AFGHANISTAN

Nutrition & Mortality SMART Survey
Final Report

Nangarhar Province, Afghanistan

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Abbreviations

ACF	Action contra la Faim/Action against Hunger
ADDA	Agency for Assistance and Development of Afghanistan
BCG	Bacillus Calmette Guerin
CDR	Crude Death Rate
CSO	Central Statistics Organization
ENA	Emergency Nutrition Assessment
GAM	Global Acute Malnutrition
HH	Household
IYCF	Infant and Young Child Feeding
MOPH	Minister of Public Health
MUAC	Mid Upper Arm Circumference
NNS	National Nutrition Survey
OW	observed Weight
OCHA	Office for the Coordination of Humanitarian Affairs
PPS	Proportional Population Size
PND	Public Health Nutrition Department
RC	Reserve Cluster
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SMART	Standardized Monitoring and Assessment of Relief and Transition
SM	Strengthen Mechanism
MW	Mean Weight
WFP	World Food Program
WASH	Water Sanitation and Hygiene
WHZ	Weight for Height Z score
W/H	Weight for height
WHO	World Health Organization
U5DR	Under five Death Rates
U5	Under five
UNICEF	United Nation Children's Fund

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Executive summery

The Integrated SMART survey was conducted from 5th November to 7th December 2016, in all districts of Nangarhar province. A total of 588 randomly selected households were assessed. This report provides a summary of the methodology used, U5 children nutrition, maternal

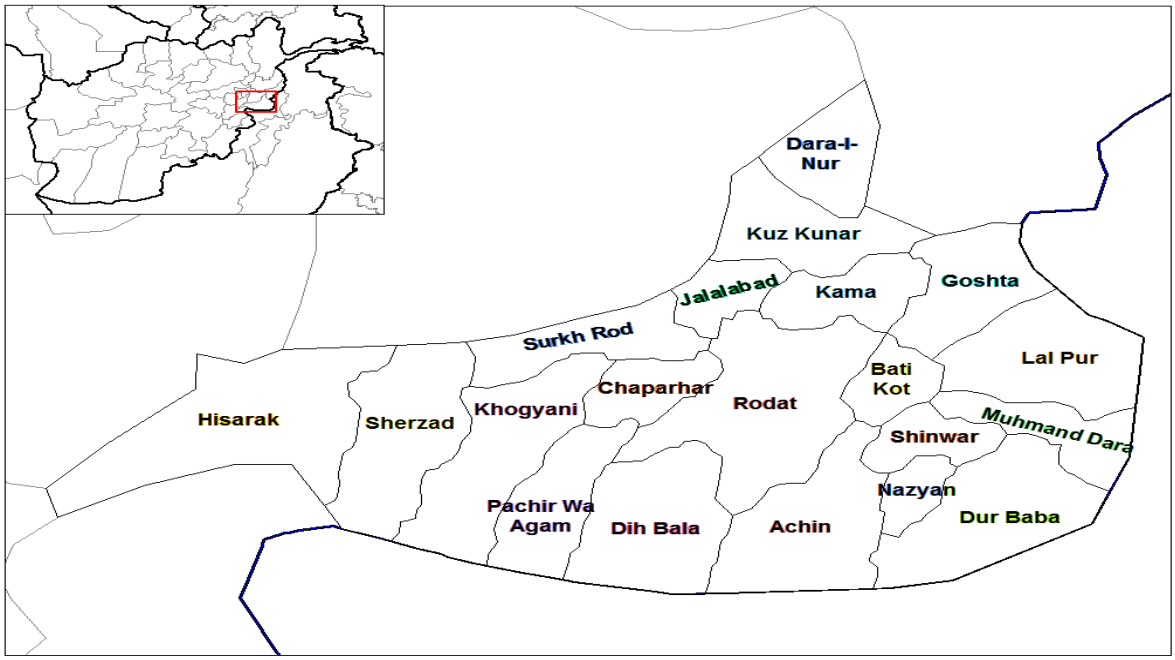
nutrition status, hygiene and sanitation practices and FSL analysis and interpretation of survey finding and recommendation proposed.

Summary findings

- A total of **4098** individuals living in **588** households were assessed. Out of them **895** were children aged 0-59 months, **841** were children aged 6-59 months and **636** were women in the childbearing age in the selected households.
- The combine GAM and SAM caseload based on MUAC and WHZ on both criteria were **17.0 % (14.5-19.5 95 CI)** and **4.9 %(3.4-6.3 95 CI)** respectively.
- Prevalence of Global Acute Malnutrition (GAM) and sever acute malnutrition (SAM) based on Weight for Height was at **12.6% (10.1-15.5 95% CI)** and **3.0% (1.9- 4.7 95% CI).**
- Prevalence of global acute malnutrition based on MUAC was at **7.4% (4.9-11.1 95% CI)** while sever acute malnutrition was at **1.7% (0.8- 3.7 95% CI).**
- Prevalence of underweight was at **26.9% (22.6-31.7 95% CI)** while sever underweight was at **8.2% (6.1-11.0 95% CI).**
- Prevalence of stunting or chronic malnutrition was at **39.5% (34.6-44.7 95% CI)** and sever stunting was at **13.9% (10.7-17.8 95% CI).**
- Crude and U5 mortality rate was **0.19**(0.08-0.42 95% CI) and **0.18** (0.04- 0.75 95% CI) respectively.
- Nutrition status of childbearing aged women was at **8.5%** respectively.
- Immunization coverage such as Measles both by card and recall, BCG confirmed by scar and Polio both by card and recall were at **84.7%, 96.6%** and **96.3%** respectively.
- Over all morbidity in the past two week prior to the survey was 83.1% respectively.

Introduction

Nangarhar is one of the 34 provinces of Afghanistan, situated in eastern part of the country. It is divided into twenty-two districts and has a population of about 1,517,388[1]. The city of Jalalabad is the capital of Nangarhar province. Nangarhar borders Laghman , Konar, Noristan ,Paktia and along to Peshawar (Pokhton khwa), Nangarhar has 22 districts such as Darah-e-Noor Kot, Goshta,Achin, Shinwari, Mohmond Darah, Lalpora, Sherzad, Nazyan, Hesarak, Durbaba, Behsud, Surkhrod, Chaperhar, Kuzkonar (Khewa), Rodat, Khugyani, Batikote, Deh Bala , Pachir-w-Agam and Jalalabad Is the capital of the province.



Survey objectives

General objective

The core purpose of this exercise was to measure the nutritional status and explore the factor associated with the prevalence of malnutrition .among under five year children, pregnant and lactating women's living in Nangarhar province

Specific objectives

- To estimate Crude Death Rate(CDR) and Under five Death Rate(U5DR)
- To determine prevalence of under nutrition among children aged 0-59 months
- To determine core Infant and Young Child Feeding(IYCF) practices among children aged 0-23 months

[1] CSO update population for 1394 (2015 - 2016)

- To determine the nutritional status of pregnant and lactating women based on MUAC assessment
- To assess Water, Sanitation and Hygiene (WASH) proxy indicators: household water storage, water use and caregiver hand washing practices.
- To estimate vitamin A supplementation and deworming coverage in the last 6 months among under-fives
- To estimate Iron-folate supplementation coverage among pregnant women.
- To estimate coverage of measles and BCG vaccination
- To assess morbidity among children 0-59 months based on a two weeks recall period.
- To assess food access and consumption on seven days recall period: households levels.

Justification

The justification of the proposed assessment is to estimate the current prevalence of under-nutrition among vulnerable populations in Nangarhar province. The survey was also investigate the current mortality rates, child health status (morbidity, immunization and supplementation), nutritional status of women of reproductive age (15-49 years) with special focus on pregnant and lactating women, IYCF and WASH practices. The last assessment that provided information on nutritional status of under-five was conducted through the Nutrition SMART Survey in 2015 and GAM rates was at poor levels of WHO classification. There is a need to investigate on the current prevalence of under-nutrition in the province. The Survey findings will used to inform future programing in the Nangarhar province. It was also serve as a good opportunity of building the capacity of ADDA and other stakeholders.

Methodology

Sample Size

The sample size of households to be surveyed was determined using ENA for SMART software version 2011 (up dated 9th July 2015). A two stage cluster sampling methodology was applied. In first stage, it involves random selection of clusters/villages (49 clusters) from total list of villages using probability proportion to size (PPS). This was done before starting the data collection at in ADDA office training hall in front of the partner survey focal point and enumerators . Villages were the primary sampling unit for the proposed survey. In the second stage of methodology, random selection of household (13 households) was done from an updated list of households. This was conducted at the field level. Households were the basic sampling unit for the proposed survey. The table 1 and 2 highlights sample size calculation for anthropometric and mortality surveys.

Table 1: Parameters for sample size calculation of anthropometric indicators, Nangarhar SAMRT, Nov 2016

Parameters for Anthropometry	Value	Assumptions based on context
Estimated prevalence of GAM (%)	7.9%	Global Acute Malnutrition (GAM) prevalence (WHZ) for Nangarhar SMART survey was estimated at 5.6 % (95 % CI: 3.9 – 7.9) with a Standard Deviation (SD) of 1.1[2]. The SD was in the range of recommended limit of 0.85-1.2. A review of the available secondary data gave us indication of a possible more dependable GAM estimates. For this reason we use (7.9 %) the highest percentage of the confidential interval due to the highest priority of morbidity in the province according to the last quarter of HMIS routine data in 2016.
± Desired precision	±2.5	It was based on survey objectives in line to estimated prevalence and SMART methodology recommendations. If we use an estimate point prevalence of 7.9% as our predicted GAM prevalence then a precision of. ±2.5 is recommended.
Design Effect *(if applicable)*	1.5	The population living in the targeted districts is considered as having similar living conditions and the same access to food and social conditions. Nevertheless, access to health facilities cannot be estimated as similar within the targeted population as some remote areas are not well served by health facilities. Hence the design effect was estimated at 1.5.
Children to be included	**730**	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 was surveyed.)
Average HH Size	7.8	Based on Nangarhar Nutrition SMART Survey 2015, the average household size was **7.8** – It's the most recent result data available.
% Children under-5	17.1%	Based on Nangarhar nutrition SMART survey 2014/2015. It is the most recent result data available.
% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%. Using the same percentage as that of most experience in the last assessments. The non-response rate was cater for unforeseen circumstances to include refusal, absenteeism or population movements
Households to be included	**647**	Minimum sample size-Households surveyed. Households was the basic sampling unit for the SMART survey

[2] Nangarhar Nutrition SMART Survey of (2015)

Table 2: Sample size calculation for mortality surveys, Nangarhar SMART, Nov 2016

Parameters for Mortality	Value	Assumptions based on context
Estimated Death Rate /10,000/day	**0.4/10000/day**	Based on Nangarhar Nutrition and mortality SMART survey 2014/2015
± Desired precision /10,000/day	**0.3**	Based on survey objectives and inline to estimated death rate
Design Effect *(if applicable)*	**1.5**	This was caters for heterogeneity in the population being sampled
Recall Period in days	130	Starting point of recall period was done (from the start of Eid Ramadan). 16th Saratan1395 the date of recall is equivalent to 6th July 2016 as per Gregorian calendar.
Population to be included	**2,323**	Population
Average HH Size	**7.8**	Based on Nangarhar nutrition and mortality SMART survey 2015
% Non-response Households	**6%**	The percentage of non-respondent households was estimated at 6%. Using the same percentage as that of most experience in the last assessments. The non-response rate was cater for unforeseen circumstances to include refusal, absenteeism or population movements.
Households to be included	**317**	Households

Sample Size for Additional Indicators:

The sample size for IYCF indicators will be calculated by using the Care international IYCF calculator, based on WHO, 2010[3] core IYCF indicators as highlighted in table 4. The core indicators include: Exclusive Breastfeeding Rate (EBF); timely initiation of breastfeeding; minimum dietary diversity and minimum meal frequency. During survey data collection, a stratified proportionate sampling methodology will be applied.

Table 3: Sample size calculation for IYCF indicators, Nangarhar SMART, Nov 2016

Parameters for Anthropometry	Value	Assumptions based on context
Estimated Prevalence of indicator (%)	50%	No recent data, a standard prevalence of 50 % recommended by WHO will be used
± Desired precision	8%	Based on survey goals.
Design Effect *(if applicable)*	2	Caters for heterogeneity within the population under study.
Survey subjects to be included	**327**	**Children form 0-23 months**
Average HH Size	7.7	National Nutrition Survey 2013
% Non-response Households	6%	From the past experiences of Afghanistan assessments due to sensitivities about mortality information.
Households to be included	**330**	**House holds**

[3] WHO 2010, Indicators for Assessing Infant and Young Child Feeding Practices

Sampling Methodology

A two-stage cluster sampling methodology was employed.

In the stage 1, random selection of clusters/villages was done using probability proportionate to size (PPS) using ENA for SMART software version 2011 of (9th July, 2015). A list of all updated villages (467) was amounted into the ENA for SMART software where PPS was applied. The villages with large population have a higher chance of being selected than villages with small population and vice versa. Reserve Clusters (RCs) was also be selected by ENA software version 2011(updated 9th July 2015). Reserve clusters was only be used if 10% or more clusters was impossible to reach during the survey as highlighted in Annex 1. A total of 50 clusters was covered if each survey team completes anthropometric measurements in 13 households in a day (647/13=49.7clusters). It was round up to 50 clusters, in each selected village; one or more community member(s) was asked to help the survey teams to conduct their work by providing information about the village with regard to the geographical organization or the number of households. In cases where there are large villages in a cluster, the village was divided into smaller segments and a segment was selected randomly to represent the cluster. This division was done based on existing administrative units e.g. neighborhoods, or streets or natural landmarks like river, road, or public places like market, schools, and mosques.

In the Stage 2, random selection of households from updated and complete list of households within a given village. In this case the actual survey data collection, was incorporate 660 households randomly selected based on survey parameters calculation for anthropometric. Based on total sample size each team can cover effectively 13 households in a day. In this assessment, 6 teams were engaged during the assessments, while data collection is expected to last 8-9 days. All households was enumerated and given numbers by the survey team. The 13 households was chosen randomly from these enumerated households, by randomly drawing household numbers required from a hat or using a random number table generated from ENA for SMART software. In cases where it is difficult to obtain an updated list of households systematic random sampling was used to identify the households to be surveyed. The teams were trained on both methods of sampling (simple and systematic random sampling) and they was also be offered with materials to assist in determining the households during the data collection exercise.

