References 78

List of Tables

Table 1: Parameters for sample size calculation of anthropometric indicators 15

Table 2: Sample size calculation for mortality surveys 16

Table 3: MUAC cut-offs points for children aged 6-59 months 21

Table 4: Definition of acute malnutrition according to weight-for-height index (W/H), expressed as a Z-score based on WHO standards 21

Table 5: Cut offs points of the Height for Age index expressed in Z-score, WHO standards 22

Table 6: Summary of the Demography 25

Table 7: Distribution of age and sex of children 6-59 months 26

Table 8: Details of proposed and actual sample size achieved 27

Table 9: Mean z-scores, Design Effects and excluded subjects/outliers of the survey 29

Table 10: Prevalence of acute malnutrition based on WHZ (and/or edema) and by sex among children 6-59 months 29

Table 11: Prevalence of acute malnutrition by age, based on WHZ and/or oedema 30

Table 12: Prevalence of acute malnutrition based on WHZ (and/or oedema) disaggregated by sex and age 30

Table 13: Distribution of severe acute malnutrition based on Oedema among children 6-59 months 31

Table 14: Prevalence of acute malnutrition based on MUAC cut off (and/or oedema) disaggregated by sex among children 6-59 months 31

Table 15: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema ... 31

Table 16: Prevalence of acute malnutrition based on combined criteria (WHZ+MUAC+Oedema) among children 6-59 months 32

Table 17: Prevalence of stunting based on height-for-age z-scores (HAZ) disaggregated by sex . 32

Table 18: Prevalence of stunting disaggregated by age based on height-for-age z-scores 34

Table 19: Prevalence of underweight based on weight-for-age z-scores (WAZ) among children 6-59 months 34
Table 20: Prevalence of underweight disaggregated by age, based on weight-for-age z-scores .. 35
Table 21: Prevalence of malnutrition among PLWs based on MUAC cut-off 35
Table 22: Iron folate supplementation for pregnant women based on available answers 36
Table 23: Status of ANC visits in the last pregnancy 36
Table 24: Skill Births Attendance (SBA) status for the last baby 36
Table 25: Death rates by age and sex category with design effect 37
Table 26: Morbidity status among under-five years children 37
Table 27: Immunization coverages for BCG, Measles, PENTA 3 and Polio vaccines among children U5 38
Table 28: Vitamin A supplementation among children 6-59 months 38
Table 29: Deworming among children 24-59 months 39
Table 30: Percentage of households with practice of different water treatment methods 41
Table 31: Hand-washing practices by the mothers/caretakers 42
Table 32: Hand washing practice by mothers/caretakers at critical time 42
Table 33: Status of food stcok in the household 47
Table 34: Food main sources that the households consumed 47

List of Figures

Figure 1 : Distribution of age and sex pyramid 27

Figure 2: Trend of stunting over the age distribution 33

Figure 3: Gaussian distributed curves HAZ 33

Figure 4: Percentage of HH water usage in liter/day 40

Figure 5: Percentage of water usage in liter/ person/day 40

Figure 6: HH level daily improved and unimproved water sources 41

Figure 7: Food security situation (Based on FCS & rSCI) 44

Figure 8: Reduced coping strategy index 45

Figure 9: Food Consumption score per HH 46

Figure 10: Households consuming different food items/group 46

Figure 11: Overlapping WHZ and MUAC data 48

ANNEXES:

Annex 1: Kunar Province Map 52

Annex 2: selected Clusters in the Kunar province 52

Annex 3: Plausibility check for: Kuner ENA data sets FV-2018.as 54

Annex 4: SMART survey questionnaires 72

1. EXECUTIVE SUMMARY

Kunar is one of the 34 provinces of Afghanistan, located in the north-eastern part of the country. It has 15 districts: Bar Kunar, Chapa Dara, Dan gam, Dara I Pech, Ghazi Abad, Khas Kunar, Naran Aw Badil, Marwera, Nari, Nor gal, Sawkai, Shaegal, Sarkani, Wata poor and capital is Asadabad.

It is one of the four "N2KL" provinces (Nangarhar Province, Nuristan Province, Kunar Province and Laghman Province). N2KL is the designation used by US and its Coalition Forces in Afghanistan for the rugged and very violent region along the borderline opposite Pakistan's Federally Administered Tribal Areas and Khyber Pakhtunkhwa. Kunar is the center of the N2KL (Nangarhar, Kunar, Laghman and Nuristan) region. The Kunar province is mostly mountainous area (86%). Nowadays a lot of rocket launchers is coming from Pakistan Khyber Pakhton Khwa and most of the people are displaced especially from Dangam and Nari districts.

A nutrition and mortality survey was conducted in the entire province of Kunar between 18th April to 10th May, 2018 during the spring season. It was a cross sectional survey following two-stage cluster sampling method, based on standardized Monitoring and Assessment of Relief and Transition (SMART) methodology. The final report shows the analysis of under-five children's nutritional status, morbidity, mortality, immunization, PLWs nutrition status, WASH and FSL indicators. The summary of the key findings is shown in table below.

1.1. Summary Findings

Children Nutritional Status	
Indicator	**Result**
GAM rate among children 6-59 months old children based on WHZ <-2SD	**14.4%** (11.9-17.2; 95% CI)
SAM rate among children 6-59 months old children based on WHZ <-3SD	**3.4%** (2.4- 4.8; 95% CI)
GAM rate among children 6-59 months old children based on MUAC <125mm	**13.7%** (10.4-17.8; 95% CI)
SAM rate among children 6-59 months old children based on MUAC <115 mm	**2.5%** (1.6- 3.7; 95% CI)
GAM rate among children 6-59 months old children based on combined criteria (MUAC <125mm and/or WHZ <-2SD and/or Oedema)	**20.9%** (18.4-23.3; 95% CI)
SAM rate among children 6-59 months old children based on combined criteria (MUAC <115mm and/or WHZ <-3SD and/or Oedema)	**4.9%** (3.6-6.2; 95% CI)
Stunting among 6-59 months old children based on HAZ <-2SD	**49.3%** (45.2-53.4; 95% CI)

Severe Stunting among 6-59 months old children based on HAZ <-3SD	**19.0%** (16.4-21.8; 95% CI)
Underweight among children 6-59 months based on WAZ <-2SD	**36.1%** (32.4-40.1; 95% CI)
Severe Underweight among children 6-59 months based on WAZ <-3SD	**12.7%** (10.5-15.2; 95% CI)

Child Health and Immunization	
Indicator	**Result**
Children aged 0-59 months that reported of being sick during the past 14 days of the survey	58.2%
Children aged 0-59 months that reported of having Fever during the past 14 days of the survey	31.9%
Children aged 0-59 months that reported of having ARI during the past 14 days of the survey	23.2%
Children aged 0-59 months that reported of having Diarrhea during the past 14 days of the survey	28.3%
Measles vaccination status of the children aged 9-59 months based on both recall and vaccination cards confirmation	90.0%
BCG vaccination status based on scar confirmation for children aged 0-59 months	92.1%
Polio vaccination status based on both recall and vaccination card confirmation for children aged 0-59 months	94.9%
PENTA 3 vaccination status based on both recall and vaccination card confirmation for children aged 3.5 – 59 months	88.2%
Deworming of children aged 24-59 months received in the last six months (based on recall)	66.1%
Vitamin A received in the last six months for children 6-59 months (based on recall)	95.1%

Nutritional status among Pregnant and Lactating Women (PLW)	
Indicator	**Result**
Undernutrition among pregnant women based on MUAC <230 mm	**12.5%** (7.2-17.8; 95% CI)
Undernutrition among lactating women based on MUAC <230 mm	**19.3%** (16.0-22.7; 95 CI)
Undernutrition among pregnant and lactating women (PLWs) based on MUAC <230mm	**17.8%** (14.9-20.7; 95% CI)

Infant and Young Children Feeding (IYCF) Practices	
Indicator	**Result**
Children ever breastfed (0-23 months children)	100.0%
Initiation of breastfeeding within 1 hour of birth (0-23 months children)	90.1%
Exclusive breastfeeding (EBF) of children less than 6 months	71.8%
Provision of colostrum in the first 3 days of birth (0-23 months children)	92.8%
Continued breastfeeding at 1 year of age (12-15 months children)	93.8%
Introduction of solid, semi-solid or soft foods to children (6-8 months)	13.0%

Crude and U5 Death Rate (Death/10,000/Day)	
Indicator	**Result**
Crude Death Rate (CDR)	0.54 (0.34-0.85; 95%CI
Under five Death Rate (U5DR)	1.26 0.66-2.39; 95% CI)

2. INTRODUCTION

Kunar is one of the 34 provinces of Afghanistan located in the northeastern part of the country. It has 15 districts: Bar Kunar, Chapa Dara, Dan gam, Dara I Pech, Ghazi Abad, Khas Kunar, Naran Aw Badil, Marwera, Nari, Nor gal, Sawkai, Shaegal, Sarkani, Wata poor and capital is Asadabad.

It is one of the four "N2KL" provinces (Nangarhar Province, Nuristan Province, Kunar Province and Laghman Province). N2KL is the designation used by US and Coalition Forces in Afghanistan for the rugged and very violent region along the line of border opposite to Pakistan's Federally Administered Tribal Areas and Khyber Pakhtunkhwa. Kunar is the center of the N2KL (Nangarhar, Kunar, Laghman and Nuristan) region.
It borders with Nangarhar Province to the south, Nuristan Province to the north, Laghman Province to the west and has a border with Pakistan in the east. The province covers an area of 4339 km^2. 86% of the province is mountainous or semi mountainous terrain while one-eighth (12%) of the area is made up of relatively flat land. The primary geographic features of the province is mountainous where lower Hindu Kush mountains are cut by the Kunar River to form the Kunar Valley. The River flows south and southwest from its source in the Pamir area and is part of the Indus river watershed via the Kabul River , which it meets at Jalalabad.

The total population of Kunar province is estimated to be around 465,706[1]. Pashtuns constitute the majority (95%) of the total population, followed by Nuristanis (5%). Pashto is the main language in the area and nearly all the residents practice Sunni Islam. Around 96% of the population of Kunar lives in rural districts while 4% lives in urban areas. Momandzai, Safi, Salarzai, and Mishwanai are among the most important tribes.
A total of five national and international organizations for health and nutrition programme (AHDS, HADAF and PU-AMI) are providing health services in the province. It is to be noted that, a total of 62 health facilities

[1] Updated CSO Population 1396 (2017-2018).

are there in the province and out of these, one Provincial Hospital (EPHS) which is implementing by Afghanistan Health and Development services (AHDS) organization. BPHS is implemented by PU-AMI in 61 health facilities (2 DHs, 1 CHC+, 8 CHCs, 19 BHCs, 30 HSCs and 1 MHT). Out of these, 30 health facilities have OPD MAM (25 under BPHS & 5 under CHF funding), 27 OPD SAM and 3 IPD SAM programs in the province.

The survey covered the whole province of completely secure and partially insecure villages, Action Against Hunger (AAH) technically supported PU-AMI to implement this survey during the spring season (May 2018) to investigate the health and nutritional status of under-five children.

3. SURVEY OBJECTIVES

2.1. Broad objective

- To determine the nutritional status of vulnerable population mainly under five children, pregnant and lactating women living in the province.

2.2. Specific objective

- To estimate Crude Death Rate (CDR) and Under five Death Rate (U5DR)
- To determine prevalence of under nutrition among children aged 6-59 months
- To determine the nutritional status of pregnant and lactating women based on MUAC assessment.
- To determine the core Infant and Young Child Feeding (IYCF) practices among children aged 0-23 months
- To assess pregnant women delivered by Skilled Birth Attendants in the province.
- To assess Water, Sanitation and Hygiene (WASH) proxy indicators: household water storage, water use and caregiver hand washing practices.
- To assess morbidity among children 0-59 months based on a two weeks recall period.
- To assess food access and consumption on seven days recall period at households level.
- To determine the coverage of immunization (Measles, PENTA 3, Polio and BCG) among children 0-59 months.

2.3. Justification

- Kunar province has been identified by UN OCHA and other UN agencies (i.e. Unicef, WFP, FAO) as a difficult to access and hard to reach province.

- The province faced many security incidents (especially in 2017), that aggravated indirectly the nutrition status of the vulnerable population mainly under five children, pregnant and lactating women.
- Kunar province is also one of the provinces selected by Nutrition cluster in 2017 that have limited updated data and districts' analysis. The last nutrition survey was conducted by PU-AMI with the technical support from ACF in Kunar province during September 2015. That survey covered only five districts (out of total 15) and the GAM rate was 11.8% (9.7-14.3; 95% CI) based on WHZ. So that was not representative of the entire province. All the stakeholders, donors and different organizations would like to know what the current nutrition status is. In this context, it is of great interest to carry out a SMART survey.
- There is a need to investigate the current prevalence of under-nutrition in the province. The Survey findings will be used to inform future programing in the province as well as to strengthen data environment.

4. METHODOLOGY

4.1. Sample Size

The sample size of households to be surveyed was determined using ENA for SMART software version 2011 (up dated 9th July 2015). A **two-stage cluster methodology** was applied. In first stage, it involves random selection of clusters/villages (51 clusters) from total list of villages using probability proportion to size (PPS) method. This was done before starting the data collection at the field office. Village was the primary sampling unit for the proposed survey. The second stage of methodology involved random selection of household from an updated list of households. This was conducted at the field level. Household was the basic sampling unit for the proposed survey. The table 1 and 2 highlights sample size calculation for anthropometric and mortality surveys.

Table 1: Parameters for sample size calculation of anthropometric indicators

Parameters for Anthropometry	Value	Assumptions based on context
Estimated prevalence of GAM (%)	14.3%	The survey referred to the previous Kunar SMART survey in Sep 2015 implemented by PU-AMI with technical support of ACF. The GAM rate was 11.8% (9.7-14.3; 95% CI) and for the current estimation of planning we used the higher range of the CI value.

Desired precision	±3%	It was based on survey objectives in line with estimated prevalence and SMART methodology recommendations. If we use an estimate point prevalence of 14.3% as our predicted GAM prevalence then a precision of ±3 is sufficient.
Design Effect	1.5	The population living in the targeted districts is considered as having pretty similar living conditions and the same access to food and social conditions.
Children to be included	*854*	Minimum sample size-children aged 6-59 months. (However to avoid possible bias of selection for younger age group, all children from 0 to 59 months old found in the selected households will be surveyed.)
Average HH Size	8	Based on AfDH survey 2013 the mostly frequent of the HH was 8.
% Children 6 – 59 Months	17.8%	Based on Kunar SMART Survey Sep 2015
% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%. Using the last experience of the SMART surveys in the different provinces.
Households to be included	**709**	Minimum sample size-Households to be surveyed. Households was the basic sampling unit for the SMART survey

Table 2: Sample size calculation for mortality surveys

Parameters for Mortality	Value	Assumptions based on context
Estimated Death Rate /10,000/day	0.3/10,000/day	Kunar SMART Survey Sep 2015.
Desired precision /10,000/day	±0.2	Based on survey objectives and in line with estimated death rate.
Design Effect	1.5	This will caters for heterogeneity in the population being sampled.
Recall Period in days	125	Starting point of recall period was counted from the Lowaya Chela (11th Jadi 1396 solar date) that

		is equivalent to 1st January, 2018 as per Gregorian calendar.
Population to be included	3,764	Population
Average HH Size	8	Based on AfDH survey the mostly frequent of the HH was 8.
% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%. Using the last experience of the SMART surveys in the deferent provinces.
Households to be included	501	Households

Note: All additional variables data (IYCF, Mortality, FSL, women nutrition status, HHs water usages, WASH, health and immunization) will be collected based on anthropometric sample size.

4.2. Sampling Methodology

A two-stage cluster sampling methodology was implemented. With the above assumptions, the number of children were 854, converted into 709 households for this survey.

Stage 1: Random selection of clusters/villages were chosen by applying probability proportion to size (PPS) using ENA for SMART software version 2011 (Updated 9th July, 2015). A list of all updated villages was amounted into the ENA for SMART software where PPS was applied. The villages with large population have a higher chance of being selected than the villages with small population and vice versa. Reserve Clusters (RCs) were also selected by ENA software version 2011 (updated 9th July 2015). 709/14 =50.64 rounded up to 51 clusters were supposed to be surveyed, each team could complete anthropometric measurements in 14 HHs in a day. Finally, 50 Clusters were surveyed out of 51 clusters: one cluster was missed due to ongoing fighting between two AOGs. As the nonresponse cluster was less than 10%, we did not used the reserve clusters as the reserve clusters were supposed to be used if 10% or more clusters would have been impossible to reach during the survey as per SMART methodology. The selected clusters are highlighted in Annex-2.

In each selected village, one or more community member(s) were asked to help the survey teams to conduct their work by providing information about the village with regard to the geographical organization or the number of households. In cases where there are large villages in a cluster, the village was divided into smaller segments and a segment was selected randomly to represent the cluster. This division was done based on

existing administrative units e.g. neighborhoods, or streets or natural landmarks like river, road, or public places like market, schools, and mosques.

Stage 2: Households were chosen randomly within each cluster/village using systematic random sampling (SRS). Based on total sample size each team could covered effectively 14 households in a day. In this assessment, 6 teams were engaged during the assessments, while data collection was done for 10 days. All households were enumerated and given numbers by the survey team. The 14 households were chosen randomly from these enumerated households, the team used systematic random sampling to identify the households to be surveyed. The teams were trained on both methods of sampling (simple and systematic random sampling) and they were offered with materials to assist in determining the households during the data collection exercise.

All the children living in the selected house aged 0 to 59 months old were included for anthropometric measurements. Children aged 0-23 months were included for IYCF assessment. To ensure that every child would have the same chance of being surveyed, if more than one eligible child were found in a household, both were included, even if there were twins. Eligible orphans living in the selected Households were also surveyed. All of the selected HH were included in the mortality survey as well as responded to questions concerning the HH as a whole (ex. water storage and FSL).

