AFGHANISTAN

Nutrition & Mortality SMART Survey
Final Report
Takhar Province, Afghanistan
8th to 25th July 2017

Survey Manager: Dr. Baidar Bakht Habib

Report prepaired by: Dr. Shafiullah Samim

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Agency for Assistance and Development of Afghanistan (AADA)with technical suport of Action Against Hunger

Action Against Hunger/Action Contre la Faim

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Abbreviations

ACF	Action Contra la Faim/Action Against Hunger
ADDA	Agency for Assistance and Development of Afghanistan
ANC	Antenatal Care
BCG	Bacillus Clamate Guerin
CDR	Crude Death Rate
CSO	Central Statistics Organization
DoPH	Directorate of Public Health
EBF	Ever Brest Feeding
ENA	Emergency Nutrition Assessment
GAM	Global Acute Malnutrition
HH	Household
HQ	Head Quarter
IYCF	Infant and Young Child Feeding
MUAC	Mid Upper Arm Circumference
MW	Mean Weight
NNS	National Nutrition Survey
OW	Observe Weight
PNC	Postnatal Care
PNO	Public Nutrition Officer
PPS	Proportional Population Size
RC	Reserve Cluster
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SMART	Standardized Monitoring and Assessment of Relief and Transitions
U5	Under five
U5DR	Under five Death Rates
UNICEF	United Nation Children's Fund
W/H	Weight for height
WASH	Water Sanitation and Hygiene
WFP	World Food Program
WHO	World Health Organization
WHZ	Weight for Height Z score

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1. Executive summery

The Nutrition and Mortality SMART assessment took place between 8th to 25thJuly, 2017 and covered the entire province of Takhar. The assessment has been technically supported by Action Against Hunger in partnership with AADA and in close coordination with Takhar public health directorate. In order to assess the current health and nutritional status of U5 children, Pregnant and lactating women;, children's anthropometry, immunization status, Vitamin-A supplementation, optimal IYCF practices, PLW's nutritional status using MUAC, Iron Folate supplementation etc. indicators were assessed along with households Food security and WASH proxy indicators. The preliminary report is providing methodology used, analysis and interpretation of the survey findings with recommendations. 673 households were assessed during assessment, using two-stage cluster sampling methodology.

Summary findings

4,808 individuals living in 673 households assessed. Out of them 1,055 were children aged from 0-59 months, 964 were children aged from 6-59 months and 725 were women of childbearing age in the selected households.

- The combine GAM and SAM prevalence based on MUAC and WHZ on both criteria were 16.8% (14.4-19.2 95% CI) and 3.3% (2.2-4.5 95% CI) respectively.
- Prevalence of Global Acute Malnutrition (GAM) and severe acute malnutrition (SAM) in children age (6-59) months based on Weight for Height was at 9.7% (7.5-12.5 95% C.I.) In addition, SAM is 1.8 % (1.1-2.9 95% CI.).
- Prevalence of Global Acute Malnutrition (GAM) and severe acute malnutrition (SAM) in children age under five (0-59) months based on Weight for Height was at 10.8% (8.7-13.4 95% CI) and SAM is 1.9 % (1.2- 3.0 95% CI).
- Prevalence of global acute malnutrition in children age under (6-59) months based on MUAC was at 11.8% (9.3-14.9 95% CI) and SAM is 2.2% (1.2- 3.8 95% CI) respectively.
- Prevalence of underweight (WAZ) in children age under (6-59) months was at 21.9 % (18.1-26.2 95% CI) and severe underweight was 4.2% (2.7- 6.3 95% CI).
- Prevalence of stunting or chronic malnutrition based on (HAZ) in children age under (6-59) months was at 38.1 % (34.2-42.1 95% CI) while severe stunting was at 11.3% (9.0-13.9 95% CI).
- Maternal malnutrition Prevalence among pregnant and lactating women (PLWs) based

on MUAC <230 was at 25.1% (21.2-28.9 95%CI).

- Immunization coverage such as Measles (9-59 months) both by card and recall was at 91.5 %, BCG (0-59 months) confirmed by scar was at 95.8% and Polio (0-59 months) both by card and recall was at 94.9% and PENTA 3 (3.5-59 months) was at 87.1%.

2. Introduction

Takhar is one of the thirty-four provinces of Afghanistan located in the northeast part of the country next to Tajikistan It is surrounded by Badakshan in the east Panjshir in the south, and Baghlan and Kunduz in in the west. The city of Taloqan serves as its capital.

The population of the province which is taken from CSO estimated population 1394 (2015-2016) is about 983,336 which are mostly tribal and a rural society. The main inhabitants of Takhar province are ethnic Tajiks which make almost 66% of population, followed by the second largest groups, the Uzbeks. The remainders are Pashtun Hazara Kho and Turkmen .There is a population of Kochi (nomads) whose numbers are vary in different seasons.

