AFGHANISTAN

Integrated Nutrition, Mortality, Health, WASH & FSL SMART Survey Report

Paktika Province, Afghanistan

7th to 15th August 2018

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Funded by: OCHA

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Acknowledgments

The authors would like to pass their sincere appreciation to the Action Against Hunger team in Kabul and Paris Headquarter.

Special appreciation goes to the Organization for Health Promotion & Management (OHPM) team in Kabul and Paktika province especially Dr. Abdul Salam Bawarzai & Dr. Dur Mohammad Saeed. Finally yet importantly tremendous appreciation goes to the following stakeholders:

- Ministry of Public Health (MoPH) especially Public Nutrition Department (PND), AIM-Working Group and Nutrition Cluster for their support and validation of survey protocol.
- Paktika Provincial Public Health Directorate (PPHD) and PNO for their support and authorization especially Dr. Abdul Hadi Hashimi & Dr. Mohammad Aslam Sabiri.
- Office for the coordination of Humanitarian Affairs (OCHA) for their financial support in the survey.
- All the community members for welcoming and support the survey teams during the data collection process.
- Survey teams composed of enumerators, team leaders and supervisors for making the entire process smoothly.

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Abbreviations

AfDHS	Afghanistan Demographic and health survey
AFSeN	Afghanistan Food Security and Nutrition
AAH/ACF	Action Against Hunger/Action contra la Faim
AIM-WG	Assessment Information Management Working Group
ANC	Antenatal Care
BCG	Bacillus Calmette Guerin
BHC	Basic Health Center
BPHS	Basic Package of Health Services
BSU	Basic Sampling Unite
SBA	Skill Birth Attendance
CDR	Crude Death Rate
CSO	Central Statistics Organization
CHA	Coordination of Humanitarian Assistance
CHC	Comprehensive Health Center
CI	Confidential Interval
DH	District Hospital
CLTS	Comminute Lead Total Sanitation
CHW	Community Health Worker
DEFF	Design Effect
EPI	expended Program of Immunization
ENA	Emergency Nutrition Assessment
EPHS	Essential Package of Hospital Services
FSL	Food Security and Livelihood
FCS	Food Consumption Score
GAM	Global Acute Malnutrition

HH	Household
HP	Health Post
HS	Household Survey
IYCF	Infant and Young Child Feeding
IMC	International Medical Corps
MAM	Moderate Acute Malnutrition
MUAC	Mid Upper Arm Circumference
MoPH	Ministry of Public Health
MW	Mean Weight
NNS	National Nutrition Survey
OCHA	office for Coordination of Humanitarian Affairs
OHPM	Organization for Health & Promotion Management
OW	Observed Weight
PPS	Proportional Population to Size
PPHD	Provincial Public Health Directorate
PH	Provincial Hospital
PNC	Postnatal cate
PND	Public Health Department
PNO	Provincial Nutrition Officer
PLW	Pregnant and Lactating women
PHO	Public Health Officer
PRRD	Planned Rural Residential Development
RC	Reserve Cluster
rCSI	Reduce Coping strategy Index
SAM	Severe Acute Malnutrition
SHC	Sub Health Center

SD	Standard Deviation
SMART	Standardized Monitoring and Assessment of Relief and Transition
TNA	Training Need Assessment
U5DR	Under five Death Rates
U5	Under five
UNICEF	United Nation Children's Fund
WFP	World Food Program
WASH	Water Sanitation and Hygiene
WAST	Wasted and Stunted
WHZ	Weight for Height Z score
W/H	Weight for height
WHO	World Health Organization
YHDO	Youth Health and Development Organization

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1. EXECUTIVE SUMMARY

Paktika is one of the 34 provinces of Afghanistan. Located in the South East part of the Afghanistan, it is surrounded by Paktia, Khost, Ghazni and Zabul provinces and has an international border with Pakistan. Paktika sits next to the poorly marked Durand Line border between Pakistan and Afghanistan.

Paktika province has 19 districts: Barmal, Dila, Gaven, Gomal, Janikhil, Mata khan, Nika, Omna, Sar Hawza, Surobi, Sharana, Terwa, Urgoon, Waza khawa, Wor Mamay, Yahakhail, Zarghon Shair(Khair kot) and Ziruk. The small city of Paktika is situated in Sharana distrist. Even though Sharana is the capital of the province and call Sharana city but its characteristics is almost same like rural villages with a bit of development.

The standardized Monitoring and Assessment of Relief and Transition (SMART) nutrition survey was conducted in summer from 7th -15th August 2018 (Asad 1397 according to solar calendar) covering the entire province. ACF technically supported Paktika BPHS implementer organization (OHPM) to implement this survey to investigate all the districts of the province and it was good opportunity to build capacity of the organization (contingent upon the security situation). It was a cross sectional survey following a two-stage cluster sampling method, based on SMART methodology. The final report shows the analysis of under-five children's nutritional status, morbidity, mortality, immunization, the nutrition status of pregnant and lactating women (PLWs) , water, sanitation and hygiene (WASH) and food security and livelihoods (FSL) indicators. The summary of the key findings is shown in the table below.

1.1. Summary Findings

Children Nutritional Status	
Indicators	**Results**
GAM rate among children 6-59 months old children based on WHZ <-2	14.0% (11.5-17.0 95% CI)
SAM rate among children 6-59 months old children based on WHZ <-3	2.4% (1.5-3.9 95% CI)
GAM rate among children 6-59 months old children based on MUAC <125mm	16.1% (13.1-19.7 95% CI)
SAM rate among children 6-59 months old children based on MUAC <115 mm	6.1% (4.5-8.4 95% CI)
GAM rate among children 0-59 months old children based on WHZ <-2	15.3% (12.7-18.3 95% CI)
SAM rate among children 0-59 months old children based on WHZ <-3	3.4% (2.4-4.8 95% CI)
GAM rate among children 6-59 months old children based on combined criteria (MUAC <125mm and/or WHZ <-2 and/or Oedema)	23.3% (19.9-27.1 95% CI)

SAM rate among children 6-59 months old children based on combined criteria (MUAC <115mm and/or WHZ <-3 and/or Oedema)	7.1% (5.2- 9.6 95% CI)
Stunting among 6-59 months old children based on HAZ <-2	41.7% (37.5-46.1 95% CI)
Severe Stunting among 6-59 months old children based on HAZ <-3	16.2% (13.9-18.9 95% CI)
Underweight among children 6-59 months based on WAZ <-2	29.8% (26.4-33.4 95% CI)
Severe Underweight among children 6-59 months based on WAZ <-3	8.4% (6.4-11.1 95% CI)

Child Health and Immunization	
Indicator	**Results**
Children 0-59 months reporting symptoms of illness* based on 2 week recall	48.3%
Children aged 0-59 months that reported of having Fever based on 2 week recall	29.6%
Children aged 0-59 months that reported of having ARI based on 2 week recall	13.7%
Children aged 0-59 months that reported of having Diarrhea based on 2 week recall	21.6%
Measles vaccination status of the children aged 9-59 months confirmed by recall or vaccination card	59.4%
BCG vaccination status based on scar confirmation for children aged 0-59 months	65.7%
Polio vaccination status confirmed by recall or vaccination card among children aged 0-59 months	81.7%
PENTA 3 vaccination status confirmed by recall or vaccination card among children aged 4–59 months	45.4%
Deworming of children aged 24-59 months received in the last six months confirmed by recall	53.1%
Vitamin A received in the last six months for children 6-59 months confirmed by recall	78.7%

*cough, fever, diarrhea, fever, rash, infection, headache, nausea, vomiting, etc.

Nutrition status among Pregnant and Lactating Women (PLW)	
Indicator	**Results**
Undernutrition among pregnant women based on MUAC <230 mm	22.1%
Undernutrition among lactating women based on MUAC <230 mm	28.0%
Undernutrition among pregnant and lactating women (PLWs) based on MUAC <230mm	26.2%

Undernutrition among pregnant and lactating women (PLWs) based on MUAC <185mm	1.0%

Infant and Young Children Feeding (IYCF) Practices	
Indicator	**Results**
Children ever breastfed (children 0-23 months)	100%
Initiation of breastfeeding within 1 hour of birth (children 0-23 months)	47.0%
Exclusive breastfeeding (EBF) of children less than 6 months	47.2%
Provision of colostrum in the first 3 days of birth (children 0-23 months)	63.6%
Continued breastfeeding at 1 year of age (children 12-15 months)	80.6%
Continued breastfeeding at 2 year of age (children 20-23 months)	55.0%
Introduction of solid, semi-solid or soft foods (children 6-8 months)	38.6%

Crude and U5 Death Rate (Death/10,000/Day)	
Indicator	**Results**
Crude death rate (CDR)	0.75 (0.48-1.18)
Under five death rate (U5DR)	0.42 (0.15-1.19)

2. INTRODUCTION

Paktika is one of the 34 provinces of Afghanistan. Located in the Southeast part of the country. Paktika is surrounded by Pakitya, Khost, Ghazni and Zabul provinces and has an international border with Pakistan. Paktika sits next to the poorly marked fictional Durand Line border between Pakistan and Afghanistan. The province covers an area of 19,336 km^2, half of the province is mountainous or semi-mountainous terrain (50%). The population of the province is about 449,116 (CSO 1396, estimated for 2018). Around 99% of the population lives in rural districts while 1% lives in urban areas. The population is approximately 51% male and 49% is female. Pashto is spoken by more than 96% of the population. Other languages spoken in the zone are Uzbek and Tajik. Paktika province also has a nomad Kuchi population whose numbers vary between different seasons.

Paktika province has 19 districts: Barmal, Dila, Gaven, Gomal, Janikhil, Mata khan, Nika, Omna, Sar Hawza, Surobi, Sharana, Terwa, Urgoon, Waza khawa, Wor Mamay, Yahakhail, Zarghon Shair(Khair kot) and Ziruk. The small city of Paktika is situated in Sharana district. Even though Sharana is the capital of the province and call Sharana city but its characteristics are almost same like rural villages with a bit of development.

Paktika, like many other provinces of Afghanistan, has been severely affected by deforestation. This has been a cause of devastating floods in the recent years. The province is mainly hilly and interspersed with seasonal river Valleys. In the north, the terrain gains elevation and becomes more rugged. The sparsely populated southern districts are also hilly, with descending elevation towards the south and west. The main crops in the

province are wheat, corn, rice, vizationetch beans, peas, spinach, cauliflower and potatoes, mainly farmed in Gomal, Urgoon, Dilawa, Omna and Sharana districts.

The SMART nutrition survey was conducted in summer (August 2018 - Asad 1397 according to solar calendar) covering the entire province (19 districts). ACF gave technical support to the Paktika Basic Package of Health services (BPHS) implementer, Organization for Health promotion and Management (OHPM) to implement this survey to investigate all the districts of the province. This offered a good opportunity to build the capacity of the organization.

Picture: Dr. Abdul Hadi "Hashami" delivering his speech

Four national and international organizations are providing the health services in the province such as UNICEF, IMC, YHDO and OHPM. International Medical Corps (IMC) is the implementer of Essential Package of Hospital Services (EPHS) and OHPM is the implementer of Basic Health Package of Services (BPHS) in the province. There are 50 operational health facilities in the province (1 PH, 2 DHs, 1 CHC+, 8 CHCs, 15 BHCs, 22 SHC and 1 prison clinic) plus seven mobile health teams and 8 mobile immunization teams providing additional health services. During the SMART nutrition survey, 163 children 6-59 months suffering from acute malnutrition (101 MAM and 62 SAM) were identified using MUAC. Among the 163 acutely malnourished children identified by MUAC, 21 MAM cases and 7 SAM cases were already enrolled in a treatment program. Fifty-five SAM cases were referred to the nearest health facility and the remained 80 MAM cases were referred to general health facilities because a program for the treatment of MAM was not present in the province.

3. SURVEY OBJECTIVES

3.1. Broad objective

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

3.2. Specific objective

- To determine the prevalence of undernutrition (stunting, wasting, underweight) among children aged 6-59 months
- To estimate Crude Death Rate (CDR) and Under Five Death Rate (U5DR)
- To determine the nutritional status of pregnant and lactating women (PLW) based on mid-upper arm circumference (MUAC) assessment.
- To assess pregnant women delivered by a skill birth Attendant (SBA) in the province.
- To assess 15 to 49 years aged women at least one antenatal care during their last pregnancy.
- To determine core Infant and Young Child Feeding (IYCF) practices among children aged <24months
- 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-week recall period.
- To assess the food security situation through Food Consumption Score (FCS) and reduced Coping strategy Index (rCSI).
- To assess food access and consumption per seven day recall period at the household level.
- To determine immunization coverage (Measles, PENTA 3, Polio and BCG) among children 0-59 months.

3.3. Justification

- In 2017, the Nutrition Cluster identified the Paktika province as having a lack of updated nutrition data, as the last SMART Nutrition Survey was conducted in May 2015 (during the spring season). The 2015 SMART survey revealed a GAM rate of 6.1% (4.5-8.1, 95% CI) in the five districts of the province (out of 19 total).
- Paktika has been identified by UNOCHA as a difficult to access and hard to reach province.
- There is a need to investigate the current prevalence of undernutrition in the province. The Survey findings will be used to inform future programming in the province.

4. METHODOLOGY

4.1. Sample Size

The sample size of children to be surveyed for the anthropometry was determined using ENA for SMART software version 2011 (updated 9th July 2015). A two-stage cluster methodology was applied. In the first stage, clusters/villages (45 clusters) were selected from a total list of villages (1295[1]) using the probability proportional to size (PPS) method. This was done before starting data collection in the field office. The village was the primary sampling unit for the proposed survey. The second stage of the methodology involved the random selection of household from a complete and updated list of households. This was conducted at field level in villages; however, the households were the basic sampling unit for the proposed survey. All children less than 60 months (5 years) were surveyed. All selected household were included in the mortality survey.

The tables 1 and 2 highlight the parameters used for 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 (%)	6.1%	Based on the GAM prevalence 6.1% (4.5-8.1; 95% CI) of 2015 SMART survey
Desired precision	±2.5	Based on SMART methodology recommendations and consistent with survey objectives in line to estimated prevalence.
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. The previous 2015 SMART also used a DEFF of 1.5.
Children to be included	**575**	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 were supposed to be surveyed.)