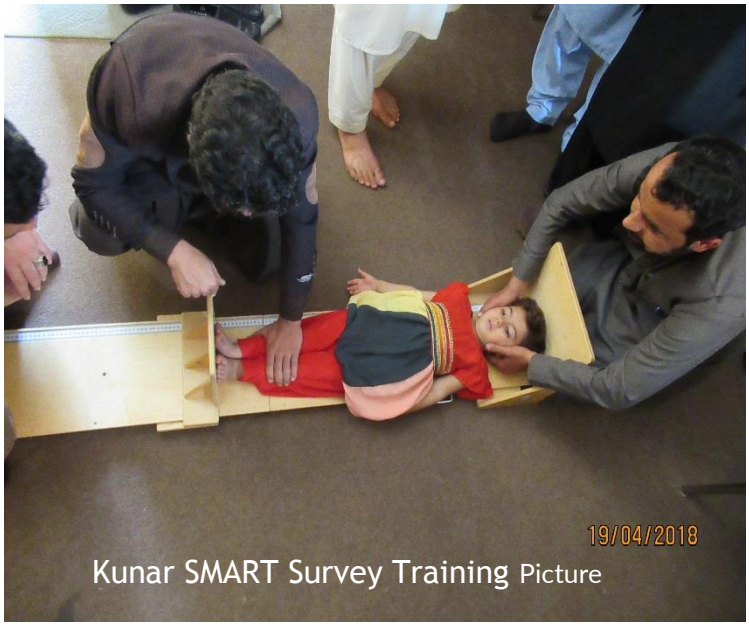
Any empty households, or households with missing or absent children were revisited at the end of the sampling day in each cluster; any missing or absent child that was not be subsequently found was not being included in the survey. A cluster control form was used to record all these missed and absent households, however the abandoned HH was excluded from the total HHs list at the beginning in the field. Elder of the villages in the villages were provided this information to the teams.

The household was the basic sampling unit. The term household was defined as all people eating from the same pot and living together (WFP definition). In Afghanistan, the term household is often defined and/or used synonymously with a compound – which potentially represents more than one household. Hence, a strategy was followed together with the village leaders/community elders identifying compound together with the use of a households list in the community and asking if there were multiple cooking areas to determine what members of the household/compound should be included in the study.

4.3. Training, team composition and supervision

Six teams of four members in each team conducted the field data collection. Each team was composed of one supervisor, one team leader and two data collectors. Each team had one female data collectors to ensure acceptance of the team amongst the surveyed households; particularly for IYCF questionnaires. Each female member of the survey team was accompanied with a mahram[2] to facilitate the work of the female data collectors at the community level. The teams were supervised by AAH, Partner and PNO of the province.

The entire survey team received a 7-days training on the survey methodology and all its practical aspects; the training was facilitated by two ACF technical staffs. A standardization test was conducted over the course of one day, measuring 10 children in order to evaluate the accuracy and the precision of the team members in taking the anthropometrics measurements. A one-day field test was also conducted by the teams in order to evaluate their work in real field conditions.



Kunar SMART Survey Training Picture

Feedback was provided to the team in regards to the results of the field test; particularly in relation to digit preferences and data collection. Refresher training on the anthropometric measurement and on the filling of the questionnaires and the household's selection was organized the last day of the training by ACF to ensure overall comprehension before going to the field.

Each team members were provided with two documents - one field guidelines document with instructions and another household definition plus selection document. All documents, such as local event calendar, questionnaires or consent forms was translated in Pashtu (local language) for better understanding and to avoid direct translation during the field data collection. The questionnaires were back translated using a different translator and pre-tested during the field test. Alterations were made as necessary.

[2] Women are not allowed to go outside without being accompanied by one male relative locally called a 'Mahram'.

Daily data entry and analysis was done using ENA software for anthropometric data, plausibility check, and feedback was provided to the data collection teams. All Anthropometric data were directly inserted into ENA while IYCF and other data were completed through an excel spreadsheet.

4.4. Data analysis

The anthropometric and mortality data were analyzed by ENA for SMART software 2011 version (9th July 2015). Survey results were interpreted in reference to WHO standards, analysis of other indicators to include IYCF, WASH, demographic and food security were done using Microsoft excel version 2016. Information generated from these indicators was used to explain the outcome indicators to include; nutritional status of under-fives and mortality (CDR and U5DR). Contextual information generated from routine monitoring were used in complementing survey findings.

4.5. INDICATORS: DEFINITION, CALCULATION and INTERPRETATION

4.5.1. Anthropometric Indicators: Definition of nutritional status of children 0-59 months

Acute Malnutrition

Acute malnutrition in children 6-59 months can be expressed by using 3 indicators; Weight for Height (W/H) or Mid Upper Arm Circumference (MUAC) or Bilateral Pitting Oedema as described below.

Weight-for-Height index (W/H)

A child's nutritional status is estimated by comparing it to the weight-for-height curves of a reference population (WHO standards data[3]). These curves have a normal shape and are characterized by the median weight (value separating the population into two groups of the same size) and its standard deviation (SD). The expression of the weight-for-height index as a Z-score (WHZ) compares the observed weight (OW) of the surveyed child to the mean weight (MW) of the reference population, for a child of the same height. The Z-score represents the number of standard deviations (SD) separating the observed weight from the mean weight of the reference population: WHZ = (OW - MW) / SD.

During the field data collection, the weight-for-height index in Z-score was calculated on the field for each child in order to refer malnourished cases to appropriate center if needed. The classification of acute malnutrition based on WHZ is illustrated in table 3.

[3] WHO standard 2006

Mid Upper Arm Circumference (MUAC)

The mid upper arm circumference does not need to be related to any other anthropometric measurement. It is a reliable indicator of the muscular status of the child and is mainly used to identify children with a risk of mortality. The MUAC is an indicator of malnutrition only for children greater or equal to 6 months. Table 3 provides the cut-off criteria for categorizing acute malnutrition cases.

Table 3: MUAC cut-offs points for children aged 6-59 months

Target group	MUAC (mm)	Nutritional status
Children 6-59 months	> or = 125	**No malnutrition**
	< 125 and >= 115	**Moderate Acute Malnutrition (MAM)**
	< 115	**Severe Acute Malnutrition (SAM)**

Nutritional bilateral "pitting" Oedema

Nutritional bilateral pitting oedema is a sign of Kwashiorkor, one of the major clinical forms of severe acute malnutrition. When associated with Marasmus (severe wasting), it is called Marasmic-Kwashiorkor. Children with bilateral oedema are automatically categorized as being severely malnourished, regardless of their weight-for-height index. The table below defines the acute malnutrition according to W/H index, MUAC criterion and oedema.

Table 4: Definition of acute malnutrition according to weight-for-height index (W/H), expressed as a Z-score based on WHO standards

Severe Acute Malnutrition (SAM)
W/H <-3 z-score and/or bilateral oedema
Moderate Acute Malnutrition
W/H <-2 z-score and >= -3 z-score and absence of bilateral oedema
Global Acute Malnutrition (GAM)
W/H <-2 z-score and/or bilateral oedema

Chronic Malnutrition

The Height-for-Age index (H/A Z-score)

The Height-for-Age measure indicates if a child of a given age is stunted and so if he is chronically malnourished. This index reflects the nutritional history of a child rather than his/her current nutritional status. This is mainly used to identify chronic malnutrition. The same principle is used as for Weight-for-Height; except that a child's chronic nutritional status is estimated by comparing its height with WHO

standards height-for-age curves, as opposed to weight-for-height curves. The Height-for-Age index of a child from the studied population is expressed in Z-score (HAZ). The HAZ cut-off points are presented in Table 5.

Table 5: Cut offs points of the Height for Age index expressed in Z-score, WHO standards

Not stunted	≥ -2 z-score
Moderate stunting	-3 z-score ≤ H/A < -2 z-score
Severe stunting	< -3 z-score

Mortality Indicator Calculation

The mortality indicators were collected in all households, regardless of the presence of children. All members of the household were counted, using the household definition.

Crude death rate (CDR):

It refers to the number of persons in the total population that died over specified period (120 days) – see the Table 2 above for Sample size calculation for mortality surveys:

$$\text{CDR} = \frac{\text{Nb of deaths x 10000 persons}}{\text{population at mid} - \text{interval x time interval in days}}$$

Under-5 death rate (U5DR):

It refers to the number of children aged (0-5) years that die over specified period of time – see the Table 2 above for Sample size calculation for mortality surveys, calculated as:

$$\text{U5DR} = \frac{\text{Nb of deaths of U5s x 10000 U5s}}{\text{population of U5s at mid} - \text{interval x time interval in days}}$$

4.3. Health

Beside anthropometric data, additional information was collected as follows:

Immunization status, Deworming and Vitamin A supplementation

Mothers/caretakers of all children were asked if children received all the necessary vaccinations, which was subsequently verified by reviewing the vaccination card, when available. If the vaccination card was not available, then the recall of the caregiver option was considered. The deworming and the Vitamin A supplementation of children were also recorded using samples.

Morbidity

Mothers/caretakers of children were asked if children had experienced an illness in the past 2 weeks. Data on Acute respiratory infection, fever and diarrhoea were recorded when symptoms according to the case definition were described by the caretaker.

4.4 WASH

Water storage and Usage

Household heads were asked what type of container they used for storing drinking water and how much water they used in the HH in the last 24 hours to assess the water use per person per day.

Hand washing practices

The mothers were asked on what occasions they washed their hands and what they used to wash their hands to determine the hand washing practices in the surveyed area.

4.5 Infant and Young Child Feeding (IYCF) Practices Indicators

The IYCF questionnaire was asked to the mothers/caretakers of children aged <24 months to assess the Infant and Young Child Feeding practices as described follows.

Child ever breastfed

The indicator refers to the proportion of children who have ever received breast milk. It was calculated by dividing the number of children born in the last 24 months who were ever breastfed by all Children born in the last 24 months. The indicator was based on historical recall, and a caregiver(s) was supposed to provide information of all children living or dead who were born in the last 24 months. This indicator looked at the number of mothers who ever breast fed their children.

Timely initiation of breastfeeding

Proportion of children born in the last 23 months who were put to the breast within one hour of birth. The indicator was calculated by dividing the number of children born in the last 24 months who were put to the breast within one hour of birth by the total of children born in the last 24 months. The denominator and numerator included living and deceased children who were born within the past 24 months.

Provision of colostrum in the first 3 days of life

Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth. This indicator looked at the number of mothers with children <24 months who fed their children with Colostrum within the first 3 days after birth.

Exclusive breastfeeding under 6 months

Proportion of infants 0-5 months of age who are fed exclusively with breast milk. It was calculated by dividing the number of all Infants aged 0–5 months who received only breast milk during the previous day by the total infants aged 0-5 months.

Continued breastfeeding at 1 year

Proportion of children 12 – 15 months of age who were fed with breast milk. It was calculated by dividing the total number of children aged 12–15 months who received breast milk during the previous day by the total children aged 12–15 months

Introduction of solid, semi-solid or soft foods:

Proportion of infants 6-8 months of age who received solid, semi-solid or soft foods. It was calculated from the number of all Infants aged 6-8 months who received solid, semi-solid or soft foods during the previous day by the total number of infants 6–8 months of age

Continued breastfeeding at 2 years

Proportion of children 20–23 months of age who were breastfed. It was calculated by dividing the number of children aged 20–23 months who received breast milk during the previous day by total children aged 20–23 months.

4.6. Maternal Health and Nutrition

Women in childbearing age were assessed for their nutritional status based on MUAC measurements. The nutritional status of pregnant and lactating mothers was assessed by using the MUAC cut-off of 230 mm. The indicator for iron-folate supplementation derived from dividing the total number of pregnant mothers supplemented with Iron-folate in the last 90 days by total number of pregnant mothers.

5. LIMITATION OF THE SURVEY

- Insecurity was one of the major limitation of the assessment in the province. Due to this issue, one cluster could not been accessed and surveyed. Insecurity also limited the survey PM to provide regular direct supervision and on job training activities in the field to some extent.
- The low education and knowledge levels of the people especially women in the districts resulted in the fact that female staff could not work in the community as it was considered as taboo for some families. For this survey, we found that six female enumerators had a lot of difficulties
- Some areas to be surveyed were situated very far from the city of Kunar province and the team could not come to the office to perform daily database supervision and data quality check.

6. SURVEY FINDINGS

6.1. Demography

The mortality questionnaire in SMART methodology is designed in a way that some additional useful demography data are provided. Data was collected from 50 clusters, 697 households, 5,213 individuals (2,838 male and 2,375 female) living in the household, with 670 households having under five children. Summary is highlighted in table below.

Table 6: Summary of the Demography

Indicator	Values
Total number of HHs with children under five	670
Average household size	7.3
Percentage of children under five	25.0%
Birth Rate	1.43
In-migration Rate (Joined)	0.84
Out-migration Rate (Left)	2.06
Number of clusters surveyed	50

6.1.1 Residential

The information collected from households regarding returnees and IDPs is presented in table below.

Residential status of households N= 649	Permanent residential	589	84.5%
	Internal displacement	71	10.2%
	Returnees	37	5.3%

6.2 Description of sample

Among the 51 clusters that were planned to be surveyed, one cluster was missed due to ongoing conflict between two AOGs in Norgal district. Data were collected from 50 clusters, 697 households, 5,213 individuals, 1,099 children aged 6-59 months where 12 children were out of Z score for WH, 1,225 children aged 0-59 months, 585 children aged 0-23 months and 820 women of reproductive age (15-49 years).

98.3 % of the calculated samples were able to be surveyed (697 HHs surveyed out of 709 HH supposed to be surveyed), meaning 1.7% non-response households. 12 households could not be surveyed: 10 households due to ongoing conflict in the Norgal district and further 2 households were empty. The average household size is 7.3. 670 households have children under five years.

Table 7: Distribution of age and sex of children 6-59 months

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:Girl
6-17	168	51.2	160	48.8	328	29.8	1.0
18-29	149	54.0	127	46.0	276	25.1	1.2
30-41	112	49.8	113	50.2	225	20.5	1.0
42-53	93	46.7	106	53.3	199	18.1	0.9
54-59	38	53.5	33	46.5	71	6.5	1.2
Total	560	51.0	539	49.0	1099	100.0	1.0

Figure 1 below shows the population pyramid of our surveyed population. It is important to note that there may be some error for children age <5 years as 24% of surveyed children did not have proper documents to confirm the exact date of birth.

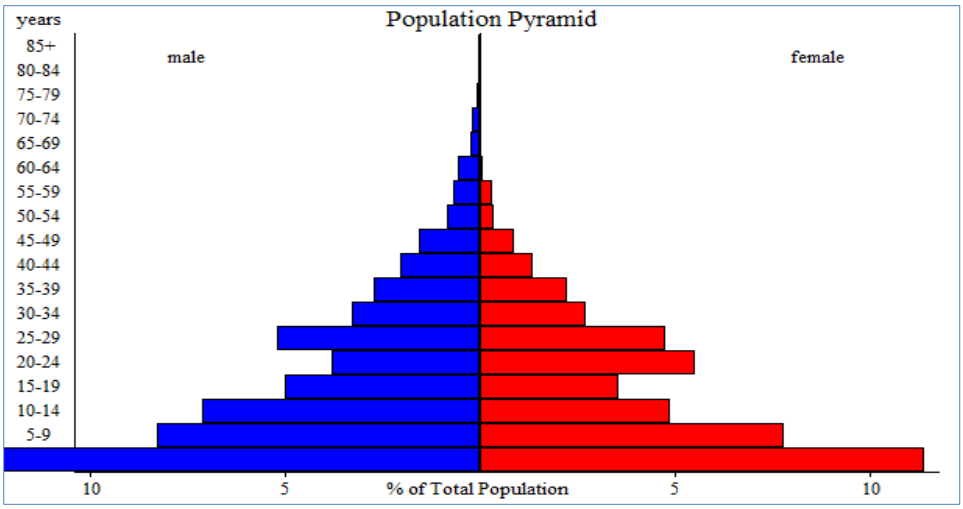


Figure 1 : Distribution of age and sex pyramid

Most of the assessed households were either resident (84.5%), or internal displaced (10.2%) or returnees (5.3%) . The number of households and children from 6-59 months planned and the number of households with completed interviews and measured children are shown in Table 8.

Table 8: Details of proposed and actual sample size achieved

Number of households planned	Number of households surveyed	% of surveyed	Number of children 6-59 months Planned	Number of children 6-59 months surveyed	% of surveyed
709	697	98.3%	854	1099	128.7%

Even though 100% households were not reached but still 128.7% of children were surveyed during the assessment. This is probably due to under estimation of the proportion of U5 children (17.8%) during the sample size calculation, that was taken from the previous survey. But the survey originally found a very high percentage of children U5 (25.0%) compare to the assumption.

6.3 Data quality

The plausibility check highlighted a good quality of the measurements with an overall score of 13%. The proportion of SMART flags was low 1.1% for WHZ and scored excellent. The percentages of values flagged with SMART flags were slightly high : 6.9 % for HAZ and 1.8% for WAZ.

The overall sex ratio was found to equally represented with a P value of 0.526.