All the children living in the selected house aged (0 to 59) months old were included for anthropometric measurements. Children aged (0-23) months were included for IYCF measurements. If more than one eligible child is found in a household, both were included, even if there are twins. Eligible orphans living in the selected Households were also be surveyed. All of the selected HH were included in the mortality survey as well as was respond to questions concerning the HH as a whole (ex. water storage).

Any empty households, or households with missing or absent children was revisited at the end of the sampling day in each cluster; any missing or absent children that was not be subsequently found was not be included in the survey. A cluster control form was used to record all these missed and absent households.

Table 4: Details of proposed and actual sample size achieved, Nangarhar SAMRT, Nov 2016

Number of households planned	Number of households surveyed	% surveyed /planned	Number of children 6-59 months planned	Number of children 6-59 months surveyed	% surveyed /planned
647	588	96.8%	730	841	115.2 %

The households were the basic sampling unit. The term households were defined as all people eating from the same pot and living together under one roof (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 then identifying compound together with the use of the list of households within the community, asking if there are multiple cooking areas to determine what members of the household/compound should be included in the study.

Training, team composition and supervision

Six teams of four member's e conducted the field data collection. Each team was composed of one supervisor, one team leader and two data collector. Each team was having at least one female data collectors to ensure acceptance of the team amongst the surveyed households; particularly for IYCF questionnaires. Each female member of the survey team was accompanied with a mahram[4] to facilitate the work of the female data collectors at the community level. The teams were supervised by ACF Nutrition SMART Program manager/ Deputy Manager and AADA Nutrition focal point and PNO.

The entire teams received a 7-days training on the survey methodology and all its practical aspects; conducted by ACF Nutrition SMART Senior Program Manager. A standardization test was conducted over the course of 1day, measured 8 children, in order to evaluate the accuracy and the precision of the team members in taking the anthropometrics measurements. A one-day field test was conducted by the teams in order to evaluate their work in real field conditions. Feedback was provided to the team in regard to the results of the field test; particularly in relation to digit preferences and data collection. Refresher training on the anthropometric measurement and on the filling of the questionnaires and the household's selection was organized on the last day of the training by ACF to ensure overall comprehension before going to the field.

One field guideline document with instructions and household definition and selection document was provided to each team member. All documents, such as local event calendar, questionnaires or consent forms were translated in Pashtu, local language, for better

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

understanding and to avoiding direct translation during the data field collection. The questionnaires were back translated using a different translator and was pre-tested during the field test. Alterations were made as necessary.

Data analysis

Anthropometric and mortality data were studied using ENA for SMART software 2011 version (updated 9th July 2015). ENA for SMART Result generated automatically survey report for acute malnutrition (WHZ and MUAC), stunting (HAZ) and underweight (WAZ), anthropometric and mortality results are presented in (%) with 95 % Confidential interval and additional indicators (IYCF, Morbidity and immunization) were studied using excel 2010.

INDICATORS: DEFINITION, CALCULATION and INTERPRETATION

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

Acute Malnutrition

Acute malnutrition in children 0-59 months can be expressed by using 2 indicators; Weight for Height (W/H) or Mid Upper Arm Circumference (MUAC) 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 weight-for-height index in Z-score will be calculated on the field for each child in order to refer malnourished cases to appropriate centre if needed. Moreover, the results will be presented in Z-score 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 5 provides the cut-off criteria for categorizing acute malnutrition cases.

Table 5: MUAC cut-offs points for children aged 6-59 months

Target group	MUAC (mm)	Nutritional status
Children 6-59 months	> or = 125 and < 135	No malnutrition
	< 125 and > or = 115	Moderate Acute Malnutrition(MAM)
	< 115	Severe Acute Malnutrition(SAM)

Nutritional bilateral "pitting" oedema

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

Table 6: Definition of acute malnutrition according to weight-for-height index (W/H), expressed as a Z-score based on WHO standards

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

Chronic Malnutrition

The height-for-age index (H/A)

The height-for-age measure indicates if a child of a given age is stunted and so if he is chronically malnourished. This index reflects the nutritional history of a child rather than his/her current nutritional status. This is mainly used to identify chronic malnutrition. The same principle is used as for weight-for-height; except that a child's chronic nutritional status is estimated by comparing its height with WHO standards height-for-age curves, as opposed to weight-for-height curves. The height-for-age index of a child from the studied population is expressed in Z-score (HAZ). The HAZ cut-off points are presented in table 7.

Table 7: **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

Mortality Indicator Calculation

The mortality indicators included all households, regardless of the presence of children. All members of the household will be counted, using the household definition.

Crude death rate (CDR)

The number of persons in the total population that dies over specified period of time.

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

Under-5 death rate (U5DR)

The number of children aged (0-5) years who die over specified period of time. Calculated as:

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

Health

Beside anthropometric data, additional information will be collected as follows:

- **Immunization status, deworming and vitamin A supplementation**

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

- **Morbidity**

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

- **Mothers nutritional status and Iron/Folate supplementation for pregnant**

Women in childbearing age will be assessed for their nutritional status based on MUAC using the cut-off of 230 mm.

WASH

- **Water storage and Usage**

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

- **Hand washing practices**

The mothers will be asked on what occasions they wash their hands and also what they use to wash their hands to determine the hand washing practices in the surveyed area.

Infant and Young Child Feeding Practices Indicators (IYCF)

The IYCF indicators used in the measurement of infant and young child feeding practices asked to the mothers/caretakers of children aged 0-23 months are described as follows.

- **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's 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 is based on historical recall, and a caregiver(s) is supposed to provide information of all children living or dead who were born in the last 24 months. This indicator will be looking at the number of mothers who ever breast fed their children. This indicator will be based on historic recall.

- **Timely initiation of breastfeeding**

Proportion of children born in the last 23 months who were put to the breast within one hour of birth. Proportion of children born in the last 23 months who were put to the breast within one hour of birth. The indicator is calculated by dividing the number of children born in the last 24 months who were put to the breast within one hour of birth by children born in the last 24 months. The denominator and numerator include living children and deceased children who were born within the past 24 months. This indicator will also be based on historical recall

- **Provision of colostrum in the first 3 days of life**

Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth. Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth. This indicator will look at the number of mothers with children 0-23 months who fed their children with Colostrum within the first 3 days after birth.

- **Exclusive breastfeeding under 6 months**

Proportion of infants 0-5 months of age who are fed exclusively with breast milk. Proportion of infants 0-5 months of age who are fed exclusively with breast milk. **Its 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.

- **Continued breastfeeding at 1 year**

Proportion of children 12 – 15 months of age who are fed with breast milk. Proportion of children 12 – 15 months of age who are fed with breast milk. It's 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

- **Introduction of solid, semi-solid or soft foods:**

Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods. Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods. Its calculated by diving 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 2 years**

Proportion of children 20–23 months of age who are fed breast milk. Proportion of children 20–23 months of age who are fed breast milk. It's 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.

Maternal Health and Nutrition

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

Survey Findings

Anthropometric results (WHO standards 2006)

The results are presented with exclusion of z- score from observed mean SAMRT flags: WHZ-3to +3, HAZ -3 to +3 and WAZ -3to +3. Percentage of Values flagged with SMART flags was classified as excellent (WHZ, HAZ and WAZ). The sex ratio was equally representative (p-value = 0.285).for complete plausibility check report refer to Annex 1 automatically generated from ENA software.

Table 8: Distribution of aged and sex of sample, Nangarhar SMART, Nov 2016.

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy : girl**
6-17	132	53.2	116	46.8	248	29.5	1.1
18-29	114	50.4	112	49.6	226	26.9	1.0
30-41	96	53.9	82	46.1	178	21.2	1.2
42-53	61	48.4	65	51.6	126	15.0	0.9
54-59	33	52.4	30	47.6	63	7.5	1.1
Total	436	51.8	405	48.2	841	100.0	1.1

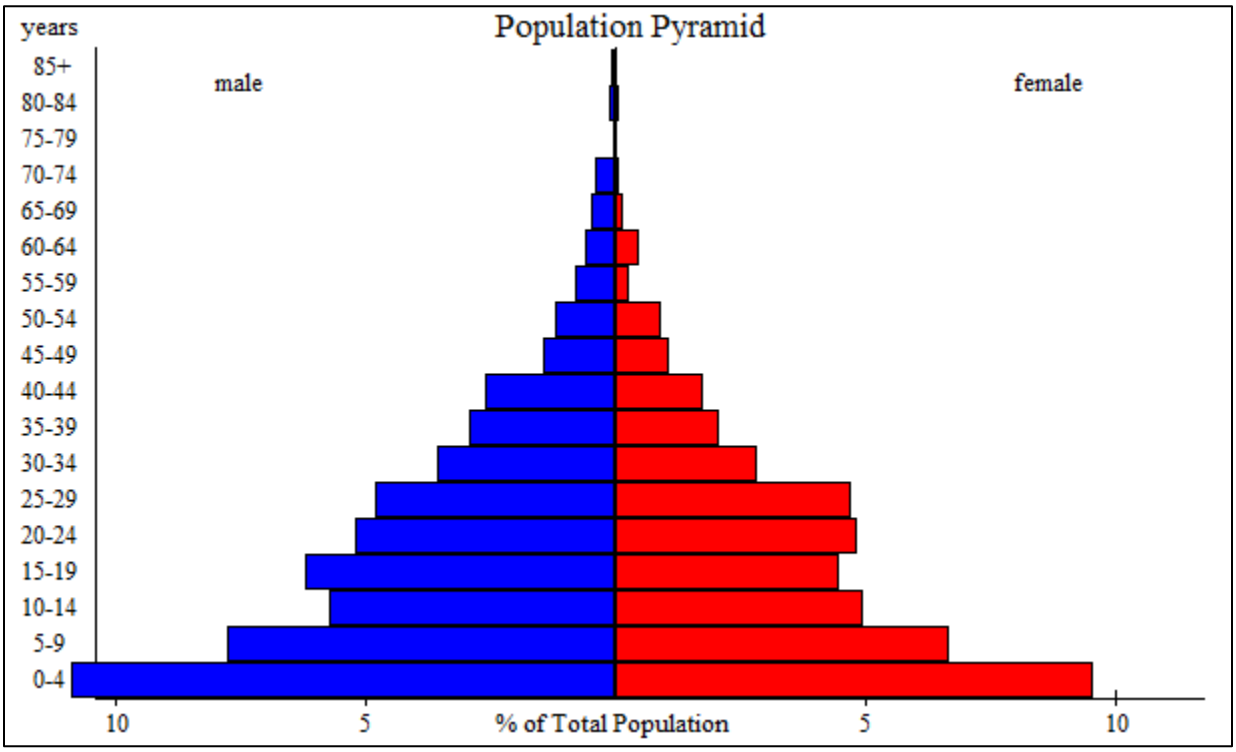


Figure 1: Population age and sex pyramid, Nangarhar SMART November 2016.

Quality of anthropometric data

The digit preference score of the survey teams were classified as a "good" for all .The sex ratio was within accepted limits, while the age ratio was above the limit of 0.85. This suggests slightly biased sample, including more children form the older age groups. Standard deviations are within accepted limits.

2 clusters were missed due to ongoing fighting in the selected area during assessment based on SMART methodology no need to cover the RCs and it was less than 10 % refused

The summary of Mean Z- score with their standards deviations, the design effect in number of the out of the range data for index is the below table.

Table 9: Mean z-scores, Design Effects and excluded subjects, Nangarhar SMART, November 2016

Indicator	N	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	828	-0.69±1.09	1.35	0	13
Weight-for-Age	828	-1.30±1.12	2.16	0	13
Height-for-Age	794	-1.52±1.31	2.08	0	47

Prevalence of Acute malnutrition (Weight-for- height Z score and /or oedema).

The sex and age disaggregated results are presented in Table 8 and 9 respectively. The Prevalence of wasting is higher among boys as compared to girls. The younger Children (6-29 months) seem to be more affected than older (30-59 months). There was no edematous case.

Table 10: Prevalence of acute malnutrition based on weight for height z score (and / or edema) and by sex, Nangarhar SMART, Nov 2016.

	All n = 828	Boys n = 431	Girls n = 397
Prevalence of global malnutrition (<-2 z-score and/or edema)	(104) 12.6 % (10.1 - 15.5 95% C.I.)	(61) 14.2 % (10.5 - 18.8 95% C.I.)	(43) 10.8 % (8.5 - 13.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no edema)	(79) 9.5 % (7.6 - 11.9 95% C.I.)	(46) 10.7 % (7.8 - 14.4 95% C.I.)	(33) 8.3 % (6.2 - 11.0 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or edema)	(25) 3.0 % (1.9 - 4.7 95% C.I.)	(15) 3.5 % (2.1 - 5.6 95% C.I.)	(10) 2.5 % (1.3 - 4.7 95% C.I.)

The prevalence of edema is 0.0 %

Table 11: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema, Nangarhar SMART, Nov 2016

		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	244	10	4.1	30	12.3	204	83.6	0	0.0
18-29	223	9	4.0	23	10.3	191	85.7	0	0.0
30-41	174	1	0.6	12	6.9	161	92.5	0	0.0
42-53	125	3	2.4	11	8.8	111	88.8	0	0.0
54-59	62	2	3.2	3	4.8	57	91.9	0	0.0
Total	828	25	3.0	79	9.5	724	87.4	0	0.0

Table 12: Distribution of acute malnutrition and oedema based on weight-for-height z-scores, Nangarhar SMART, Nov 2016

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 31 (3.7 %)	Not severely malnourished No. 810 (96.3 %)

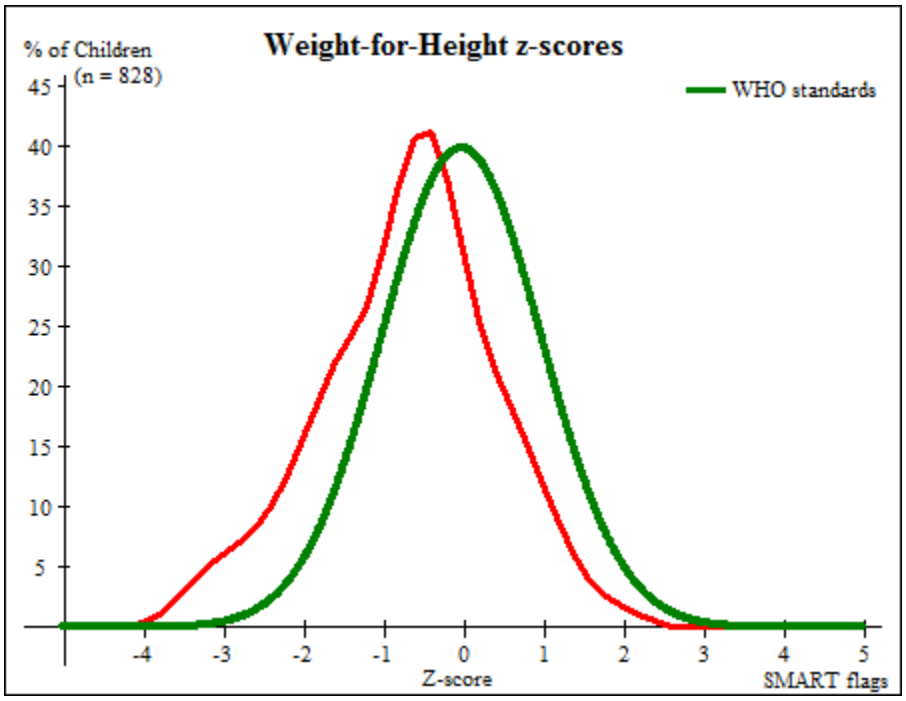


Figure 2: Distribution curves weight -for-height, Nangarhar SMART, November 2016

Table 13: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex, Nangarhar SMART, Nov 2016.