[1] Paktika EPI Micro plan 2018

Average HH Size	7.5	Based on the 2015 SMART survey in Paktika
% Children 0 – 59 Months	15.6%	Based on the 2015 SMART survey in Paktika
% Non-response Households	5.5%	The percentage of non-respondent households was estimated at 5.5% based on the Paktika SMART survey 2015
Households included	**578**	Minimum sample size households surveyed. Households was the basic sampling unit (BSU) 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	0.25/10000/ day	Based on the Paktika SMART survey 2015 CDR of 0.25 (0.13-0.47; 95% CI).
Desired precision /10,000/day	±0.25	Based on SMART methodology recommendation and consistent with survey objectives in order to estimate death rate.
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. The previous 2015 SMART also used a DEFF of 1.5.
Recall Period in days	**107**	Starting point of recall period was 28th April 2018 and the midpoint of data collection was 12th August (Mujahidin Victory from Russian 8th Sawar 1397 is equal to 28th April 2018).
Population to be included	**2,345**	**Population**
Average HH Size	**7.5**	Based on the 2015 SMART in Paktika
% Non-response Households	**5.5%**	The percentage of non-respondent households was estimated at 5.5% based on the 2015 Paktika SMART survey
Households to be included	**331**	Households

Note: To reach the objectives of the anthropometry a minimum of 578 households were required and to reach the objectives of the mortality a minimum of 331 households were required. Thus, to obtain meaningful results for both mortality and anthropometry, the larger sample size of 578

was used. All additional variables (IYCF, Mortality, FSL, Women nutrition status, HHS water usage, WASH, Health & Immunization) were collected base on anthropometric sample size.

4.2. Sampling Methodology

A **two-stage cluster sampling** methodology was implemented:

Stage 1: Random selection of clusters/villages were chosen by applying (PPS) using ENA for SMART software version 2011 (updated 9th July, 2015). A complete and updated list of all villages was added into the ENA for SMART software where the PPS method was applied. The villages with a large population had a higher chance of being selected than the villages with a small population and vice versa. This list of villages/clusters[2] was obtained from BPHS partner (OHPM) Paktika EPI micro plan. For Sharana district (capital of Paktika) which is a mixed of small semi-urban and mostly rural area, the list of villages was gathered based on the zone/street/Guzar from semi-urban place. Considering time for travel, sampling, and household surveys it was estimated that 13 HHs could be visited per team per day, with a sample size of 578 HHs, 578/13=44.46 rounded up to 45 total clusters to be surveyed. However, a total of 42 clusters were covered out 45 Clusters :Three clusters were inaccessible due to ongoing conflict so the teams had access to only 42 clusters . Reserve Clusters (RCs) were not used as the 3 missed clusters (6.6%) were less than 10% of selected clusters. In addition, villages with potential insecurity (384 of 1,679) were identified and systematically excluded in the final sampling frame.

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 were large villages or semi-urban zones/small city in a cluster, the village/zone was divided into smaller segments and a segment was selected randomly to represent the cluster. This division was done based on existing administrative unit's e.g. streets or natural landmarks like rivers, roads, or public places like the Masjid, hills and mountains.

Stage 2: Random selection of households occurred from an updated and complete list of households within a given village. Based on the estimated time to travel to the survey area, to select and to survey the households, each team could effectively survey 13 households in a day. In this assessment, eight teams were engaged, while data collection was completed in 10 days. All households were listed and given numbers by the survey team. The 13 households were chosen randomly from these enumerated households lists using systematic random sampling. The teams were trained on both methods of sampling (simple and systematic random

[2] PAKTIKA EPI micro plan 2018

sampling) but the teams actually used systematic random sampling method in determining the households during the data collection exercise based on HHs definition[3]. For the small semi-urban/city in Sharana district the team took into account of multistoried building as multiple HHs depending on the HHs definition.

All the children living in the selected house aged 0-59 months old were included for anthropometric measurements. Children aged <24 months were included for IYCF investigation. If more than one eligible child was 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 HHs 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 children that were not subsequently found were not included in the survey. A cluster control form was used to record all missed and absent households, however, abandoned HHs were ideally excluded from the total HHs list at the beginning in the field. This information was often provided to the teams by an elder in the village. In the semi-urban/small city like Sharana, assistance was taken from Wakeele-Guzar in this process.

The term household was defined as all people eating from the same pot and living together World food Program (WFP) definition. In Afghanistan, the term household is often defined and/or used synonymous with a compound – which potentially represents more than one household as defined here. In this case, a two-step process was ensured with the village leaders/community elders and to identify compounds from the household list in advance and asking if there were multiple cooking areas to determine the number of households.

4.3. Training, team composition and supervision

Eight teams of four members conducted the field data collection. Each team was composed of one supervisor (mostly OHPM nutrition officers) one team leader and two data collectors. Most of the data collectors were midwives or nurses. Each team had at least one female data collector to ensure acceptance of the team amongst the surveyed households; particularly for IYCF questions. Each female member of the survey team was accompanied with a mahram[4] to facilitate the work of the female data collectors at the community level. The majority of the people in Paktika speak and understand Pashto language; therefore, the survey manager

[3] WFP definition: All people eating from the same pot and living together

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

conducted the training in Pasto as well as the Pashto version of the questionnaire was used. The teams were supervised by ACF, Partner OHPM Organization and the PPHD staffs of the province.

The entire teams received a 7-day training in Pashto language on the SMART survey methodology and all its practical aspects Two ACF technical staff facilitated the training. A standardization test was conducted over the course of 1 day, measuring 10 children, in order to evaluate the accuracy and the precision of the team members in taking the anthropometric measurements. The teams also conducted a one-day field test in order to evaluate their work in real field conditions. Feedback was provided to the team about 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 out of the questionnaires household selection was organized on the last day of the training by ACF to ensure overall comprehension before data collection began.

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

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

4.4. Data analysis

The anthropometric and mortality data was analyzed using ENA for SMART software 2011 version (9th July 2015). Survey results were interpreted in reference to WHO standards, the analysis of the other indicators related to IYCF, WASH, demographics and food security was done using Microsoft excel version 2010. Information generated from these indicators was used to explain the outcome indicators to include; nutritional status of children under five and mortality (CDR and U5DR). Contextual information generated from routine monitoring complemented survey findings. The ACF Afghanistan surveillance team has a standardized excel based data entry and analysis sheet to enter data and analyze additional variables indicators like IYCF, Morbidity, Maternal nutrition by MUAC, EPI vaccination for children, WASH and FSL indicators. Interpretation

of each result was done based on the existing threshold for different indicators as well as comparing with other available data sources at national and provincial level.

4.5. INDICATORS: DEFINITION, CALCULATION and INTERPRETATION

4.5.1. Anthropometric Indicators: Definition of nutritional status of children 6-59 months

Acute Malnutrition

Acute malnutrition in children 6-59 months can be identified using three indicators; Weight for Height Index (W/H), 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[5]). 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 WHZ was calculated in the field for each child in order to refer malnourished cases to appropriate center if needed. Moreover, the results were presented in Z-scores using WHO reference in the final report. The classification of acute malnutrition based on WHZ is well illustrated in table 5.

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.

Picture: Field data collection

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

Target group	MUAC (mm)	Nutritional status
Children 6-59 months	>= 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 4 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 and considering the presence of oedema

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)

The height-for-age measure indicates if a child of a given age is stunted. This index reflects the nutritional history of a child rather than his/her current nutritional status and 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 (HAZ) 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

4.5.2. 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)

CDR refers to the number of persons in the total population that died over the specified period of time (107 days) Refer to Table 2 above for the sample size calculation for mortality surveys.

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

Under-5 death rate (U5DR)

U5DR refers to the number of children aged (0-5) years that died over the specified period of time (107 days).

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

4.6. Health

In addition to anthropometric data, the following health information was collected:

- **Immunization Status, Deworming and Vitamin A Supplementation**

Mothers/caretakers of children were asked if the children received all the necessary vaccinations (Measles, BCG, PENTA3 and Polio), which will subsequently be verified by reviewing the vaccination card, if available. In the case of PENTA 3 although this vaccination should be given on 14 weeks (3.5months), consistent with SMART methodology age data without documentation of exact birth date, age is rounded down to the nearest month, therefore, PENTA3 was assessed from 4-59 months. If the vaccination card was not available, then recall of the caregiver was considered. Confirming the deworming and the Vitamin A supplementation status of children were also verified showing example products.

- **Morbidity**

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

4.6.1. WASH

- **Water Storage, Treatment and Usage**

Household heads were asked what type of container and treatment method they use for storing and purifying drinking water. They were also asked how much water they used in the HH in the last 24 hours to assess the water use per person per day. The HH head was asked about what sources of water was used for HH use, excluding water used for animals.

- **Hand Washing Practices**

Mothers/caretakers were asked on what occasions they wash their hands and also what they used to wash their hands to determine the hand washing practices in the surveyed area.

4.6.2. Infant and Young Child Feeding (IYCF) Practices Indicators

The IYCF questionnaire was asked of caregivers of children aged <24 months to assess the IYCF practices as described below:

- **Child Ever Breastfed**

Proportion of children who have ever received breast milk. The indicator refers to proportion of children who have ever received breast milk. It is 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 the caregiver was asked 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 breastfed 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 23 months who were put to the breast within one hour of birth by children born in the last 23 months. The denominator and numerator include living and deceased children who were born within the past 23 months.

- **Provision of Colostrum in the First 3 Days of Life**

Proportion of children who received colostrum[6] within the first 3 days after birth. This indicator assessed the number of mothers with children <24months 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 receive only breast milk during the previous day by total infants aged 0-5 months.

- **Introduction of Solid, Semi-solid or Soft foods:**

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

- **Continued Breastfeeding at 1 Year**

Proportion of children 12–15 months of age who are 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 total children aged 12–15 months

- **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.

4.6.3. Maternal Health and Nutrition

- Pregnant and lactating women were assessed for their nutritional status based on MUAC measurements. The nutritional status of pregnant and lactating mothers were derived using the MUAC cut-off of 230 mm.
- **Antenatal care:** Caregivers between the ages of 15-49 years at household level will be asked on whether they sought at least one antenatal care during their last pregnancy. In this case, the last pregnancy will be considered of the last child who is still between 0-59 months for the purpose of having a more precise recall period.
- **Delivery assisted by a Skilled Birth Attendant (SBA)**: caregiver who confirms receiving assistance from a skilled birth attendants (i.e. mid-wives, nurse, doctor who are certified by MoPH) during the last delivery.
- The indicator for **Iron-folate supplementation** was derived from dividing the total number of pregnant mothers supplemented with Iron-folate in the last 90 days by total number of pregnant mothers.

[6] The yellow or golden first milk produced in the first days. It is an important source of nutrition and immune protection for the newborn.

4.7. Survey limitations

- Insecurity was one of the limitations for the assessment in the province. Due to this issue, three clusters could not be accessed and surveyed.
- The ACF survey in charge and Public Nutrition Officer (PNO) were not able to provide regular direct supervision and on the job training activities to the teams during data collection due insecurity in the field.
- During the last three days of data collection survey, AAH/ACF were forced to evacuate the province due insecurity.

5. SURVEY FINDINGS

5.1. Demography

The mortality questionnaire of the SMART methodology is designed in a way that some additional useful demography data are gathered. Data was collected from 42 clusters, 527 households[7]. 4,530 Individuals (2,640 male and 1,890 female) who were members of the households. Among these, 492 households had children under five. The summery is highlighted in table 6 below.

Table 6: Summary of the demographic Summary

Indicators	Values
Total number of HHs with children under five	492
Average household size	8.6
Percentage of children under five	25.2%
Birth Rate	0.82/10000/Day
In-migration Rate (Joined)	0.02/10000/Day
Out-migration Rate (Left)	1.87/10000/Day
Number of clusters surveyed	42

[7] One limitation of the ENA software for analyzing demographic data is the maximum number of household members that can be entered is 20. During data collection, four households with more than 20 household members (81 in HH 1 and 2 in cluster 10, 22 in clusters 15 and 24 in cluster 26) were identified. Ultimately, the number of households, the average household size, and the number of households with children under five had to be calculated manually.

5.1.1 Residential Status

The assessed households were categorized as either resident (94.5%), internally displaced (2.7%) or returnee's (2.8%). The information collected from households regarding returnees and IDPs is presented in table below.

Residential status of households N= 527	Permanent residential	498	94.5%
	Internal displacement	14	2.7%
	Returnees	15	2.8%

5.2 Description of sample

Among the 45 clusters that were planned to be surveyed, 3 clusters were missed due to ongoing conflict and security problems in the Waza Khwa, Tarwee and Khoshamand districts. Data were collected from 42 clusters, 527 households, 4,530 individuals, 1,011 children aged 6-59 months. Six children were excluded per SMART Flags of WHZ, 1,117 children aged 0-59 months, 492 children aged 0-23 months and 908 women of reproductive age (15-49 years) were surveyed.

Although 45 clusters and 578 HHs were calculated from ENA, with three clusters were inaccessible the teams ultimately attempted to survey (42*13=546) households. Of these, 527 (96.5%) were surveyed, meaning a 3.5% (19/546) non-response rate (absent and rejected)

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	126	46.8	143	53.2	269	26.6	0.9
18-29	146	51.0	140	49.0	286	28.3	1.0
30-41	105	45.5	126	54.5	231	22.8	0.8
42-53	66	50.8	64	49.2	130	12.9	1.0
54-59	60	63.2	35	36.8	95	9.4	1.7
Total	503	49.8	508	50.2	1,011	100.0	1.0

Figure 1 below shows the population pyramid of the surveyed population. Notably, the age category for children under five is much larger than all other categories. There are also fewer females than males, specifically in the 15-19 year age category. It is important to note the age data is not exact, given that age data from household members five years and older were based on recall. Also, that 90% of surveyed children <5 did not have proper documents to confirm the exact date of birth.

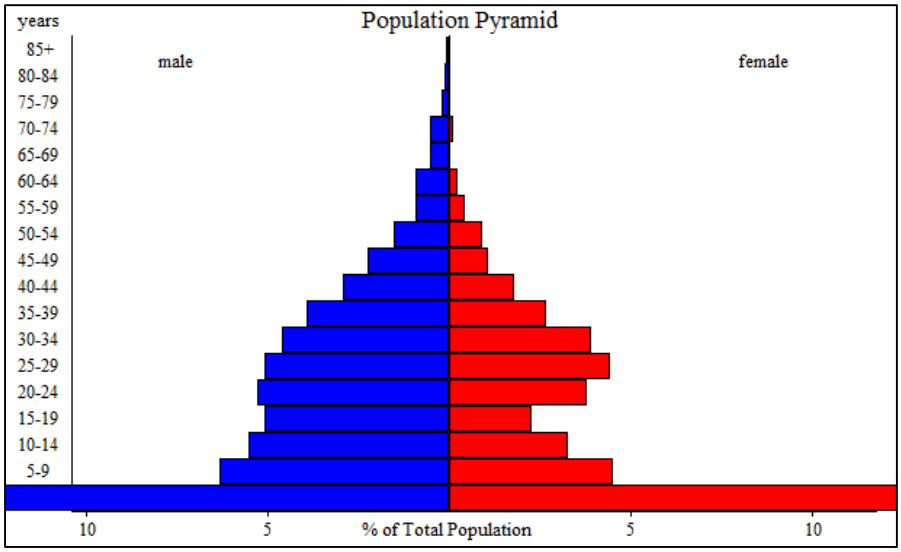


Figure 1 : Distribution of age and sex pyramid

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 **logistically** planned	Number of households surveyed	% of HHs surveyed of planned	Number of children 6-59 months Planned	Number of children 6-59 months surveyed	% of surveyed
585	527	90.1%	575	1011	175.8%

Even though 100% households were not reached, 175.8% of planned children were surveyed during the assessment. This is probably due to under estimation of the proportion of children under five (15.6%) in the planning stage. Actually during the survey found a very high percentage of children under five (25.2%) compare to the assumption.