However, the age ratio of 6-29 months to 30-59 months of 1.22 shows a significant difference (P-Value=0.000) while the value should be around 0.85, meaning that there were **far more children aged 6-29 months surveyed than children 30-59 months**. This can be explained by the following reasons:

- Survey was conducted during the wheat harvesting time and many older children (i.e. 4 or 5 years) actually went to wheat field with their fathers. From the mortality dataset, we found that a total of 42 children U5 was missed for anthropometric measures as well as for other indicators, and most of them were in the age category of 30-59 months. This may lead to an increased proportion of younger children (6-29 months) in dataset.
- The 2nd explanation is related to the age parameter: only 76% of children interviewed were found to have an exact date of age (day, month and year) by showing identification paper (vaccination cads, Birth certificates or other documents by fathers or mothers if available) while the rest of children age distribution used local event calendars.
- The occurrence of age heaping by EPI outreach workers by altering the infant's date of birth (DoB) in vaccination card is also a parameter that needs to be taken into consideration. Due to the late birth registration and then trying to align with the EPI schedule, they often intentionally change the DoB to later dates. For example, a child may be born in January but when EPI outreach workers register the vaccination in March or April, they put the current date in the card instead of original DoB.
- In addition to this, due to lack of human resources and higher proportion of home deliveries, health/EPI staff cannot instantly register all the newborns. This has also implication on the percentage flag data for Height especially when it compares with age.

Standard deviation for the distribution of Weight-for-Height (1.05) is classified as excellent, and Weight-for-Age (1.09) classified as good. However, Height-for-Age (1.2) is classified as slightly problematic and we may be cautious with the estimate of the prevalence of the stunting (49.3%).

6.4 Undernutrition

The nutritional status of children was analyzed using the WHO Child Growth Standards 2006. . Table 9 shows the Z-scores, design effect, and the number of children with flag signs and number of samples excluded in the analysis.

Table 9: Mean z-scores, Design Effects and excluded subjects/outliers of the survey

Indicator	N	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	1087	-0.89±1.05	1.51	0	12
Weight-for-Age	1079	-1.65±1.09	1.71	0	20
Height-for-Age	1023	-1.92±1.20	1.72	0	76

*Contains for WHZ and WAZ the children with oedema.

6.4.1 Prevalence of Global Acute Malnutrition (GAM)

Acute malnutrition is the condition represented by measures of wasted body muscles and thinness or bilateral pitting oedema and represents current nutritional status in the population. It represents child's failure to receive adequate nutrition and may be the result of inadequate food intake or a recent episode of illness causing loss of weight.

The analysis of GAM rate was generated on children aged 6-59 months (table 10).

Table 10: Prevalence of acute malnutrition based on WHZ (and/or edema) and by sex among children 6-59 months

Indicators	All n = 1087	Boys n = 552	Girls n = 535
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	(156) 14.4 % (11.9 - 17.2 95% C.I.)	(84) 15.2 % (12.1 - 18.9 95% C.I.)	(72) 13.5 % (10.6 - 16.9 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 z-score to ≥-3 z-score, no oedema)	(119) 10.9 % (9.1 - 13.1 95% C.I.)	(61) 11.1 % (8.8 - 13.8 95% C.I.)	(58) 10.8 % (8.3 - 14.1 95% C.I.)
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	(37) 3.4 % (2.4 - 4.8 95% C.I.)	(23) 4.2 % (2.6 - 6.6 95% C.I.)	(14) 2.6 % (1.5 - 4.4 95% C.I.)

The prevalence of oedema is 0.0 %

Table 11: Prevalence of acute malnutrition by age, based on WHZ and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (≥-3 to <-2 z-score)		Normal (≥-2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	326	21	6.4	47	14.4	258	79.1	0	0.0
18-29	274	11	4.0	38	13.9	225	82.1	0	0.0
30-41	223	1	0.4	13	5.8	209	93.7	0	0.0
42-53	195	2	1.0	18	9.2	175	89.7	0	0.0
54-59	69	2	2.9	3	4.3	64	92.8	0	0.0
Total	1087	37	3.4	119	10.9	931	85.6	0	0.0

A further analysis of the GAM rate based on weight for height Z score was done between children 6-23 months (20.7%) and children aged 24-59 months (9.7%) and showed that these rates were significantly different. It means children less than 24 months were more effected than older children. For more details, refer to tables below.

Table 12: Prevalence of acute malnutrition based on WHZ (and/or oedema) disaggregated by sex and age

6-23 months aged	All n = 455	Boys n = 236	Girls n = 219
Prevalence of global acute malnutrition(GAM) (<-2 z-score and/or Oedema)	(94) 20.7% (16.7-25.2 95% CI)	(53) 22.5% (17.2-28.7 95% CI)	(41) 18.7% (14.1-24.4 95% CI)
Prevalence of Severe acute malnutrition (SAM) (<-3 z-score and/or Oedema)	(30) 6.6% (4.6- 9.4 95% CI)	(20) 8.5% (5.4-13.1 95% CI)	(10) 4.6% (2.6- 8.0 95% CI)
24-59 months aged	**All n = 630**	**Boys n = 316**	**Girls n = 314**
Prevalence of global acute malnutrition (GAM) (<-2 z-score and/or Oedema)	(61) 9.7% (7.5-12.3 95% CI)	(31) 9.8% (7.3-13.1 95% CI)	(30) 9.6% (6.8-13.3 95% CI)
Prevalence of severe acute malnutrition (SAM) (<-3 z-score and/or Oedema)	(6) 1.0% (0.4- 2.3 95% CI)	(3) 0.9% (0.2- 4.2 95% CI)	(3) 1.0% (0.3- 2.9 95% CI)

***There were no cases of Oedema**

Table 13: Distribution of severe acute malnutrition based on Oedema among children 6-59 months

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic Kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 43 (3.9 %)	Not severely malnourished No. 1056 (96.1 %)

There were no cases of Oedema found.

Table 14: Prevalence of acute malnutrition based on MUAC cut off (and/or oedema) disaggregated by sex among children 6-59 months

Indicators	All n = 1,095	Boys n = 557	Girls n = 538
Prevalence of global malnutrition (<125 mm and/or Oedema)	(150) 13.8 % (10.4 - 17.8 95% C.I.)	(56) 10.1 % (6.7 - 14.9 95% C.I.)	(94) 17.5 % (13.7- 22.1 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm to ≥115 mm, no Oedema)	(123) 11.2 % (8.3 - 15.0 95% C.I.)	(51) 9.2 % (6.0 - 13.7 95% C.I.)	(72) 13.4 % (9.9 - 17.8 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or Oedema)	(27) 2.5 % (1.6 - 3.7 95% C.I.)	(5) 0.9 % (0.4 - 2.1 95% C.I.)	(22) 4.1 % (2.6 - 6.4 95% C.I.)

Table 15: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

		Severe wasting (<115 mm)		Moderate wasting (≥115 mm and <125 mm)		Normal (>=125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	325	20	6.2	71	21.8	234	72.0	0	0.0
18-29	276	6	2.2	42	15.2	228	82.6	0	0.0
30-41	225	1	0.4	4	1.8	220	97.8	0	0.0
42-53	199	0	0.0	6	3.0	193	97.0	0	0.0
54-59	70	0	0.0	0	0.0	70	100.0	0	0.0
Total	1095	27	2.5	123	11.2	945	86.3	0	0.0

Weight for Height Z score is considered as the basic measures for Global Acute Malnutrition, but it should be certainly noted that there is no gold standard measure for acute malnutrition. Beside, based on 2005

WHO and UNICEF Joint Statement on Child Growth Standards and the identification of SAM in infants and children, MUAC measurement of less than 115mm among children 6 to 59 months old is documented as severe acute malnutrition. MUAC less than 115mm indicates a high-elevated risk of mortality and morbidity than weight for height. Hence, it is important to use both criteria (MUAC+WHZ) of malnutrition for IMAM case loading; the table 16 shows the GAM rate by both criteria.

Table 16: Prevalence of acute malnutrition based on combined criteria (WHZ+MUAC+Oedema) among children 6-59 months

GAM and SAM based on combined criteria*	N	Result
Prevalence of Global Acute Malnutrition (MUAC<125 mm and/or WHZ <-2 SD and/or Oedema)	1,083	(226) **20.9%** (18.4-23.3 95%, CI)
Prevalence of Severe Acute Malnutrition (MUAC <115 mm and/or WHZ <-3SD and/or Oedema)	1,083	(53) **4.9%** (3.6-6.2 95% CI)

*There was no cases of Oedema

6.4.2 Prevalence of chronic malnutrition (stunting)

Stunting indicates a failure to achieve one's genetic potential for height. It usually reflects the persistent, cumulative effects of long poor micro and macronutrients and other deficits that often cross several generations, which is caused by failure to receive adequate nutrition over a long period and is affected by recurrent and chronic illness. It is not sensitive to recent/short-term changes in dietary intake and multi sectorial approach is needed to contribute to the prevention of stunting. The table below shows stunting rate based on height for age and by sex among children 6-59 months old.

Table 17: Prevalence of stunting based on height-for-age z-scores (HAZ) disaggregated by sex

	All n = 1023	Boys n = 513	Girls n = 510
Prevalence of stunting (<-2 z-score)	(504) 49.3 % (45.2 - 53.4 95% C.I.)	(256) 49.9 % (44.3 - 55.5 95% C.I.)	(248) 48.6 % (43.9 - 53.4 95% C.I.)
Prevalence of moderate stunting (<-2 z-score to ≥-3 z-score)	(310) 30.3 % (26.6 - 34.2 95% C.I.)	(152) 29.6 % (24.9 - 34.8 95% C.I.)	(158) 31.0 % (26.8 - 35.4 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(194) 19.0 % (16.4 - 21.8 95% C.I.)	(104) 20.3 % (16.6 - 24.5 95% C.I.)	(90) 17.6 % (14.4 - 21.4 95% C.I.)

The distribution of HAZ of the observed population (SMART flags excluded) compared to WHO Reference curve shows that it was strongly shifted to the left, suggesting restricted linear growth of the observed population. Further analysis suggests that linear growth retardation is at its highest in the group of children aged 18-29 months (n=263) to then decrease with the increase of age. However, height-for-Age SD (1.2) is classified as problematic as a reached to the 1.2 and we may be cautious with the estimate of the prevalence of the stunting (49.3%). As a reminder, only 76% of children interviewed were found to have an exact date of age (day month and year) by showing identification paper while the rest of children age distribution used local event calendars. Due to some digit preference in height (Score-10), age heaping/incorrect age due to various reasons as well as poor result of height measurement during the standardization test (8 got poor in Height measurement out of total 12 enumerators) the overall height measurement was slightly problematic especially during the calculation of H/A Z-Scores. There were 6.9% flag data for HAZ where a total of 76 data series were out of range according to H/A Z-scores.

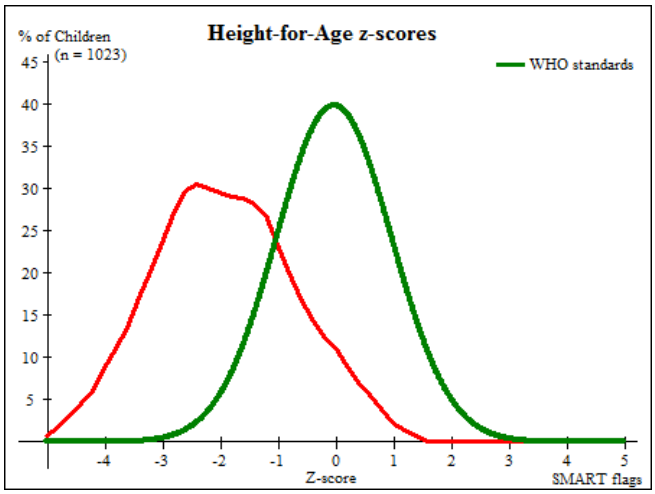


Figure 3: Gaussian distributed curves HAZ

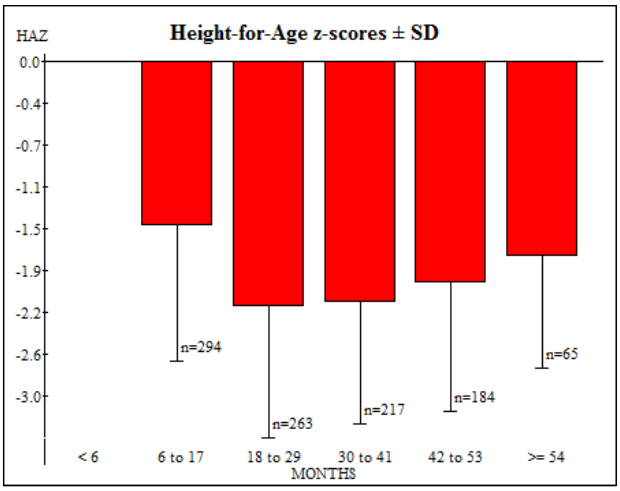


Figure 2: Trend of stunting over the age distribution

Table 18: Prevalence of stunting disaggregated by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 to <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-17	294	35	11.9	64	21.8	195	66.3
18-29	263	64	24.3	90	34.2	109	41.4
30-41	217	51	23.5	77	35.5	89	41.0
42-53	184	35	19.0	63	34.2	86	46.7
54-59	65	9	13.8	16	24.6	40	61.5
Total	1023	194	19.0	310	30.3	519	50.7

6.4.3 Prevalence of underweight

Underweight is a compound index of height-for-age and weight-for-height. It takes into account both acute and chronic forms of malnutrition. While underweight or weight-for-age was used for monitoring the previous Millennium Development Goals, it is no longer use for monitoring individually children, as it cannot detect children who are stunted. Furthermore, it does not detect acute malnutrition that threatens children's lives. The underweight results are presented in **table 19** for more details.

Table 19: Prevalence of underweight based on weight-for-age z-scores (WAZ) among children 6-59 months

	All n = 1079	Boys n = 548	Girls n = 531
Prevalence of underweight (<-2 z-score)	(390) 36.1 % (32.4 - 40.1 95% C.I.)	(206) 37.6 % (33.2 - 42.2 95% C.I.)	(184) 34.7 % (30.0 - 39.6 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(253) 23.4 % (20.7 - 26.5 95% C.I.)	(138) 25.2 % (22.5 - 28.1 95% C.I.)	(115) 21.7 % (17.5 - 26.5 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(137) 12.7 % (10.5 - 15.2 95% C.I.)	(68) 12.4 % (9.7 - 15.8 95% C.I.)	(69) 13.0 % (10.1 - 16.5 95% C.I.)

Table 20: Prevalence of underweight disaggregated by age, based on weight-for-age z-scores

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	320	40	12.5	72	22.5	208	65.0	0	0.0
18-29	271	55	20.3	64	23.6	152	56.1	0	0.0
30-41	224	21	9.4	52	23.2	151	67.4	0	0.0
42-53	194	16	8.2	47	24.2	131	67.5	0	0.0
54-59	70	5	7.1	18	25.7	47	67.1	0	0.0
Total	1079	137	12.7	253	23.4	689	63.9	0	0.0

6.4.5 Women health and nutrition status

In this survey, all women of child bearing age (CBA aged 15-49 years) were included. A total of 820 women was assessed for nutrition status, ANC/PNC services and iron folate supplementation. But for nutrition status the analysis was done only for pregnant and lactating women, for iron folate supplementation only from pregnant women, while last child delivery status was asked to all the women. Adequate nutrition is critical for women especially during pregnancy and lactation because inadequate nutrition causes damage not only to women's own health but also to their children and the development of the next generation. The results for PLWs are presented in tables 21 and 22.

Table 21: Prevalence of malnutrition among PLWs based on MUAC cut-off

Physiological Status	Frequency (MUAC <230 mm)	Results 95% CI
Malnutrition among Pregnant women (N=152)	19	**12.5%** (7.2-17.8 95% CI)
Malnutrition among Lactating women (N=522)	101	**19.3%** (16.0-22.7 95% CI)
Malnutrition among PLWs (N=674)	120	**17.8%** (14.9-20.7 95% CI)

Table 22: Iron folate supplementation for pregnant women based on available answers

Iron- folate for Pregnant women (N=152)	Frequency	Results
Yes	81	53.3%
No	70	46.0%
Don't Know	1	0.7%

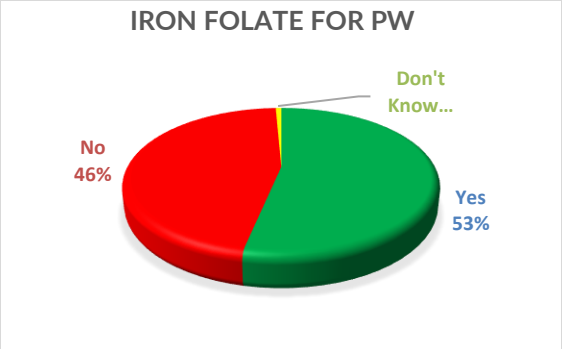


Table 23: Status of ANC visits in the last pregnancy

ANC Visits in the last pregnancy (N= 820)	Frequency	Result
Yes	533	65.0%
No	287	35.0%
ANC visits by Whom? (N=532)		
Health professional	528	99.2%
Traditional	2	0.4%
Community health worker	1	0.2%
Relative/ Friends	1	0.2%

*ANC visited by whom" response came from those women who actually had ANC checkup.

Table 24: Skill Births Attendance (SBA) status for the last baby

Status of Skill Birth Attendance during last delivery (N=818)		**Frequency**	**Result (%)**
Last delivery at the health facilities		567	69.3%
Last Delivery at home	Professionals (Nurses, midwifes, Doctors and community midwifes)	12	1.5%
	Non-Professionals (CHWs, TBA and relatives)	239	29.2%

6.5 Crude and Under 5 Years Death Rate

The mortality data was also included in the survey to know the rate of CDR and U5DR. The survey-estimated plan was to survey 3,921 individuals in 521 households. So it was less than the sample size for anthropometric, the teams referred for all additional variables including mortality data based on anthropometric sample size. So finally 697 households with 5,213 individuals were assessed. The CDR and

U5DR are lower than WHO emergency threshold[4] as shown in the table below. However the U5DR is still relatively quite high (1.32 Death/10,000/Day) in Kunar and require attention.