	All n = 834	Boys n = 431	Girls n = 403
Prevalence of global malnutrition (< 125 mm and/or oedema)	(62) 7.4 % (4.9 - 11.1 95% C.I.)	(20) 4.6 % (2.4 - 8.9 95% C.I.)	(42) 10.4 % (7.2 - 14.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(48) 5.8 % (3.8 - 8.6 95% C.I.)	(17) 3.9 % (1.9 - 7.9 95% C.I.)	(31) 7.7 % (5.3 - 11.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(14) 1.7 % (0.8 - 3.7 95% C.I.)	(3) 0.7 % (0.2 - 2.1 95% C.I.)	(11) 2.7 % (1.2 - 6.2 95% C.I.)

Prevalence of MUAC cut of classification

The prevalence of acute malnutrition based on MUAC cut-off is presented in Table 12. The younger children (6-29 months) seem to be more affected than older (30-59 months).

Table 14: Prevalence of acute malnutrition by age, based on MUAC cut offs 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	241	11	4.6	34	14.1	196	81.3	0	0.0
18-29	226	2	0.9	10	4.4	214	94.7	0	0.0
30-41	178	0	0.0	2	1.1	176	98.9	0	0.0
42-53	126	0	0.0	2	1.6	124	98.4	0	0.0
54-59	63	1	1.6	0	0.0	62	98.4	0	0.0
Total	834	14	1.7	48	5.8	772	92.6	0	0.0

PREVALENCE OF UNDERWEIGHT (WHO 2006)

The underweight is defined by weight-for-age z-scores (WAZ). The sex and age disaggregated results are represented in table 13.

Table 15: Prevalence of underweight based on weight-for-age z-scores by sex, Nangarhar SMART, Nov 2016

	All n = 828	Boys n = 427	Girls n = 401
Prevalence of underweight (<-2 z-score)	(223) 26.9 % (22.6 - 31.7 95% C.I.)	(112) 26.2 % (21.1 - 32.1 95% C.I.)	(111) 27.7 % (22.8 - 33.1 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(155) 18.7 % (15.6 - 22.3 95% C.I.)	(77) 18.0 % (14.5 - 22.2 95% C.I.)	(78) 19.5 % (15.3 - 24.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(68) 8.2 % (6.1 - 11.0 95% C.I.)	(35) 8.2 % (5.4 - 12.3 95% C.I.)	(33) 8.2 % (5.8 - 11.5 95% C.I.)

Table 16: Prevalence of underweight by age, based on weight-for-age z-scores Nangarhar SMART, November 2016

		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	243	19	7.8	49	20.2	175	72.0	0	0.0
18-29	223	29	13.0	42	18.8	152	68.2	0	0.0

30-41	173	13	7.5	28	16.2	132	76.3	0	0.0
42-53	126	4	3.2	22	17.5	100	79.4	0	0.0
54-59	63	3	4.8	14	22.2	46	73.0	0	0.0
Total	828	68	8.2	155	18.7	605	73.1	0	0.0

PREVALENCE OF STUNTING BASED ON HEIGHT-FOR-AGE Z SCORES (HAZ) (WHO 2006)

The chronic malnutrition or stunting is defined by Height-for-age Z-scores (HAZ) <-2. The sex and age disaggregated results are represented in Table 15.

Table 17: Prevalence of stunting based on height-for-age z-scores and by sex, Nangarhar SMART, Nov 2016

	All n = 794	Boys n = 409	Girls n = 385
Prevalence of stunting (<-2 z-score)	(314) 39.5 % (34.6 - 44.7 95% C.I.)	(147) 35.9 % (30.6 - 41.7 95% C.I.)	(167) 43.4 % (37.4 - 49.5 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(204) 25.7 % (22.6 - 29.0 95% C.I.)	(94) 23.0 % (19.3 - 27.1 95% C.I.)	(110) 28.6 % (24.7 - 32.8 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(110) 13.9 % (10.7 - 17.8 95% C.I.)	(53) 13.0 % (9.2 - 18.0 95% C.I.)	(57) 14.8 % (11.0 - 19.7 95% C.I.)

Table 18: Prevalence of stunting by age based on height-for-age z-scores, Nangarhar SMART, Nov 2016

		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	230	22	9,6	51	22,2	157	68,3
18-29	212	42	19,8	69	32,5	101	47,6
30-41	165	29	17,6	37	22,4	99	60,0
42-53	124	12	9,7	25	20,2	87	70,2
54-59	63	5	7,9	22	34,9	36	57,1
Total	794	110	13,9	204	25,7	480	60,5

Figure 3 shows the distribution of HAZ of the observed population (SMART flags excluded) compared to WHO Reference curve. In Nangarhar, it was strongly shifted to the left, suggesting restricted linear growth of the observed population. Further analysis (**Figure 4**) suggests that linear growth retardation is at its highest in the lower age group of children (6-17 months)

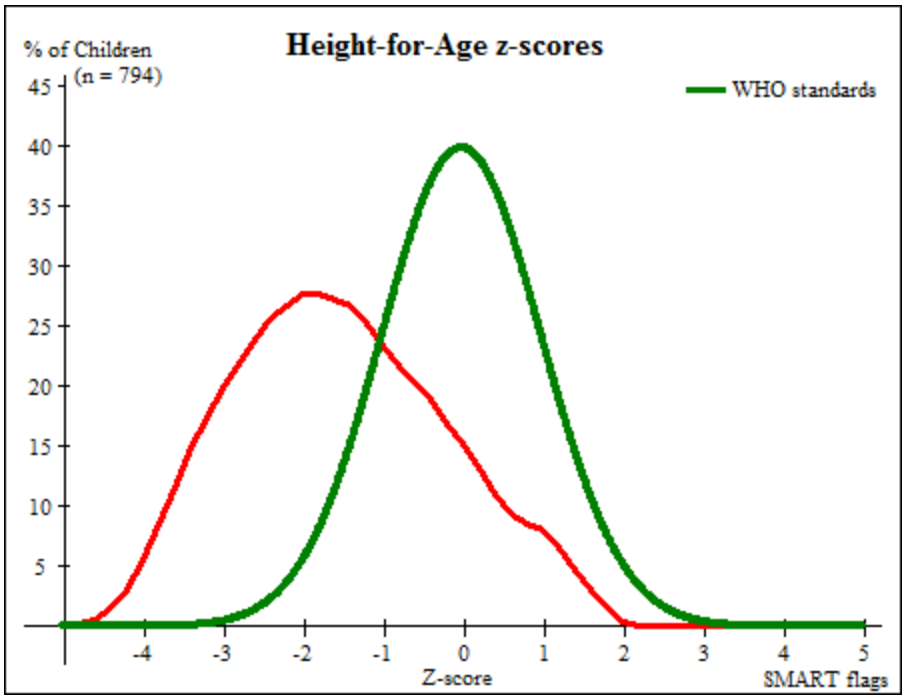


Figure 3: Gaussian distributed curve, HAZ, Nangarhar SMART, Nov 2016

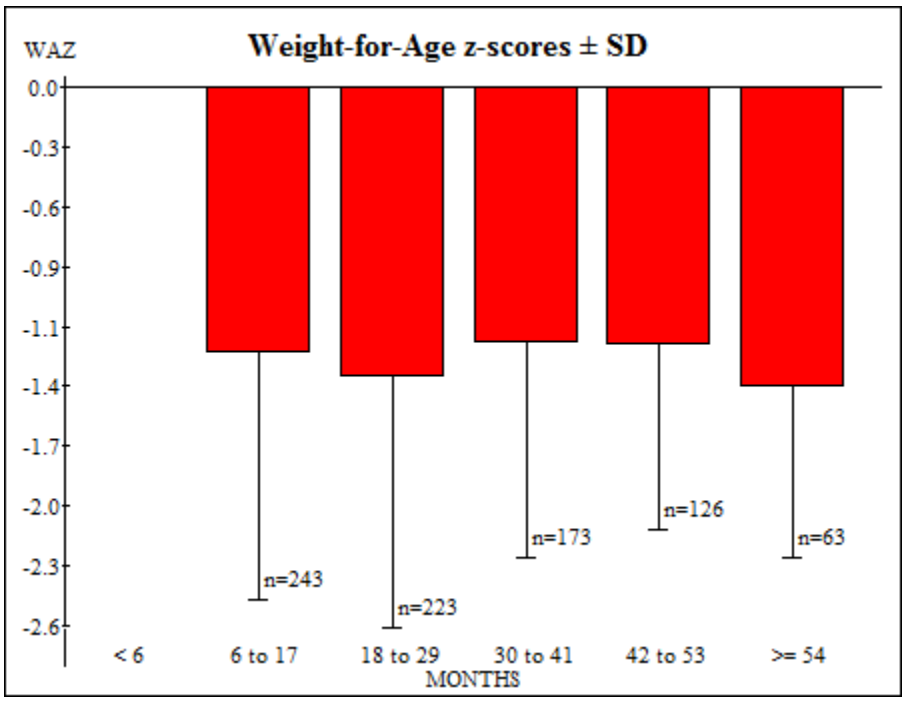


Figure 4: Trend of stunting over the age distribution, Nangarhar SMART, November 2016

CHILD HEALTH INDICATORS.

TWO WEEKS RECALL MORBIDITY (CHILDREN 0-59 MONTHS)

744 out of 895 respondents answered about their children illness experienced in last 2 weeks prior to the survey conduction. So, 83.1% responded with "yes" it mean that their children experienced illnesses in past two week below table indicate episode of illness.

Table 19: Morbidity two weeks recall period among children from 0-59 month, (n=895), Nangarhar SMART, November 2016

Parameter	Frequency	Results
Overall Morbidity in the past 2 weeks prior to the survey	744	83.1% (95% CI, 80.7-85.6)
Acute respiratory Infection (ARI)	427	47.7% (95%CI, 44.4-51.0)
Fever	531	59.3% (95% CI, 56.1-62.5)
Diarrhea	305	34.0% (95% CI, 31.0-37.2)

Immunization (BCG, Measles and Polio)

Immunization, supplementation and deworming are proxy indicators informing community health outreach and health seeking behaviors (table below for all vaccination).

Table 20: Immunization age based on vaccination, Nangarhar SMART, November 2016

Indicators	Frequency	Results (%)
Measles by cards (children from 9-59 months) (N=787)	364	46.2%(95%CI, 42.8-49.7)
Measles both by recall and cards (children 9-59 months)(N=787)	667	84.7% (95%CI, 82.2-87.3)
BCG scare (children 0-59 months) (N=895)	865	96.6% (95% CI, 95.5-97.8)
Polio by cards (children 0-59 months)(N=895)	441	49.2% (95CI, 46.0-52.5)
Polio both by cards and recalls (0-59 months)(N=895)	862	96.3% (95% CI, 95.1-97.5)

Supplementation and Deworming

Supplementation and deworming are proxy indicators informing community Health outreach and health seeking behaviors. A summary of the results are presented in the below. See below.

Table 21: Vitamin A and Deworming coverage, Nangarhar SMART, November 2016

Indicators	Class	Frequency	Results
Vitamin A supplementation (children 6-59 months) (N=831)	Yes	758	91.2% (95%CI, 89.3-93.1)
	No	57	6.9% (95% CI, 5.1-8.6)
	DK	16	1.9% (95% CI, 1.6-2.4)
Deworming (children 24-59 months)(N=498)	Yes	409	82.0% (95% Ci, 78.8-85.5)
	No	58	11.6% (95% Ci, 8.8-14.5)
	DK	31	6.2% (95% Ci, 4.1-8.3)

IYCF Indicators

Indicators for infant and young child feeding (IYCF) practices included all children 0 – 23 months. A total of 329 children's were included in the sample. The results are presented as percentage of the total answers available, and as such were not presented with confidence interval (See Table below).

Table 22: Infant and Young Child Feeding Practice, Nangarhar SMART, November 2016.

CORE INDICATORS	DEFINITION	n	%
Child ever breastfed (N=395)	Proportion of children who have ever received breast milk	395	100% (95% Ci, 100.0-100.0)
Timely initiation of breastfeeding (N=395)	Proportion of children born in the last 23 months who were put to the breast within one hour of birth	289	73.2%(95% CI, 68.8-77.5)
Provision of colostrum within first 3 days (N=395)	Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth	391	99 %(95 CI, 98.0-100.0)
Still breast feeding at 1 year (N=97)	Proportion of children 12-15 months of age who are fed breast milk.	88	90.8%(95% Ci, 84.9-96.5)
Exclusive breast feeding (N=63)	Proportion of infants 0-5 months of age who are fed exclusively with breast milk.	23	36.5%(95% CI, 24.6-48.4)
Introduction of solid, semi-solid or soft foods (N=44)	Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods.	17	38.7%(95% CI, 24.2-53.4)

Maternal Nutrition status and hand washing

All women aged between 15 and 49 years, found in the selected households, were included in the analysis of the following 3 key indicators:

- Physiological status
- Nutritional status based on MUAC cut-off
- Iron/folate for pregnant women (at least once up to the visit of the survey team)

The results are presented in the below tables.