5.3 Data quality

The plausibility check indicated the weight and height measurements were of good quality with an overall score of 14%. The proportion of SMART flags for WHZ of 0.6% was categorized as excellent. The proportion of SMART flags for HAZ was 1.9 % and for WAZ was 0.4 %.

The overall sex ratio indicated that boys and girls were equally represented (p=0.875). However, the age ratio of 6-29 months to 30-59 months was 1.22, suggesting a significant difference (p=0.000). The expected value to indicate an equal distribution should be around 0.85, meaning that there were far more children aged 6-29

months surveyed than children 30-59 months. Further, there were fewer female children aged 54-59 months surveyed than expected. Based on our teams' observations the people were not allowing their old daughters to be surveyed. One other limit of the survey was that only 10% of surveyed children were found to have an exact birth date (day month and year) as confirmed by documentation (vaccination cards, birth certificates and documented by fathers or mothers if available) while the rest of the children's ages were estimated using a local event calendar.

Standard deviation for the distribution of WHZ (1.08) and WAZ (1.08), both were classified as excellent. However, HAZ (1.28) was classified as a problematic. Therefore, the estimate of the prevalence of the stunting (41.7%) should be interpreted with caution.

5.4 Undernutrition

The nutritional status of children 6-59 months was analyzed in reference to the 2006 WHO Child Growth Standards. Table 9 shows the Z-scores, design effect, and the number of children with missing and flagged data.

Table 9: Mean z-scores, design effects ,missing and out of range data

Indicator	N	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	1,005	-0.82±1.08	1.50	0	6
Weight-for-Age	1,007	-1.46±1.08	1.48	0	4
Height-for-Age	992	-1.67±1.28	1.83	0	19

* WHZ and WAZ unavailable z score include cases of oedema.

5.5. Nutrition

5.5.1. 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 acts as proxy for the current nutritional status of 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 weight-for-height z-scores (and/or edema) and by sex among children 6-59 months

Indicators	All n = 1,005	Boys n = 501	Girls n = 504
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	(141) 14.0 % (11.5 - 17.0 95% C.I.)	(69) 13.8 % (10.7 - 17.5 95% C.I.)	(72) 14.3 % (11.2 - 18.0 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 z-score to ≥-3 z-score, no oedema)	(117) 11.6 % (9.6 - 14.0 95% C.I.)	(58) 11.6 % (9.2 - 14.5 95% C.I.)	(59) 11.7 % (9.0 - 15.1 95% C.I.)
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	(24) 2.4 % (1.5 - 3.9 95% C.I.)	(11) 2.2 % (1.1 - 4.3 95% C.I.)	(13) 2.6 % (1.5 - 4.4 95% C.I.)

The prevalence of oedema was 0.0 %

Table 11: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (≥-3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	265	15	5.7	44	16.6	206	77.7	0	0.0
18-29	285	3	1.1	38	13.3	244	85.6	0	0.0
30-41	230	4	1.7	19	8.3	207	90.0	0	0.0
42-53	130	1	0.8	9	6.9	120	92.3	0	0.0
54-59	95	1	1.1	7	7.4	87	91.6	0	0.0
Total	1005	24	2.4	117	11.6	864	86.0	0	0.0

A further analysis of the GAM rate based on WHZ showed a significant difference between children 6-23 months (20.2%) and children aged 24-59 months (10.3%). Suggesting that children less than 24 months were more affected than older children were. 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 (381)	Boys (179)	Girls (202)
Prevalence of global acute malnutrition (GAM) (<-2 z-score and/or Oedema)	(77) 20.2 % (15.8 - 25.5 95% C.I.)	(38) 21.2 % (14.8 - 29.4 95% C.I.)	(39) 19.3 % (14.1 - 25.9 95% C.I.)
Prevalence of Severe acute malnutrition (SAM) (<-3 z-score and/or Oedema)	(17) 4.5 % (2.7 - 7.3 95% C.I.)	(7) 3.9 % (1.7 - 8.7 95% C.I.)	(10) 5.0 % (2.7 - 8.9 95% C.I.)
24-59 months aged	**All (623)**	**Boys (322)**	**Girls (331)**
Prevalence of global acute malnutrition (GAM) (<-2 z-score and/or Oedema)	(64) 10.3 % (8.0 - 13.1 95% C.I.)	(31) 9.6 % (6.8 - 13.4 95% C.I.)	(33) 11.0 % (8.0 - 14.9 95% C.I.)
Prevalence of severe acute malnutrition (SAM) (<-3 z-score and/or Oedema)	(7) 1.1 % (0.5 - 2.6 95% C.I.)	(4) 1.2 % (0.5 - 3.3 95% C.I.)	(3) 1.0 % (0.3 - 3.3 95% C.I.)

*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. 25 (2.5 %)	Not severely malnourished No. 986 (97.5 %)

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 = 1,011	Boys n = 503	Girls n = 508
Prevalence of global malnutrition (<125 mm and/or Oedema)	(163) 16.1 % (13.1 - 19.7 95% C.I.)	(63) 12.5 % (9.5 - 16.4 95% C.I.)	(100) 19.7 % (15.3 - 24.9 95% C.I.)

Prevalence of moderate malnutrition (< 125 mm to ≥115 mm, no Oedema)	(101) 10.0 % (7.9 - 12.5 95% C.I.)	(43) 8.5 % (6.3 - 11.5 95% C.I.)	(58) 11.4 % (8.3 - 15.5 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or Oedema)	(62) 6.1 % (4.5 - 8.4 95% C.I.)	(20) 4.0 % (2.3 - 6.8 95% C.I.)	(42) 8.3 % (5.9 - 11.6 95% C.I.)

Table 15: Prevalence of acute malnutrition based on MUAC disaggregated by sex and two group's age

6-23 months aged	All (386)	Boys (180)	Girls (206)
Prevalence of global acute malnutrition (GAM) based on MUAC	(133) 34.5% (28.9-40.5 95% CI)	(180): (47) 26.1% (20.9-32.1 95% CI)	(206): (86) 41.7% (33.1-50.9 95% CI)
Prevalence of Severe acute malnutrition (SAM) based on MUAC	(54) 14.0% (10.2-18.8 95% CI)	(16) 8.9% (5.0-15.2 95% CI)	(38) 18.4% (13.0-25.5 95% CI)
24-59 months aged	**All (625)**	**Boys (323)**	**Girls (302)**
Prevalence of global acute malnutrition (GAM) based on MUAC	(30) 4.8% (3.4- 6.8 95% CI)	(16) 5.0% (2.8- 8.5 95% CI)	(14) 4.6% (2.8-7.6 95% CI)
Prevalence of severe acute malnutrition (SAM) based on MUAC	(8) 1.3% (0.6- 2.7 95% CI)	(4) 1.2% (0.4- 4.1 95% CI)	(4) 1.3% (0.5- 3.4 95% CI)

Table 16: 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	269	47	17.5	57	21.2	165	61.3	0	0.0
18-29	286	12	4.2	34	11.9	240	83.9	0	0.0
30-41	231	1	0.4	9	3.9	221	95.7	0	0.0
42-53	130	0	0.0	0	0.0	130	100.0	0	0.0
54-59	95	2	2.1	1	1.1	92	96.8	0	0.0
Total	1011	62	6.1	101	10.0	848	83.9	0	0.0

Weight for Height Z score is considered key indicator for acute malnutrition, but it should be noted that there is no gold standard measure for acute malnutrition. Based on the 2009 WHO and UNICEF Joint Statement on Child Growth Standards and the identification of SAM in Infants and Children, a 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 Integrated Management of Acute Malnutrition (IMAM) case loading. Table 17 shows the GAM and SAM rate on both criteria.

Table 17: Prevalence of acute malnutrition based on combined criteria (WHZ+ MUAC+ Oedema among children 6-59 months

GAM and SAM based on combined criteria*	All (1005)	Boys (501)	Girls (504)
Prevalence of Global Acute Malnutrition (MUAC<125 mm and/or WHZ <-2 and/or Oedema)	(234) 23.3% (19.9-27.1 95% CI)	(98) 19.6% (15.6-24.2 95% CI)	(136) 27.0% (22.3-32.3 95% CI)
Prevalence of Severe Acute Malnutrition (MUAC <115 mm and/or WHZ <-3 and/or Oedema)	(71) 7.1% (5.2- 9.6 95% CI)	(24) 4.8% (2.9-7.8 95% CI)	(47) 9.3% (6.8-12.7 95% CI)

*There were no identified cases of oedema

5.5.2. 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-term poor micro and macronutrients intake and other deficits that often persist across generations. It is caused by the 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: Table 18 shows stunting rate based on height for age and by sex among children 6-59 months old.

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

	All n = 992	Boys n = 497	Girls n = 495
Prevalence of stunting (<-2 z-score)	(414) 41.7 % (37.5 - 46.1 95% C.I.)	(218) 43.9 % (39.3 - 48.5 95% C.I.)	(196) 39.6 % (34.2 - 45.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score to ≥-3 z-score)	(253) 25.5 % (21.5 - 30.0 95% C.I.)	(129) 26.0 % (21.1 - 31.5 95% C.I.)	(124) 25.1 % (20.3 - 30.5 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(161) 16.2 % (13.9 - 18.9 95% C.I.)	(89) 17.9 % (14.3 - 22.2 95% C.I.)	(72) 14.5 % (11.8 - 17.7 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=280) to then decrease with older age group . However, the HAZ SD (1.28) was classified as problematic and higher than the normal range (0.80-1.2), therefore, estimate of the prevalence of the stunting (41.7%) should be interpreted with caution. As a reminder, only 10% of children interviewed were found to have an exact birth date.

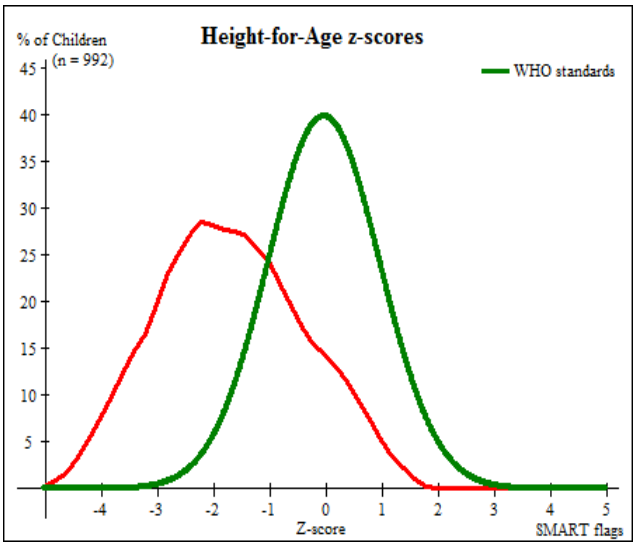


Figure 3: Gaussian Distributed Curve HAZ

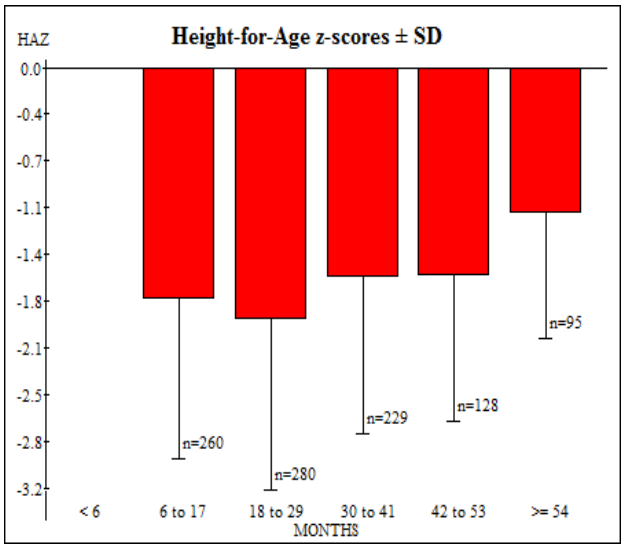


Figure 2: Trend of Stunting over the age distribution

Table 19: Prevalence of stunting disaggregated by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-17	260	45	17.3	72	27.7	143	55.0
18-29	280	63	22.5	79	28.2	138	49.3
30-41	229	32	14.0	57	24.9	140	61.1
42-53	128	15	11.7	29	22.7	84	65.6
54-59	95	6	6.3	16	16.8	73	76.8
Total	992	161	16.2	253	25.5	578	58.3

5.5.3. 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 individual children, as it cannot detect children who are stunted. Furthermore, it does not detect life-threating acute malnutrition among children. The underweight results are presented in **table 20** for more details.

Table 20: Prevalence of underweight based on weight-for-age z-scores (WAZ) among children 6-59 months

	All n = 1007	Boys n = 502	Girls n = 505
Prevalence of underweight (<-2 z-score)	(300) 29.8 % (26.4 - 33.4 95% C.I.)	(154) 30.7 % (25.8 - 36.0 95% C.I.)	(146) 28.9 % (24.7 - 33.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(215) 21.4 % (18.7 - 24.3 95% C.I.)	(113) 22.5 % (18.1 - 27.7 95% C.I.)	(102) 20.2 % (17.0 - 23.8 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(85) 8.4 % (6.4 - 11.1 95% C.I.)	(41) 8.2 % (5.5 - 12.1 95% C.I.)	(44) 8.7 % (6.5 - 11.7 95% C.I.)