Table 25: Death rates by age and sex category with design effect

Death Rate	Result (Death/10,000/Day)	Design Effect
'Overall	**0.54** (0.34-0.85)	1.78
By Sex		
Male	0.59 (0.29-1.16)	2.37
Female	0.48 (0.28-0.83)	1.05
By Age		
0-4	**1.26** (0.66-2.39)	2
5-11	0.15 (0.04-0.59)	1
12-17	0.13 (0.02-0.97)	1
18-49	0.28 (0.12-0.64)	1.19
50-64	0.56 (0.08-3.98)	1
65-120	8.42 (3.10-20.43)	1

6.6 Child Health and Immunization

6.6.1 Morbidity

The survey found that, out of total 1,225 children U5 - 713 were sick that is 58.2% reported to have illness in the last 14 days prior to the survey; the major illnesses reported were diarrhea, ARI and Fever as highlighted in the table below.

Table 26: Morbidity status among under-five years children

Parameter (N=1225)	Frequency	Results (%)
Acute Respiratory Infection (ARI)	284	23.2%
Fever	391	31.9%
Diarrhea	347	28.3%

6.6.2 Child Health and Immunization

Immunization is an important public health intervention that protects children from illness and disability. As part of the Expanded Program on Immunization (EPI), measles vaccination is given to infants aged between 9 to 18 months, BCG is given to infant on birth time and PENTA 3 is given to infant on 14 weeks of birth.

[4] WHO's emergency thresholds of CDR 1/10,000/day and U5DR 2/10,000/day respectively

1,225 under five children were assessed in 697 HHs, the immunization results of this survey are presented in the table 27 below.

Table 27: Immunization coverages for BCG, Measles, PENTA 3 and Polio vaccines among children U5

Indicator	Class	Frequency	Results
Measles (children aged 9-59 months) (N= 1,032)	Yes by cards	719	69.7%
	Yes by recall	209	20.3%
	Both by card and recall	**928**	**90.0%**
	No	104	10.0%
	Don't know	0	0.0%
Polio (children aged 0-59 months) (N= 1,225)	Yes by cards	937	76.5%
	Yes by recall	226	18.4%
	Both by card and recall	**1,163**	**94.9%**
	No	62	5.1%
	Don't know	0	0.0%
PENTA 3 (children aged 14 weeks/ 3.5 to 59 months) (N=1,166)	Yes by cards	809	69.4%
	Yes by recall	219	18.8%
	Both by card and recall	**1,028**	**88.2%**
	No	130	11.1%
	Don't know	8	0.7%
BCG scar (children aged 0-59 months) (N=1,225)	By scar confirmation	1,128	92.1%
	No	97	7.9%

6.6.3 Vitamin A Supplementation for children

Provision of Vitamin A supplementation among children 6-59 months every 6 months can help protect a child from mortality and morbidity associated with Vitamin A deficiency and is documented as being one of the most cost-effective approaches to improve child continuation of life or existence. The coverage of Vitamin A supplementation in the last 6 months is presented in the table below.

Table 28: Vitamin A supplementation among children 6-59 months

Indicator	Class	Frequency	Results
Vitamin A supplementation 6-59 months (N= 1,101)	**Yes**	1047	95.1%
	No	48	4.4%
	Don't know	6	0.5%

6.6.4 Deworming of children aged 24-59 months

Helminths or intestinal worms represent a serious public health problem in areas where climate is tropical, sanitation inadequate and unhygienic. Helminths cause significant malabsorption of vitamin A and aggravate malnutrition and anemia, which eventually contributes to retarded growth and poor performance in school.

Children under five years old are extremely vulnerable to the deficiencies induced by worm infestations. This puts deworming as critical for the reduction of child morbidity and mortality. The proportion of children who received deworming the past 6 months is presented in table 29.

Table 29: Deworming among children 24-59 months

Indicator	Class	Frequency	Results
Deworming (24-59 months children) (N=634)	**Yes**	419	66.1%
	No	209	33.0%
	Don't know	6	0.9%

6.7 Infant and Young Child Feeding (IYCF) Practices

Indicators for infant and young child feeding (IYCF) practices were also included in the survey for all children 0-23 months old. A total of 585 children under two years were included in the sample. The results are presented in percentage of the total answers available.

Table 30: Infant and Young Child Feeding (IYCF) Practices (0-23 months children)

IYCF indicators	Definition	Frequency	Results
Children ever breastfed (N=585)	Proportion of children (0-23 months) who have ever received breast milk	585	100.0%
Timely initiation of breastfeeding (N=585)	Proportion of children born in the last 24 months who were put to the breast within one hour of birth	527	90.1%
Provision of colostrum within first 3 days of delivery (N=585)	Proportion of children (0-23 months) who received colostrum (yellowish liquid milk) within the first 3 days after birth	543	92.8%
Continued breastfeeding at one year (N=130)	Proportion of children 12–15 months of age who fed breast milk.	122	93.8%
Exclusive breastfeeding for children <6 months (N=124)	Proportion of infants 0–5 months of age who fed exclusively with breast milk.	89	71.8%
Introduction of solid, semi solid or soft foods (N=69)	Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods.	9	13.0%

6.8 WASH

6.8.1 Water Availability and Consumption

697 households and 5,213 individuals (2,838 male and 2,375 female) were surveyed on water consumption practices. Figure 4 and 5 shows the total amount of water consumption in liters per households and per individual.

Analysis excluded the water used by animals. Data were displayed according to the proportion of liters used. The results were then divided in quantity of water in liters available to each household's member per day and liters to each person per day.

According to Sphere minimum standards, an average consumption of 15L water/Person/Day is recommended.

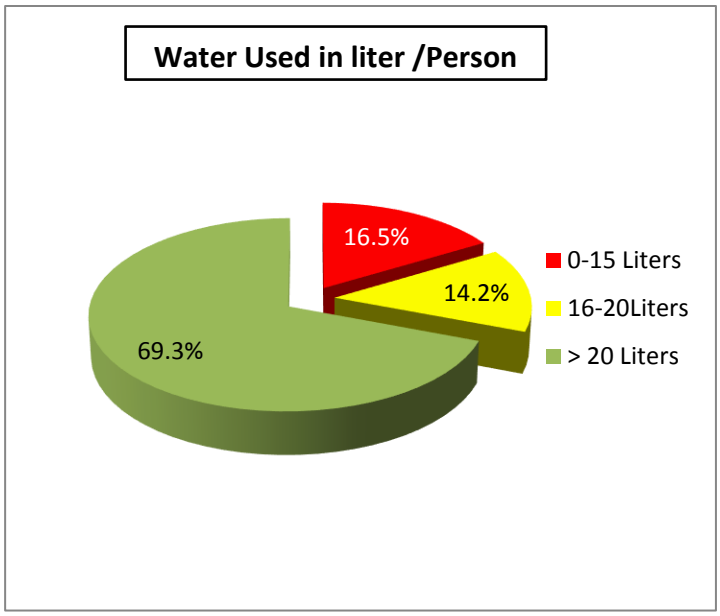


Figure 5: Percentage of water usage in liter/ person/day

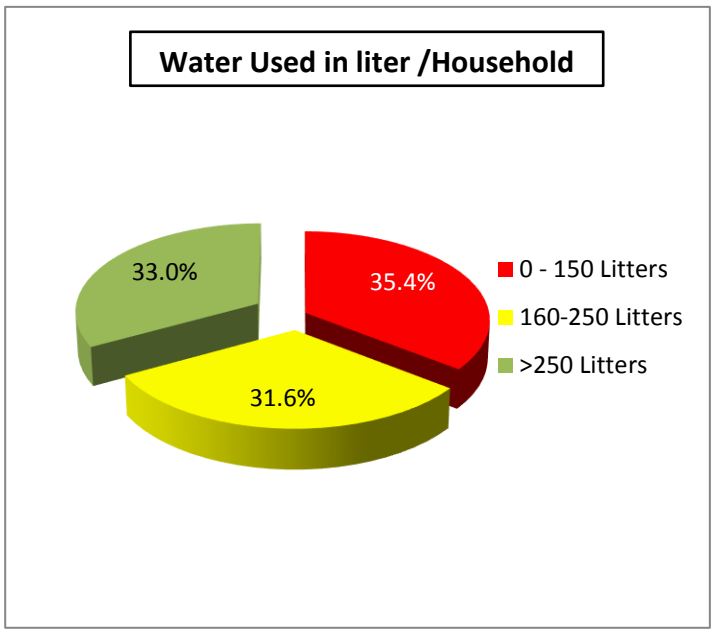


Figure 4: Percentage of HH water usage in liter/day

6.8.2 Houesholds Waters Sources and Treatment

The majority (22.8%) of the households in the province were found to use unsafe water sources and 77.2% were found to use safe water sources with the specific sources illustrated in Figures 6 and 7. Analysis of water treatment methods (table 29) indicated that the majority (96.1%) did not treat water prior to consumption. This predisposes households to water borne diseases such as diarrhea and typhoid fever.

Parameters (N=697)	Frequency	Result
Households using improved water sources	538	77.2%
Households using unimproved water sources	159	22.8%

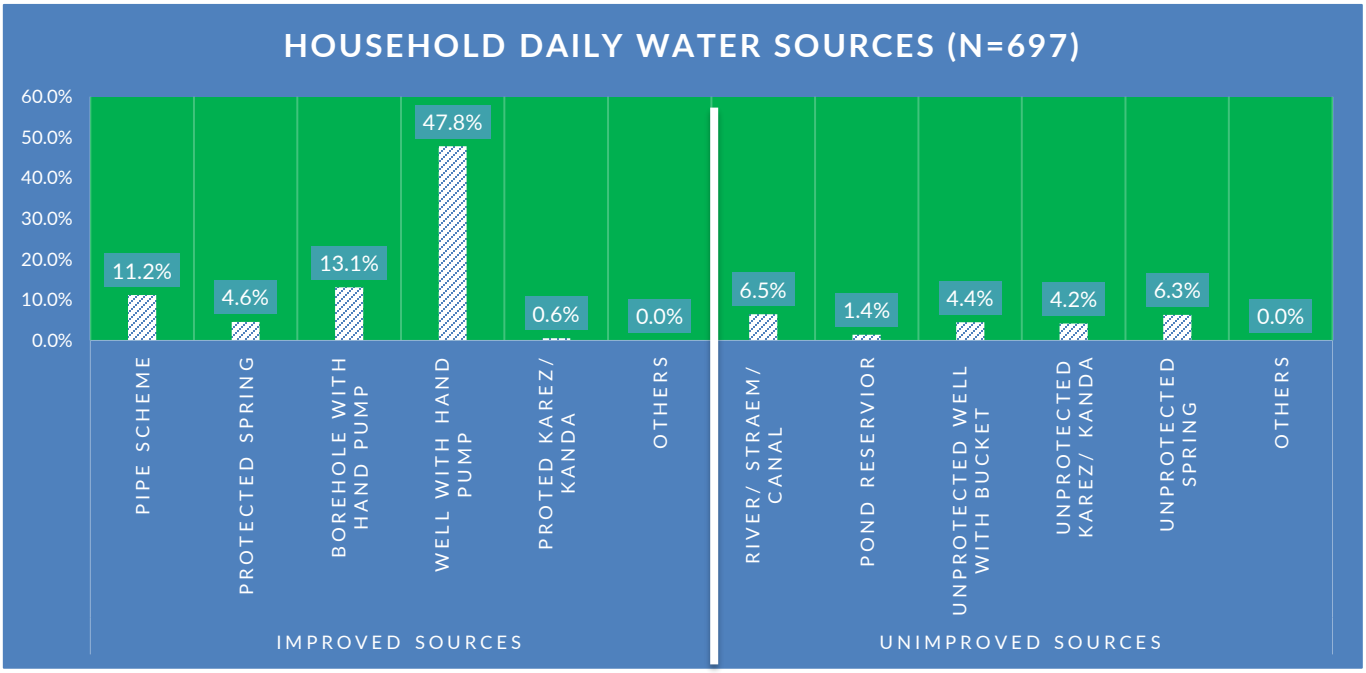


Figure 6: HH level daily improved and unimproved water sources

Table 30: Percentage of households with practice of different water treatment methods

Water treatment methods (N=697)	Frequency	Result (%)
Boil	8	1.1%
Chlorine	17	2.4%
Strain it through a cloth	1	0.1%
Water Filter	1	0.1%
Stand and settle (Sedimentation)	664	95.3%
Others	6	0.9%

6.8.3 Caregiver's Hand washing practice

Hand washing practices were also included in the survey, this information was largely knowledge/recall based, there is no practical verification process to know if mothers/caretakers actually practiced hand washing at all critical points. Appropriate hand washing is a general measure that contributes to the prevention and control of communicable diseases. 22.2% of mothers/caregivers wash their hand at five critical points (see tables below).

Table 31: Hand-washing practices by the mothers/caretakers

Hand washing practices by mothers/caretakers (N=820)	Frequency	Results (%)
Only clean with water	684	83.4%
Soap/Ash with clean water	135	16.5%
Wash both hands	795	97.0%
Rubs hands together at least 3 times	584	71.2%
Dries hand hygienically by air-drying or using a clean cloths	454	55.4%

Table 32: Hand washing practice by mothers/caretakers at critical time

Response (n=820)	Frequency	Results
Wash hands at 5 critical moments	**182**	**22.2%**
After defecation	809	98.7%
After cleaning baby's bottom	837	77.7%
Before food preparation	412	50.2%
Before eating	763	93.0%
Before feeding children (including breastfeeding)	246	30.0%

6.9 Households Food Security and Livelihoods (FSL)

6.9.1 Food Consumption Scores and Food Based Coping Strategies

Food security exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food for a healthy and active life. In this survey, the *Food Consumption Score* (FCS)[5] was used

[5] The Food Consumption Score (FCS) is an acceptable proxy indicator to measure caloric intake and diet quality at household level, giving an indication of food security status of the household if combined with other household access indicators. It is a composite score based on dietary diversity, food frequency, and relative nutritional importance of different food groups. The FCS is calculated based on the past 7-day food consumption recall for the household and classified into three categories: poor consumption (FCS = 1.0 to 28); borderline (FCS = 28.1 to 42); and acceptable consumption

to describe the current short-term household food security situation. The score was triangulated with the food-based or *reduced Coping Strategy Index* (rCSI)[6] to provide an indication of the food security status of the household. The triangulation of these two food security proxy indicators allows for capturing the interaction between household food consumption and coping strategies adopted, and hence, more properly reflects the food security situation in Kunar province.

Classification for food security: households having poor food consumption with high or medium coping strategies and those with borderline food consumption but with high coping are considered as ***severely food insecure (in red in the table below)***. Households having poor food consumption with low coping strategies, households having borderline food consumption with medium coping strategies and those having acceptable consumption but with high coping strategies are considered as ***moderately food insecure (in yellow in the table below).*** Households having borderline or acceptable food consumption with low or medium coping are considered as Food Security ***(in green in the Table below)***[7]**.**

Food consumption groups (based on FCS)	Coping group (based on CSI)		
	High coping	Medium coping	No or low coping
Poor	Severely food insecure	Severely food insecure	Moderately food insecure
Border line	Severely food insecure	Moderately food insecure	Food secure
Acceptable	Moderately food insecure	Food secure	Food secure

(FCS = >42.0). The FCS is a weighted sum of food groups. The score for each food group is calculated by multiplying the number of days the commodity was consumed and its relative weight.

[6] The reduced Coping Strategy Index (rCSI) is often used as a proxy indicator of household food insecurity. Households were asked about how often they used a set of five short-term food based coping strategies in situations in which they did not have enough food, or money to buy food, during the one-week period prior to interview. The information is combined into the rCSI which is a score assigned to a household that represents the frequency and severity of coping strategies employed. First, each of the five strategies is assigned a standard weight based on its severity. These weights are: Relying on less preferred and less expensive foods (=1.0); Limiting portion size at meal times (=1.0); Reducing the number of meals eaten in a day (=1.0); Borrow food or rely on help from relatives or friends (=2.0); Restricting consumption by adults for small children to eat (=3.0). Household CSI scores are then determined by multiplying the number of days in the past week each strategy was employed by its corresponding severity weight, and then summing together the totals. The total rCSI score is the basis to determine and classify the level of coping: into three categories: No or low coping (rCSI= 0-9), medium coping (rCSI = 10-17), high coping (r ≥18).

[7] Adopted from WFP (Kabul Informal Settlement (KIS) Winter Needs Assessment FINAL REPORT ON FOOD SECURITY, December 8th, 2015)

6.9.2 Food security situation

Based on triangulation of *Food Consumption Score* (FSC) with the food-based or *reduced Coping Strategy Index* (rCSI), the survey finding shows that 11.7% households had moderate and severe food insecurity for more details see figure bellow.