Table 23: Physiological status of women of reproductive age (15 – 49 years), (n=638), Nangarhar SMART survey, November 2016

Status	Frequency	%
Pregnant	122	19.2% (95 Ci, 16.1-22.2)
Lactating	335	52.5%(95% Ci, 48.6-56.4)
Non-pregnant & non-lactating	181	28.3%(95 Ci, 24.9-31.9)

Table 24: Nutritional status of women of reproductive age based on mid-upper arm, (N=638) Nangarhar SMART survey, November 2016

MUAC cut offs	Frequency	%
Global acute malnutrition MUAC< 230 mm	54	8.5 %95% CI, 6.3-10.6)
Moderate acute malnutrition MUAC ≥210mm to< 230 mm	44	6.9 %(95% CI, 4.9-8.9)
Sever acute malnutrition MUAC < 210	10	1.6%(95% Ci, 0.6-2.5)

Table 25: Iron folate for pregnant women based on available answers, (n=119), Nangarhar SMART survey, November 2016

Iron-folate for PLW	Frequency	%
Yes	80	76.2% (95% CI, 58.8-75.7)
No	31	26.1%(95% CI, 18.2-33.9)
Don't know	11	9.2%(95% CI, 0.6-2.5)

Table 26: ANC visits in the last pregnancy, (N=638), Nangarhar SMART survey, November 2016

ANC visited by WHOM	Frequency	%
Health professional	487	76.3% (95% CI, 73.0-79.6)
Traditional birth attendant	34	5.3%(95% CI, 3.6-7.1)
Community health worker	11	1.7%(95% CI, 0.7-2.7)
Relative/Friends	6	0.9%(95% CI, 0.2-1.7)
No visited during pregnancy	1	0.2%(95% CI, -0.2-0.5)

Hand washing practices before and after events indicated in table below.

Table 27: Hand washing practice, Nangarhar SMART, November 2016

Hand Washing care takers (n=638)	Frequency	%
Only water	195	30.6%(95CI, 27.0-34.1)
Soap/ASH	436	68.3%(95% CI, 64.7-71.9)
Wash both hands	600	94.0%(95%CI, 92.2-95.9)
Rubs hands together at least three times	419	65.7%(95% CI, 62.0-69.3)
Dries hands hygienically by air-drying or using a clean cloth	414	64.9% (95% CI, 61.2-68.6)

Table 28: Hand washing practice at 5 critical moments, (n=638), Nangarhar SMART, November 2016.

Response	Frequency	%
Wash hands at all 5 critical moments	372	58.3%(95% CI, 54.5-62.1)
After Toilet/latrines	629	98.6%(95% Ci, 97.7-99.5)
Before cooking	528	82.8%(95% CI, 79.8-85.7)
Before eating	599	93.9% (95% CI, 92.0-95.7)
After taking children to the toilet	477	74.8% (95% CI, 71.4-78.1)
Before feed child	436	68.3% (95% CI, 64.7-71.9)

*: This was a multiple response question; percentages don't add up to 100.

NB: As this information was largely knowledge/recall based, there is no practical verification process to know if mothers/caretakers actually practiced hand washing at all 5 critical points or if they were largely recalling times to which they were previously informed.

HOUSEHOLDS INFORMATION

Crud and under five Children mortality rates

The table below shows mortality rates with age and sex categorized. The crude and under five children mortality rates were below as WHO emergency threshold.

Table 29: Mortality rates, Nangarhar SMART, Nov 2016

'Overall	0.19 (0.08-0.42)	1.64
'Sex		
'Male	0.17 (0.07-0.41)	1
'Female	0.21 (0.07-0.58)	1.32
'Years		
'0-4	0.18 (0.04-0.75)	1
'5-11	0.10 (0.01-0.76)	1.04
'12-17	0.16 (0.02-1.21)	1.03
'18-49	0.13 (0.03-0.58)	1.65
'50-64	0.44 (0.06-3.02)	1

'65-120	2.52 (0.65-9.19)	1

Demography

The mortality questionnaires in SMART are designed in a way that some additional useful demography data can be withdrawn. Summery is available in table below. A total of 4098 individuals were surveyed.

The survey showed **32.8 %** were internal displacements from the different districts were found In the selected households.

Table 30: Short Summery of demography, Nangarhar SMART, Nov 2016

Indicators	Value
Average households size	7
Children under five	20.7 %

Water treatment and consumption at households level

A total of 588 responders, representing 588 households and 4098 individuals, included, either male or female. The information collected form household's regarding total amount of water consumption in litter per household, excluded those water used by animals, and subsequently organized into range of litters used. The results were then divided into the quantity of water in liters available to each household member per day.

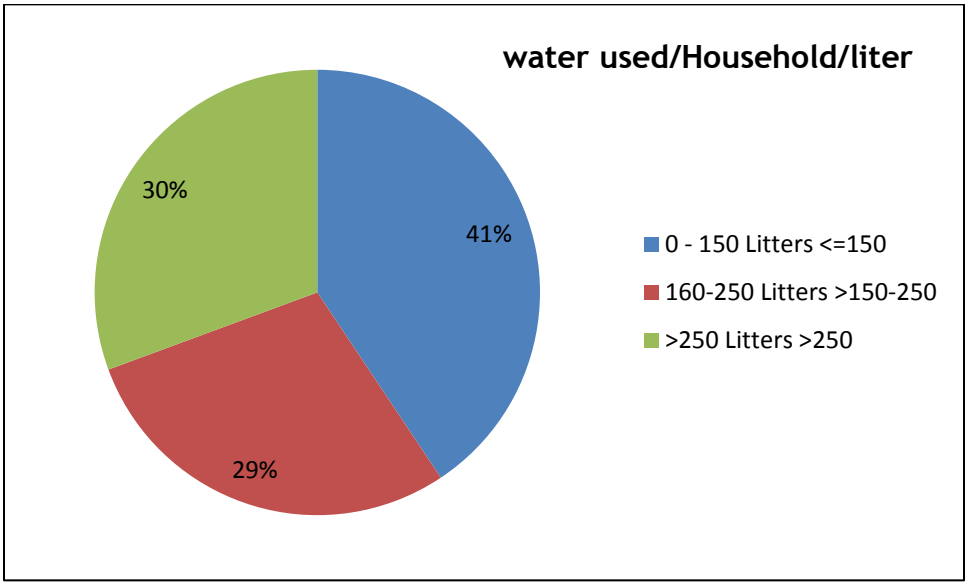


Figure 5: Percentage of household's level daily quantity daily used in liter/ day (n=588), Nangarhar SAMRT, Nov 2016

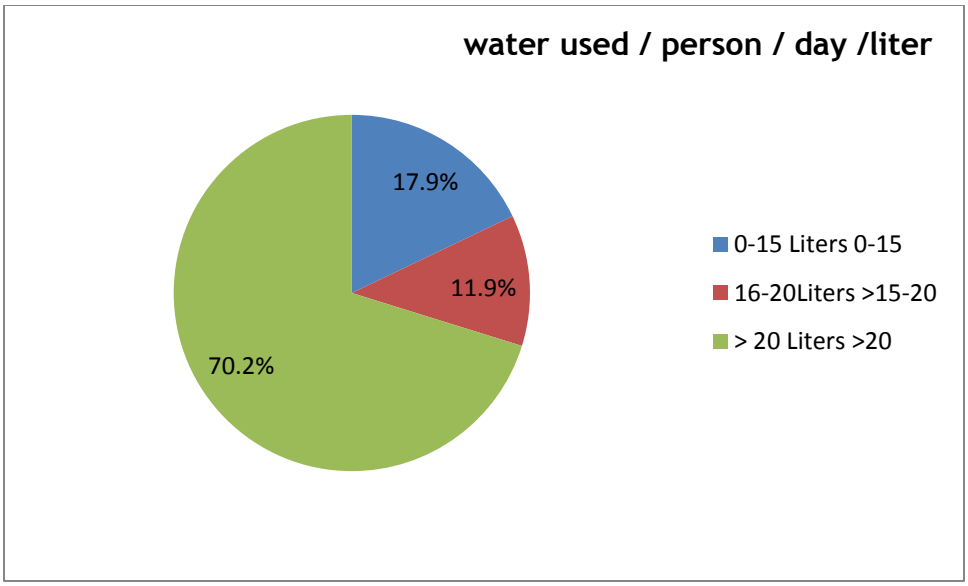


Figure 6: Percentage of households level daily quantity daily used in liter/ day, Nangarhar SAMRT, Nov2016

Table 31: Percentage of households with access to water treatment (n=588), Nangarhar SAMRT, Nov 2016

Water treatment	Frequency	%
Boil	15	2.5%
Chlorine	65	11.0%
Strain into the cloths	8	1.4%
Water filter	5	0.9%
Stand and settle	495	842%

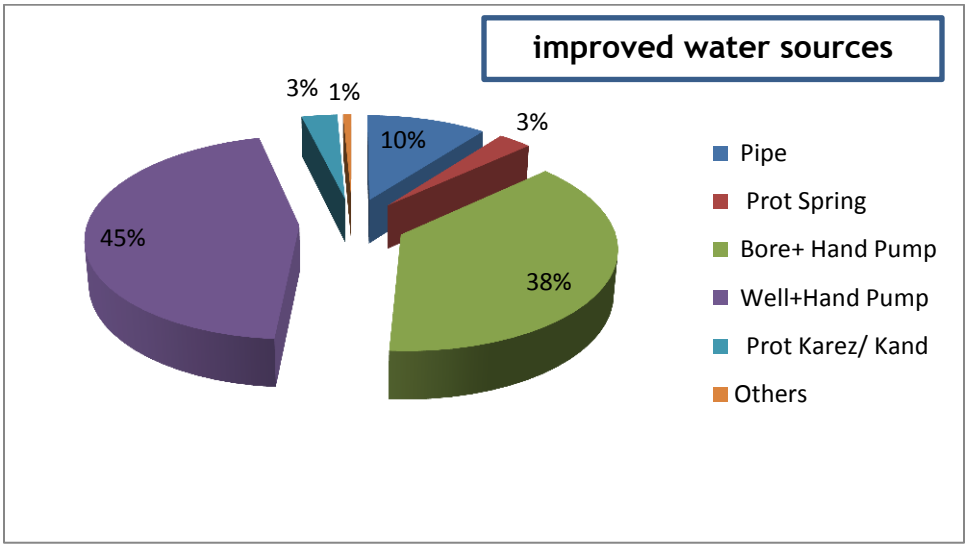


Figure 7: Household level daily improved water sources (n=549), Nangarhar SMART, Nov 2016

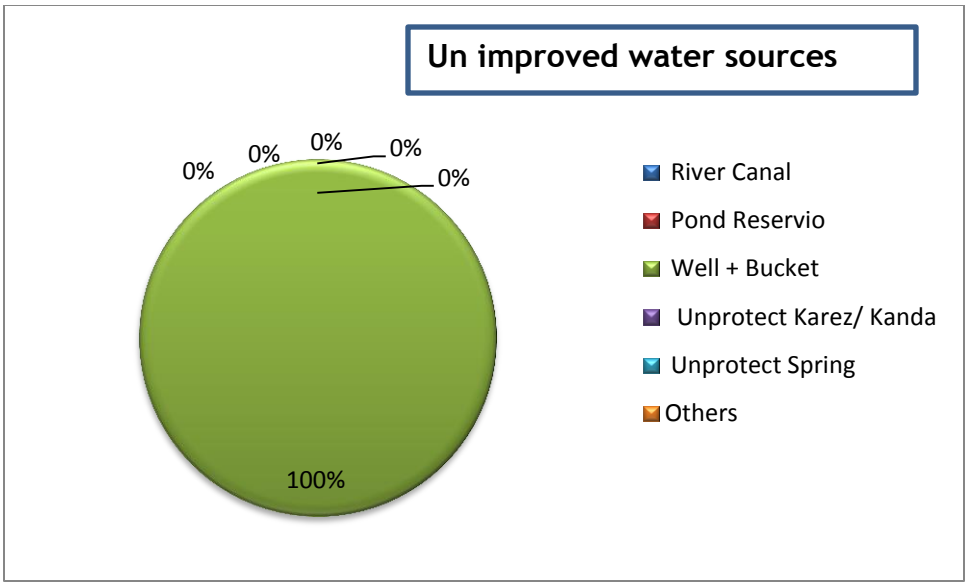


Figure 8: Households level daily unimproved water sources, (n =39), Nangarhar SAMRT, Nov 2016

Food Security and livelihood

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, food consumption based on the Food Consumption Score (FCS)[6] as a description for the current short-term household food security situation is triangulated with the food-based or reduced Coping Strategy Index (rCSI)[7] to provide an indication of the food security status of the household. The triangulation of these two food security proxy indicators, instead of only food consumption, allows for capturing the interaction between household food consumption and coping strategies adopted, and hence, more properly reflects the food security situation in Ghor province.

[6] 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.

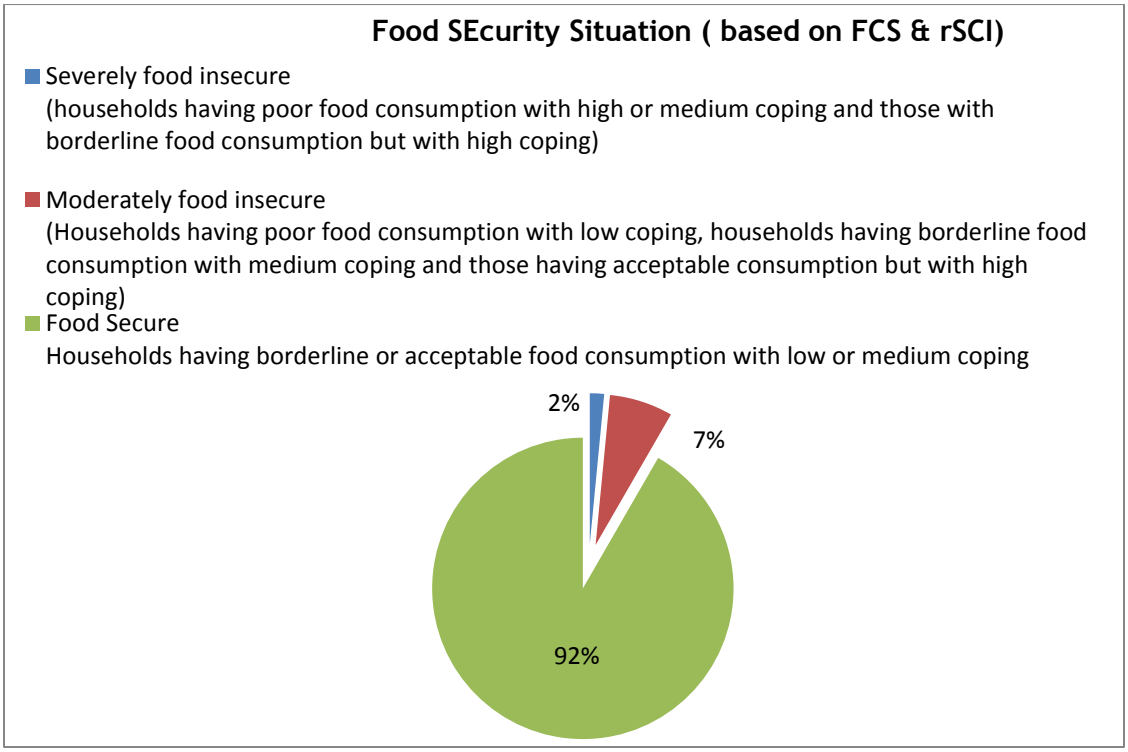
[7] The reduced Coping Strategy Index (rCSI) is often used as a proxy indicator of household food insecurity. Households were asked about how often they used a set of five short-term food based coping strategies in situations in which they did not have enough food, or money to buy food, during the one-week 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).