The province contains about 17 districts, such as named are Warsaj, Farkhar, Chal, Ashkamish, Bangi, Kalafgan, Khwajaghar, Rustaq, Yangiqala, Darqad, Chah Aab, Khwaja Bahawaden, Baharak, Hazar Sumach, Namak Aab, Dashtiqala and Taloqan is provincial capital of the province.

The nutrition and mortality SMART survey was conducted in summer (July 2017) covering the entire province. ACF technically supported AADA for the implemented of this survey to investigate health, nutrition, WASH and FSL situation in the entire districts of Takhar province through the integrated nutrition and mortality SMART assessment.

1.1 Context and justification

The justification of the proposed assessment is to estimate the current prevalence of under-nutrition among vulnerable populations in the province. The survey 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-fives was conducted through the National Nutrition Survey in 2013 and GAM rates 7.9%(6.23 - 10.08 95 %CI) 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 be used to inform future programing in the Takhar

province. It was also serves as a good opportunity of building the capacity of AADA and other stakeholders.

1.2 Survey objectives

Main objective

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

Specific objectives

- To estimate Crude Death Rate (CDR) and under five Death Rate (U5DR).
- To determine prevalence of under nutrition among children aged 6-59 months
- To determine core Infant and Young Child Feeding (IYCF) practices among children aged 0-23 months
- To determine the nutritional status of pregnant and lactating women based on MUAC assessment.
- To assess institutional birth attendance in the province.
- To assess Water, Sanitation and Hygiene (WASH) proxy indicators: household water storage, water use and caregiver hand washing practices.
- To assess morbidity among children 0-59 months based on a two weeks recall period.
- To assess food access and consumption on seven days recall period: households levels.
- To assess education of the school aged population in the province.

3. Methodology

3.1. Sampling Methodology

A two-stage cluster sampling methodology was implemented.

Stage 1: In the stage 1, random selection of clusters/villages was done using probability proportionate to size (PPS) using ENA software version 2011 of (9th July, 2015). A list of all updated villages (1142) 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 3. A total of 49 clusters were covered with 14 households in a day. At 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.

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 incorporated 686 households systematic randomly selected based on survey parameters calculation for anthropometry. Based on total sample size, each team covered effectively 14 households in a day. In this assessment, 6 teams were engaged during the assessments, while data collection was expected 10 days. All households was enumerated and given numbers by the survey team. There was 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 were also being 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 was included for anthropometric measurements. Children aged less than <24 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 was also be surveyed. All of the selected HH was 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 1: Details of proposed and actual sample size achieved, Takhar SMART, July 2017.

Number of HH planned	Number of HH surveyed	% of HH surveyed / planned	Number of children 6-59 months planned	Number of children 6-59 months surveyed	% of surveyed children 6-59 months/Planned
696	**673**	**96.7%**	**730**	**964**	**132.1%**

The household was the basic sampling unit. The term household was defined as all people eating from the same pot and living together (WFP definition). In Afghanistan, the term household is often defined and/or used 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.

3.2. Sample Size

The sample size of households surveyed was determined using ENA software version 2011 (up dated 9th July 2015). A two stage cluster methodology applied. In first stage, it involves random selection of clusters/villages (49 clusters) from total list of villages using probability proportion to size (PPS) method. This was done before starting of data collection at the office or training hall. Villages were the primary sampling unit for the proposed survey. In the second stage of methodology, it involve random selection of household (14 households) 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 2 and 3 highlights sample size calculation for anthropometric and mortality surveys.

Table 2: Parameters for sample size calculation of anthropometric indicators, Takhar SMART, July 2017

Parameters for Anthropometry	Value	Assumptions based on context
Estimated prevalence of GAM (%)	7.9%	The survey team will refer to the NNS 2013 assessment for the planning stage of this survey (GAM was 7.9% 6.23 - 10.08 95% CI) due to any updated data. The SD was above (1.6) of recommended limit of 0.85-1.2. There is no any updated data that's why we used 7.9% with cautions.
± 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 will be surveyed.)

Average HH Size	8	Based on AfDH survey the mostly frequent of the HH was 8.
% Children under-5	15.5 %	Based on CSO updated population for Afghanistan 1396 (2017-2018)
% Non-response Households	6 %	The percentage of non-respondent households was estimated at 6%. Using the last experience of the SMART surveys in the deferent provinces.
Households to be included	696	Minimum sample size-Households to be surveyed. Households will be the basic sampling unit for the SMART survey