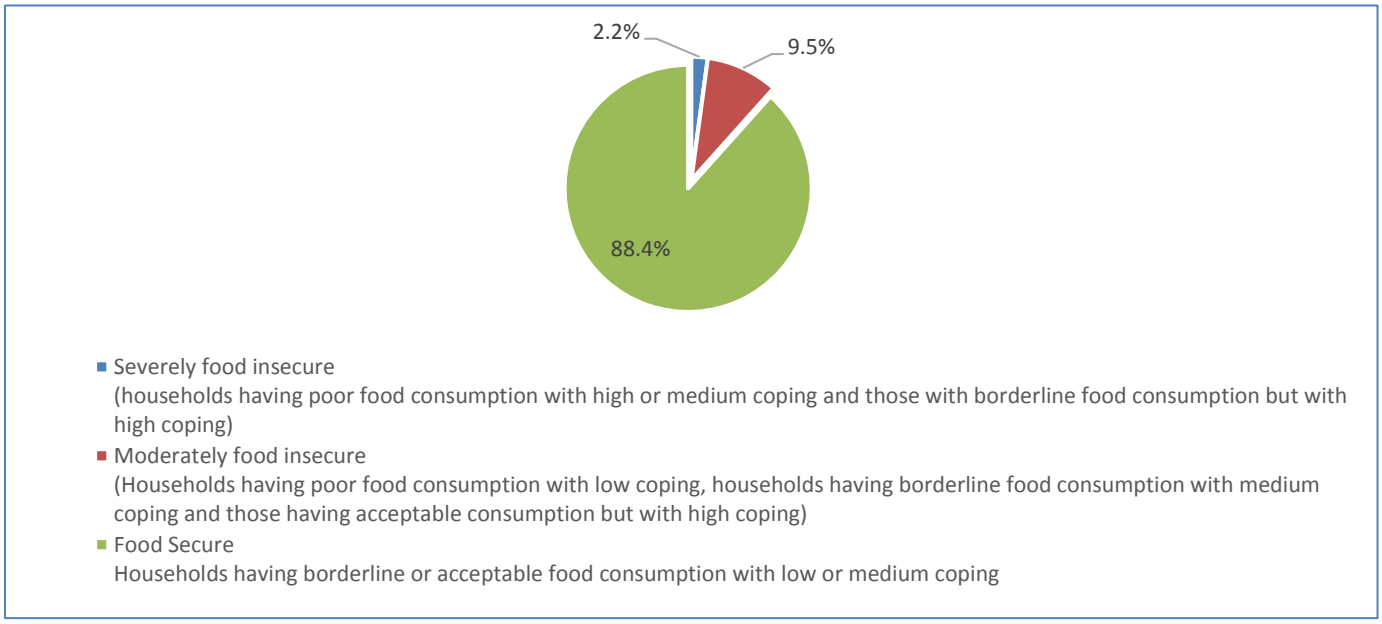
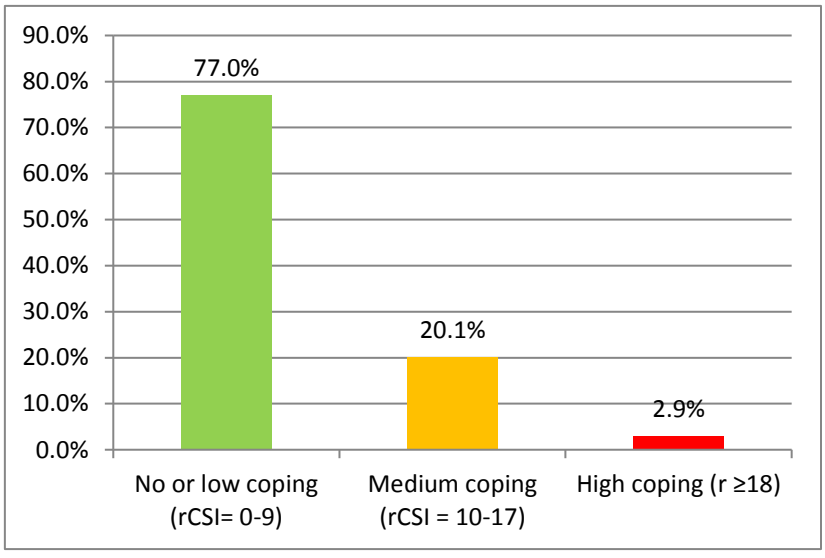


Figure 7: Food security situation (Based on FCS & rSCI)

6.9.3 Reduced Coping Strategy Index[8]

The Food Based Coping Strategy Index is based on measures of the frequency of use of food deprivation, such as the recourse to cheaper food, reductions of the quantity of meals, the act of borrowing food, as well as alterations in food distribution within the household to favor children. Each strategy is weighted as per its severity with borrowing food and altering the distribution of food within the



[8] Adopted from WFP (*Kabul Informal Settlement (KIS) Winter Needs Assessment FINAL REPORT ON FOOD SECURITY, December 8th, 2015)*

household regarded as the most severe strategies. Categories are then defined based upon these scores varying from low coping (0-9) to medium coping (10-17) and high coping (>18).

2.9% of HHs with a high level of coping (rCSI ≥18 score).
20.1% of HHs with a medium level of coping (rCSI= 10-17 score).
77.0% of HHs with No or Low-level coping (rCSI=0-9 score).

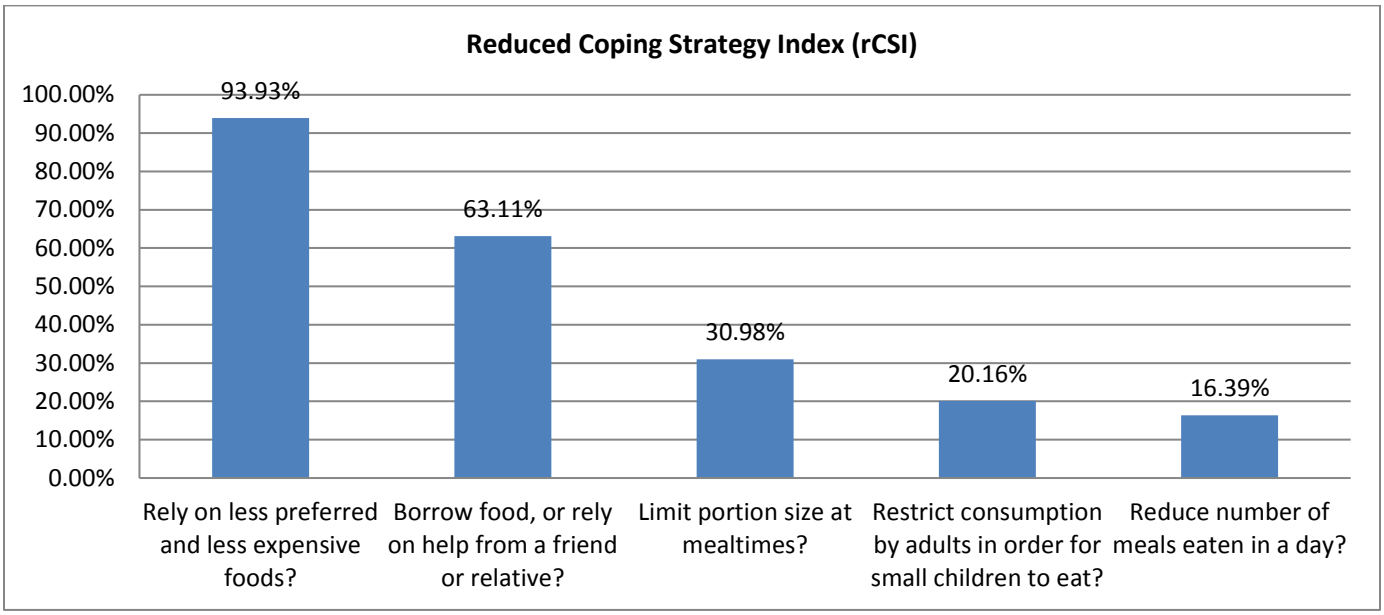


Figure 8: Reduced coping strategy index

6.9.4 Food Consumption Score:

Food Consumption Scores are the sum of the frequency of consumption (in the 7 days prior to the interview) of each type of food item (cereal, pulses, vegetables, meat fish and eggs, dairies, oil and sugar) weighted by their nutritional value (proteins are weighted 4, cereals 2, pulses 3, and vegetables and fruits 1, while sugar is weighted 0.5). Households are then grouped into "Poor" food consumption (1.0-28), "Borderline" (28.01 – 42) and acceptable (above 42). Food consumption groups are a proxy of food consumption and reflect both the frequency and quality of food consumption.

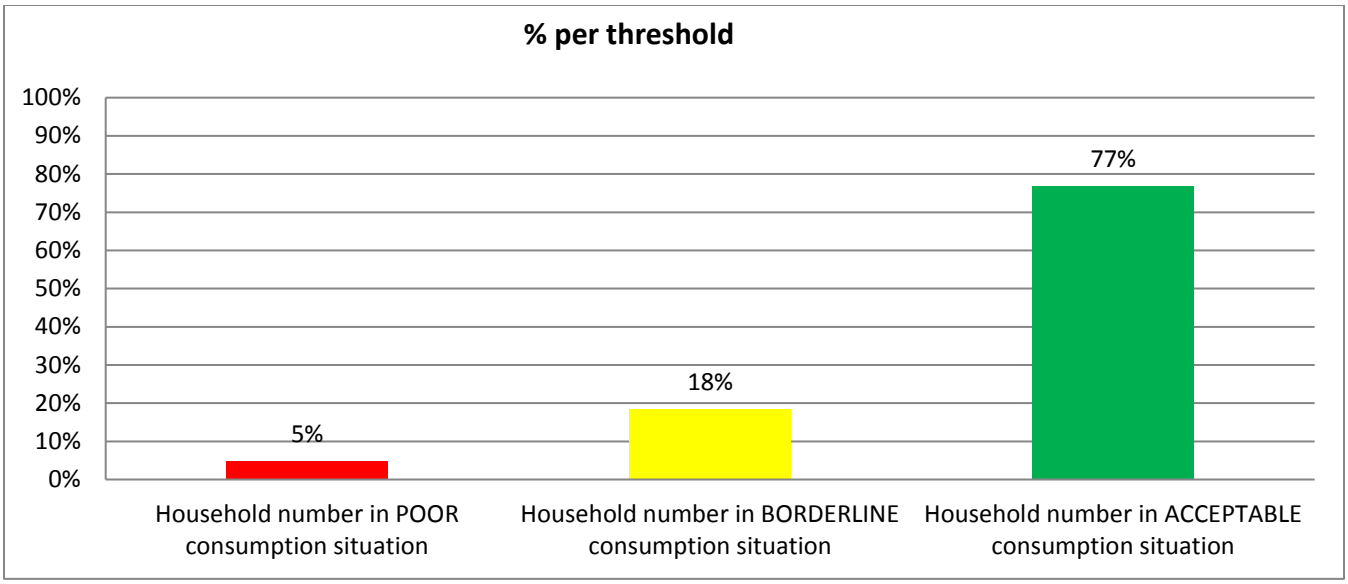


Figure 9: Food Consumption score per HH

5% households surveyed have Poor consumption scores (FCS = 1.0 to 28).

18% households surveyed have Borderline consumption scores (FCS = 28.1 to 42).

77% households surveyed have acceptable food consumption scores (FCS = >42.0).

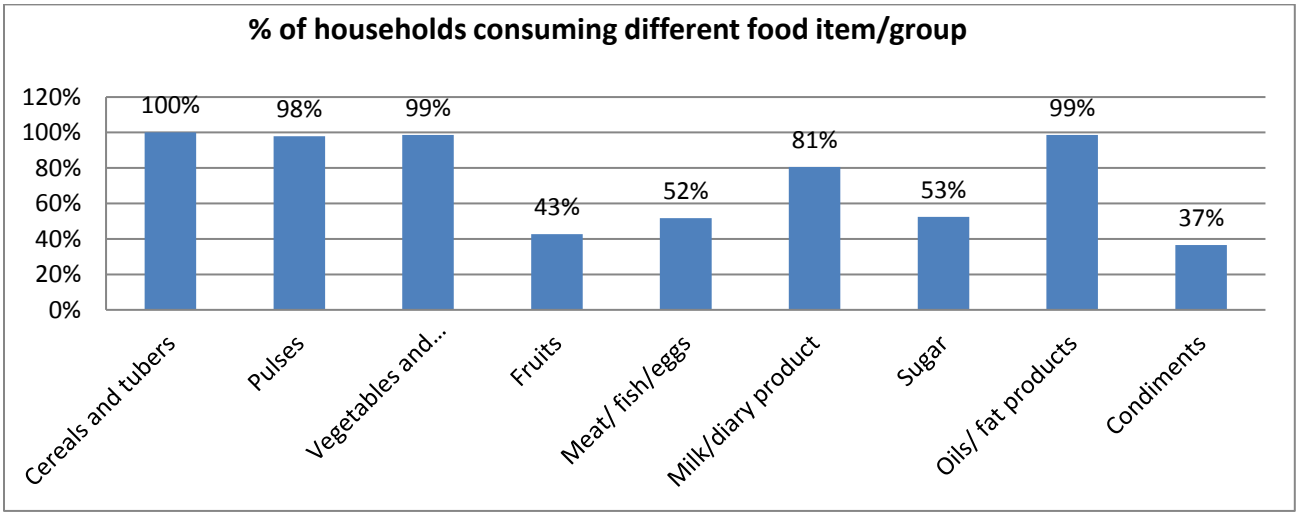


Figure 10: Households consuming different food items/group

6.9.5 Food stock

The table below shows the HHs percentages with duration of food stock in HHs where a staggering 66.0% households responded that there is no food stock in the house.

Table 33: Status of food stcok in the household

Status, N=697 Respondents	N	Results (%)
No food stock in the households	460	66.0%
Less than a week food stock in household	111	16.0%
Food stock in household from 1-3 weeks	65	9.3%
Stock food in household up to 3 months	33	4.7%
Stock food in household for more than 3 months	28	4.0%

6.9.6 Food main sources

The survey finding shows that most of the food that households used in the last 7 days prior to the survey was cash based, see table below for more details.

Table 34: Food main sources that the households consumed

	Own production	Cash	Credit	Battering	Gift/ charity	Wild food	Food Aid	Total
Cereals and tubers	82	544	69	2	0	0	0	**697**
Pulses/ Nuts	23	588	70	0	1	0	0	**682**
Vegetables and leaves	104	532	22	0	30	0	0	**688**
Fruits	4	279	5	0	13	0	0	**301**
Meat/ fish/eggs	1	331	4	0	15	0	1	**352**
Milk/diary product	449	62	0	0	49	0	0	**560**
Sugar / Honey	0	359	6	0	0	0	0	**365**
Oils/ fat products	1	652	31	0	0	0	2	**686**
Condiments	3	250	2	0	0	0	1	**256**

7. CONCLUSION

7.1. Undernutrition

Results of his survey is not the reflection of national nutrition situation but are representative of only for the entire Province of Kunar. The results of the survey shows a prevalence of Global Acute Malnutrition of **14.4% (11.9-17.2 95% CI)** and for severe acute malnutrition (SAM) of **3.4% (2.4-4.8 95% CI)** based on weight for height z-score. So based on WHZ GAM is classified as 'serious' nutrition situation in the province according

to the WHO severity–classification[9]. SAM prevalence by WHZ (3.4%) is at critical/emergency level in the province. According to the last 2013 NNS survey, the GAM and SAM prevalence were **21.6% (17.9 - 25.78 95 % CI)**, and **11.2 % (7.47 - 16.5 95%CI)** respectively in the province based on WHZ. It is also important to note that SMART survey was conducted by PU-AMI with technical support from ACF in September 2015 (covering five districts out of fifteen), where the GAM rate was 11.8% (9.7-14.3 95% CI).

The GAM prevalence based on MUAC is **13.7% (10.4-17.8; 95% CI)** and SAM is **2.5% (1.6- 3.7; 95% CI)**, slightly lower than WHZ based GAM.

The combined MUAC and WHZ prevalence revealed GAM and SAM prevalence of **20.9% (18.4 -23.3; 95 % CI)** and **4.9% (3.6-6.2; 95% CI)** respectively. According to this combined GAM and SAM prevalence, the nutritional situation is very critical in the province. The combined rate informs the estimated SAM and MAM caseload in the province for better programing. All the children in the sample detected as acutely malnourished (either by MUAC or WHZ or Oedema) are bring into the calculation according to combined criteria. To detect all acute malnourished children eligible for treatment, the MUAC only detection is not enough according to Afghanistan IMAM Guidelines.

This has to be further investigated. See figure 11 in the actual acute malnutrition comparing WHZ <-2 Z-score with MUAC <125 mm and there is slightly difference respectively.

GAM based on both WHZ and MUAC criterions have been more prevalent in children under 2 years **(WHZ based: 20.7%** (16.7-25.2, 95% CI) and **MUAC based: 26.5%** (20.5-33.5, 95% CI) compared to children over 2 years children **(WHZ based: 9.7% (7.5-12.3**, 95% CI) and **MUAC based: 4.5%** (3.0-6.9, 95% CI). This suggests higher vulnerability of younger children to wasting.

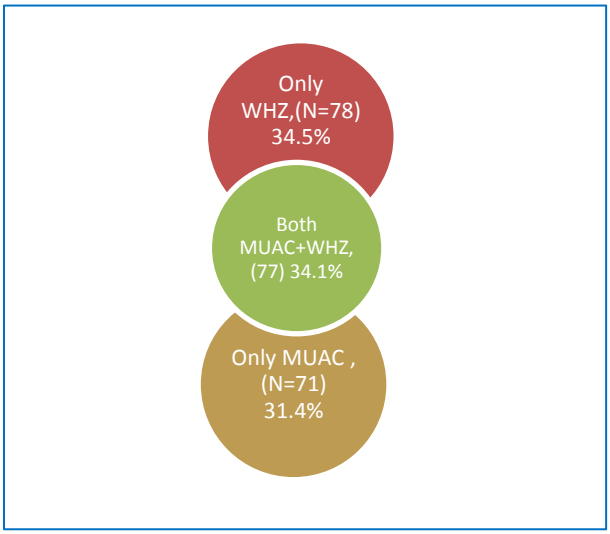


Figure 11: Overlapping WHZ and MUAC data

Chronic malnutrition in the province continue to be worrying. The results of the present survey clearly showed that, based on WHO classification of severity of

[9] WHO acute malnutrition classification : <5% acceptable, 5-9% poor, 10-14% serious, >15% critical (without aggravating factors)

malnutrition, the overall prevalence of stunting is very high **49.3% (45.2-53.4- 95% CI)**. One in every two children included in the survey were found to be stunted, while one in every three children was underweight **36.1% (32.4-40.1 95% CI)**.

7.2 Mortality rates

The Crude death rate and Under five death rate were below the WHO emergency[10] threshold. However, Kunar province has been found to be having quite high CDR (0.54 death/10,000/Day) and U5DR (1.26 death/10,000/Day) even it's still under the WHO defined emergency thresholds for mortality and require some close monitoring and follow-up.