As a result, households having poor food consumption with high or medium coping and those with borderline food consumption but with high coping are considered as ***severely food insecure***. Households having poor food consumption with low coping, households having borderline food consumption with medium coping and those having acceptable consumption but with high coping are considered as ***moderately food insecure.*** Households having borderline or acceptable food consumption with low or medium coping are considered as ***food Secures (Table)***[8].

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

Food security situation

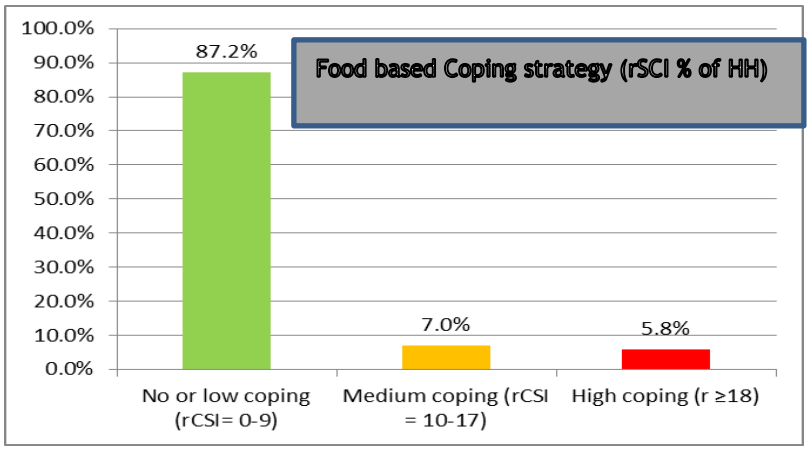
Based on triangulation of Food Consumption Score (FSC) with the food-based or reduced Coping Strategy Index (rCSI), the survey finding shows **2%** of households have severely food insecurity and **7 %** of households were moderately food insecurity see below table for more details.



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

Reduced Coping Strategy Index[9]:

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).



- ✓ 5.8% of HHs with a high level of coping (rCSI ≥18 score).
- ✓ 7.0% of HHs with a medium level of coping (rCSI= 10-17 score).
- ✓ 87.2% of HHs with No or Low level coping (rCSI=0-9 score).

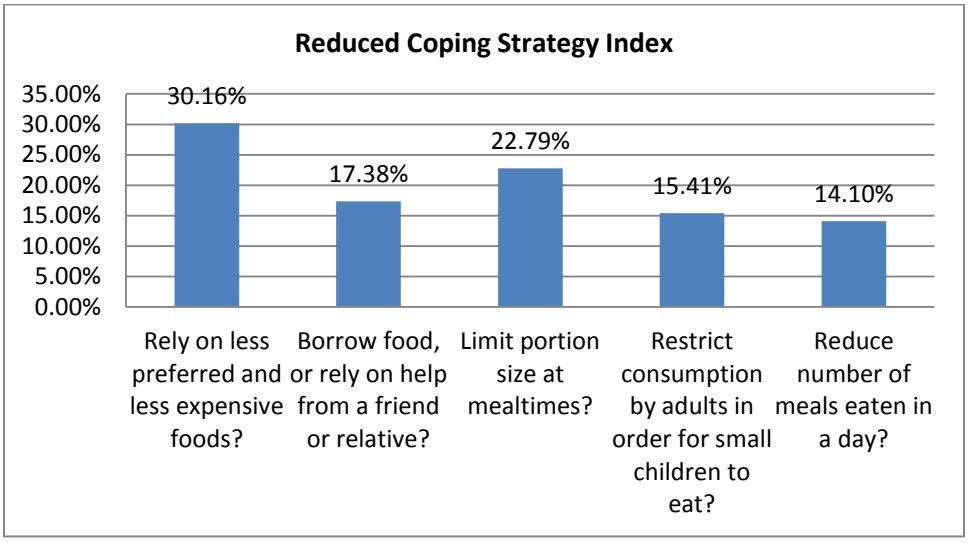


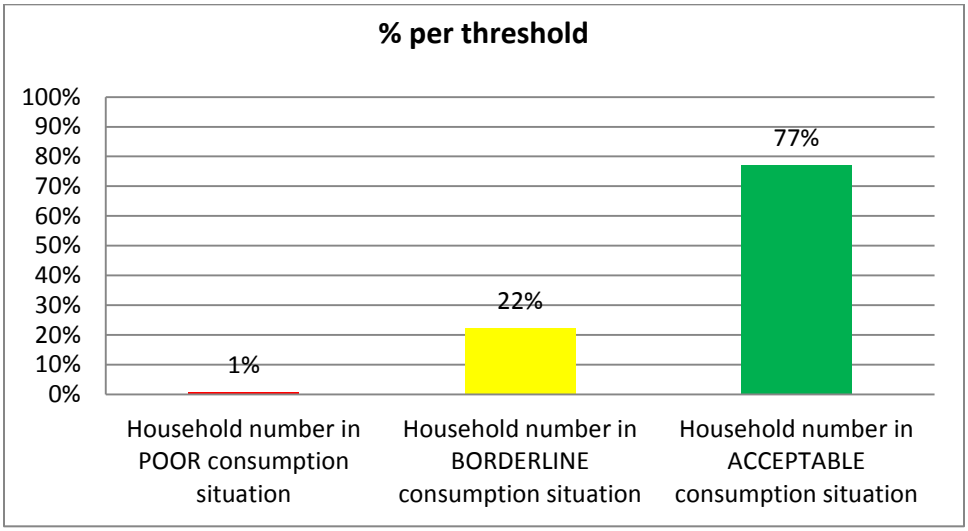
Figure 9: Reduced coping strategy index, Nangarhar SMART, Nov 2016

Food Consumption Scores:

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

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

vegetables and fruits 1, while sugar is weighted 0.5). Households are then grouped into "Poor" food consumption (1.0-28), "Borderline" (28.01 – 42) and acceptable (above 42). Food consumption groups are a proxy of food consumption and reflect both the frequency and quality of food consumption.



- ✓ 1% households surveyed have Poor consumption scores (FCS = 1.0 to 28).
- ✓ 28% households surveyed have Border line consumption scores (FCS = 28.1 to 42).
- ✓ 77% households surveyed have acceptable food consumption scores (FCS = >42.0).

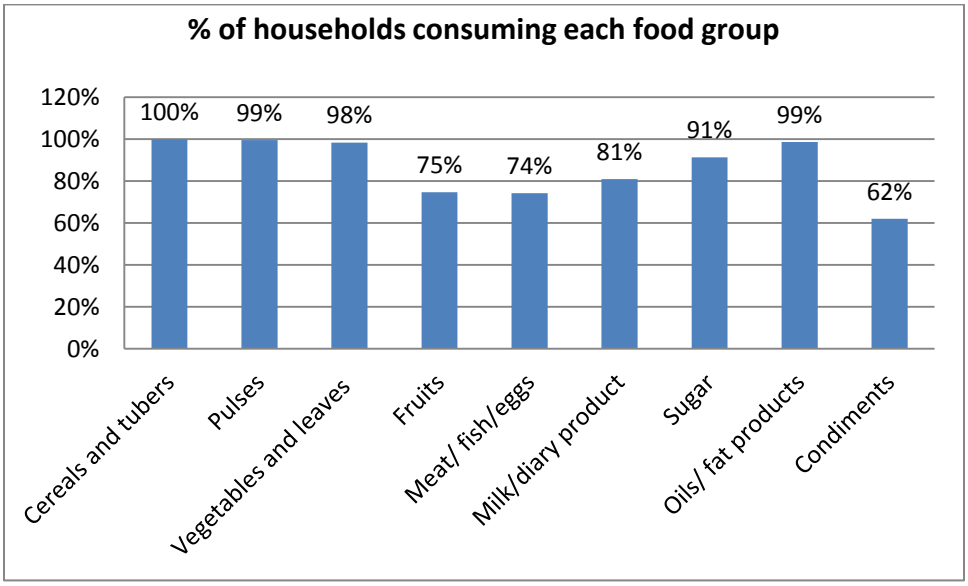


Figure 10: Households consuming each food group, Nangarhar SMART, Nov 2016

Discussions

Nutrition

The survey findings show that the prevalence of Global Acute Malnutrition (GAM) based on WHZ was at 12.6% (10.1-15.5 95% CI) And based on MUAC was at 7.4% (4.9-11.1 95% CI).So based on WHZ is classified as 'serious' and MUAC is indicating a "poor" nutrition situation according WHO severity classification of acute malnutrition. SAM prevalence by WHZ and MUAC was at 3.0% (1.9-4.7 95% CI) and 1.7% (0.8- 3.7 95% CI) respectively.

If both criteria are combined, overall rate of children likely to be eligible for SAM and MAM management rises to 17.0 % (14.5-19.5 95 CI) .SAM combined rates is estimated to be 4.9 %(3.4-6.3 95 CI) It's recommended to use the combined rates for estimation of GAM and SAM in the province for program design and caseload calculation. Also it is recommending providing SAM and MAM program parallel across the province. The acutely malnourished children are WHZ, and MUAC based community screenings are not enough to detect all acutely malnourished children eligible for treatment according criteria stipulated in Afghanistan IMAM Guidelines. This has to be however further investigated. See figure 5 in the actual acute malnutrition camper WHZ <-2 Z score with MUAC <125 mm is significant different and respectively.

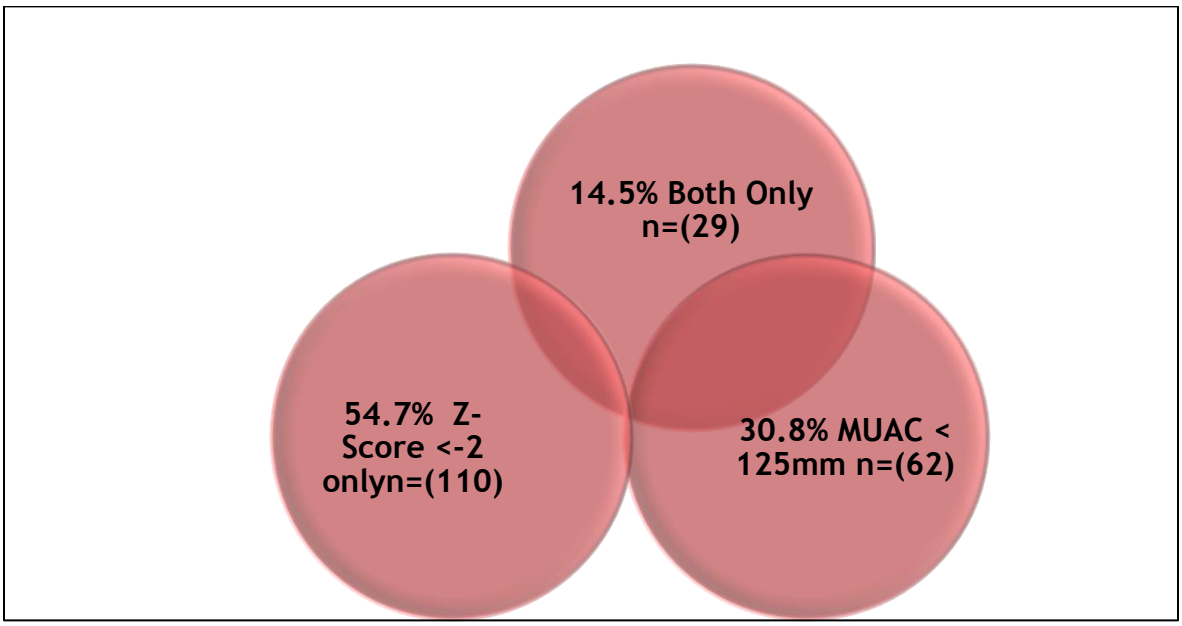


Figure 11: Overlapping WHZ<-2 and MUAC<125, Nangarhar SMART, November 2016

The younger children (6-29 months) seem to be more affected than older (30-59 months; the difference was statistically significant for underweight, with the younger age group showing 1.1 times as more likely to be malnourished than the younger counterparts. The younger age group includes the critical breastfeeding age (6-23.9 months) during which the child experiences multiple challenges in terms of the quality and quantity of food consumed as well as frequent infections resulting from poor feeding practices and conditions.

Date rates

The respective crude and under five death rates of 0.17 (0.07-0.41) and 0.21 (0.07-0.58) are low the WHO *alert* thresholds of 1/10,000/day and 2/10,000/day for CMR and U5MR. For both mortality rate cases of death were not collected in the survey.

IYCF Practices

At the time of assessment (73.2%) of children (6-23.9 months) were timely initiation of breastfeeding, 90.8% still breastfeeding at 12-15 months, the rate of exclusive breastfeeding is lower at 36.5%. Proportion of infants 6–8 months of age whom received solid, semi-solid or soft foods was 38.7 %). As timely initiation of breastfeeding, exclusive breastfeeding and appropriate complementary feeding having vital role on decreasing mortality and morbidity associate with illness among children. So, late introduction to complementary foods or failing to timely initiation breastfeeding and exclusively breastfeed feeding this increases children vulnerability to malnutrition, infection and other illnesses. Despite this exposes children to unhygienic feeding conditions. This is especially a real risk in such an environment where water is not treated and hand-washing with soap is not a common practice leading to high diarrhea incidences. Thus all these factors are immediate and underlying causes of Malnutrition.