Table 21: 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	266	38	14.3	66	24.8	162	60.9	0	0.0
18-29	286	25	8.7	70	24.5	191	66.8	0	0.0
30-41	230	15	6.5	42	18.3	173	75.2	0	0.0
42-53	130	4	3.1	24	18.5	102	78.5	0	0.0
54-59	95	3	3.2	13	13.7	79	83.2	0	0.0
Total	1007	85	8.4	215	21.4	707	70.2	0	0.0

5.6. Women health and nutrition status

All women of childbearing age (15-49 years) were included. A total of 908 women were assessed for nutrition status, antenatal care (ANC) and iron folate supplementation. The analysis focused on pregnant and lactating women, iron folate supplementation only from pregnant women, while last child delivery status was asked of 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 22 and figure 23.

Table 22: Prevalence of malnutrition among PLWs based on MUAC cut-off

Physiological Status	Frequency (MUAC <230 mm)	Results
Malnutrition among Pregnant women (N=190)	42	22.1%
Malnutrition among Lactating women (N=440)	123	28.0%
Malnutrition among PLWs (N=630)	165	26.2%

Table 23: Iron folate supplementation for pregnant women

Iron- folate for pregnant women (n= 190)	Frequency	Results
Yes	69	36.3%
No	119	62.6%
Do not know	2	1.1%

Table 24: Status of ANC visits in the last pregnancy

ANC Visits in the last pregnancy (N= 869)	Frequency	Results
Yes	399	45.9%
No	470	54.1%
ANC visits by Whom? (N=399)		
Health professional	325	81.5%
Traditional birth attendant (TBA)	22	5.5%
Community health worker (CHW)	24	6.0%
Relative/ friend	20	5.0%

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

Table 25: Skill Births Attendance (SBA) status for the last baby

Status of Skill Birth Attendance during last delivery (N=856)		Frequency	Results %
Last delivery at the health facilities		399	46.6%
Last Delivery at home	Professionals (Nurses, midwifes, Doctors and community midwifes)	45	5.2%
	Non-Professionals (CHWs, TBA and relatives)	302	35.3%
	Not responded/ Nothing available	110	12.9%

5.7. Crude and Under 5 Years Death Rate

The mortality data was also included in the survey to calculate the CDR and U5DR. It was planned to survey 2,345 individuals in 331 households, however, relaying on the anthropometric sample size. Ultimately527 households with 4,530 individuals (1,890 female and 2,540 male) were assessed. The CDR and U5DR were lower than WHO emergency threshold[8] as shown in the table (24) below. However the U5DR is still relatively high (0.75 Death/10,000/Day) in Paktika province and requires attention.

Table 26: Death rates by age and sex category with design effect

Population	(Death rate /10,000/Day	Design Effect
'Overall	0.75 (0.48-1.18)	1.87
'Sex		
'Male	1.01 (0.61-1.68)	2.04
'Female	0.40 (0.20-0.81)	1.12
'Years		
'0-4	0.42 (0.15-1.19)	1.45
'5-11	0.45 (0.14-1.36)	1.0
'12-17	0.00 (0.00-0.00)	1.0
'18-49	0.83 (0.37-1.86)	3.16
'50-64	2.11 (0.72-6.04)	1.01
'65-120	6.40 (2.01-18.49)	1.61

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

5.8. Child Health and Immunization

5.8.1 Morbidity

The survey found that, among 1,117 children under five, 48.3% (540 out of 1,117) of children reported symptoms of illness (cough, fever, diarrhea, fever, rash, infection, headache, nausea, vomiting, etc.) the 2 weeks prior to the survey. The major illnesses reported were diarrhea, ARI and fever as highlighted in the table below (27).

Table 27: Morbidity status among under-five year's children

Parameter (N=1117)	Frequency	Results (%)
Acute Respiratory Infection (ARI)	153	13.7%
Fever	331	29.6%
Diarrhea	241	21.6%

5.8.2 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 9-18 months, Bacillus Chalmette Guerin (BCG) is given to infants at birth and Pertussis, Diphtheria, Tetanus, Hepatitis B and Hemophilia's Influenza Type B (PENTA 3) is given to infant at 14 weeks of age. 1,117 under five children were assessed for their immunization history. These results are presented in the table 28 below.

Table 28: Immunization coverages for BCG, Measles, PENTA 3 and Polio vaccines among children U5

Indicators	Class	Frequency	Results
Measles (children aged 9-59 months) (N= 938)	Yes by cards	182	19.4%
	Yes by recall	375	40.0%
	Both by card and recall	**557**	**59.4%**
	No	342	36.3%
	Don't know	39	4.2%
Polio (children aged 0-59 months) (N= 1114)	Yes by cards	305	27.4%
	Yes by recall	605	54.3%
	Both by card and recall	**910**	**81.7%**
	No	125	11.2%
	Don't know	79	7.1%
PENTA 3 (children aged 4-59 months) (N=1057)	Yes by cards	203	19.2%
	Yes by recall	277	26.2%
	Both by card and recall	**480**	**45.4%**
	No	461	43.6%

	Don't know	116	11.0%
BCG scar (children aged 0-59 months) (N=1116)	Only by scar confirmation	733	65.7%
	No	383	34.3%

5.8.3 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 health. The coverage of Vitamin A supplementation in the last 6 months is presented in the table below.

Table 29: Vitamin A supplementation among children 6-59 months

Indicators	Class	Frequency	Results
Vitamin A supplementation 6-59 months (N= 1006)	**Yes**	792	78.3%
	No	190	18.8%
	Don't know	24	2.4%

5.7.4 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 parasitic infections. This means deworming is critical for the reduction of child morbidity and mortality. The proportion of children who received deworming the past 6 months is presented in table 30.

Table 30: Deworming among children 24-59 months

Indicators	Class	Frequency	Results
Deworming (24-59 months children) (N=620)	**Yes**	329	53.1%
	No	280	45.2%
	Don't know	11	1.8%

5.6. 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 492 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 month's children)

IYCF indicators	Definition	Frequency	Results
Children ever breastfed (N=492)	Proportion of children (0-23 months) who have ever received breast milk	492	100%
Timely initiation of breastfeeding (N=492)	Proportion of children born in the last 23 months who were put to the breast within one hour of birth	231	47.0%
Provision of colostrum within first 3 days of delivery (N=492)	Proportion of children (0-23 months) who received colostrum (yellowish liquid milk) within the first 3 days after birth	313	63.6%
Continued breastfeeding at one year (N=103)	Proportion of children 12–15 months of age who fed breast milk.	83	80.6%
Continued breastfeeding at two years year (N=60)	Proportion of children 20-23 months of age who fed breast milk.	33	55.0%
Exclusive breastfeeding for children <6 months (N=106)	Proportion of infants 0–5 months of age who fed exclusively with breast milk.	50	47.2%
Introduction of solid, semi solid or soft foods (N=70)	Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods.	27	38.6%

6.9. WASH

6.9.1 Water Availability and Consumption

527 households and 4,530 individuals (2640 male and 1890 female) were surveyed on water consumption practices. Figure 4 and 5 shows the total amount of water consumption in liters per individual and per household.

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.

Sphere Standards recommends a minimum of 15L of water/person/day during a humanitarian emergency. According to national standards, a minimum consumption of 25L of water/person/day is recommended.

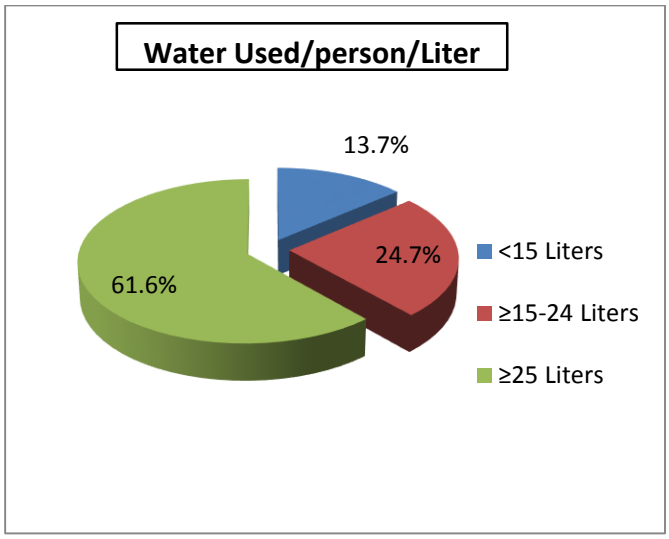


Figure 4: Percentage of water usage in liter/ person/day

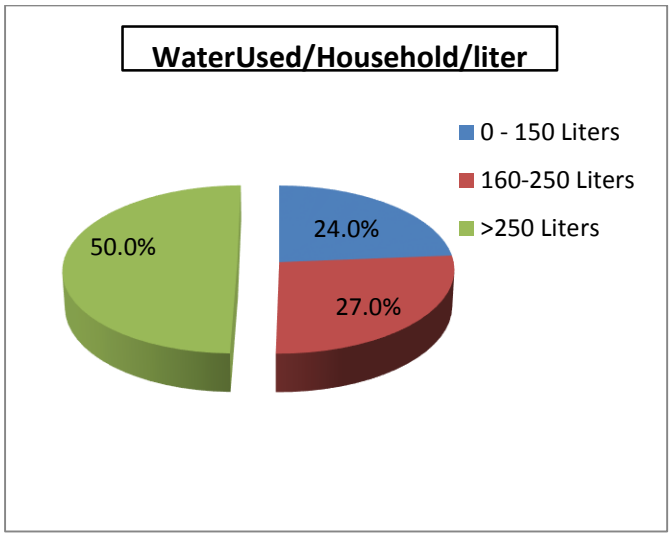


Figure 5: Percentage of HH water usage in liter/day

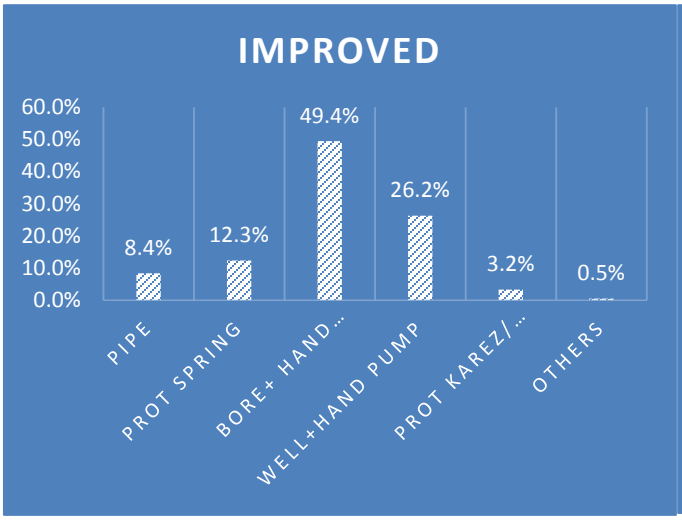


Figure 6: HHs level improved water usage

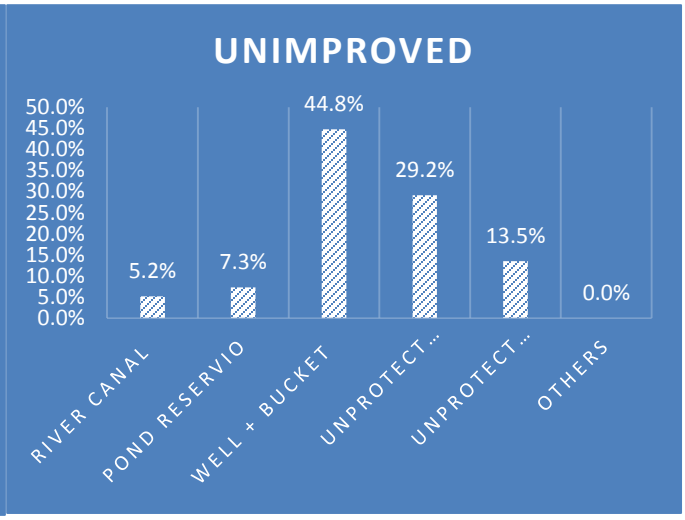


Figure 7: HHs level unimproved water usage

6.9.2 Houesholds Waters Sources and Treatment

The majority (81.8%) of the households in the province were found using safe water sources and 18.2% were found using unsafe water sources with the specific sources illustrated in Figures 6 and 7. Analysis of water treatment methods (table 32) indicated that (21.3%) did not treat drinking water prior to consumption. This predisposes households to water borne diseases such as diarrhea and typhoid fever.

Among HHs surveyed, 69 (13.1%) used water treatment methods to improve the quality of their drinking water. The most common method of water treatment was boiling. Most surveyed households, 401 (76.1%) households relied on a simple stand and settle method, which allowed the sedimentation in the water to settle at the bottom of the container. The remaining 57 (10.8%) households do not use any additional methods to improve their water quality. See Table 32.

Table 31: Percentage of households with access to water treatment

Water treatment methods (N=527)	Frequency	Results
Boiling	59	11.2%
Chlorine	5	0.9%
Straining through a cloth	4	0.8%
Water filter	1	0.2%

6.9.3 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 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. 13.5% of caregivers reporting washing their hands at the five critical points (see tables (33) below).

Table 32: Hand-washing practices by the mothers/caretakers

Hand washing practices by mothers/caretakers	Frequency	Results
Only clean with water (N=875)	746	85.3%
Soap/ash with clean water (N=907)	434	47.9%
Washes both hands (N=907)	719	79.3%
Rubs hands together at least 3 times (N=905)	531	58.7%
Dries hands hygienically by air-drying or using a clean cloths (N=886)	162	18.3%

Table 33: Hand washing practice by mothers/caretakers at critical time

Hand washing practices at critical moments	Frequency	Results
Washes hands at all 5 critical moments (908)	123	13.5%
After defecation (N=907)	835	92.1%

After cleaning baby's bottom (N=895)	575	64.2%
Before food preparation (N=907)	646	71.2%
Before eating (N=907)	862	95.0%
Before feeding children (including breastfeeding) (N=888)	214	24.1%

6.10. Households Food Security and Livelihoods (FSL)

6.10.1. 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)[9] was used to describe the current short-term household food security situation. The score was triangulated with the food-based or *reduced Coping Strategy Index* (rCSI)[10] 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 Paktika 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)***[11]**.**

[9] 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 (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.

[10] 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).

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

Table 34: food consumption score

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

6.10.2 Food security situation

Based on triangulation of the FSC with the food-based rCSI, the survey finding shows that 39.1% households had moderate and severe food insecurity for more details see figure bellow (8).