7.3 Maternal nutritional status

There are no commonly accepted standards for maternal malnutrition status based on MUAC cut-offs. In surveys, the MUAC cutoff of 230 mm is used to approximately identify their status. This survey shows that **17.8% (14.9-20.7; 95% CI)** of the mothers (PLWs) suffered from malnutrition based on MUAC<230mm.
The main concern was iron supplementation among pregnant women, which the survey found to be low **(53.3%)**. Institutional delivery was also found to be low (69.3%) which can be due to the fact that, ANC check-up rate was also quite low (65.0%). The Iron supplementation prevents anemia during pregnancy and eventual life-threatening complications during pregnancy and delivery. Therefore, it decreases maternal mortality, prenatal and perinatal infant loss and prematurity (that can be directly related to child stunting in the first 2 years of life).

7.4 Child Health and Immunization

The UNICEF conceptual framework of malnutrition can be used to explain the probable causes of under-nutrition in this area. Diseases weaken the individual immune system, increase nutritional needs and in the same time may be a reason of reduced food intake and absorption (diarrhea), engaging the body in a vicious circle with malnutrition. In the Kunar province, half of the sampled children **(52.8 %)** had suffered from one or another form of illness symptoms such as diarrhea **(28.3%)**, fever (**31.9%)** or acute respiratory **(23.2%)** in the last 2 weeks prior the survey, suggesting quite high illness of basic treatable diseases.

It is important to note that low child immunity system also contributes to increase the malnutrition, morbidity and mortality. The survey shows a BCG vaccination coverage of **92.2%**, a measles vaccination coverage both

[10] WHO's emergency thresholds of CDR 1/10,000/day and U5DR 2/10,000/day respectively.

by recall and by card confirmation of **90.0%, the** polio vaccination coverage of **94.9% was** good, the only concern was 88.2**%** for **PENTA 3** vaccination that compared to national target 90% is considered as low. Low immunization coverages contribute to increase morbidity and mortality rates.

Worm infection in children caused mal- absorption, which can aggravate malnutrition and anemia rates and contribute to retarded growth, child morbidity and mortality. Deworming is recommended for children from 24 to 59 months of age as children in this age group are considered as a potential risk of acquiring the disease. Deworming also helps to enhance the iron status of children, which eventually helps children to exercise the best their intellectual ability. The proportion of all children aged 24-59 months who had received deworming in the last 6 month prior to the survey was low **(66.1 %),**

8. RECOMMENDATIONS

- AIM-WG, PND and Nutrition Cluster to immediately organize meeting with PU-AMI, Unicef, MoPH, WFP and other actors responsible for the nutrition programme in Kunar province to seriously put a plan/intervention to tackle the very high rate of undernutrition.
- Provide sensitization sessions about prevention, malnutrition treatments as well as consequences of malnutrition to Health Shura as they were found to be very influential in the community.
- Motivate and effectively mobilize CHWs to strengthen active case findings through regular monthly planning in the community level.
- Support relevant aspects of availability, access as well as the utilization of nutritious and diverse foods through integrated programming.
- Expand Nutrition services along with IMCI and MCH services by using mobile health teams in the uncovered areas for SAM and MAM children and PLWs.
- Integrate multi-sectorial health, nutrition, WASH and FSL intervention in the province to fight both acute and chronic malnutrition.
- Support women and their families to practice optimal breastfeeding and ensure timely and adequate complementary feeding through provision of IYCF programs at facility and community levels.
- Advocate for an integrated approach within the health system to ensure monitoring of chronic malnutrition, growth monitoring and promotion, at the health facility and primarily community level.

- Sensitize the community on the importance of micronutrient supplementation and immunization for children and pregnant women.
- Ensure regular supervision and monitoring of the current IMAM program by the PNO and other provincial level nutrition managers to closely observe the situation and provide necessary support to the field team.
- Carry out a SQUEAC survey to better understand the barriers in the health facilities and at community level to evaluate the coverage of current nutrition program. As well as carrying out a SMART survey next year (May 2019) to continue closely monitoring of the nutrition situation.
- Unsafe drinking water: to Scale up soft and hard WASH interventions, strengthening awareness on water treatment. In additional, rehabilitation or constructions of protected water sources and provision of water filters to affected community for safe drinking water.
- Establish water source management committees.
- Poor handwashing practices: to increase hygiene awareness in the community level. The awareness needs to include personal, environmental and menstrual hygiene messages.
- Improve awareness to EPI workers or any other health workers to correctly write the day of births on the vaccination cards or any other document used for survey.

9. ANNEXES

Annex 1: Kunar Province Map

Annex 2: selected Clusters in the Kunar province

SN	Province	District Name	Name of Health Facility	Villages Name	Population size	Cluster
1	Kuner	اسعد اباد	DHاسعد اباد	کوز کورونه	2688	RC
2	Kuner	اسعد اباد	DHاسعد اباد	دم کلي	11368	1
3	Kuner	اسعد اباد	DHاسعد اباد	دوشاخيل	1176	2
4	Kuner	اسعد اباد	DHاسعد اباد	کرهاله	14000	3
5	Kuner	اسعد اباد	DHاسعد اباد	کرمار	5110	4
6	Kuner	وته بور	BHCوته پور	وته پور	616	5
7	Kuner	پيچ دره	DHمانو کی	ننگلام	1771	6

8	Kuner	پیچ دره	DHمانو کی	شلوتی	476	7
9	Kuner	چپه دره	CHCسینزو	غوندی	420	8
10	Kuner	نرنگ	CHCنرنگ	لمټک لاندی کلي	1204	9
11	Kuner	څوکی	DHڅوکی	سیند غاره میاگان	700	10
12	Kuner	نورګل	CHCنورګل	کـــرچندو	966	11
13	Kuner	خاص کنر	CHCخاص کنر	باندي کلي	602	12
14	Kuner	خاص کنر	BHCمنګوال	منګوال	1946	13
15	Kuner	سرکانی	CHCسرکانی	سید خیلو	2611	14
16	Kuner	شیګل	CHCشیګل	کنا سیر لر کلي	238	15
17	Kuner	اسمار	CHCاسمار	ججی	2030	16
18	Kuner	دانګام	BHCدانکام	بر کلی دانګام	854	17
19	Kuner	ناری	BHCبریکوت	سلام کوټ	980	18
20	Kuner	ناری	BHCناری	ناړی لرکلی	1120	19
21	Kuner	اسعد اباد	DHاسعد اباد	کوز ځاګي	1470	20
22	Kuner	اسعد اباد	DHاسعد اباد	انځرو ناو	1365	21
23	Kuner	اسعد اباد	DHاسعد اباد	سیری کلی	1890	RC
24	Kuner	وته بور	BHCوتې پور	غوندی	896	22
25	Kuner	پیچ دره	DHمانو کی	سندری	1442	23
26	Kuner	پیچ دره	DHمانو کی	شاهی لام	700	24
27	Kuner	پیچ دره	BHCبارکندی	زورمنډی	1365	25
28	Kuner	پیچ دره	BHCبارکندی	مناګي	840	26
29	Kuner	نرنگ	CHCنرنگ	توحید اباد کډو	994	27
30	Kuner	نرنگ	CHCنرنگ	کوتکی کلی	5054	28
31	Kuner	نرنگ	CHCنرنگ	برنرنگ کلی	2310	29
32	Kuner	نرنگ	CHCنرنگ	خوړونه روباط	1505	30
33	Kuner	څوکی	DHڅوکی	څوکی + والی قلعه	1106	31
34	Kuner	څوکی	DHڅوکی	دیګان + سرکاری قلعه	1204	32
35	Kuner	څوکی	DHڅوکی	ګټوقلا او تنګی	1155	RC
36	Kuner	نورګل	BHCفاطمی	توره تیـــــګه بر چم	609	33
37	Kuner	خاص کنر	CHCخاص کنر	کولالان	903	34
38	Kuner	خاص کنر	CHCخاص کنر	شیخان	903	35
39	Kuner	خاص کنر	BHCمنګوال	میا ګان	903	36
40	Kuner	خاص کنر	BHCمنګوال	کورمټا	525	37
41	Kuner	سرکانی	CHCسرکانی	دوسرکه	1645	38
42	Kuner	سرکانی	CHCسرکانی	بره ګنجګلو بیله	476	39
43	Kuner	سرکانی	BHCبهره اباد	بره جیبه	1134	40
44	Kuner	سرکانی	BHCبهره اباد	ادرګام ټاپو	1239	RC
45	Kuner	مروری	BHCمروری	کوز لاهور ډاګ	700	41

46	Kuner	مروری	BHCمروری	سیری کوز طرف	1260	42
47	Kuner	شیګل	CHCشیګل	کنیور	644	43
48	Kuner	شیګل	CHCشیګل	چاقوري	693	RC
49	Kuner	شیګل	BHCلچی	برخور	350	44
50	Kuner	اسمار	CHCاسمار	سنګرډاک	511	45
51	Kuner	غازی اباد	CHCنیشه ګام	کاڅکل کڅ	1190	46
52	Kuner	دانګام	CHCنیشه ګام	نیلي ګال	1400	47
53	Kuner	ناری	CHCبریکوت	کندک سی کلی	630	48
54	Kuner	ناری	BHCناری	شـــامســـیر لـــر کلـــي	476	49
55	Kuner	شیګل	CHCلچی	بنګیل	140	50
56	Kuner	دانګام	CHCنیشه ګام	کامتا شاهی	714	RC
57	Kuner	نورګل	BHCغازی باد	ودیرو کلی کوز چم	749	51

Annex 3: Plausibility check for: Kuner ENA data sets FV-2018.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)
Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (1.1 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.526)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (3)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (10)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (5)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.				and	and	and	or
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (1.05)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.17)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.13)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**1** (p=0.025)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**13** %

The overall score of this survey is 13 %, this is good.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 24 %
Anthropometric Indices likely to be in error (-3 to 3 for WHZ, -3 to 3 for HAZ, -3 to 3 for WAZ, from observed mean - chosen in Options panel - these values will be flagged and should be excluded from analysis for a nutrition survey

in emergencies. For other surveys this might not be the best procedure e.g. when the percentage of overweight

children has to be calculated):

Line=45/ID=1: **WHZ (-5.240)**, WAZ (-5.313), Weight may be incorrect
Line=61/ID=1: HAZ (2.108), Age may be incorrect
Line=69/ID=3: HAZ (-6.428), Age may be incorrect
Line=70/ID=4: HAZ (-6.622), WAZ (-6.025), Age may be incorrect
Line=75/ID=1: HAZ (2.037), Age may be incorrect
Line=88/ID=1: HAZ (1.284), Age may be incorrect
Line=91/ID=1: HAZ (1.877), Height may be incorrect
Line=134/ID=1: **WHZ (6.346)**, HAZ (-9.068), Height may be incorrect
Line=138/ID=2: HAZ (-5.122), Height may be incorrect
Line=140/ID=4: **WHZ (-5.284)**, WAZ (-4.922), Weight may be incorrect
Line=156/ID=1: HAZ (2.306), Age may be incorrect
Line=163/ID=1: HAZ (1.378), Age may be incorrect
Line=164/ID=2: HAZ (3.435), Age may be incorrect
Line=175/ID=1: HAZ (1.971), Age may be incorrect
Line=177/ID=3: HAZ (-5.116), Height may be incorrect
Line=184/ID=2: HAZ (10.090), WAZ (3.509), Age may be incorrect
Line=189/ID=3: HAZ (-6.553), WAZ (-5.138), Age may be incorrect
Line=190/ID=4: HAZ (2.210), Age may be incorrect
Line=200/ID=2: HAZ (-5.328), Age may be incorrect
Line=204/ID=2: HAZ (1.308), Age may be incorrect
Line=272/ID=1: HAZ (-4.928), Age may be incorrect
Line=278/ID=2: HAZ (1.462), Height may be incorrect
Line=293/ID=3: HAZ (2.050), WAZ (1.359), Age may be incorrect
Line=294/ID=4: HAZ (2.024), Age may be incorrect
Line=327/ID=1: HAZ (1.216), Age may be incorrect
Line=329/ID=2: HAZ (1.895), Age may be incorrect
Line=331/ID=1: HAZ (1.617), WAZ (1.626), Age may be incorrect
Line=333/ID=2: HAZ (3.907), Age may be incorrect
Line=346/ID=1: HAZ (1.652), Age may be incorrect
Line=349/ID=1: **WHZ (2.985)**, HAZ (-5.586), Height may be incorrect
Line=350/ID=1: HAZ (-7.398), WAZ (-4.787), Age may be incorrect
Line=360/ID=1: HAZ (-6.901), WAZ (-5.122), Age may be incorrect
Line=362/ID=1: **WHZ (-6.638)**, HAZ (7.722), Height may be incorrect
Line=381/ID=1: HAZ (-5.391), Age may be incorrect
Line=382/ID=1: HAZ (4.731), Age may be incorrect
Line=392/ID=2: HAZ (-6.227), Age may be incorrect
Line=422/ID=1: HAZ (3.050), WAZ (1.742), Age may be incorrect
Line=449/ID=2: HAZ (1.409), Age may be incorrect
Line=458/ID=1: **WHZ (-4.349)**, Height may be incorrect
Line=478/ID=1: **WHZ (-6.600)**, WAZ (-5.796), Weight may be incorrect
Line=493/ID=2: HAZ (-6.028), Age may be incorrect
Line=496/ID=2: HAZ (1.885), WAZ (1.458), Age may be incorrect
Line=507/ID=2: HAZ (-6.062), Height may be incorrect
Line=519/ID=3: HAZ (3.584), Age may be incorrect
Line=522/ID=3: HAZ (-4.914), Age may be incorrect
Line=526/ID=2: HAZ (3.418), Age may be incorrect
Line=527/ID=3: HAZ (-5.778), WAZ (-4.888), Age may be incorrect
Line=539/ID=1: HAZ (-5.181), Age may be incorrect
Line=541/ID=1: HAZ (2.544), Height may be incorrect
Line=542/ID=1: HAZ (4.988), WAZ (1.485), Age may be incorrect
Line=548/ID=1: HAZ (1.422), Age may be incorrect
Line=549/ID=1: **WHZ (3.388)**, Height may be incorrect
Line=550/ID=2: HAZ (2.991), Age may be incorrect
Line=582/ID=5: HAZ (3.475), Age may be incorrect

Line=603/ID=2: HAZ (1.215), Age may be incorrect
Line=669/ID=1: HAZ (1.343), Age may be incorrect
Line=700/ID=2: HAZ (-5.780), Age may be incorrect
Line=730/ID=3: **WHZ (2.670)**, Height may be incorrect
Line=734/ID=1: HAZ (2.131), Age may be incorrect
Line=747/ID=2: **WHZ (2.454)**, Height may be incorrect
Line=781/ID=1: HAZ (2.898), WAZ (1.595), Age may be incorrect
Line=798/ID=2: HAZ (-5.687), Height may be incorrect
Line=801/ID=1: HAZ (-5.360), Height may be incorrect
Line=804/ID=2: HAZ (1.502), Age may be incorrect
Line=811/ID=1: **WHZ (-4.056)**, HAZ (1.297), Height may be incorrect
Line=816/ID=1: **WHZ (3.334)**, Weight may be incorrect
Line=818/ID=1: HAZ (1.404), Age may be incorrect
Line=854/ID=2: HAZ (-5.697), Age may be incorrect
Line=883/ID=3: HAZ (-5.005), Height may be incorrect
Line=902/ID=2: HAZ (2.217), Age may be incorrect
Line=964/ID=1: HAZ (3.072), Age may be incorrect
Line=1012/ID=3: HAZ (4.589), WAZ (1.476), Age may be incorrect
Line=1014/ID=1: HAZ (-6.607), WAZ (-5.254), Age may be incorrect
Line=1034/ID=1: HAZ (3.210), Age may be incorrect
Line=1035/ID=2: HAZ (1.867), Age may be incorrect
Line=1052/ID=3: HAZ (4.085), WAZ (2.333), Age may be incorrect
Line=1065/ID=1: HAZ (1.925), Age may be incorrect
Line=1066/ID=1: HAZ (-4.967), Age may be incorrect
Line=1089/ID=3: HAZ (1.230), Height may be incorrect
Line=1099/ID=2: HAZ (-6.118), Height may be incorrect
Line=1102/ID=1: HAZ (-7.592), WAZ (-5.048), Age may be incorrect
Line=1105/ID=3: HAZ (2.946), Age may be incorrect
Line=1121/ID=1: HAZ (-6.807), WAZ (-4.934), Age may be incorrect
Line=1123/ID=2: HAZ (-4.934), Age may be incorrect

Percentage of values flagged with SMART flags:WHZ: 1.1 %, HAZ: 6.9 %, WAZ: 1.8 %

Age distribution:

Month 6 : #########
Month 7 : ##############################
Month 8 : ###################
Month 9 : ###############################
Month 10 : ################################
Month 11 : ########################
Month 12 : ##
Month 13 : ##############################
Month 14 : ###################
Month 15 : ##############################
Month 16 : ###############################
Month 17 : ###################
Month 18 : ########################
Month 19 : ########################
Month 20 : ####################
Month 21 : ###################
Month 22 : ###################
Month 23 : ########################
Month 24 : ##############################
Month 25 : ####################################
Month 26 : ########################
Month 27 : ##############
Month 28 : ####################

Month 29 : ######################
Month 30 : ######################
Month 31 : ####################
Month 32 : #############
Month 33 : ###############
Month 34 : #############
Month 35 : ######################
Month 36 : ##
Month 37 : ########################
Month 38 : ################
Month 39 : ##########
Month 40 : #############
Month 41 : #############
Month 42 : ########
Month 43 : #########
Month 44 : #############
Month 45 : ################
Month 46 : ####################
Month 47 : #############
Month 48 : ###################################
Month 49 : ######################
Month 50 : ##################
Month 51 : #########
Month 52 : ##########
Month 53 : ###############
Month 54 : ################
Month 55 : ##########
Month 56 : #####
Month 57 : ####
Month 58 : ##################
Month 59 : ######################
Month 60 : ##
Age ratio of 6-29 months to 30-59 months: 1.22 (The value should be around 0.85).:
p-value = 0.000 (significant difference)