Aggravating FACTORS

Morbidity, immunization, supplementation and deworming

The UNICEF conceptual framework of malnutrition can be used to explain the probable causes of under nutrition in this area. Disease weakens an individual immune system causing them to have other side effects such as reduced food intake and diarrhea. In this province, more than half of sampled children suffered from one or two form of illnesses or another (75.5%), such us diarrhea (34%), fever (88.8%) and ARI (47.7%). Through discussion with health workers, diarrhea cases amongst these ages' groups were mainly reported to be managed through home treatment. The use of micronutrients supplementation

Conclusion

The survey finding shows that the prevalence of Global Acute Malnutrition (GAM) based on WHZ was at 12.6% (10.1-15.5 95% CI) And based on MUAC was at 7.4% (4.9-11.1 95% CI) based on WHZ is classified as 'serious' and MUAC is indicating a "poor" nutrition situation according WHO severity classification of acute malnutrition[10], SAM prevalence by WHZ and MUAC was at 3.0% (1.9- 4.7 95% CI) and 1.7% (0.8- 3.7 95% CI). It is quit signal that the burden of malnutrition in period of caseloads might be careful to emergency (combined GAM by WHZ and MUAC and edema) 17.0 % (14.5-19.5 95% CI). Combined severe acute malnutrition (SAM) (by WHZ and MUAC) 4.9% (3.4-6.3 95 % CI) in Nangarhar province are considered to be emergency according to the interpretation of Afghanistan nutrition sectors[11]. It is recommended to use the combined rates for estimation of GAM and SAM in the Nangarhar province for program design and caseload calculation.

In conclusion, the survey has indicated that there is a tricky of malnutrition in Nangarhar province. From the results presented above it is notable that although the different measure of malnutrition (WHZ and MAUC) are indicated as an emergency nutrition situation respectively, a combination of the measures/results indicate that the number of cases found malnourished is

[10] WHO acute malnutrition classification : <5% acceptable, 5-9 % poor, 10-14 % serious, >15 % critical

[11] SAM above 3% is emergency

very high in the province it is noted that morbidity rate are high in the province; almost 1 in 3 children was reported diarrhea, 1 in 2 had ARI and fever. The nutrition situation trends needs to be followed closely on a regular basis. From other site the chronic malnutrition and underweight reflects the nutrition deficiency affecting the population on long term process. More than 1 in 3 of the surveyed children were found be stunted and 1 in 4 children were underweight by intervening at an early stage through a multisectorial approach, chronic malnutrition can be prevented.

In addition, daily stressors (as poverty, unemployment, limited services...) and series of traumatic situations (ongoing conflict, insecurity, ongoing internal displacement due to ongoing conflict in the different districts and returnees from the immigration…….) have a clear impact on the mental health conditions of People. This delicate psychosocial condition has a clear influence on maternal nutrition status and child nutritional and health Status especially in the duration of 1000 days.

Recommendations

Summary of some key recommendations are noted below:

Under nutrition

- In line with survey findings, it is recommending to promote nutrition Specific interventions. Those interventions that directly work to prevent or treat malnutrition such as micronutrients supplementation, food fortification, promotion of breastfeeding (timely initiation, exclusive breastfeeding), appropriate complementary feeding and treatment of malnutrition.

- Seeing to the survey finding, it is recommending to provide nutrition Sensitive interventions, those activities that are indirectly prevent malnutrition and address the underlying causes of malnutrition such as provision of safe water, hygiene, sanitation, food security, birth spacing and others.

- The survey finding representing over burden of illness experienced by children. So, it is recommended to lunch some infection prevention intervention and applying malnutrition sensitive interventions such as provision of safe drinking water, Hygiene promotion practices, sanitation.

- Based on WHO classification Survey finding representing, that GAM rate is serious conditions, due to presence of many more predisposing factors in the area the nutrition situation become critical, needs to provide quality nutrition preventive and treatment services and lunching some long duration projects to provides SAM, MAM services parallel and focused on community based nutrition interventions.

- It is recommending conducting community based advocacy seminars to focus on IYCF counselling, support community mobilization, timely health seeking behavior.

- Survey data representing that Khogyani and Shinwari zones having more malnutrition packet data .So, community mobilization programs should be expanded to the area's, in order to enrolled all malnourished through Community based massive screening in the catchment area of Khgyani and Shinwar Zones children to the SAM and MAM program,

- Survey finding shows that Prevalence of stunting is serious. So, for prevention of chronic malnutrition, the first 1000 golden days should be consider as windows of opportunity, some advocacy seminars should be conduct on community level and should explain the importance of appropriate nutrition in first 1000 days ,community awareness program should be focused on following points;

    a) Promotion of Diversified food usages
    b) Promotion of fortified food usages at household level
    c) Optimal IYCF practices should be improved
    d) Promotion of iron folic acid supplementation for PLWs
    e) Improved health seeking behavior
    f) Promotion of immunizations
    g) Promotion of maternal, newborn and child health nutrition practices).

Child health and immunization

- Improve awareness and investigate more on barriers for improved health care seeking by families for management of children's infections.
- Strength child health prevention (vaccination, deworming and supplementation) and referral.
- Concentrating efforts on encouraging IYCF that fails to be achieved: exclusive breastfeeding and timely introduction of quality complementary food.

Maternal nutrition status

- Reinforcing Iron-Folate supplementation at health facility level, as well as vaccination.
- Improve quality of counseling during antenatal and postnatal controls on key topics as anemia prevention, minimum maternal diet.

Other key programmatic recommendations are:

- Strength regular supportive supervisions, Monitoring and Surveillance system on health facilities and community level.
- To strength active and passive case finding and timely reporting system.
- Another survey should be conducted within one year interval in order to assess the existence services and represents currents nutrition status of the province.
- In order to assess the nutritional status of U5 year children community based massive screening should be strengthen.
- In order to evaluate prevalence of malnutrition it is recommended to conduct nutrition SMART survey after one year

Annexes

Annex 1: plausibility check report

Plausibility check for: Nangarhar_SMART_ Final Data set_112016.as
Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)
Overall data quality

Criteria	Flags*	Unit	Excel. Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5
(% of out of range subjects)			0	5	10	20	**0** (1.5 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001
(Significant chi square)			0	2	4	10	**0** (p=0.285)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001
(Significant chi square)			0	2	4	10	**10** (p=0.000)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20
			0	2	4	10	**0** (4)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20
			0	2	4	10	**0** (6)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20
			0	2	4	10	**0** (5)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20
.				and	and	and	or
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80
			0	5	10	20	**0** (1.09)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6
			0	1	3	5	**1** (-0.24)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6
			0	1	3	5	**0** (-0.06)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001
			0	1	3	5	**0** (p=0.082)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**11** %

The overall score of this survey is 11 %, this is good.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 51 %
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=3/ID=1: **WHZ (6.385)**, HAZ (-7.999), Height may be incorrect
Line=8/ID=1: **WHZ (3.362)**, WAZ (2.672), Weight may be incorrect
Line=10/ID=1: **WHZ (5.473)**, WAZ (2.460), Weight may be incorrect
Line=32/ID=3: **WHZ (2.370)**, Height may be incorrect
Line=48/ID=2: HAZ (1.872), Height may be incorrect
Line=65/ID=1: **WHZ (2.941)**, Height may be incorrect
Line=70/ID=1: HAZ (3.751), Age may be incorrect
Line=75/ID=1: **WHZ (-4.160)**, Weight may be incorrect
Line=76/ID=1: HAZ (2.858), Age may be incorrect
Line=98/ID=4: **WHZ (3.867)**, WAZ (1.814), Weight may be incorrect
Line=121/ID=1: HAZ (1.586), Age may be incorrect
Line=157/ID=1: HAZ (-6.220), WAZ (-4.323), Age may be incorrect
Line=165/ID=1: HAZ (2.964), Age may be incorrect
Line=167/ID=3: HAZ (3.678), WAZ (1.741), Age may be incorrect
Line=168/ID=2: HAZ (2.091), Height may be incorrect
Line=170/ID=1: HAZ (1.833), Age may be incorrect
Line=171/ID=2: HAZ (2.255), Height may be incorrect
Line=172/ID=1: **WHZ (-4.185)**, HAZ (10.030), Height may be incorrect
Line=173/ID=1: **WHZ (-4.418)**, HAZ (3.693), Height may be incorrect
Line=176/ID=1: HAZ (3.975), WAZ (2.152), Age may be incorrect
Line=219/ID=2: HAZ (1.984), Age may be incorrect

Line=229/ID=2: **WHZ (-3.943)**, Height may be incorrect
Line=233/ID=1: **WHZ (6.422)**, WAZ (3.142), Weight may be incorrect
Line=240/ID=1: HAZ (-6.795), Age may be incorrect
Line=265/ID=1: HAZ (-7.240), Height may be incorrect
Line=272/ID=1: HAZ (-4.472), Age may be incorrect
Line=277/ID=1: HAZ (-5.230), WAZ (-4.281), Age may be incorrect
Line=282/ID=1: HAZ (-5.048), Age may be incorrect
Line=283/ID=1: HAZ (-4.502), Age may be incorrect
Line=286/ID=1: HAZ (1.735), Age may be incorrect
Line=291/ID=2: HAZ (-4.572), Height may be incorrect
Line=297/ID=2: HAZ (-4.777), Age may be incorrect
Line=304/ID=2: HAZ (-4.677), Age may be incorrect
Line=313/ID=2: HAZ (2.094), Age may be incorrect
Line=325/ID=1: HAZ (1.768), Age may be incorrect
Line=569/ID=1: HAZ (2.431), Height may be incorrect
Line=570/ID=2: HAZ (1.945), Height may be incorrect
Line=579/ID=3: HAZ (2.038), Height may be incorrect
Line=587/ID=2: HAZ (1.615), Age may be incorrect
Line=594/ID=1: HAZ (-5.732), Age may be incorrect
Line=603/ID=1: HAZ (3.551), Age may be incorrect
Line=606/ID=2: HAZ (7.145), WAZ (3.259), Age may be incorrect
Line=622/ID=1: HAZ (-5.522), Age may be incorrect
Line=623/ID=2: HAZ (-5.095), Age may be incorrect
Line=633/ID=2: HAZ (2.219), Age may be incorrect
Line=634/ID=3: HAZ (4.207), Age may be incorrect
Line=636/ID=2: HAZ (3.654), WAZ (2.011), Age may be incorrect
Line=640/ID=2: HAZ (3.376), Age may be incorrect
Line=763/ID=1: HAZ (1.901), Age may be incorrect
Line=779/ID=1: HAZ (2.386), Age may be incorrect
Line=781/ID=1: HAZ (2.613), Age may be incorrect
Line=796/ID=2: HAZ (-6.108), Age may be incorrect
Line=831/ID=2: **WHZ (-3.787)**, WAZ (-4.698), Weight may be incorrect
Line=838/ID=1: HAZ (11.030), WAZ (3.280), Age may be incorrect
Line=839/ID=1: HAZ (-5.781), Age may be incorrect
Line=861/ID=1: HAZ (-6.625), WAZ (-5.190), Age may be incorrect
Line=866/ID=1: **WHZ (-4.374)**, Weight may be incorrect
Percentage of values flagged with SMART flags:WHZ: 1.5 %, HAZ: 5.6 %, WAZ: 1.5 %

Age distribution:
Month 6 : ############
Month 7 : ################
Month 8 : ######################
Month 9 : ###################
Month 10 : ############
Month 11 : ######################
Month 12 : ####################################
Month 13 : ######################
Month 14 : ##############
Month 15 : ######################
Month 16 : ################
Month 17 : ###################
Month 18 : ##
Month 19 : ################
Month 20 : ################
Month 21 : ########
Month 22 : ########
Month 23 : ##########################
Month 24 : ###################################
Month 25 : ##############################
Month 26 : ###########
Month 27 : ############
Month 28 : ############
Month 29 : #########
Month 30 : ################

Month 31 : ######
Month 32 : #########
Month 33 : ###
Month 34 : ##############
Month 35 : ###############
Month 36 : ##
Month 37 : ##################
Month 38 : ##########
Month 39 : ############
Month 40 : ########
Month 41 : #########
Month 42 : ################
Month 43 : #####
Month 44 : #######
Month 45 : #######
Month 46 : #########
Month 47 : ################
Month 48 : ##
Month 49 : #########
Month 50 : ####
Month 51 : ##
Month 52 : ######
Month 53 : ###
Month 54 : ############
Month 55 : ############
Month 56 : ###############
Month 57 : #######
Month 58 : ######
Month 59 : #########
Month 60 : ###
Age ratio of 6-29 months to 30-59 months: 1.29 (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	132/101.2 (1.3)	116/94.0 (1.2)	248/195.1 (1.3)	1.14
18 to 29	12	114/98.6 (1.2)	112/91.6 (1.2)	226/190.2 (1.2)	1.02
30 to 41	12	96/95.6 (1.0)	82/88.8 (0.9)	178/184.4 (1.0)	1.17
42 to 53	12	61/94.1 (0.6)	65/87.4 (0.7)	126/181.5 (0.7)	0.94
54 to 59	6	33/46.5 (0.7)	30/43.2 (0.7)	63/89.8 (0.7)	1.10
6 to 59	54	436/420.5 (1.0)	405/420.5 (1.0)		1.08

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.285 (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: **4** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.100

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: **6** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.000 (significant difference)

Digit preference MUAC:
Digit .0 : ##
Digit .1 : ##
Digit .2 : ##
Digit .3 : ##
Digit .4 : ##
Digit .5 : ##
Digit .6 : ###################################
Digit .7 : ###################################
Digit .8 : ###################################
Digit .9 : ###################################
Digit preference score: **5** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.027 (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:	1.22	1.16	1.09
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	13.1%	13.1%	12.6%
calculated with current SD:	13.8%	12.9%	11.5%
calculated with a SD of 1:	9.2%	9.6%	9.5%
HAZ			
Standard Deviation SD:	1.73	1.54	1.31
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	39.4%	39.1%	39.5%
calculated with current SD:	37.2%	35.7%	35.8%
calculated with a SD of 1:	28.6%	28.6%	31.6%
WAZ			
Standard Deviation SD:	1.20	1.20	1.12
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	27.0%	27.0%	26.9%
calculated with current SD:	27.3%	27.3%	26.6%
calculated with a SD of 1:	23.5%	23.5%	24.2%

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

WHZ	p= 0.000	p= 0.000	p= 0.000
HAZ	p= 0.000	p= 0.000	p= 0.000
WAZ	p= 0.002	p= 0.002	p= 0.019

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

Skewness

WHZ	0.40	-0.19	-0.24
HAZ	1.07	0.50	0.25
WAZ	0.14	0.14	-0.07

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	3.28	0.55	-0.06
HAZ	6.21	0.53	-0.64
WAZ	0.53	0.53	-0.29