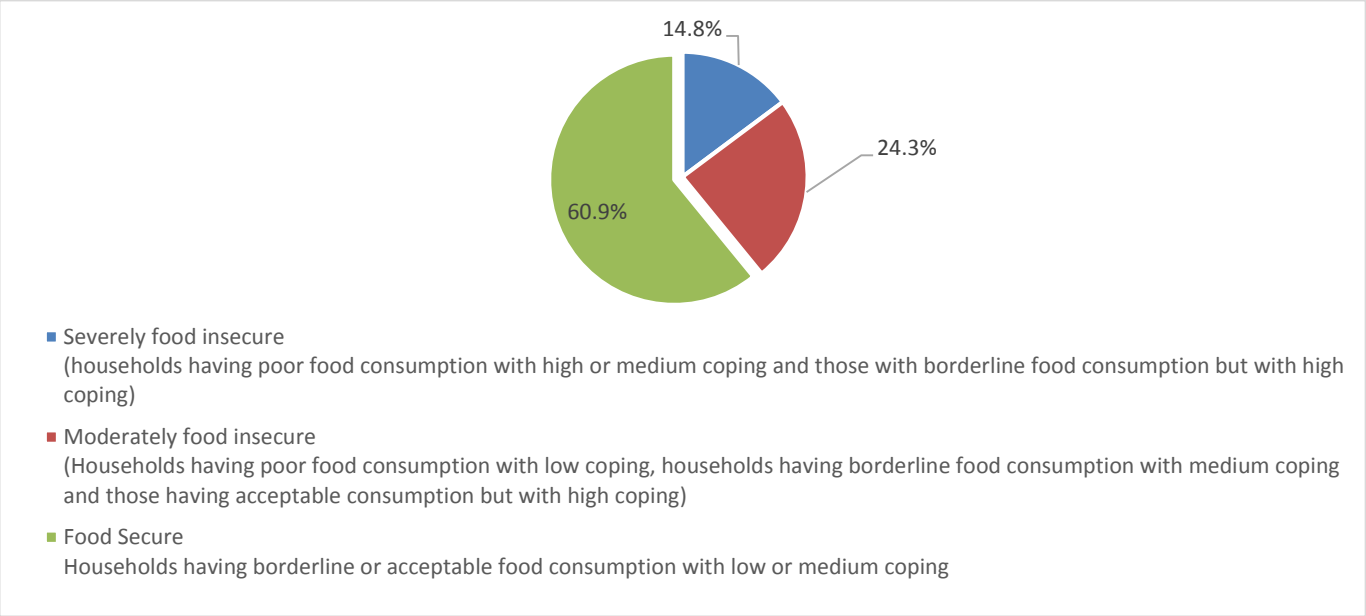
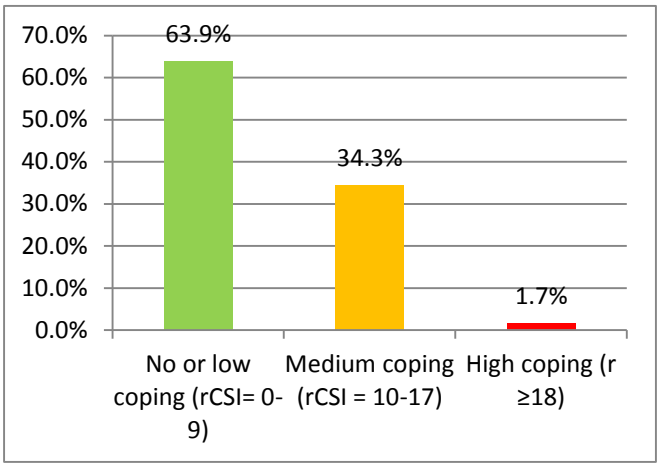


Figure 8: Food security situation (Based on FCS & rSCI)

6.10.3 Reduced Coping Strategy Index[12]

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 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).



1.7% of HHs with a high level of coping (rCSI ≥18 score).
34.3% of HHs with a medium level of coping (rCSI= 10-17 score).
63.9% % of HHs with No or Low-level coping (rCSI=0-9 score).

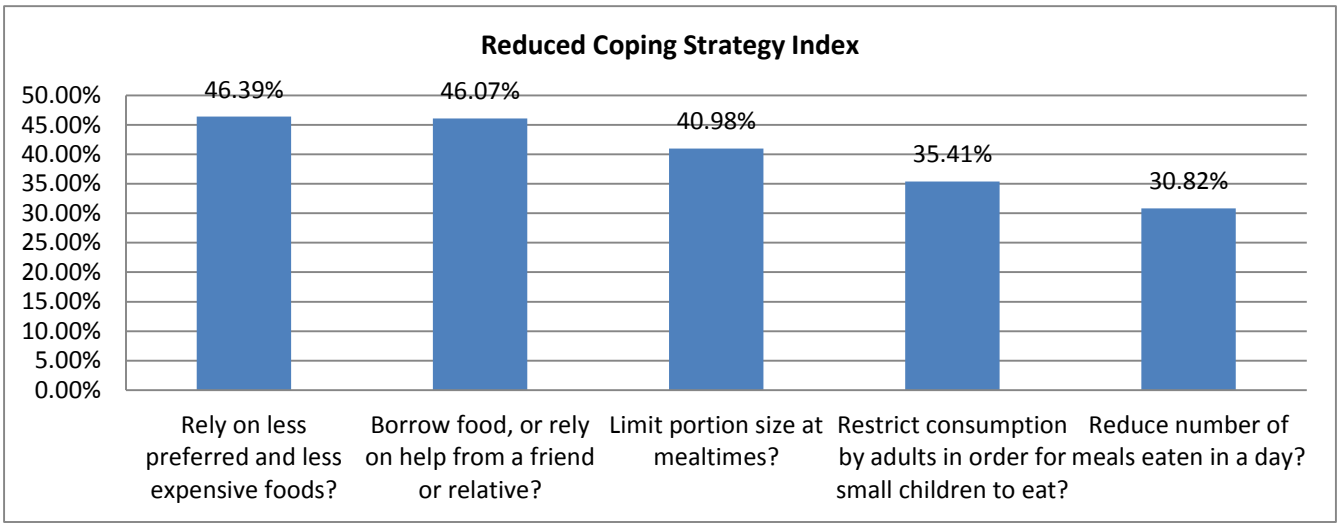


Figure 9: Reducing Coping Strategy Index

6.8.4 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

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

weighted 0.5). Households are then grouped into “Poor” food consumption (0-28), “Borderline” (28.5 – 42) and acceptable (> 42). Food consumption groups are a proxy of food consumption and reflect both the frequency and quality of food consumption.

31.9% households surveyed have Poor consumption scores (FCS = 0 to 28).
24.3% households surveyed have Borderline consumption scores (FCS = 28.5 to 42).
43.8% households surveyed have acceptable food consumption scores (FCS = >42.0).

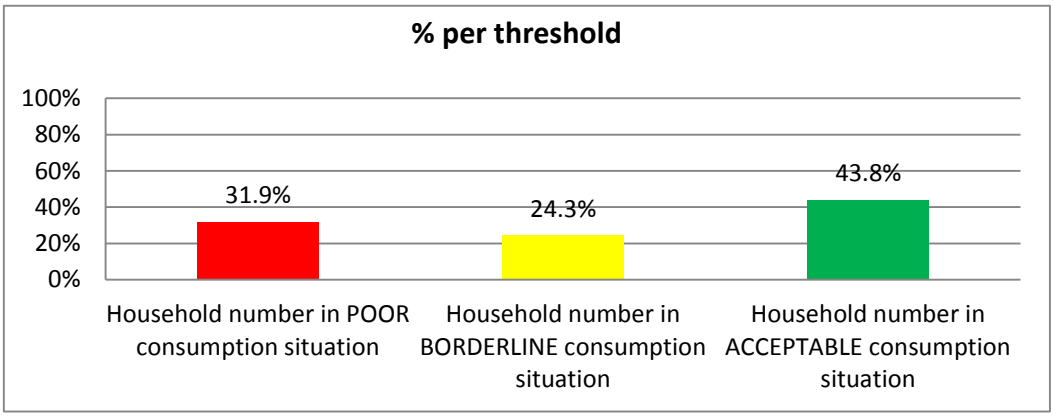


Figure 10: HHs level Consumption Score

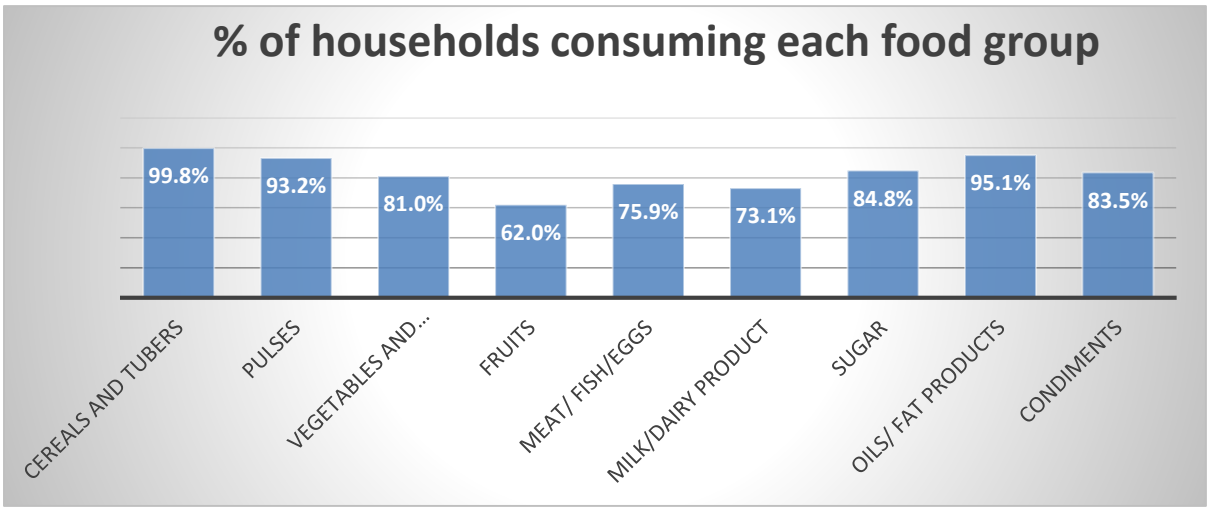


Figure 11: Households consuming different food items/group

6.8.5 Food stock

The table below shows the HHs percentages with duration of food stock in HHs, where staggering 36.8% households responded that there is no food stock in the house.

Table 35: Status of food stock in the household

Status, N=527 Respondents	N	Results
No food stock in the households	194	36.8%
Less than a week food stock in household	39	7.4%
Food stock in household from 1-3 weeks	83	15.7%
Stock food in household up to 1-3 months	116	22.0%
Stock food in household for more than 3 months	95	18.0%

6.8.6 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 obtaining using cash see table (37) below for more details.

Table 36: Food main sources that the households consumed

	Own production	Cash	Credit	Bartering	Gift/ charity	Wild food	Food Aid	Total
Cereals and tubers	188	188	127	6	2	0	15	**526**
Pulses/ Nuts	117	228	121	8	10	3	2	**489**
Vegetables and leaves	94	224	107	6	2	0	1	**434**
Fruits	60	189	99	6	1	0	3	**358**
Meat/ fish/eggs	43	249	114	5	9	0	1	**421**
Milk/diary product	212	73	77	4	8	6	10	**390**
Sugar / Honey	65	258	127	4	1	0	18	**473**
Oils/ fat products	69	271	150	5	1	0	19	**515**
Condiments	65	259	106	4	1	1	20	**456**

7. CONCLUSION

7.1. Undernutrition

Results of this survey are not a reflection of national nutrition situation but are representative of only for the Province of Paktika. The results of the survey showed the GAM prevalence based on WHZ was **14.0% (11.5-17.0 95% CI)** and for SAM was **2.4% (1.5-3.9 95% CI)** . This level of severity per WHZ was classified as a 'serious' nutrition situation in the province according to the WHO severity-classification[13]. SAM prevalence by WHZ (2.4%) is slightly below what is considered a priority (=>3.0%) for the Afghanistan context.
The GAM prevalence based on MUAC was **16.1% (13.1-19.7 95% CI)** and SAM was 6**.1% (4.5-8.4 95% CI)** which was higher than GAM based on WHZ.

The combined acute malnutrition prevalence by MUAC and WHZ and oedema revealed the GAM prevalence was **23.3% (19.9-27.1 95% CI)** and the SAM prevalence was **7.1% (5.2- 9.6 95% CI)**. According to this combined GAM and SAM prevalence, the nutritional situation can be interpreted as very critical in the province. The combined prevalence is important as it informs the estimated SAM and MAM caseload in the province for better programming. All the children in the sample detected as acutely malnourished by any indicator are reflected in this calculation according to combined criteria. We can also observe how many children were identified by the different anthropometric indicators. For example, from our surveyed sample, if only MUAC had been used, 72 (30.8%) cases of acute malnutrition by WHZ would have been missed. This supports the opinion that MUAC only detection is not enough according to Afghanistan IMAM Guidelines.

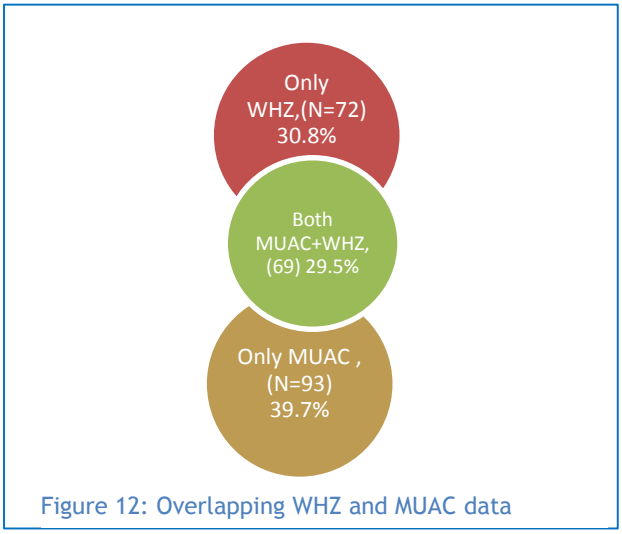


Figure 12: Overlapping WHZ and MUAC data

This should 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 criteria have been more prevalent in children under 2 years **WHZ based 39.6% (34.2-45.3 95% CI)**, **MUAC based 34.5% (28.9-40.5 95% CI)** compared to children over 2 years children

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

(WHZ based: 13.9% (11.2-17.0 95% CI) and **MUAC based 5.4% (3.9-7.6 95% CI)**. This suggests higher vulnerability of wasting among younger children.