Statistical evaluation of sex and age ratios (using Chi squared statistic):

Age cat.	mo.	boys	girls	total	ratio boys/girls
to 17	12	168/129.9 (1.3)	160/125.1 (1.3)	328/255.0 (1.3)	1.05
18 to 29	12	149/126.7 (1.2)	127/121.9 (1.0)	276/248.6 (1.1)	1.17
30 to 41	12	112/122.8 (0.9)	113/118.2 (1.0)	225/241.0 (0.9)	0.99
42 to 53	12	93/120.8 (0.8)	106/116.3 (0.9)	199/237.1 (0.8)	0.88
54 to 59	6	38/59.8 (0.6)	33/57.5 (0.6)	71/117.3 (0.6)	1.15
6 to 59	54	560/549.5 (1.0)	539/549.5 (1.0)		1.04

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.526 (boys and girls equally represented)
Overall age distribution: p-value = 0.000 (significant difference)
Overall age distribution for boys: p-value = 0.000 (significant difference)
Overall age distribution for girls: p-value = 0.000 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Digit preference Weight:

Digit .0 : ##
Digit .1 : ##
Digit .2 : ##
Digit .3 : ##

Digit .4 : ##
Digit .5 : ##
Digit .6 : ##
Digit .7 : ##
Digit .8 : ##
Digit .9 : ##
Digit preference score: **3** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.257
Digit preference Height:
Digit .0 : ##
Digit .1 : ############################
Digit .2 : ##
Digit .3 : ####################################
Digit .4 : ########################
Digit .5 : ##
Digit .6 : ##
Digit .7 : ######################
Digit .8 : ########################
Digit .9 : ##################################
Digit preference score: **10** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.000 (significant difference)
Digit preference MUAC:
Digit .0 : ##################################
Digit .1 : ##
Digit .2 : ##################################
Digit .3 : ##
Digit .4 : ####################################
Digit .5 : ##
Digit .6 : ##
Digit .7 : ##############################
Digit .8 : ##############################
Digit .9 : ##############################
Digit preference score: **5** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.004 (significant difference)
Evaluation of Standard deviation, Normal distribution, Skewness and Kurtosis using the 3 exclusion (Flag)

procedures

.	no exclusion	exclusion from reference mean (WHO flags)	exclusion from observed mean (SMART flags)
WHZ			
Standard Deviation SD:	1.15	1.09	1.05
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	14.7%	14.4%	14.4%
calculated with current SD:	16.7%	15.1%	14.5%
calculated with a SD of 1:	13.3%	13.0%	13.3%
HAZ			
Standard Deviation SD:	1.68	1.53	1.20
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	48.5%	48.0%	49.3%
calculated with current SD:	45.9%	44.5%	47.2%
calculated with a SD of 1:	43.2%	41.6%	46.7%
WAZ			
Standard Deviation SD:	1.18	1.18	1.09
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	36.5%	36.4%	36.1%
calculated with current SD:	38.6%	38.4%	37.4%
calculated with a SD of 1:	36.6%	36.5%	36.4%

Results for Shapiro-Wilk test for normally (Gaussian) distributed data:

WHZ	p= 0.000	p= 0.003	p= 0.005
HAZ	p= 0.000	p= 0.000	p= 0.001
WAZ	p= 0.003	p= 0.008	p= 0.024

(If p < 0.05 then the data are not normally distributed. If p > 0.05 you can consider the data normally distributed)

Skewness

WHZ	-0.09	-0.03	-0.17
HAZ	0.76	0.72	0.11
WAZ	-0.06	-0.02	-0.04

If the value is:
-below minus 0.4 there is a relative excess of wasted/stunted/underweight subjects in the sample
-between minus 0.4 and minus 0.2, there may be a relative excess of wasted/stunted/underweight subjects in the sample.
-between minus 0.2 and plus 0.2, the distribution can be considered as symmetrical.
-between 0.2 and 0.4, there may be an excess of obese/tall/overweight subjects in the sample.
-above 0.4, there is an excess of obese/tall/overweight subjects in the sample

Kurtosis

WHZ	2.66	0.39	-0.13
HAZ	4.59	1.64	-0.45
WAZ	0.65	0.57	-0.20

Kurtosis characterizes the relative size of the body versus the tails of the distribution. Positive kurtosis indicates relatively large tails and small body. Negative kurtosis indicates relatively large body and small tails.
If the absolute value is:
-above 0.4 it indicates a problem. There might have been a problem with data collection or sampling.
-between 0.2 and 0.4, the data may be affected with a problem.
-less than an absolute value of 0.2 the distribution can be considered as normal.

Test if cases are randomly distributed or aggregated over the clusters by calculation of the Index of Dispersion (ID)

and comparison with the Poisson distribution for:
WHZ < -2: ID=1.43 (p=0.025)
WHZ < -3: ID=1.20 (p=0.156)
GAM: ID=1.43 (p=0.025)
SAM: ID=1.20 (p=0.156)
HAZ < -2: ID=1.94 (p=0.000)
HAZ < -3: ID=1.47 (p=0.018)
WAZ < -2: ID=1.86 (p=0.000)
WAZ < -3: ID=1.40 (p=0.034)
Subjects with SMART flags are excluded from this analysis.
The Index of Dispersion (ID) indicates the degree to which the cases are aggregated into certain clusters (the degree to which there are "pockets"). If the ID is less than 1 and p > 0.95 it indicates that the cases are UNIFORMLY distributed among the clusters. If the p value is between 0.05 and 0.95 the cases appear to be randomly distributed among the clusters, if ID is higher than 1 and p is less than 0.05 the cases are aggregated into certain cluster (there appear to be pockets of cases). If this is the case for Oedema but not for WHZ then aggregation of GAM and SAM cases is likely due to inclusion of oedematous cases in GAM and SAM estimates.
Are the data of the same quality at the beginning and the end of the clusters?
Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster

per day is measured then this will be related to the time of the day the measurement is made).

```
Time                                SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.09 (n=50, f=0)  ############
02: 1.58 (n=46, f=3)  ################################
03: 1.06 (n=49, f=0)  ###########
04: 1.67 (n=46, f=2)  ####################################
05: 0.98 (n=46, f=0)  #######
06: 1.25 (n=45, f=0)  ##################
07: 0.92 (n=47, f=0)  #####
08: 1.29 (n=47, f=1)  ####################
09: 0.98 (n=41, f=0)  ########
10: 1.16 (n=47, f=0)  ###############
11: 1.05 (n=42, f=1)  ###########
12: 1.00 (n=40, f=0)  #########
13: 1.17 (n=47, f=1)  ################
14: 1.11 (n=45, f=2)  #############
15: 1.05 (n=47, f=0)  ##########
16: 0.98 (n=45, f=0)  ########
17: 0.90 (n=42, f=0)  ####
18: 0.93 (n=40, f=0)  #####
19: 1.22 (n=40, f=0)  ##################
20: 0.96 (n=35, f=0)  #######
21: 1.12 (n=36, f=0)  ##############
22: 1.28 (n=28, f=0)  ####################
23: 0.71 (n=27, f=0)
24: 1.23 (n=24, f=0)  ##################
25: 1.18 (n=22, f=1)  ################
26: 1.44 (n=18, f=1)  OOOOOOOOOOOOOOOOOOOOOOOOO
27: 1.28 (n=11, f=0)  OOOOOOOOOOOOOOOOOOO
28: 1.11 (n=10, f=0)  ~~~~~~~~~~~~~
29: 1.51 (n=09, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
30: 1.05 (n=06, f=0)  ~~~~~~~~~~~~
31: 0.24 (n=04, f=0)
32: 1.30 (n=04, f=0)  ~~~~~~~~~~~~~~~~~~~~~
33: 0.74 (n=02, f=0)
34: 1.44 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~
35: 1.10 (n=02, f=0)  ~~~~~~~~~~~~~~
38: 0.05 (n=02, f=0)
39: 1.83 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~

for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Analysis by Team

Team	**1**	**2**	**3**	**4**	**5**	**6**
n =	232	127	143	148	199	250
Percentage of values flagged with SMART flags:						
WHZ:	0.9	1.6	0.0	3.4	1.5	0.0
HAZ:	5.2	9.4	9.1	6.1	5.5	7.6
WAZ:	1.3	1.6	1.4	1.4	3.0	2.0
Age ratio of 6-29 months to 30-59 months:						
	0.98	2.17	0.93	1.14	1.09	1.50
Sex ratio (male/female):						
	1.34	1.27	1.07	1.24	0.64	0.95
Digit preference Weight (%):						
.0 :	11	10	13	9	8	9
.1 :	9	13	10	11	14	12
.2 :	9	8	12	14	13	14
.3 :	10	11	7	9	10	8
.4 :	9	9	5	9	9	16
.5 :	11	13	10	14	10	7
.6 :	8	9	7	8	11	10
.7 :	14	9	8	9	13	8
.8 :	9	8	13	9	9	8
.9 :	9	10	14	9	6	7
DPS:	6	6	10	6	8	10

Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)

Digit preference Height (%):						
.0 :	11	37	15	19	11	3
.1 :	6	5	3	9	11	11
.2 :	12	6	11	9	9	16
.3 :	9	8	8	7	8	16
.4 :	10	6	5	7	8	6
.5 :	14	12	20	25	14	17
.6 :	11	9	8	9	14	12
.7 :	8	7	9	3	6	5
.8 :	9	7	6	3	10	5
.9 :	10	4	13	7	11	9
DPS:	7	31	16	22	8	16

Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)

Digit preference MUAC (%):						
.0 :	6	17	9	11	6	9
.1 :	13	8	3	13	8	14
.2 :	6	9	10	7	13	12
.3 :	13	14	13	9	13	10
.4 :	10	8	12	7	14	10
.5 :	9	23	15	14	12	10
.6 :	12	8	13	10	11	10
.7 :	6	6	11	10	10	8
.8 :	13	6	10	6	6	6
.9 :	12	2	4	13	10	9
DPS:	9	20	13	9	9	7

Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)

Standard deviation of WHZ:						
SD	1.08	1.11	0.98	1.32	1.25	1.11
Prevalence (< -2) observed:						
%	12.9	14.2	9.5	19.6	16.0	

Prevalence (< -2) calculated with current SD:
% 16.4 15.0 14.0 20.7 18.3
Prevalence (< -2) calculated with a SD of 1:
% 14.7 12.4 7.7 15.3 15.8
Standard deviation of HAZ:
SD 1.50 1.73 1.68 1.60 1.69 1.80
observed:
% 43.5 40.2 53.8 50.0 52.8 50.0
calculated with current SD:
% 40.5 37.8 49.8 48.4 52.2 46.1
calculated with a SD of 1:
% 35.9 29.6 49.6 47.4 53.8 43.0
Statistical evaluation of sex and age ratios (using Chi squared statistic) for:
Team 1:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	38/30.9 (1.2)	23/23.0 (1.0)	61/53.8 (1.1)	1.65
18 to 29	12	37/30.1 (1.2)	17/22.4 (0.8)	54/52.5 (1.0)	2.18
30 to 41	12	31/29.2 (1.1)	22/21.7 (1.0)	53/50.9 (1.0)	1.41
42 to 53	12	20/28.7 (0.7)	26/21.4 (1.2)	46/50.1 (0.9)	0.77
54 to 59	6	7/14.2 (0.5)	11/10.6 (1.0)	18/24.8 (0.7)	0.64
6 to 59	54	133/116.0 (1.1)	99/116.0 (0.9)		1.34

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.026 (significant excess of boys)
Overall age distribution: p-value = 0.515 (as expected)
Overall age distribution for boys: p-value = 0.047 (significant difference)
Overall age distribution for girls: p-value = 0.676 (as expected)
Overall sex/age distribution: p-value = 0.001 (significant difference)
Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	28/16.5 (1.7)	21/13.0 (1.6)	49/29.5 (1.7)	1.33
18 to 29	12	22/16.1 (1.4)	16/12.7 (1.3)	38/28.7 (1.3)	1.38
30 to 41	12	10/15.6 (0.6)	9/12.3 (0.7)	19/27.8 (0.7)	1.11
42 to 53	12	10/15.3 (0.7)	9/12.1 (0.7)	19/27.4 (0.7)	1.11
54 to 59	6	1/7.6 (0.1)	1/6.0 (0.2)	2/13.6 (0.1)	1.00
6 to 59	54	71/63.5 (1.1)	56/63.5 (0.9)		1.27

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.183 (boys and girls equally represented)
Overall age distribution: p-value = 0.000 (significant difference)
Overall age distribution for boys: p-value = 0.001 (significant difference)
Overall age distribution for girls: p-value = 0.020 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)
Team 3:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	22/17.2 (1.3)	20/16.0 (1.2)	42/33.2 (1.3)	1.10
18 to 29	12	11/16.7 (0.7)	16/15.6 (1.0)	27/32.3 (0.8)	0.69
30 to 41	12	14/16.2 (0.9)	16/15.1 (1.1)	30/31.4 (1.0)	0.88
42 to 53	12	17/16.0 (1.1)	14/14.9 (0.9)	31/30.9 (1.0)	1.21
54 to 59	6	10/7.9 (1.3)	3/7.4 (0.4)	13/15.3 (0.9)	3.33
6 to 59	54	74/71.5 (1.0)	69/71.5 (1.0)		1.07

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.676 (boys and girls equally represented)
Overall age distribution: p-value = 0.459 (as expected)
Overall age distribution for boys: p-value = 0.372 (as expected)
Overall age distribution for girls: p-value = 0.449 (as expected)
Overall sex/age distribution: p-value = 0.086 (as expected)

Team 4:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	26/19.0 (1.4)	16/15.3 (1.0)	42/34.3 (1.2)	1.63
18 to 29	12	17/18.5 (0.9)	20/14.9 (1.3)	37/33.5 (1.1)	0.85
30 to 41	12	17/18.0 (0.9)	16/14.5 (1.1)	33/32.5 (1.0)	1.06
42 to 53	12	17/17.7 (1.0)	11/14.2 (0.8)	28/31.9 (0.9)	1.55
54 to 59	6	5/8.8 (0.6)	3/7.0 (0.4)	8/15.8 (0.5)	1.67
6 to 59	54	82/74.0 (1.1)	66/74.0 (0.9)		1.24

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.188 (boys and girls equally represented)
Overall age distribution: p-value = 0.170 (as expected)
Overall age distribution for boys: p-value = 0.358 (as expected)
Overall age distribution for girls: p-value = 0.290 (as expected)
Overall sex/age distribution: p-value = 0.026 (significant difference)

Team 5:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	19/18.1 (1.0)	35/28.1 (1.2)	54/46.2 (1.2)	0.54
18 to 29	12	22/17.6 (1.2)	28/27.4 (1.0)	50/45.0 (1.1)	0.79
30 to 41	12	17/17.1 (1.0)	21/26.5 (0.8)	38/43.6 (0.9)	0.81
42 to 53	12	12/16.8 (0.7)	27/26.1 (1.0)	39/42.9 (0.9)	0.44
54 to 59	6	8/8.3 (1.0)	10/12.9 (0.8)	18/21.2 (0.8)	0.80
6 to 59	54	78/99.5 (0.8)	121/99.5 (1.2)		0.64

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.002 (significant excess of girls)
Overall age distribution: p-value = 0.484 (as expected)
Overall age distribution for boys: p-value = 0.641 (as expected)
Overall age distribution for girls: p-value = 0.468 (as expected)
Overall sex/age distribution: p-value = 0.004 (significant difference)

Team 6:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	35/28.3 (1.2)	45/29.7 (1.5)	80/58.0 (1.4)	0.78
18 to 29	12	40/27.6 (1.4)	30/29.0 (1.0)	70/56.6 (1.2)	1.33
30 to 41	12	23/26.7 (0.9)	29/28.1 (1.0)	52/54.8 (0.9)	0.79
42 to 53	12	17/26.3 (0.6)	19/27.6 (0.7)	36/53.9 (0.7)	0.89
54 to 59	6	7/13.0 (0.5)	5/13.7 (0.4)	12/26.7 (0.4)	1.40
6 to 59	54	122/125.0 (1.0)	128/125.0 (1.0)		0.95

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.704 (boys and girls equally represented)
Overall age distribution: p-value = 0.000 (significant difference)
Overall age distribution for boys: p-value = 0.008 (significant difference)
Overall age distribution for girls: p-value = 0.003 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster

per day is measured then this will be related to the time of the day the measurement is made).
Team: 1

```
Time                                SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.21 (n=11, f=0)  ################
02: 1.80 (n=11, f=1)  ##########################################
03: 0.68 (n=11, f=0)
04: 1.09 (n=11, f=0)  ############
05: 1.06 (n=11, f=0)  ###########
06: 1.32 (n=10, f=0)  ######################
07: 0.85 (n=11, f=0)  ##
08: 0.90 (n=11, f=0)  ####
09: 1.05 (n=09, f=0)  ###########
10: 0.67 (n=10, f=0)
11: 1.19 (n=10, f=0)  ################
12: 0.86 (n=09, f=0)  ##
13: 1.34 (n=10, f=1)  ########################
14: 0.95 (n=08, f=0)  ######
15: 0.61 (n=11, f=0)
16: 0.62 (n=10, f=0)
17: 0.69 (n=10, f=0)
18: 0.90 (n=10, f=0)  ####
19: 1.23 (n=09, f=0)  ##################
20: 0.94 (n=08, f=0)  ######
21: 1.25 (n=07, f=0)  ###################
22: 1.09 (n=07, f=0)  ############
23: 1.09 (n=04, f=0)  OOOOOOOOOOOO
24: 0.79 (n=03, f=0)
25: 0.50 (n=04, f=0)
26: 0.44 (n=02, f=0)
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~

for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 2

```
Time                                SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.23 (n=08, f=0)  ##################
02: 1.69 (n=07, f=1)  ######################################
03: 0.93 (n=07, f=0)  ######
04: 1.92 (n=07, f=1)  ################################################
05: 0.94 (n=08, f=0)  ######
06: 0.88 (n=08, f=0)  ###
07: 1.08 (n=07, f=0)  ############
08: 0.90 (n=08, f=0)  ####
09: 1.09 (n=07, f=0)  ############
10: 1.09 (n=08, f=0)  ############
11: 0.45 (n=08, f=0)
12: 0.81 (n=07, f=0)
13: 1.36 (n=08, f=0)  ########################
14: 0.55 (n=08, f=0)
15: 0.58 (n=06, f=0)
16: 0.59 (n=05, f=0)
17: 0.79 (n=04, f=0)
18: 0.37 (n=03, f=0)
19: 0.56 (n=03, f=0)
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~

for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 3