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=1.31 (p=0.082)
WHZ < -3: ID=1.20 (p=0.165)
GAM: ID=1.31 (p=0.082)
SAM: ID=1.20 (p=0.165)
HAZ < -2: ID=1.37 (p=0.050)
HAZ < -3: ID=1.63 (p=0.005)
WAZ < -2: ID=1.54 (p=0.011)
WAZ < -3: ID=1.47 (p=0.023)
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: 1.54 (n=46, f=1)  ###############################
02: 1.43 (n=44, f=1)  ############################
03: 1.05 (n=43, f=0)  ##########
04: 0.96 (n=43, f=0)  #######
05: 1.06 (n=42, f=0)  ###########
06: 1.58 (n=41, f=3)  ################################
07: 1.67 (n=44, f=3)  ####################################
08: 1.09 (n=45, f=0)  ############
09: 1.24 (n=41, f=1)  ##################
10: 1.00 (n=43, f=0)  ########
11: 1.11 (n=44, f=0)  #############
12: 1.19 (n=41, f=1)  #################
13: 1.10 (n=42, f=0)  #############
14: 1.12 (n=37, f=0)  ##############
15: 0.85 (n=39, f=0)  ##
16: 1.10 (n=38, f=0)  #############
17: 1.30 (n=37, f=1)  ####################
18: 1.22 (n=29, f=0)  ##################
19: 1.25 (n=25, f=0)  ##################
20: 1.63 (n=19, f=2)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
21: 1.26 (n=12, f=0)  OOOOOOOOOOOOOOOO
22: 1.47 (n=09, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~
23: 0.97 (n=08, f=0)  ~~~~~~~
24: 0.63 (n=07, f=0)
25: 0.63 (n=05, f=0)
26: 0.57 (n=03, f=0)
```

27: 0.71 (n=03, f=0)
28: 1.27 (n=03, f=0) ~~~~~~~~~~~~~~~~~~~
29: 1.53 (n=02, f=0) ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Analysis by Team

Team	**1**	**2**	**3**	**4**	**5**	**6**
n =	173	131	131	145	119	142
Percentage of values flagged with SMART flags:						
WHZ:	2.9	2.3	0.8	1.4	0.0	0.7
HAZ:	11.0	7.6	0.8	6.2	1.7	2.8
WAZ:	2.9	2.3	1.5	0.7	0.8	0.0
Age ratio of 6-29 months to 30-59 months:						
	1.44	1.67	1.18	1.01	1.43	1.15
Sex ratio (male/female):						
	1.16	1.67	0.72	0.81	1.02	1.33
Digit preference Weight (%):						
.0 :	10	15	10	15	12	4
.1 :	18	9	11	12	11	8
.2 :	6	8	9	12	13	18
.3 :	9	11	12	12	11	5
.4 :	7	5	10	8	9	12
.5 :	9	12	14	11	9	12
.6 :	10	11	8	10	8	8
.7 :	14	16	4	8	8	13
.8 :	9	8	15	8	13	8
.9 :	7	5	8	4	6	12
DPS:	12	11	10	10	7	13
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Digit preference Height (%):						
.0 :	14	14	10	16	14	11
.1 :	9	11	13	14	8	5
.2 :	16	11	16	8	11	11
.3 :	20	11	11	6	5	15
.4 :	8	8	9	6	13	6
.5 :	8	13	15	11	6	13
.6 :	7	8	10	8	11	8
.7 :	6	7	11	11	9	10
.8 :	8	6	0	8	13	18
.9 :	4	11	5	11	8	4
DPS:	16	8	15	10	10	13
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Digit preference MUAC (%):						
.0 :	13	5	14	16	10	8
.1 :	13	8	8	10	9	8
.2 :	12	9	11	13	11	16
.3 :	9	16	7	2	16	11
.4 :	10	18	13	9	7	8
.5 :	13	7	16	19	10	8
.6 :	8	9	14	5	12	8
.7 :	10	9	7	4	8	13
.8 :	5	10	7	7	7	15
.9 :	9	9	2	15	11	4
DPS:	8	12	14	18	9	12
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Standard deviation of WHZ:						
SD	1.30	1.40	1.23	1.09	1.12	1.16
Prevalence (< -2) observed:						
%	17.3	10.7	11.5	12.4	10.9	14.1
Prevalence (< -2) calculated with current SD:						
%	18.2	13.9	14.9	11.3	10.9	11.9
Prevalence (< -2) calculated with a SD of 1:						
%	12.0	6.4	10.0	9.5	8.5	8.6

Standard deviation of HAZ:

SD	1.97	1.82	1.77	1.48	1.48	1.42
observed:						
%	29.5	45.0	51.1	40.0	42.0	32.4
calculated with current SD:						
%	25.3	44.5	47.5	39.5	39.6	31.6
calculated with a SD of 1:						
%	9.4	40.0	45.6	34.6	34.8	24.8

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	28/21.6 (1.3)	33/18.6 (1.8)	61/40.1 (1.5)	0.85
18 to 29	12	26/21.0 (1.2)	15/18.1 (0.8)	41/39.1 (1.0)	1.73
30 to 41	12	17/20.4 (0.8)	13/17.5 (0.7)	30/37.9 (0.8)	1.31
42 to 53	12	17/20.1 (0.8)	10/17.3 (0.6)	27/37.3 (0.7)	1.70
54 to 59	6	5/9.9 (0.5)	9/8.5 (1.1)	14/18.5 (0.8)	0.56
6 to 59	54	93/86.5 (1.1)	80/86.5 (0.9)		1.16

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.323 (boys and girls equally represented)
Overall age distribution: p-value = 0.002 (significant difference)
Overall age distribution for boys: p-value = 0.161 (as expected)
Overall age distribution for girls: p-value = 0.003 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	29/19.0 (1.5)	16/11.4 (1.4)	45/30.4 (1.5)	1.81
18 to 29	12	23/18.5 (1.2)	14/11.1 (1.3)	37/29.6 (1.2)	1.64
30 to 41	12	19/18.0 (1.1)	7/10.7 (0.7)	26/28.7 (0.9)	2.71
42 to 53	12	6/17.7 (0.3)	10/10.6 (0.9)	16/28.3 (0.6)	0.60
54 to 59	6	5/8.8 (0.6)	2/5.2 (0.4)	7/14.0 (0.5)	2.50
6 to 59	54	82/65.5 (1.3)	49/65.5 (0.7)		1.67

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.004 (significant excess of boys)
Overall age distribution: p-value = 0.001 (significant difference)
Overall age distribution for boys: p-value = 0.003 (significant difference)
Overall age distribution for girls: p-value = 0.200 (as expected)
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	16/12.8 (1.3)	15/17.6 (0.9)	31/30.4 (1.0)	1.07
18 to 29	12	12/12.4 (1.0)	28/17.2 (1.6)	40/29.6 (1.3)	0.43
30 to 41	12	17/12.1 (1.4)	19/16.7 (1.1)	36/28.7 (1.3)	0.89
42 to 53	12	8/11.9 (0.7)	11/16.4 (0.7)	19/28.3 (0.7)	0.73
54 to 59	6	2/5.9 (0.3)	3/8.1 (0.4)	5/14.0 (0.4)	0.67
6 to 59	54	55/65.5 (0.8)	76/65.5 (1.2)		0.72

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.067 (boys and girls equally represented)
Overall age distribution: p-value = 0.006 (significant difference)
Overall age distribution for boys: p-value = 0.154 (as expected)
Overall age distribution for girls: p-value = 0.014 (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	18/15.1 (1.2)	25/18.6 (1.3)	43/33.6 (1.3)	0.72
18 to 29	12	14/14.7 (1.0)	16/18.1 (0.9)	30/32.8 (0.9)	0.88
30 to 41	12	14/14.3 (1.0)	18/17.5 (1.0)	32/31.8 (1.0)	0.78
42 to 53	12	8/14.0 (0.6)	13/17.3 (0.8)	21/31.3 (0.7)	0.62

54 to 59 6 11/6.9 (1.6) 8/8.5 (0.9) 19/15.5 (1.2) 1.38
---
6 to 59 54 65/72.5 (0.9) 80/72.5 (1.1) 0.81
The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.213 (boys and girls equally represented)
Overall age distribution: p-value = 0.134 (as expected)
Overall age distribution for boys: p-value = 0.234 (as expected)
Overall age distribution for girls: p-value = 0.467 (as expected)
Overall sex/age distribution: p-value = 0.033 (significant difference)

Team 5:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	18/13.9 (1.3)	15/13.7 (1.1)	33/27.6 (1.2)	1.20
18 to 29	12	17/13.6 (1.3)	20/13.3 (1.5)	37/26.9 (1.4)	0.85
30 to 41	12	14/13.2 (1.1)	13/12.9 (1.0)	27/26.1 (1.0)	1.08
42 to 53	12	11/12.9 (0.8)	9/12.7 (0.7)	20/25.7 (0.8)	1.22
54 to 59	6	0/6.4 (0.0)	2/6.3 (0.3)	2/12.7 (0.2)	0.00
6 to 59	54	60/59.5 (1.0)	59/59.5 (1.0)		1.02

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.927 (boys and girls equally represented)
Overall age distribution: p-value = 0.004 (significant difference)
Overall age distribution for boys: p-value = 0.066 (as expected)
Overall age distribution for girls: p-value = 0.113 (as expected)
Overall sex/age distribution: p-value = 0.003 (significant difference)

Team 6:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	23/18.8 (1.2)	12/14.2 (0.8)	35/32.9 (1.1)	1.92
18 to 29	12	22/18.3 (1.2)	19/13.8 (1.4)	41/32.1 (1.3)	1.16
30 to 41	12	15/17.8 (0.8)	12/13.4 (0.9)	27/31.1 (0.9)	1.25
42 to 53	12	11/17.5 (0.6)	12/13.2 (0.9)	23/30.6 (0.8)	0.92
54 to 59	6	10/8.6 (1.2)	6/6.5 (0.9)	16/15.2 (1.1)	1.67
6 to 59	54	81/71.0 (1.1)	61/71.0 (0.9)		1.33

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.093 (boys and girls equally represented)
Overall age distribution: p-value = 0.279 (as expected)
Overall age distribution for boys: p-value = 0.317 (as expected)
Overall age distribution for girls: p-value = 0.632 (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

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: 1.20 (n=08, f=0) ################
02: 0.93 (n=08, f=0) #####
03: 0.58 (n=07, f=0)
04: 0.90 (n=07, f=0) ####
05: 1.34 (n=07, f=0) ######################
06: 1.83 (n=07, f=1) ##
07: 3.53 (n=07, f=3) ##
08: 1.30 (n=08, f=0) ####################
09: 0.90 (n=07, f=0) ####
10: 0.88 (n=07, f=0) ####
11: 0.92 (n=08, f=0) #####
12: 0.53 (n=08, f=0)
13: 1.03 (n=08, f=0) ##########
14: 1.17 (n=07, f=0) ###############
15: 0.94 (n=08, f=0) ######
16: 0.95 (n=08, f=0) ######
17: 1.54 (n=08, f=1) ##############################
18: 1.40 (n=07, f=0) ########################

19: 0.51 (n=07, f=0)
20: 0.89 (n=06, f=0) ####
21: 0.72 (n=04, f=0)
22: 1.92 (n=05, f=0) ###
23: 0.77 (n=04, f=0)
24: 0.65 (n=04, f=0)
25: 0.77 (n=03, f=0)
28: 1.65 (n=02, f=0) ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 2

Time   SD for WHZ
point   0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 2.88 (n=08, f=1) ##
02: 2.45 (n=08, f=1) ##
03: 1.36 (n=06, f=1) ########################
04: 1.23 (n=06, f=0) ##################
05: 1.07 (n=07, f=0) ###########
06: 2.09 (n=07, f=2) ##
07: 0.99 (n=07, f=0) ########
08: 1.10 (n=07, f=0) #############
09: 1.04 (n=07, f=0) ##########
10: 1.29 (n=07, f=0) ####################
11: 1.08 (n=07, f=0) ############
12: 0.71 (n=07, f=0)
13: 0.84 (n=06, f=0) ##
14: 1.06 (n=06, f=0) ###########
15: 0.76 (n=07, f=0)
16: 0.80 (n=06, f=0)
17: 0.26 (n=06, f=0)
18: 1.29 (n=04, f=0) OOOOOOOOOOOOOOOOOOOO
19: 0.58 (n=03, f=0)
20: 0.21 (n=02, f=0)
21: 1.34 (n=02, f=0) ~~~~~~~~~~~~~~~~~~~~~~~
22: 0.59 (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: 1.59 (n=08, f=0) #################################
02: 0.73 (n=08, f=0)
03: 0.52 (n=08, f=0)
04: 0.53 (n=08, f=0)
05: 1.05 (n=08, f=0) ###########
06: 1.50 (n=08, f=0) #############################
07: 1.09 (n=08, f=0) ############
08: 1.00 (n=08, f=0) #########
09: 0.93 (n=07, f=0) #####
10: 0.70 (n=08, f=0)
11: 1.02 (n=07, f=0) #########
12: 1.89 (n=06, f=1) ##
13: 1.13 (n=07, f=0) ##############
14: 1.37 (n=07, f=0) ########################
15: 1.17 (n=06, f=0) ################
16: 1.37 (n=05, f=0) OOOOOOOOOOOOOOOOOOOOOOOO
17: 1.24 (n=06, f=0) ###################
18: 1.23 (n=03, f=0) OOOOOOOOOOOOOOOOOO
19: 1.22 (n=03, f=0) OOOOOOOOOOOOOOOOOO
20: 2.83 (n=02, f=1) ~~~~~~
(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 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: 0.91 (n=08, f=0) #####
02: 1.04 (n=07, f=0) ##########
03: 1.30 (n=06, f=0) #####################
04: 1.14 (n=07, f=0) ##############
05: 0.65 (n=08, f=0)
06: 1.45 (n=07, f=1) ###########################
07: 0.95 (n=07, f=0) ######
08: 0.75 (n=07, f=0)
09: 1.80 (n=07, f=1) ##
10: 0.87 (n=08, f=0) ###
11: 0.88 (n=08, f=0) ####
12: 0.72 (n=06, f=0)
13: 1.29 (n=07, f=0) ####################
14: 1.47 (n=06, f=0) ############################
15: 0.33 (n=06, f=0)
16: 1.12 (n=07, f=0) ##############
17: 1.11 (n=07, f=0) #############
18: 0.60 (n=05, f=0)
19: 0.99 (n=04, f=0) ########
20: 1.81 (n=04, f=0) ###
21: 1.03 (n=03, f=0) OOOOOOOOOO
(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 5

Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.91 (n=08, f=0) #####
02: 0.99 (n=07, f=0) ########
03: 1.14 (n=07, f=0) ##############
04: 0.97 (n=07, f=0) #######
05: 1.42 (n=06, f=0) ##########################
06: 1.30 (n=07, f=0) #####################
07: 1.63 (n=07, f=0) ###################################
08: 1.01 (n=08, f=0) #########
09: 1.44 (n=06, f=0) ###########################
10: 0.98 (n=07, f=0) #######
11: 1.03 (n=06, f=0) ##########
12: 1.33 (n=06, f=0) ######################
13: 0.27 (n=06, f=0)
14: 0.63 (n=05, f=0)
15: 0.63 (n=05, f=0)
16: 0.94 (n=05, f=0) ######
17: 1.33 (n=04, f=0) OOOOOOOOOOOOOOOOOOOOOO
18: 0.32 (n=03, f=0)
19: 1.84 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
20: 1.82 (n=02, f=0) ~~~~~~
21: 2.74 (n=02, f=0) ~~~~~~
(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 6

Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.61 (n=08, f=0)
02: 1.42 (n=07, f=0) ##########################
03: 0.96 (n=07, f=0) #######
04: 0.88 (n=08, f=0) ###
05: 0.74 (n=08, f=0)
06: 1.37 (n=05, f=0) ########################
07: 0.77 (n=07, f=0)
08: 1.12 (n=07, f=0) ##############
09: 1.12 (n=08, f=0) ##############
10: 1.50 (n=07, f=0) #############################
11: 1.30 (n=08, f=0) #####################

12: 1.32 (n=07, f=0) ####################
13: 1.25 (n=07, f=0) ##################
14: 1.04 (n=06, f=0) ##########
15: 1.30 (n=07, f=0) ####################
16: 1.63 (n=07, f=0) ##################################
17: 1.57 (n=07, f=0) ################################
18: 1.31 (n=06, f=0) ####################
19: 1.28 (n=03, f=0) OOOOOOOOOOOOOOOOOO
20: 1.88 (n=04, f=1) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
21: 0.14 (n=03, f=0)
23: 0.79 (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)

Annex 2: Nangarhar physically map

Annex 3: selected Clusters

SN	Province Name	District Name	Geographical unit	Population size	Cluster
1	Nangarhar	Bihsud	TAGHAR	1458	1
2	Nangarhar	Bihsud	NAGHLO	3897	2
3	Nangarhar	Bihsud	FARM HADA	19395	3
4	Nangarhar	Surkh Rod	DARONTA	4554	4
5	Nangarhar	Surkh Rod	HAJI HA	1316	5
6	Nangarhar	Surkh Rod	KHAIR ABAD ABRO	1161	6
7	Nangarhar	Chaparhar	DAK GHULAM KHAN	818	7
8	Nangarhar	Chaparhar	BANDA MIRAN	893	8
9	Nangarhar	Chaparhar	SULAIMAN KHAIL	1301	9
10	Nangarhar	Rodat	MEYA BANDA	704	10
11	Nangarhar	Rodat	HESARAK	1269	11
12	Nangarhar	Kama	BAZED KHAIL	1434	12
13	Nangarhar	Kama	SHODA KALA	782	13
14	Nangarhar	Kama	KOZ MIRZA KHAIL	712	14
15	Nangarhar	Kuz Kunar	KOTE	960	15
16	Nangarhar	Dara-I-Nur	DOOD YALAG	213	16
17	Nangarhar	Dara-I-Nur	AMLA YA ROYAR	1085	17
18	Nangarhar	Sherzad	ZANG ZAYE	452	18
19	Nangarhar	Sherzad	SADESAR	931	19