Chronic malnutrition in the province continues to be worrying. The results of the present survey clearly showed that, based on WHO classification of severity of malnutrition, the overall prevalence of stunting is very high **41.7% (37.5-46.1 95% CI) it means, more than one in three children were suffering from stunting.**

Further, in this survey some children were diagnosed simultaneously as both wasted and stunted (WaSt). These types of malnutrition tend to be addressed as different issues, despite evidence of common causality[14]. Recent research has demonstrated that children that are WaSt have a high mortality association, suggesting that children which are both stunted and wasted should be considered a priority group for nutrition interventions[15]. Further analysis on the WaSt children in this survey sample as presented in **Figure 13** revealed that out of 414 stunted children, **29.5% (25.1-33.9 95% CI)** children were WaSt. Of potentially greater concern, **9.7% (6.8-12.5 95% CI)** were WaSt with severe wasting.

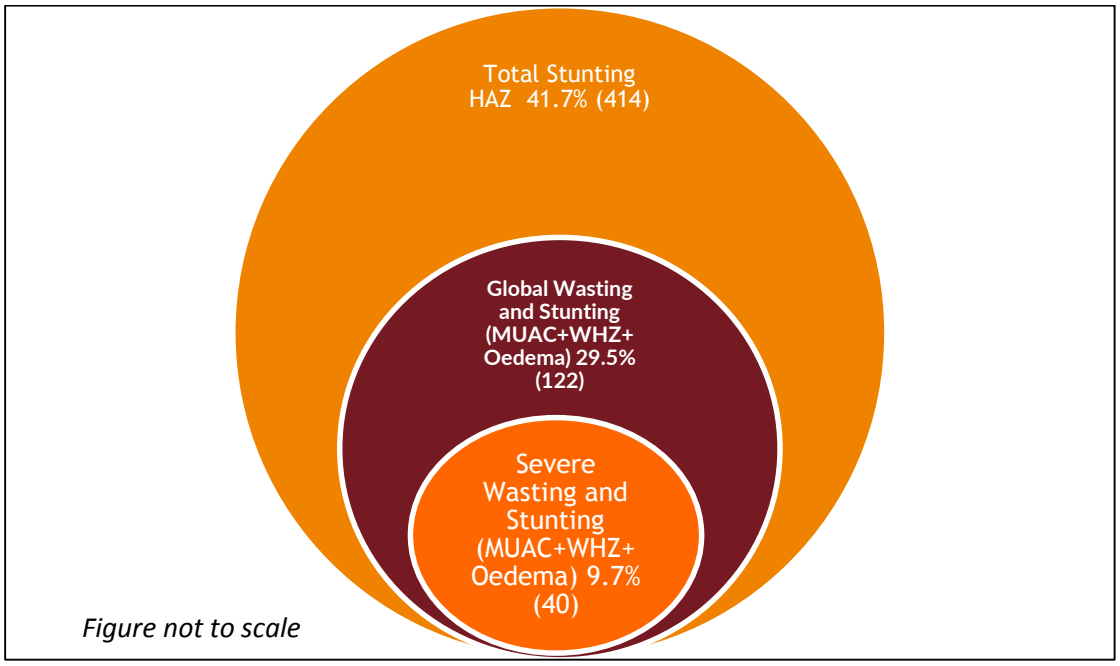


Figure 13: Wasted in the same time stunted

[14] Briend, A., Khara, T., Dolan, C. (2015) Wasting and Stunting—Similarities and Differences: Policy and Programmatic Implications. *Food and Nutrition Bulletin,* vol. 36, no. 1

[15] Myatt, M., et al. (2018) Children Who are Both Wasted and Stunted are also Underweight and have a High Risk of Death: a Descriptive Epidemiology of Multiple Anthropometric Deficits Using Data from 51 Countries. *Archives of Public Health*, vol. 76, no. 28.

9. RECOMMENDATIONS AND ACTION PLAN

S/N	Key findings	Actions to be taken	By who?	Resources required	Timeline of implementation
1	GAM prevalence based on WHZ is 14.0% (11.5-17.0 95% CI) which is serious situation according to the WHO threshold	OHPM technical team will conduct an emergency review of all health facilities providing the nutrition related services.	OHPM/PHO	Nutrition check list	30,Oct,2018
		Strengthening of regular effective supervision from all HFs accordingly.			
		Strengthening referral system between different types of health facilities accordingly.			
		Conducting meetings with all health facilities' related CHWs regarding the said issues for community awareness and mobilizing the community as well.			
		conducting TNA in all health facilities are under covering of OHPM by OHPM technical team			
		Providing refresher training for health facilities staff according project-training plan.			
		Enhancing community awareness through medical deliberations with local radios about nutrition, and our currently situation in the province and about to exerted the ill children to health facilities.			
		Requesting for hiring of nutrition counselor in needed health facilities.			
		Strengthening of joint supervision with PHO (PNO) from all HFs accordingly.			

		Sharing the said gaps with all health facilities' heads in monthly coordination meeting and also sharing the solving progression of the said health problem by facilities' in charges in each monthly coordination meeting conducting in field office.			
		There is not OPD MAM program so it is strongly recommended to take start OPD MAM program that is so better for preventing MAM children in the province.			
		Strictly following up the remedial plan in all health facilities accordingly with all technical officers.			
2	Based on both criteria (MUAC and WHZ) GAM prevalence is 23.3% and SAM 7.1% which is bad situation.	OHPM technical team will Conduct an emergency reviewing from all those health facilities providing the nutrition related services.	OHPM Nutrition officer, PNO,UNICEF Nutrition extender	Check lists/training budget/Guide line	Dec,2018
		Strengthening of regular effective supervision from all HFs accordingly.			
		Strengthening referring system between different types of health facilities accordingly.			
		Conducting meetings with all health facilities' related CHWs regarding the said issues for community awareness and mobilizing the community as well.			
		conducting TNA in all health facilities are under covering of OHPM by OHPM technical team			
		Providing refresher training for health facilities staff according project-training plan.			
		Enhancing community awareness through medical deliberations with local radios about nutrition, and our currently situation in the province and about to exerted the ill children to health facilities.			

		Requesting for hiring of nutrition counselor in needed health facilities.			
		Strengthening of joint supervision PHO (PNO) from all HFs accordingly.			
		Sharing the said gaps with all health facilities' heads in monthly coordination meeting and also sharing the solving progression of the said health problem by facilities' in charges in each monthly coordination meeting conducting in field office.			
		Strictly following up the remedial plan in all health facilities with all technical officers accordingly.			
3	Stunting in the area covered by the SMART survey was 41.7%, Which very high according to the WHO threshold	OHPM technical team will Conduct an emergency reviewing from all those health facilities providing the nutrition related services.	OHPM Nutrition officer, PNO,UNICEF Nutrition extender	Check lists/training budget/Guide line	Dec,2018
		Strengthening of regular effective supervision from all HFs accordingly.			
		Strengthening referring system between different types of health facilities accordingly.			
		Conducting meetings with all health facilities' related CHWs regarding the said issues for community awareness and mobilizing the community as well.			
		conducting TNA in all health facilities are under covering of OHPM by OHPM technical team			
		Providing refresher training for health facilities staff according project training plan.			
		Enhancing community awareness through medical deliberations with local radios about nutrition, and our currently situation in the province and about to exerted the ill children to health facilities.			
		Requesting for hiring of nutrition counselor in needed health facilities.			

		Strengthening joint supervision PHO (PNO) from all HFs accordingly.			
		Sharing the said gaps with all health facilities' heads in monthly coordination meeting and also sharing the solving progression of the said health problem by facilities' in charges in each monthly coordination meeting conducting in field office.			
		Strictly following up the remedial plan in all health facilities with all technical officers accordingly.			
4	**According to the WHO SPHER standard for the National target measles >80%. However, according to the Rapid SMART survey finding the measles coverage was 59.20% which is low than WHO threshold.**	OHPM technical team will Conduct an emergency reviewing from all those health facilities providing EPI related services.	OHPM Nutrition officer /PHO/UNICEF nutrition extender	Check lists/training budget/Guide line	Dec,2018
		Providing defaulter list and following up by CHS and CHWs jointly with vaccinator.			
		Revising monthly outreach and mobile plans in all under OHPM covering health facilities.			
		Increasing mobile and outrage activities in all under OHPM covering health facilities accordingly.			
		Strengthening regular effective supervision from all under OHPM covering HFs accordingly.			
		Conducting meetings with all health facilities' related CHWs regarding the said issues for community awareness and mobilizing the community as well.			
		Strengthening referring of children by CHWs to all types of health facilities accordingly.			
		conducting TNA in all health facilities are under covering of OHPM by OHPM technical team			
		Providing refresher training for health facilities staff according project-training plan and conducted TNA.			

		Enhancing community awareness through medical deliberations with local radios about Measles, and our currently situation in the province.			
		Strengthening joint supervision (PNO, nutrition extender) from all HFs accordingly.			
		Sharing the current gaps with all in-charge of health facilities in monthly coordination meeting and sharing the solving progression of the said health problem by facilities' in charge in each monthly coordination meeting conducting in field office.			
		Strictly following up the remedial plan in all health facilities with all technical officers accordingly.			
5	GAM prevalence of PLWs based on MUAC was 26.2%. Which is very high.	OHPM technical team will conduct evaluation from all under OHPM covering health facilities as soonest time.	PNO/OHPM /UNICEF	Check lists/training budget/Guide line	Dec,2018
		Providing refresher training for health facilities' MWs regarding the said issue according project-training plan.			
		Strengthening supportive supervision from CNNSS site in the province jointly by OHPM technical team and UNICEF nutrition extender accordingly.			
		Providing an incentive for CNNSS sites' CHWs by UNICEF accordingly.			
		Strictly following up the remedial plan in all health facilities with all technical officers accordingly.			
6	**General observation (Poor Hygiene practice, Poor access to safe drinking water, High disease**	Strengthening CLTS evaluating in the province implementing by OHPM in Mata khan district by jointly OHPM technical team and in other district by PHO technical team accordingly.	UNICEF/WHO/WFP/OHPM/IMC/PRRD	Budget/check list, trainers	Feb, 2019
		Providing AFSEN program in Paktika province.			

	rate at the time and poor food security status of the community)	Conducting providing safe water training at community level for CHWs and for community elders.			
		Distributing chlorine and providing community level training about chlorine advantages for CHWs and community elders.			
		Providing deep wells for overall district of Paktika province.			
7	**Most admission of Malnourished Children were based on MUAC in HFs (according to the HFs Registration)**	OHPM technical team will conduct evaluation from all under OHPM covering health facilities as soonest time.	OHPM Nutrition officer/PNO /Nutrition extender	Check lists/training budget/Guide line	30/11/2018
		Conducting TNA in all health facilities are under covering of OHPM by OHPM technical team			
		Providing refresher training for health facilities staff according project-training plan.			
		Strengthening regular effective supervision from all HFs accordingly.			
		Providing on the job training during supportive supervision accordingly.			
		Strictly following up the remedial plan in all health facilities with all technical officers and jointly with PNO, nutrition extender accordingly.			

Anex- 1: Physical Map Paktika

Anex- 2: selected Clusters in the Paktika province

Province_Name	Distract Name	Geographical unit	Population size	Cluster
Paktika	Yahyakhil	سوخت کلی	1071	RC
Paktika	Yahyakhil	قرب الدین	1540	1
Paktika	Sarawza	ځدرک	777	2
Paktika	Sarawza	نوی تالت خیل	1190	RC
Paktika	Sarawza	پاسنی	931	3
Paktika	Khair Kot	شاه گل کلا	2016	4
Paktika	Khair Kot	شیرین کلا	1743	5
Paktika	Khair Kot	شاکی خیل	2800	6
Paktika	Khair Kot	دینارخیل	9450	7
Paktika	Khair Kot	ملنک چمبران	1113	8
Paktika	Jani Khil	انه کلا	637	9
Paktika	Jani Khil	خادلی	315	10
Paktika	Jani Khil	لعل محمد	105	11
Paktika	Naka	تورگل	448	12
Paktika	Omna	څه کمر جماعت	749	13
Paktika	Giana	وړه	973	14
Paktika	Giana	کمال	1673	15
Paktika	Giana	درب کځکی	784	16
Paktika	Sharana	زاولی	3353	17
Paktika	Sharana	سره کلا	3990	18
Paktika	Sharana	نوی کاریز	532	RC
Paktika	Sharana	حاجی امیر	931	RC
Paktika	Sharana	گودا کلا	742	19
Paktika	Urgon	دهنه	903	20
Paktika	Urgon	شینکی	903	21
Paktika	Urgon	عین الدین کوت	490	22

Paktika	Urgon	فیردوس عرسله	518	23
Paktika	Waza khwa	برج	3423	24
Paktika	Waza khwa	ژیری	3423	25
Paktika	Waza khwa	ګړی	16275	26
Paktika	Waza khwa	خارګماه	3255	27
Paktika	Tarwee	جان داد	168	28
Paktika	Mata Khan	نوی چاونی	287	29
Paktika	Khoshamand	حاجی عید محمد	245	30
Paktika	Khoshamand	وچهورړه	245	31
Paktika	Dila	میر علم	3150	32
Paktika	Dila	حاجی غوتی	301	33
Paktika	Zerok	خوس خیل	217	34
Paktika	Zerok	شناوز	651	35
Paktika	Yosufkhil	اوده جماعت	504	36
Paktika	Yosufkhil	شیرابت جماعت	1491	37
Paktika	Yosufkhil	خوجه با با	2086	38
Paktika	Sarobi	نوی لانجی خیل	630	39
Paktika	Sarobi	پانی کلی	273	40
Paktika	Sarobi	شمع خیل	1610	RC
Paktika	Bairmal	تورکنډی ملکی	1260	41
Paktika	Bairmal	صالح خیل	308	42
Paktika	Bairmal	لعل ماجان کلی	609	43
Paktika	Bairmal	خړکوټ	651	44
Paktika	Bairmal	کوت کلی	252	45

Anex- 4: Plausibility check for: Paktika SMART ENA 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 (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	**0** (0.6 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	**0** (p=0.875)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**0** (3)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**2** (8)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**0** (7)
Standard Dev WHZ . .	Excl and Excl	SD SD	<1.1 and >0.9 0	<1.15 and >0.85 5	<1.20 and >0.80 10	>=1.20 or <=0.80 20	**0** (1.08)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	**0** (-0.04)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	**1** (-0.30)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	**1** (p=0.049)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**14** %

The overall score of this survey is 14 %, this is good.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 90 %
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=18/ID=18: HAZ (1.912), Age may be incorrect
Line=41/ID=41: **WHZ (2.309)**, Height may be incorrect
Line=50/ID=50: HAZ (1.780), Age may be incorrect
Line=64/ID=64: HAZ (2.755), Age may be incorrect