```
Time                                SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.45 (n=07, f=0)
02: 1.05 (n=07, f=0)  ##########
03: 0.73 (n=07, f=0)
04: 0.90 (n=07, f=0)  ####
05: 1.10 (n=04, f=0)  OOOOOOOOOOOOO
06: 1.50 (n=05, f=0)  ##############################
07: 0.92 (n=07, f=0)  #####
08: 1.17 (n=07, f=0)  ################
09: 0.57 (n=07, f=0)
10: 1.21 (n=06, f=0)  ##################
11: 1.07 (n=05, f=0)  ###########
12: 0.90 (n=03, f=0)  OOOO
13: 0.66 (n=07, f=0)
14: 0.82 (n=06, f=0)  #
15: 1.12 (n=07, f=0)  #############
16: 0.85 (n=07, f=0)  ##
17: 1.19 (n=07, f=0)  ################
18: 0.71 (n=06, f=0)
19: 1.16 (n=07, f=0)  ###############
20: 0.51 (n=05, f=0)
21: 1.15 (n=06, f=0)  ###############
22: 0.74 (n=03, f=0)
23: 1.01 (n=04, f=0)  OOOOOOOOO
24: 0.61 (n=03, f=0)
25: 0.28 (n=02, f=0)
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~

for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 4

```
Time                                SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.08 (n=07, f=0)  ############
02: 1.02 (n=07, f=0)  #########
03: 0.75 (n=07, f=0)
04: 2.79 (n=06, f=1)  ##################################################################
05: 1.21 (n=06, f=0)  ##################
06: 1.40 (n=07, f=0)  ########################
07: 1.02 (n=07, f=0)  #########
08: 0.65 (n=05, f=0)
09: 0.81 (n=06, f=0)
10: 0.47 (n=07, f=0)
11: 1.47 (n=06, f=1)  ############################
12: 0.45 (n=06, f=0)
13: 0.61 (n=06, f=0)
14: 1.36 (n=07, f=1)  ######################
15: 1.10 (n=06, f=0)  ############
16: 1.10 (n=07, f=0)  #############
17: 1.16 (n=06, f=0)  ###############
18: 0.89 (n=05, f=0)  ####
19: 1.75 (n=05, f=0)  ########################################
20: 1.03 (n=06, f=0)  #########
21: 1.10 (n=06, f=0)  #############
22: 1.95 (n=05, f=0)  ################################################
23: 0.60 (n=04, f=0)
24: 1.14 (n=03, f=0)  OOOOOOOOOOOOO
25: 1.94 (n=03, f=1)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
26: 4.43 (n=02, f=1)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~

for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 5

```
Time                                SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.74 (n=08, f=0)
02: 1.33 (n=07, f=1)  ######################
03: 1.39 (n=08, f=0)  ########################
04: 1.19 (n=06, f=0)  ################
05: 1.15 (n=08, f=0)  ################
06: 1.16 (n=06, f=0)  ################
07: 0.79 (n=07, f=0)
08: 2.37 (n=08, f=1)  ##################################################################
09: 0.75 (n=04, f=0)
10: 1.45 (n=07, f=0)  ##########################
11: 1.11 (n=06, f=0)  #############
12: 1.28 (n=06, f=0)  ####################
13: 0.86 (n=08, f=0)  ###
14: 1.67 (n=08, f=1)  ######################################
15: 1.11 (n=08, f=0)  #############
16: 1.28 (n=08, f=0)  ####################
17: 0.62 (n=06, f=0)
18: 1.35 (n=07, f=0)  ######################
19: 0.89 (n=07, f=0)  ####
20: 0.69 (n=08, f=0)
21: 1.13 (n=08, f=0)  ##############
22: 1.36 (n=06, f=0)  ########################
23: 0.65 (n=08, f=0)
24: 1.34 (n=08, f=0)  ######################
25: 1.20 (n=06, f=0)  ##################
26: 1.06 (n=06, f=0)  ##########
27: 0.25 (n=04, f=0)
28: 1.20 (n=04, f=0)  OOOOOOOOOOOOOOOO
29: 1.61 (n=03, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
30: 1.77 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~

for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 6

```
Time                                SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.97 (n=09, f=0)  #######
02: 1.20 (n=07, f=0)  ##################
03: 1.09 (n=09, f=0)  ############
04: 1.03 (n=09, f=0)  ##########
05: 0.67 (n=09, f=0)
06: 1.28 (n=09, f=0)  ####################
07: 1.07 (n=08, f=0)  ############
08: 0.56 (n=08, f=0)
09: 1.40 (n=08, f=0)  ########################
10: 0.87 (n=09, f=0)  ###
11: 0.90 (n=07, f=0)  ####
12: 1.40 (n=09, f=0)  ########################
13: 1.60 (n=08, f=0)  ##################################
14: 0.68 (n=08, f=0)
15: 1.50 (n=09, f=0)  ##############################
16: 0.89 (n=08, f=0)  ####
17: 0.81 (n=09, f=0)
18: 0.78 (n=09, f=0)
19: 1.25 (n=09, f=0)  ###################
20: 1.23 (n=08, f=0)  ###################
21: 0.77 (n=09, f=0)
22: 1.32 (n=07, f=0)  ######################
23: 0.54 (n=07, f=0)
24: 1.26 (n=07, f=0)  ###################
25: 0.98 (n=07, f=0)  #######
26: 1.08 (n=07, f=0)  ############
27: 1.47 (n=06, f=0)  ############################
28: 1.12 (n=05, f=0)  OOOOOOOOOOOOO
29: 1.65 (n=05, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
30: 0.82 (n=03, f=0)  O
31: 0.07 (n=03, f=0)
32: 1.15 (n=03, f=0)  OOOOOOOOOOOOOO
34: 1.44 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~
35: 1.10 (n=02, f=0)  ~~~~~~~~~~~~~
38: 0.05 (n=02, f=0)
39: 1.83 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~

for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)
(for better comparison it can be helpful to copy/paste part of this report into Excel)

Annex 4: SMART survey questionnaires

Household questionnaire

A. Identification variables: This section is mandatory to fill to all teams in all the HH visited during the survey. The information contained in this section are:

1. **Date of the survey:** This is the date of data collection, it should written in the standard format for all the questionnaires administered during the survey. (day/month/year
2. **Name of the village:** Indicate the name of the sampled village that is visited on the particular day of data collection.
3. **Cluster number:** Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation will be done together with the team at the **training hall.** Important to note that once Cluster number has been assigned it cannot be changed.
4. **Team ID number:** Teams was formed during the training session. Each team was assigned a unique number ranging from 1-6. Each team must indicate the team number on the questionnaires they administer.
5. **Household number:** Each HH in the selected cluster was assigned a number. There are 14 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit **(e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10th HH in the village)**
6. **Starting time of the interview:** This is indicated the time of start of the interview in the selected HH.
7. **Consent:** Each team was provided with a consent form that they were required to ask for permission to conduct the survey in each HH. This is meant to seek permission from the HH

head or caregiver to be allowed to conduct the assessment. It is important to note the reason for refusal in case the HH does not accept the interview.

B. Wash: Description of the following key WASH indicators

1. **Source of drinking water:** This question was asked to the respondent of the HH to find out where HH are accessing their drinking water. The sources of water are categorised into two main categories I.e. Improved sources and un-improved sources. These are based on the two main recommended categories of responses.
   - Number of HH accessing water from improved sources[11]/ total number of respondents.
   - Number of HH accessing water from unimproved sources[12]/ total number of respondents.
2. **Water treatment methods:** This question was seek to find out what methods HH are using to make their drinking water safe. This indicator will show the proportion of HH practicing safe methods of water treatment in the survey area. The calculation of this will be:
   - Total number of HH practicing safe water treatment methods[13]/ total number of respondents
   - Total number of HH not practicing safe water treatment methods/ total number of respondents.
3. **Water Use/Consumption at HH level:** This question was seeking to find out the amount of water consumed by each individual living in the household per day. The aim of this indicator is to check whether households are consuming the required minimum amount of water per person per day compared to the minimum threshold as defined by the WHO standard for HH water consumption.
4. **Hand washing practices:** Caregivers was asked on hand washing practices to ascertain instances in their daily activities and in the 5 critical points when they wash their hands. The caregiver should not probed for answers/response rather they should be allowed to provide their response independently.
5. **Use of Soap:** A follow up question was asked to ascertain the hand washing practice by asking the caregiver to demonstrate how they wash their hands and what they use to wash their hands,

[11] Piped scheme, protected springs, boreholes with hand pump, well with hand pump, protected karez

[12] River/ stream/ canal. Pond/ reservoir, well with bucket, unprotected karez, unprotected spring.

[13] Boil, use of water filter

they rubs both hands and drying by clean cloths .

Food access and consumption

1. **Food consumption scoring:** this question was seeking to find out the group of food to check whether households are consuming in the past 7 days and check the source of the food.
2. **Reduced coping of strategy index:** this question check enough many and food to buy.
3. **Food security situation:** **the question check the food security in households level** Based on triangulation of Food Consumption Score (FSC) with the food-based or reduced Coping Strategy Index (rCSI).

Child Questionnaire

Identification:

This section is mandatory was filled to all teams in all the HH visited during the survey. The information contained in this section is:

1. **Date of the survey:** This is the date of data collection, it should written in the standard format for all the questionnaires administered during the survey. (day/month/year
2. **Name of the village:** Indicate the name of the sampled village that is visited on the particular day of data collection.
3. **Cluster number:** Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation was done together with the team at the **training hall.**_Important to note that once Cluster number has been assigned it cannot be changed.
4. **Team ID number:** Teams was formed during the training session. Each team was assigned a unique number ranging from 1-6. Each team must indicate the team number on the questionnaires they administer.
5. **Household number:** Each HH in the selected cluster was assigned a number. There are a total of 14 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit **(e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10th HH in the village)**
6. **Caregiver Number:** Each caregiver living in the selected HH was assigned a specific unique number. This is the same number that will appear in the Caregiver questionnaire. In case of more than one caregiver in a HH each will be assigned a unique number to identify and distinguish them from each

other. Each caregiver was linked to her/his children selected in the HH to be able to link each caregiver with the children.

7. **Child Number:** Each Child Under the age of 5 years living in the selected HH was assigned a specific unique number. In case of more than one child in a HH each was assigned a unique number to identify and distinguish them from each other. Each child was linked to her/his caregiver selected in the HH to be able to link each caregiver with the children.
8. **Age in months:** Only children between 0 and 59 months old of age will be included. Height will not be considered as a valid criterion in absence of age due to the high stunting rates in The province. Age was confirmed by showing a vaccination card or a birth certificate, if available. If these documents are not available, the use of a local event calendar built for the province was used to determine the age. The age was recorded into the questionnaire in months.
9. **Sex:** Male or female
10. **Weight (in kg):** Children were weighed to the nearest 0.1kg by using an Electronic Uni-scale. The children who can easily stand was asked to stand on the weighing scale and their weight recorded. In a situation when the children could not stand up, the double weighing method was applied.
11. **Height (in cm):** Wooden measuring board was used to measure bare headed and barefoot children. The precision of the measurement is 1 mm. Children of less than 2 years of age will be measured lying down and those equal to or above 2 years of age measured standing up.
12. **Mid-Upper Arm Circumference (in mm):**MUAC will be used as an indicator of mortality risk for malnutrition and will be measured to the nearest 1mm for all children with an indicated age of greater than 6 months, using the UNICEF MUAC strips. An adult MUAC tape was used to measure women of reproductive age (15-49 years)
13. **Oedema:** Only children with bilateral pitting nutrition oedema was recorded as having nutritional oedema this will be checked by applying normal thumb pressure for at least 3 seconds to both feet.

Infant and Young Child Feeding

In this section only children <24 months were considered as eligible respondents. All children within these age groups were selected in the surveyed HH and the following indicators administered to them.

1. **Ever Breastfed:** This indicator looked at the number of mothers who have ever breast fed their children. This looked at the last pregnancy of the mother or the current child who is <24 months old.
2. **Time to Breastfeeding/Initiation to Breast milk:** This indicator assessed at the amount of time it took for mothers to put their children to the breast after giving birth. The focus was on the mother's last pregnancy in which the child is <24 months.
3. **Colostrum feeding:** this indicator looked at the number of mothers with children <24 months who

fed their children with Colostrum within the first 3 days after birth.

4. **Breast-feeding Yesterday:** This indicator investigated the number of mothers who breast-fed their children <24 months one day (day and Night) prior to the data collection day.
5. **Other Liquids offered to the child:** This indicator asked the mothers of children <24 months what other liquids were offered to the child one day (day and night) prior to the data collection day.
6. **Complimentary feeding:** This indicator looked at the number of mothers who gave solid and semi-solid foods to children <24 months one day (day and night) prior to the data collection day.
7. **Minimum Meal frequency:** This indicator asked mothers on the number of times they provided solid and semi-solid foods to their children <24 months one day (day and night) prior to the data collection day.

Child Health status

This section was look at all children in the HH between the ages of 0-59 months.

1. **Type of Illness:** This question asked about the types of illness that the child (0-59 months) has had in the last 14 days prior to the data collection day. A small definition of the key illness is provided in the questionnaire to enable the data collector identify the illness correctly
2. **Vitamin A supplementation:** This question will ask the caregiver of child 6-59 months on whether the child has received vitamin A tablets in the previous 6 months prior to the data collection day. Each team was provided with a Sample of the Vitamin A tablet to enable the caregivers to easily identify it.
3. **Deworming:** This question asked the caregiver of child 24-59 months on whether the child has received deworming tablets in the previous 6 months prior to the data collection day. Each team was provided with a Sample of the deworming tablet to enable the caregivers to easily identify it.
4. **BCG vaccination:** This question asked the caregiver on whether the child 0-59 months has received BCG vaccination.
5. **PENTA vaccination:** the question asked the caregiver on whether the child 3.5-59 months has received PENTA3 vaccination.
6. **Measles vaccination:** the question asked the caregiver whether the child 9-59 months has received the measles vaccination.
7. **Polio vaccination:** the question asked the caregiver whether the child 0-59 months has received the

polio vaccination.

Caregiver questionnaire

Identification:

This section is mandatory was filled to all teams in all the HH visited during the survey. The information contained in this section is:

1. **Date of the survey:** This is the date of data collection, it should written in the standard format for all the questionnaires administered during the survey. (day/month/year
2. **Name of the village:** Indicate the name of the sampled village that is visited on the particular day of data collection.
3. **Cluster number:** Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation will be done together with the team at the **training hall.** Important to note that once Cluster number has been assigned it cannot be changed.
4. **Team ID number:** Teams was formed during the training session. Each team was assigned a unique number ranging from 1-6. Each team must indicate the team number on the questionnaires they administer.
5. **Household number:** Each HH in the selected cluster was assigned a number. There are a total of 13 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit **(e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10th HH in the village)**
6. **Caregiver Number:** Each caregiver living in the selected HH was assigned a specific unique number. This is the same number that will appear in the Caregiver questionnaire. In case of more than one caregiver in a HH each will be assigned a unique number to identify and distinguish them from each other. Each caregiver was linked to her/his children selected in the HH to be able to link each caregiver with the children.

Antenatal Care, delivery assist and Health seeking behavior

1. **Antenatal care:** Caregivers between the ages of 15-49 years at household level will be asked on whether they sought ante-natal care during their last pregnancy. In this case, last pregnancy was considered of the last child who is still between 0-59 months for purposes of having a more precise re-call period.
2. **Delivery assisted by SBA:** caregiver who respond positive to getting assistance from Skilled Birth Attendants during the last delivery.

3. **Health seeking behaviour:** Caregivers who respond positive to seeking antenatal care will be asked who they sought assistance from. This question seeks to identify the health seeking pattern of the respondents from the first point of contact to the last point of contact.
4. **Distance to Health centre:** This question seeks to identify how long it takes a caregiver to access the health facility and ascertain if geographical distance is a factor affecting access to the health centre

Maternal Nutrition

This section seeks to identify the nutrition status of pregnant and lactating women.

1. **MUAC measurement:** The caregivers mid – upper arm circumference will be measured using the standard WFP issued adult MUAC tape.
2. **Physiological status:** Each of the caregivers will asked about their current physiological status to ascertain whether they are currently pregnant, lactating, pregnant and lactating or not pregnant.
3. **Iron – Folate supplementation**: Caregivers who report to be currently pregnant will be asked whether they are taking iron folate tablets or not. This is to ascertain the number of pregnant mothers who are supplemented and using iron –folate/ferrous.

10. REFERENCES

- ENA software 2011 updated 9 July 2018.
- WHO child Growth Standards 2006
- CSO: updated population 1396 (2017-2018)
- National Nutrition Survey 2013
- Afghanistan Demographic and Health Survey 2015
- WHO: morality emergency thresholds
- WHO: emergency severity classification
- Adapt from WFP (Kabul informal Settlements) Winter Need Assessment FINAL REPORT ON FOOD SECURITY 2016