20	Nangarhar	Khogyani	HALYAZ KHAIL	603	20
21	Nangarhar	Khogyani	CHAR QALA	629	21
22	Nangarhar	Khogyani	FATTAH SHAYE	1543	22
23	Nangarhar	Khogyani	MAMA KHAIL	1721	23
24	Nangarhar	Khogyani	SULIMAN KALAY	667	24
25	Nangarhar	Pachir Wa Agam	SABER HULYA	2139	25
26	Nangarhar	Kot	TAWOS KHAIL	766	26
27	Nangarhar	Kot	DOWANI	1786	27

28	Nangarhar	Nazyan	MULLAH KHAIL	1197	28
29	Nangarhar	Shinwar	GARD ABA JOWI"26"	1981	29
30	Nangarhar	Shinwar	NAQEL JOWI "26"	8181	30
31	Nangarhar	Shinwar	NAQEL JOWI "25"	7374	31
32	Nangarhar	Bati Kot	AKHOND ZADA GAN	1535	32
33	Nangarhar	Bati Kot	JANI KHAIL	3283	33
34	Nangarhar	Bati Kot	BARIK AB QALAWAL	1275	34
35	Nangarhar	Muhmand Dara	SULTAN KHAIL	1148	35
36	Nangarhar	Muhmand Dara	GARDI GHAWOS	6205	36
37	Nangarhar	Goshta	ARKHI	2910	37
38	Nangarhar	Lal Pur	SAMZE	399	38
39	Nangarhar	Jalal abad City	Kacha gari	16000	39
40	Nangarhar	Jalal abad City	Mastofiayt	2500	40
41	Nangarhar	Jalal abad City	Charahi	9600	41
42	Nangarhar	Jalal abad City	Babrian	1500	42
43	Nangarhar	Jalal abad City	Canal 11 weala	2908	43
44	Nangarhar	Jalal abad City	Qasaba	4500	44
45	Nangarhar	Jalal abad City	Qari jan shahid kosa	5158	45
46	Nangarhar	Jalal abad City	Joy hafat	2500	46
47	Nangarhar	Jalal abad City	Khowaja saidiq agha	12000	47
48	Nangarhar	Jalal abad City	Campona	8000	48
49	Nangarhar	Jalal abad City	Zara Saranwali	2000	49
50	Nangarhar	Jalal abad City	Nahia 3	3600	50
51	Nangarhar	Goshta	LAKO	611	RC
52	Nangarhar	Goshta	PAITOW YA LALKALAY	1093	RC
53	Nangarhar	Surkh Rod	SAYEDAN FOLADI	889	RC
54	Nangarhar	Surkh Rod	KATPOR	716	RC
55	Nangarhar	Surkh Rod	DEDA WAL	824	RC
56	Nangarhar	Jalal abad City	Ghanda choshma	3000	RC

Annex 4: QUESTIONNAIRES

Household questionnaire

Make the list of the data with explanation. For example:

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

1. **Date of the survey:** This is the date of data collection, it should be written in the standard format for all the questionnaires administered during the survey. (day/month/year
2. **Name of the village:** Indicate the name of the sampled village that is visited on the particular day of data collection.
3. **Cluster number:** Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation will be done together with the team at the **training hall.** Important to note that once Cluster number has been assigned it cannot be changed.
4. **Team ID number:** Teams will be formed during the training session. Each team will be assigned a unique number ranging from 1-5. Each team must indicate the team number on the questionnaires they administer.
5. **Household number:** Each HH in the selected cluster will be assigned a number. There are a total of 13 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit **(e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10th HH in the village)**
6. **Starting time of the interview:** This is indicated the time of start of the interview in the selected HH.
7. **Consent:** Each team will be provided with a consent form that they will be required to ask for permission to conduct the survey in each HH. This is meant to seek permission from the HH head or caregiver to be allowed to conduct the assessment. It is important to note the reason for refusal in case the HH does not accept the interview.

B. **Wash:** Description of the following key WASH indicators

1. **Source of drinking water:** This question will be asked to the respondent of the HH to find out where HH are accessing their drinking water. The sources of water are categorised into two main categories I.e. Improved sources and un-improved sources. These are based on the two main recommended categories of responses.

- Number of HH accessing water from improved sources[12]/ total number of respondents.
- Number of HH accessing water from unimproved sources[13]/ total number of respondents.

2. **Water treatment methods:** This question will seek to find out what methods HH are using to make their drinking water safe. This indicator will show the proportion of HH practicing safe methods of water treatment in the survey area. The calculation of this will be:

- Total number of HH practicing safe water treatment methods[14]/ total number of respondents
- Total number of HH not practicing safe water treatment methods/ total number of respondents.

3. **Water Use/Consumption at HH level:** This question will be seeking to find out the amount of water consumed by each individual living in the household per day. The aim of this indicator is to check whether households are consuming the required minimum amount of water per person per day compared to the minimum threshold as defined by the WHO standard for HH water consumption.
4. **Hand washing practices:** Caregivers will be asked on hand washing practices to ascertain instances in their daily activities when they wash their hands. The caregiver should not be probed for answers/response rather they should be allowed to provide their response independently.
5. **Use of Soap:** A follow up question will be asked to ascertain the hand washing practice by asking the caregiver to demonstrate how they wash their hands and what they use to wash their hands.

Food access and consumption

1. **Food consumption scoring:** this question will be seeking to find out the group of food to check whether households are consuming in the past 7 days and check the source of the food.

2. **Reduced coping of strategy index:** this question will check enough many and food to buy.

Child Questionnaire

Identification:

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

Date of the survey: This is the date of data collection, it should be written in the standard format for all the questionnaires administered during the survey. (day/month/year

[12] Piped scheme, protected springs, boreholes with hand pump, well with hand pump, protected karez
[13] River/ stream/ canal. Pond/ reservoir, well with bucket, unprotected karez, unprotected spring.
[14] Boil, use of water filter

1. **Name of the village:** Indicate the name of the sampled village that is visited on the particular day of data collection.
2. **Cluster number:** Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation will be done together with the team at the **training hall.** Important to note that once Cluster number has been assigned it cannot be changed.
3. **Team ID number:** Teams will be formed during the training session. Each team will be assigned a unique number ranging from 1-5. Each team must indicate the team number on the questionnaires they administer.
4. **Household number:** Each HH in the selected cluster will be assigned a number. There are a total of 14 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit **(e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10th HH in the village)**
5. **Caregiver Number:** Each caregiver living in the selected HH will be assigned a specific unique number. This is the same number that will appear in the Caregiver questionnaire. In case of more than one caregiver in a HH each will be assigned a unique number to identify and distinguish them from each other. Each caregiver will be linked to her/his children selected in the HH to be able to link each caregiver with the children.
6. **Child Number:** Each Child Under the age of 5 years living in the selected HH will be assigned a specific unique number. In case of more than one child in a HH each will be assigned a unique number to identify and distinguish them from each other. Each child will be linked to her/his caregiver selected in the HH to be able to link each caregiver with the children.
7. **Age in months:** Only children between 0 and 59 months old of age will be included. Height will not be considered as a valid criterion in absence of age due to the high stunting rates in Nangarhar province. Age will be confirmed by showing a vaccination card or a birth certificate, if available. If these documents are not available, the use of a local event calendar built for Nangarhar province will be used to determine the age. The age will be recorded into the questionnaire in months.
8. **Sex:** Male or female
9. **Weight (in kg):** Children will be weighed to the nearest 0.1kg by using an Electronic Uni-scale. The children who can easily stand will be asked to stand on the weighing scale and their weight recorded. In a situation when the children could not stand up, the double weighing method will be applied.
10. **Height (in cm):** Measuring board will be used to measure bare headed and barefoot children. The precision of the measurement is 1 mm. Children of less than 2 years of age will be measured lying down and those equal to or above 2 years of age measured standing up.
11. **Mid-Upper Arm Circumference (in mm):**MUAC will be used as an indicator of mortality risk for malnutrition and will be measured to the nearest 1mm for all children with an indicated age of greater than 6 months, using the UNICEF MUAC strips. An adult MUAC tape will be used to measure women of reproductive age (15-49 years)
12. **Oedema:** Only children with bilateral pitting nutrition oedema will be recorded as having nutritional oedema this will be checked by applying normal thumb pressure for at least 3 seconds to both feet.

Infant and Young Child Feeding

In this section only children 0-23 months will be considered as eligible respondents. All children within these age groups will be selected in the surveyed HH and the following indicators administered to them.

- **Ever Breastfed:** This indicator will be looking at the number of mothers who have ever breast fed their children. This will look at the last pregnancy of the mother or the current child who is between 0-23 months old.
- **Time to Breastfeeding/Initiation to Breast milk:** This indicator will look at the amount of time it took for mothers to put their children to the breast after giving birth. The focus will be on the mother's last pregnancy in which the child is between 0-23months.
- **Colostrum feeding:** this indicator will look at the number of mothers with children 0-23 months who fed their children with Colostrum within the first 3 days after birth.
- **Breast feeding Yesterday:** this indicator will look at the number of mothers who breast fed their children 0-23 months one day (day and Night) prior to the data collection day.
- **Other Liquids offered to the child:** This indicator will ask the mothers of children 0-23 months what other liquids were offered to the child one day (day and night) prior to the data collection day.
- **Minimum dietary diversity:** This indicator will ask the mothers on the types of food given to the child 0-23 months one day (day and night) prior to the day of data collection. The food groups are categorised based on the WHO-IYCF guidelines.
- **Complimentary feeding:** This indicator looks at the number of mothers who gave solid and semi-solid foods to children 0-23 months one day (day and night) prior to the data collection day.
- **Minimum Meal frequency:** This indicator will ask mothers on the number of times they provided solid and semi-solid foods to their children 0-23 months one day (day and night) prior to the data collection day.

Child Health status

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

- ✓ **Type of Illness:** This question will ask about the types of illness that the child (0-59 months) has had in the last 14 days prior to the data collection day. A small definition of the key illness is provided in the questionnaire to enable the data collector identify the illness correctly

- ✓ **Vitamin A supplementation:** This question will ask the caregiver of child 0-59 months on whether the child has received vitamin A tablets in the previous 6 months prior to the data collection day. Each team will be provided with a Sample of the Vitamin A tablet to enable the caregivers to easily identify it.
- ✓ **Deworming:** This question will ask the caregiver of child 12-59 months on whether the child has received deworming tablets in the previous 6 months prior to the data collection day. Each team will be provided with a Sample of the deworming tablet to enable the caregivers to easily identify it.
- ✓ **BCG vaccination:** This question will ask the caregiver on whether the child 0-59 months has received BCG vaccination.

Caregiver questionnaire

Identification:

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

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

Antenatal Care and Health seeking behavior

- ✓ **Antenatal care:** Caregivers between the ages of 15-49 years at household level will be asked on

whether they sought ante-natal care during their last pregnancy. In this case last pregnancy will be considered of the last child who is still between 0-59 months for purposes of having a more precise re-call period.

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

Maternal Nutrition

This section seeks to identify the nutrition status of women between the ages 15-49 years (Child bearing age)

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

References

CSO: updated population for Afghanistan 1394(2015-2016)
Nangarhar Nutrition and Mortality SMART survey 2015.
WHO 2010: indicators for Assessing of Infant Young Child Feeding Practice (IYCF) .
WHO 2009: severity classification