Line=120/ID=120: HAZ (1.683), Age may be incorrect
Line=165/ID=165: HAZ (1.633), Age may be incorrect
Line=179/ID=179: **WHZ (3.897)**, Weight may be incorrect
Line=186/ID=186: HAZ (-4.813), Height may be incorrect
Line=194/ID=194: **WHZ (2.980)**, Weight may be incorrect
Line=394/ID=394: WAZ (1.650), Weight may be incorrect
Line=531/ID=531: HAZ (1.654), Age may be incorrect
Line=534/ID=534: **WHZ (3.718)**, Weight may be incorrect
Line=536/ID=536: HAZ (1.814), Age may be incorrect
Line=537/ID=537: HAZ (8.343), WAZ (2.863), Age may be incorrect
Line=556/ID=556: HAZ (-6.687), WAZ (-5.470), Age may be incorrect
Line=664/ID=664: HAZ (1.389), Height may be incorrect
Line=693/ID=693: **WHZ (2.394)**, Height may be incorrect
Line=706/ID=706: HAZ (1.962), Age may be incorrect
Line=715/ID=715: **WHZ (-4.659)**, HAZ (3.127), Height may be incorrect
Line=776/ID=776: HAZ (4.261), WAZ (2.077), Age may be incorrect
Line=782/ID=782: HAZ (2.221), Age may be incorrect
Line=883/ID=931: HAZ (-4.922), Height may be incorrect
Line=903/ID=951: HAZ (1.820), Age may be incorrect
Line=986/ID=1034: HAZ (2.037), Age may be incorrect
Line=1116/ID=1116: HAZ (1.565), Age may be incorrect

Percentage of values flagged with SMART flags:WHZ: 0.6 %, HAZ: 1.9 %, WAZ: 0.4 %

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 : #########

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
6 to 17	12	126/116.7 (1.1)	143/117.9 (1.2)	269/234.6 (1.1)	0.88
18 to 29	12	146/113.8 (1.3)	140/114.9 (1.2)	286/228.7 (1.3)	1.04
30 to 41	12	105/110.3 (1.0)	126/111.4 (1.1)	231/221.7 (1.0)	0.83
42 to 53	12	66/108.5 (0.6)	64/109.6 (0.6)	130/218.2 (0.6)	1.03
54 to 59	6	60/53.7 (1.1)	35/54.2 (0.6)	95/107.9 (0.9)	1.71
6 to 59	54	503/505.5 (1.0)	508/505.5 (1.0)		0.99

The data are expressed as observed number/expected number (ratio of obs/expect)

Overall sex ratio: p-value = 0.875 (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: 0.562

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: **8** (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: **7** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.000 (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:	1.12	1.12	1.08
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	14.0%	14.0%	14.0%
calculated with current SD:	14.3%	14.3%	13.7%
calculated with a SD of 1:	11.6%	11.6%	11.9%
HAZ			
Standard Deviation SD:	1.41	1.36	1.28
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	41.2%	41.2%	41.7%
calculated with current SD:	39.3%	39.1%	39.9%
calculated with a SD of 1:	35.1%	35.3%	37.2%
WAZ			
Standard Deviation SD:	1.10	1.10	1.08
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	29.8%	29.8%	29.8%
calculated with current SD:	31.1%	31.1%	30.9%
calculated with a SD of 1:	29.3%	29.3%	29.6%

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

WHZ	p= 0.048	p= 0.048	p= 0.097
HAZ	p= 0.000	p= 0.000	p= 0.000
WAZ	p= 0.401	p= 0.401	p= 0.061

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

Skewness

WHZ	0.11	0.11	-0.04
HAZ	0.59	0.32	0.12
WAZ	0.00	0.00	-0.05

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	0.31	0.31	-0.30
HAZ	2.29	-0.02	-0.61
WAZ	0.04	0.04	-0.30

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=1.39 (p=0.049)
WHZ < -3: ID=1.21 (p=0.170)
GAM: ID=1.39 (p=0.049)
SAM: ID=1.21 (p=0.170)
HAZ < -2: ID=1.59 (p=0.010)
HAZ < -3: ID=1.46 (p=0.028)
WAZ < -2: ID=1.65 (p=0.005)
WAZ < -3: ID=1.80 (p=0.001)

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: 1.08 (n=42, f=0)  ############
02: 1.30 (n=36, f=1)  ######################
03: 0.91 (n=39, f=0)  #####
04: 1.18 (n=40, f=0)  ################
05: 1.10 (n=39, f=0)  #############
06: 1.31 (n=40, f=0)  ######################
07: 1.06 (n=37, f=0)  ###########
08: 1.17 (n=40, f=0)  ################
09: 0.98 (n=36, f=0)  ########
10: 1.09 (n=38, f=0)  ############
11: 1.14 (n=40, f=0)  ##############
12: 1.13 (n=39, f=0)  ##############
13: 0.95 (n=40, f=0)  ######
14: 1.19 (n=39, f=1)  ################
15: 1.13 (n=33, f=0)  ##############
16: 1.33 (n=33, f=1)  ######################
17: 1.09 (n=33, f=0)  ############
18: 1.12 (n=34, f=0)  ##############
19: 1.17 (n=30, f=1)  ################
20: 1.19 (n=25, f=0)  ################
21: 1.02 (n=28, f=0)  #########
22: 0.90 (n=22, f=0)  ####
23: 1.04 (n=22, f=0)  ##########
24: 0.89 (n=24, f=0)  ####
25: 1.45 (n=22, f=1)  ##########################
26: 0.93 (n=19, f=0)  #####
27: 1.19 (n=18, f=0)  OOOOOOOOOOOOOOOOO
28: 0.90 (n=18, f=0)  OOOO
29: 1.22 (n=17, f=0)  OOOOOOOOOOOOOOOOO
30: 0.82 (n=14, f=0)  O
31: 1.64 (n=13, f=1)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
32: 1.18 (n=11, f=0)  OOOOOOOOOOOOOOO
33: 1.35 (n=09, f=0)  ~~~~~~~~~~~~~~~~~~~~~~
34: 0.77 (n=07, f=0)
35: 0.79 (n=06, f=0)
36: 1.15 (n=06, f=0)  ~~~~~~~~~~~~~~~
37: 1.43 (n=05, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~
38: 1.34 (n=05, f=0)  ~~~~~~~~~~~~~~~~~~~~~~
39: 0.45 (n=03, f=0)
40: 1.08 (n=02, f=0)  ~~~~~~~~~~~~
41: 1.00 (n=02, f=0)  ~~~~~~~~~
42: 0.87 (n=02, f=0)  ~~~
43: 0.48 (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 7 8

n =	60	70	121	141	180	130	170	139
Percentage of values flagged with SMART flags:								
WHZ:	0.0	0.0	0.8	0.0	0.0	1.5	0.6	1.4
HAZ:	0.0	1.4	2.5	0.7	0.6	2.3	2.4	4.3
WAZ:	1.7	0.0	0.0	0.0	0.6	0.0	0.6	0.7
Age ratio of 6-29 months to 30-59 months:								
	1.31	1.50	2.10	1.20	1.25	0.94	1.13	0.93
Sex ratio (male/female):								
	1.31	0.71	1.02	0.86	0.89	0.86	1.15	1.28
Digit preference Weight (%):								
.0 :	5	21	8	9	13	9	14	8
.1 :	17	4	8	9	7	12	14	5
.2 :	15	10	21	10	8	8	12	7
.3 :	10	6	17	11	11	14	11	12
.4 :	10	7	7	6	10	8	7	13
.5 :	5	23	0	13	9	13	9	7
.6 :	8	11	9	6	11	10	12	12
.7 :	12	3	10	9	11	12	9	12
.8 :	12	10	11	19	7	5	4	12
.9 :	7	4	10	7	13	9	9	13
DPS:	12	22	17	12	7	8	10	9

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

Digit preference Height (%):								
.0 :	0	40	15	12	10	19	12	8
.1 :	8	4	3	6	9	1	8	9
.2 :	22	19	16	14	12	12	15	13
.3 :	7	9	11	18	11	12	12	9
.4 :	5	7	5	11	7	15	9	13
.5 :	7	10	16	11	7	10	12	12
.6 :	20	1	10	4	7	16	9	9
.7 :	7	0	3	10	11	5	6	12
.8 :	7	7	7	9	12	5	8	7
.9 :	18	3	15	4	15	5	9	9
DPS:	23	37	16	14	8	19	8	7

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

Digit preference MUAC (%):								
.0 :	0	17	16	11	9	32	9	8
.1 :	15	6	4	5	11	2	14	10
.2 :	15	14	17	16	12	8	8	9
.3 :	5	27	11	12	6	9	7	6
.4 :	3	9	3	11	8	19	12	9
.5 :	12	10	21	13	8	14	18	11
.6 :	15	3	8	11	10	5	9	14
.7 :	12	7	0	4	10	5	6	12
.8 :	10	4	6	11	17	3	8	12
.9 :	13	3	14	6	8	2	8	8
DPS:	17	24	22	12	9	30	12	8

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

Standard deviation of WHZ:

SD	1.20	1.20	1.14	1.12	1.06	1.15	1.03	1.08
Prevalence (< -2) observed:								
%	13.3	24.3	15.7	10.6	20.6	16.2	7.6	8.6
Prevalence (< -2) calculated with current SD:								
%	12.8	20.1	14.7	12.6	20.4	15.6	9.7	10.1
Prevalence (< -2) calculated with a SD of 1:								
%	8.6	15.8	11.4	10.0	18.9	12.3	9.0	8.4

Standard deviation of HAZ:

SD	1.25	1.41	1.57	1.32	1.26	1.33	1.43	1.59
observed:								
%	36.7	41.4	41.3	38.3	45.6	33.8	47.6	39.6
calculated with current SD:								
%	29.9	40.5	40.2	37.9	46.5	32.4	41.9	37.5
calculated with a SD of 1:								
%	25.5	36.8	34.9	34.2	45.6	27.2	38.5	30.6

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	7/7.9 (0.9)	7/6.0 (1.2)	14/13.9 (1.0)	1.00
18 to 29	12	10/7.7 (1.3)	10/5.9 (1.7)	20/13.6 (1.5)	1.00
30 to 41	12	7/7.5 (0.9)	7/5.7 (1.2)	14/13.2 (1.1)	1.00
42 to 53	12	6/7.3 (0.8)	1/5.6 (0.2)	7/12.9 (0.5)	6.00
54 to 59	6	4/3.6 (1.1)	1/2.8 (0.4)	5/6.4 (0.8)	4.00
6 to 59	54	34/30.0 (1.1)	26/30.0 (0.9)		1.31

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.302 (boys and girls equally represented)
Overall age distribution: p-value = 0.189 (as expected)
Overall age distribution for boys: p-value = 0.894 (as expected)
Overall age distribution for girls: p-value = 0.083 (as expected)
Overall sex/age distribution: p-value = 0.050 (as expected)

Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	6/6.7 (0.9)	13/9.5 (1.4)	19/16.2 (1.2)	0.46
18 to 29	12	6/6.6 (0.9)	17/9.3 (1.8)	23/15.8 (1.5)	0.35
30 to 41	12	4/6.4 (0.6)	9/9.0 (1.0)	13/15.3 (0.8)	0.44
42 to 53	12	5/6.3 (0.8)	2/8.8 (0.2)	7/15.1 (0.5)	2.50
54 to 59	6	8/3.1 (2.6)	0/4.4 (0.0)	8/7.5 (1.1)	
6 to 59	54	29/35.0 (0.8)	41/35.0 (1.2)		0.71

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.151 (boys and girls equally represented)
Overall age distribution: p-value = 0.076 (as expected)
Overall age distribution for boys: p-value = 0.060 (as expected)
Overall age distribution for girls: p-value = 0.002 (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	19/14.2 (1.3)	24/13.9 (1.7)	43/28.1 (1.5)	0.79
18 to 29	12	18/13.8 (1.3)	21/13.6 (1.5)	39/27.4 (1.4)	0.86
30 to 41	12	7/13.4 (0.5)	5/13.2 (0.4)	12/26.5 (0.5)	1.40
42 to 53	12	9/13.2 (0.7)	6/12.9 (0.5)	15/26.1 (0.6)	1.50
54 to 59	6	8/6.5 (1.2)	4/6.4 (0.6)	12/12.9 (0.9)	2.00
6 to 59	54	61/60.5 (1.0)	60/60.5 (1.0)		1.02

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.928 (boys and girls equally represented)
Overall age distribution: p-value = 0.000 (significant difference)
Overall age distribution for boys: p-value = 0.106 (as expected)
Overall age distribution for girls: p-value = 0.000 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Team 4:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	16/15.1 (1.1)	19/17.6 (1.1)	35/32.7 (1.1)	0.84
18 to 29	12	18/14.7 (1.2)	24/17.2 (1.4)	42/31.9 (1.3)	0.75
30 to 41	12	17/14.3 (1.2)	19/16.7 (1.1)	36/30.9 (1.2)	0.89
42 to 53	12	9/14.0 (0.6)	13/16.4 (0.8)	22/30.4 (0.7)	0.69
54 to 59	6	5/6.9 (0.7)	1/8.1 (0.1)	6/15.0 (0.4)	5.00
6 to 59	54	65/70.5 (0.9)	76/70.5 (1.1)		0.86

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.354 (boys and girls equally represented)
Overall age distribution: p-value = 0.018 (significant difference)
Overall age distribution for boys: p-value = 0.453 (as expected)
Overall age distribution for girls: p-value = 0.039 (significant difference)
Overall sex/age distribution: p-value = 0.005 (significant difference)

Team 5:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	29/19.7 (1.5)	23/22.0 (1.0)	52/41.8 (1.2)	1.26
18 to 29	12	27/19.2 (1.4)	21/21.5 (1.0)	48/40.7 (1.2)	1.29
30 to 41	12	16/18.6 (0.9)	31/20.8 (1.5)	47/39.5 (1.2)	0.52
42 to 53	12	5/18.3 (0.3)	11/20.5 (0.5)	16/38.8 (0.4)	0.45
54 to 59	6	8/9.1 (0.9)	9/10.1 (0.9)	17/19.2 (0.9)	0.89
6 to 59	54	85/90.0 (0.9)	95/90.0 (1.1)		0.89

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.456 (boys and girls equally represented)
Overall age distribution: p-value = 0.001 (significant difference)
Overall age distribution for boys: p-value = 0.001 (significant difference)
Overall age distribution for girls: p-value = 0.049 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Team 6:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	9/13.9 (0.6)	14/16.2 (0.9)	23/30.2 (0.8)	0.64
18 to 29	12	18/13.6 (1.3)	22/15.8 (1.4)	40/29.4 (1.4)	0.82
30 to 41	12	15/13.2 (1.1)	17/15.3 (1.1)	32/28.5 (1.1)	0.88
42 to 53	12	6/12.9 (0.5)	7/15.1 (0.5)	13/28.1 (0.5)	0.86
54 to 59	6	12/6.4 (1.9)	10/7.5 (1.3)	22/13.9 (1.6)	1.20
6 to 59	54	60/65.0 (0.9)	70/65.0 (1.1)		0.86

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.380 (boys and girls equally represented)
Overall age distribution: p-value = 0.001 (significant difference)

Overall age distribution for boys: p-value = 0.017 (significant difference)
Overall age distribution for girls: p-value = 0.088 (as expected)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Team 7:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	19/21.1 (0.9)	25/18.3 (1.4)	44/39.4 (1.1)	0.76
18 to 29	12	33/20.6 (1.6)	13/17.9 (0.7)	46/38.5 (1.2)	2.54
30 to 41	12	19/20.0 (1.0)	25/17.3 (1.4)	44/37.3 (1.2)	0.76
42 to 53	12	15/19.6 (0.8)	8/17.0 (0.5)	23/36.7 (0.6)	1.88
54 to 59	6	5/9.7 (0.5)	8/8.4 (0.9)	13/18.1 (0.7)	0.63
6 to 59	54	91/85.0 (1.1)	79/85.0 (0.9)		1.15

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.357 (boys and girls equally represented)
Overall age distribution: p-value = 0.044 (significant difference)
Overall age distribution for boys: p-value = 0.025 (significant difference)
Overall age distribution for girls: p-value = 0.017 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

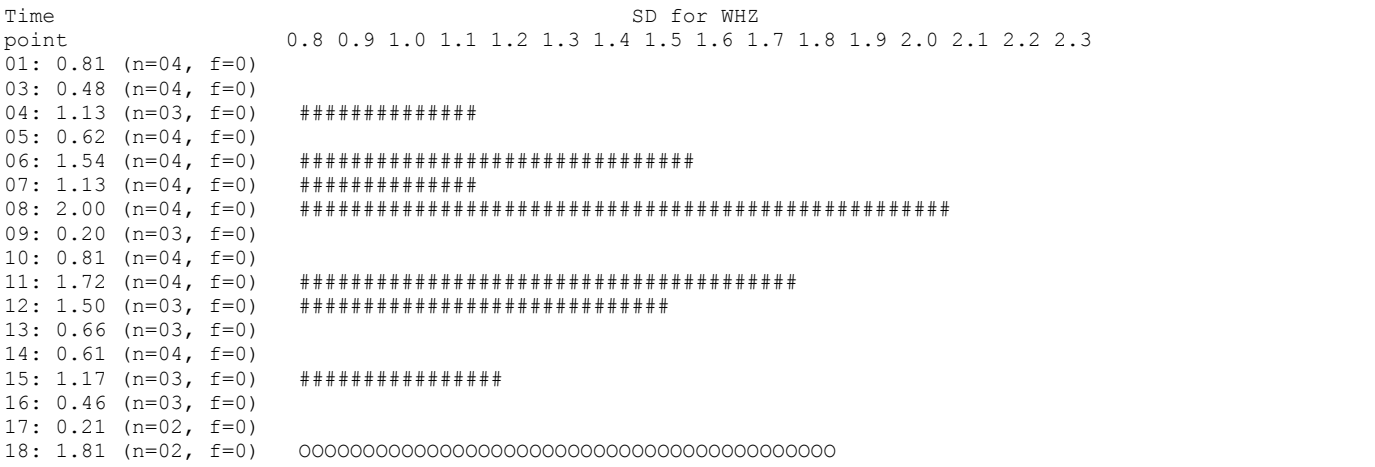
Team 8:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	21/18.1 (1.2)	18/14.2 (1.3)	39/32.3 (1.2)	1.17
18 to 29	12	16/17.6 (0.9)	12/13.8 (0.9)	28/31.4 (0.9)	1.33
30 to 41	12	20/17.1 (1.2)	13/13.4 (1.0)	33/30.5 (1.1)	1.54
42 to 53	12	11/16.8 (0.7)	16/13.2 (1.2)	27/30.0 (0.9)	0.69
54 to 59	6	10/8.3 (1.2)	2/6.5 (0.3)	12/14.8 (0.8)	5.00
6 to 59	54	78/69.5 (1.1)	61/69.5 (0.9)		1.28

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.149 (boys and girls equally represented)
Overall age distribution: p-value = 0.585 (as expected)
Overall age distribution for boys: p-value = 0.483 (as expected)
Overall age distribution for girls: p-value = 0.285 (as expected)
Overall sex/age distribution: p-value = 0.034 (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



(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: 0.53 (n=04, f=0)
02: 1.12 (n=04, f=0)   #############
03: 0.66 (n=03, f=0)
04: 1.91 (n=04, f=0)   ################################################
05: 0.89 (n=03, f=0)   ####
06: 1.82 (n=04, f=0)   ##########################################
07: 0.16 (n=03, f=0)
08: 1.00 (n=04, f=0)   ########
09: 0.63 (n=04, f=0)
10: 1.39 (n=03, f=0)   ########################
11: 1.14 (n=04, f=0)   ###############
12: 1.62 (n=02, f=0)   ##################################
13: 1.41 (n=04, f=0)   ########################
14: 1.08 (n=04, f=0)   ############
16: 0.69 (n=02, f=0)
17: 0.75 (n=02, f=0)
18: 0.64 (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: 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: 0.69 (n=06, f=0)
02: 1.38 (n=06, f=0)   ########################
03: 1.02 (n=04, f=0)   #########
04: 1.20 (n=06, f=0)   ################
05: 0.64 (n=05, f=0)
06: 1.29 (n=05, f=0)   ####################
07: 1.22 (n=06, f=0)   ################
08: 1.22 (n=05, f=0)   ################
09: 0.99 (n=04, f=0)   ########
10: 1.15 (n=06, f=0)   ##############
11: 1.12 (n=06, f=0)   ############
12: 1.36 (n=06, f=0)   ######################
13: 0.80 (n=06, f=0)
14: 1.43 (n=06, f=0)   ############################
15: 1.07 (n=06, f=0)   ############
16: 0.94 (n=02, f=0)   OOOOOO
17: 1.01 (n=03, f=0)   #########
18: 1.34 (n=04, f=0)   ######################
19: 2.81 (n=03, f=1)   ######################################################################
20: 0.91 (n=02, f=0)   OOOOO
21: 0.30 (n=03, f=0)
23: 1.59 (n=02, f=0)   OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
24: 0.10 (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: 1.19 (n=05, f=0)   ################
02: 1.32 (n=03, f=0)   OOOOOOOOOOOOOOOOOOOO
03: 1.10 (n=05, f=0)   #############
04: 0.58 (n=05, f=0)
05: 1.44 (n=05, f=0)   ###########################
06: 0.26 (n=04, f=0)
07: 0.76 (n=05, f=0)
08: 1.20 (n=05, f=0)   ################
09: 1.30 (n=05, f=0)   ####################
10: 0.80 (n=04, f=0)
11: 1.20 (n=04, f=0)   ################
12: 0.82 (n=05, f=0)   #
13: 1.07 (n=05, f=0)   ###########
14: 0.98 (n=04, f=0)   ########
15: 1.14 (n=05, f=0)   ##############
16: 1.35 (n=04, f=0)   ######################
```

```
17: 0.98 (n=05, f=0)   #######
18: 1.59 (n=04, f=0)   ################################
19: 0.89 (n=05, f=0)   ####
20: 1.52 (n=05, f=0)   ##############################
21: 0.85 (n=04, f=0)   ##
22: 1.33 (n=04, f=0)   ######################
23: 1.16 (n=05, f=0)   ################
24: 1.29 (n=04, f=0)   ####################
25: 1.16 (n=05, f=0)   ################
26: 1.14 (n=04, f=0)   ##############
27: 1.08 (n=05, f=0)   ############
28: 0.52 (n=05, f=0)
29: 1.35 (n=04, f=0)   ########################
30: 0.16 (n=02, f=0)
31: 0.37 (n=03, f=0)
32: 0.89 (n=02, f=0)   OOOO
33: 2.44 (n=02, f=0)   OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
(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: 1.39 (n=07, f=1)   ##########################
02: 0.97 (n=07, f=0)   #######
03: 1.13 (n=07, f=0)   ###############
04: 1.23 (n=07, f=0)   ##################
05: 1.33 (n=07, f=0)   ######################
06: 1.41 (n=07, f=0)   ##########################
07: 0.51 (n=05, f=0)
08: 1.15 (n=07, f=0)   ################
09: 1.14 (n=06, f=0)   ###############
10: 0.83 (n=07, f=0)   #
11: 1.43 (n=07, f=0)   ##########################
12: 0.88 (n=07, f=0)   ###
13: 0.80 (n=07, f=0)
14: 0.92 (n=05, f=0)   #####
15: 1.05 (n=06, f=0)   ############
16: 0.99 (n=07, f=0)   ########
17: 1.07 (n=07, f=0)   ############
18: 0.87 (n=07, f=0)   ###
19: 1.18 (n=06, f=0)   ################
20: 0.70 (n=04, f=0)
21: 0.43 (n=05, f=0)
22: 0.90 (n=03, f=0)   OOOO
23: 0.80 (n=02, f=0)
24: 0.20 (n=03, f=0)
25: 1.02 (n=03, f=0)   OOOOOOOOO
26: 1.37 (n=03, f=0)   OOOOOOOOOOOOOOOOOOOOOOOO
27: 0.33 (n=02, f=0)
28: 0.61 (n=02, f=0)
29: 1.16 (n=03, f=0)   OOOOOOOOOOOOOOO
30: 1.17 (n=03, f=0)   OOOOOOOOOOOOOOOO
31: 0.45 (n=03, f=0)
32: 0.78 (n=03, f=0)
33: 1.03 (n=03, f=0)   OOOOOOOOOO
34: 0.91 (n=03, f=0)   OOOOO
35: 0.82 (n=02, f=0)   O
36: 0.51 (n=02, f=0)
37: 1.05 (n=02, f=0)   OOOOOOOOOO
38: 1.16 (n=02, f=0)   OOOOOOOOOOOOOOO
(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: 0.84 (n=05, f=0)   ##
02: 1.17 (n=04, f=0)   ################
03: 1.20 (n=05, f=0)   ##################
04: 1.66 (n=05, f=0)   ####################################
```

```
05: 0.51 (n=05, f=0)
06: 1.24 (n=05, f=0)    ###################
07: 1.19 (n=05, f=0)    ##################
08: 0.50 (n=05, f=0)
09: 0.60 (n=05, f=0)
10: 0.61 (n=05, f=0)
11: 0.26 (n=05, f=0)
12: 1.31 (n=05, f=0)    ####################
13: 0.76 (n=04, f=0)
14: 1.64 (n=05, f=1)    ###################################
15: 0.90 (n=04, f=0)    ####
16: 1.83 (n=05, f=0)    ##########################################
17: 1.62 (n=04, f=0)    ###################################
18: 1.23 (n=05, f=0)    ##################
19: 0.35 (n=04, f=0)
20: 1.19 (n=04, f=0)    ##################
21: 1.06 (n=04, f=0)    ###########
22: 0.37 (n=04, f=0)
23: 1.04 (n=04, f=0)    ##########
24: 1.16 (n=03, f=0)    ###############
25: 3.08 (n=03, f=1)    ######################################################################
26: 0.13 (n=02, f=0)
27: 0.38 (n=02, f=0)
28: 1.26 (n=02, f=0)    OOOOOOOOOOOOOOOOOO
29: 1.07 (n=02, f=0)    OOOOOOOOOOO
30: 0.79 (n=02, f=0)
31: 2.52 (n=02, f=0)    OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
(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: 7

```
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: 0.90 (n=06, f=0)    ####
02: 0.65 (n=06, f=0)
03: 0.38 (n=06, f=0)
04: 0.71 (n=05, f=0)
05: 1.27 (n=06, f=0)    ####################
06: 0.81 (n=06, f=0)    #
07: 0.77 (n=06, f=0)
08: 0.56 (n=06, f=0)
09: 1.35 (n=05, f=0)    ########################
10: 0.92 (n=04, f=0)    #####
11: 1.02 (n=05, f=0)    #########
12: 0.84 (n=06, f=0)    ##
13: 0.77 (n=06, f=0)
14: 1.37 (n=06, f=0)    ########################
15: 0.78 (n=04, f=0)
16: 1.05 (n=05, f=0)    ##########
17: 0.95 (n=05, f=0)    ######
18: 0.91 (n=06, f=0)    #####
19: 0.87 (n=06, f=0)    ###
20: 1.13 (n=06, f=0)    ##############
21: 0.95 (n=06, f=0)    ######
22: 1.14 (n=06, f=0)    ##############
23: 1.02 (n=04, f=0)    #########
24: 0.95 (n=06, f=0)    ######
25: 1.27 (n=05, f=0)    ####################
26: 0.85 (n=05, f=0)    ##
27: 1.67 (n=04, f=0)    ###################################
28: 1.13 (n=04, f=0)    ##############
29: 1.10 (n=04, f=0)    ##############
30: 0.00 (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: 8

```
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: 1.00 (n=05, f=0)    ########
```

```
02: 2.10 (n=05, f=1)    ######################################################
03: 0.98 (n=05, f=0)    ########
04: 0.72 (n=05, f=0)
05: 1.75 (n=04, f=0)    ########################################
06: 1.84 (n=05, f=0)    ############################################
07: 1.40 (n=03, f=0)    ########################
08: 0.62 (n=04, f=0)
09: 0.49 (n=04, f=0)
10: 1.31 (n=05, f=0)    ######################
11: 0.71 (n=05, f=0)
12: 0.99 (n=05, f=0)    ########
13: 0.98 (n=05, f=0)    ########
14: 0.55 (n=05, f=0)
15: 0.97 (n=04, f=0)    #######
16: 1.92 (n=05, f=1)    ################################################
17: 0.62 (n=05, f=0)
18: 0.37 (n=04, f=0)
19: 0.38 (n=04, f=0)
20: 1.58 (n=03, f=0)    ################################
21: 0.85 (n=05, f=0)    ##
22: 0.60 (n=04, f=0)
23: 0.62 (n=05, f=0)
24: 0.82 (n=05, f=0)    #
25: 1.00 (n=04, f=0)    ########
26: 0.48 (n=03, f=0)
27: 1.67 (n=03, f=0)    ####################################
28: 0.85 (n=03, f=0)    ##
29: 1.17 (n=03, f=0)    ###############
30: 0.35 (n=03, f=0)
31: 0.44 (n=02, f=0)
32: 1.24 (n=02, f=0)    OOOOOOOOOOOOOOOOO
36: 0.91 (n=02, f=0)    OOOO
(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)

10. REFERENCES

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