Table 3: Sample size calculation for mortality survey, Takhar SMART, July 2017

Parameters for Mortality	Value	Assumptions based on context
Estimated Death Rate /10,000/day	0.05/1000 0/day	No updated death rate at population level; Recommended in cases where there is no specific mortality data for the area to be surveyed.
± Desired precision /10,000/day	0.1%	Based on survey objectives and inline to estimated death rate.
Design Effect (if applicable)	1.5	This will caters for heterogeneity in the population being sampled.
Recall Period in days	130	Starting point of recall period calculated from the commence Starting point of recall period will be done (from the beginning of Now Rose).1st Hamal 1396 the date of recall is equivalent to 21st March 2017 as per Gregorian calendar. Mend of Winter session, 1st Jadi 1395 the date of recall is equivalent to 21th December 2016 as per Gregorian calendar.
Population to be included	**2,727**	**Population**
Average HH Size	8	Based on Farah SMART survey the most frequent HH size was 7.
% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%. Using the last experience of the SMART surveys in the deferent provinces.
Households to be included	**363**	**Households**

WHO 2010, Indicators for Infant and Young child Feeding Practices

It is to be noted that the required number of sample for the anthropometric is 696 households, which is already more than 363 HHs estimated for mortality sample. Therefore the IYCF questionnaires have been administered in the same households for anthropometric indicators with eligible target group (i.e. mother of infant <6months for EBF indicators) for different IYCH indicators.

3.3. Training, team composition and supervision

Six teams of four members' 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[1] to facilitate the work of the female data collectors at the community level. ACF Nutrition SMART Senior Deputy Program manager, AADA Nutrition focal point and PNO supervised the teams.

The entire teams received a 7-days training on the survey methodology and all its practical aspects; conducted by ACF Nutrition SMART Senior Deputy Program Manager. A standardization test was conducted over the period of one day, measured 8 children, in order to evaluate the accuracy and the precision of anthropometric measurement for each team members. Despite standardization test for one day, filed works (field test) was conducted to seek the professionalism of the team on the ground. Base on filed test, result feedback provided to the team in order to strength their weak points; 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 Dari, local language, for better 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.

3.4. Data entry and analysis

Anthropometric and mortality data were studied using ENA for SMART software 2011 version (updated 9th July 2015). The software automatically generated assessment result 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 2017

4. Indicators: definition, calculation and interpretation

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

- **Acute Malnutrition**

Acute malnutrition in children 6-59 months can be expressed by using 2 indicators; Weight for Height (W/H) or Mid Upper Arm Circumference (MUAC) as described below.

Weight-for-height index (W/H)

Child's nutritional status is estimated by comparing it to the weight-for-height curves of a reference

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

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

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

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 4 provides the cut-off criteria for categorizing acute malnutrition cases.

Table 4: MUAC cut-offs points for children aged 6-59 months

Target group	MUAC (mm)	Nutritional status
Children 6-59 months	**> or = 125**	No malnutrition
	< 125 to >= 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 5: 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 below.

Table 6: Cut offs points of the Height for Age index (HAZ) expressed in Z-score, WHO standards

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

4.2. Mortality Indicator Calculation

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

4.3. Crude death rate (CDR)

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

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

4.4. Under-5 death rate (U5DR)

The number of children aged (0-5) years that die over specified period of time Table 2 above for Sample size calculation for mortality surveys. Calculated as:

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

5. Health

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

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

- **Morbidity**

Mothers/caretakers of children were asked if children had experienced an illness in the past 2 weeks. Acute respiratory infection, fever and diarrhoea was 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 were assessed for their nutritional status based on MUAC using the cut-off of 230 mm.

6. WASH

- **Water storage and Usage**

House hold heads was 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 was 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.

7. 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 less than < 24 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 was looking at the number of mothers who ever breast fed their children. This indicator was based on historic recall.

- **Timely initiation of breastfeeding**

Proportion of children born in the last 24 months, whom were timely breast feed (breast feed at first hours of birth). The indicator is calculating by dividing the number of children aged 24 months who were timely breast feed by children age less than 24 months. The denominator and numerator include living children and deceased children who were born within the past 24 months. This indicator was based on historical recall.

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

Proportion of children who received colostrum (yellowish liquid milk) within the first 3 days after birth.This indicator was 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. It's 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. 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. It's 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 leas then <24 months of age who are fed breast milk. It's calculated by dividing the number of children aged leas then < 24 months who received breast milk during the previous day by total children aged leas the < 24 months.

8. Maternal Health and Nutrition

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

9. Survey Findings

9.1. Anthropometric results (based on WHO standard)

Anthropometric results are presented with exclusion of SMART flags: Z score values ranging outside- -3 to +3 for all three index (WHZ, HAZ and WAZ). The survey finding opened the distribution of the boys and girls in the sample were significant excess of boys with (**p-value = 0.039)**, the percentage of values flagged with SMART flags was WHZ: 0.7 %, HAZ: 1.3 % and WAZ: 0.5 %,

Age ratio of 6-29 months to 30-59 months: 0.88 (The value should be around 0.85).: p-value = 0.602 (as expected)

For more details, refer to **ANNEX 1** plausibility report.

Table 7: Distribution of age and sex of sample, Takhar SMART, July 2017

	Boys	%	Girls	%	Total	%	Ratio, boys : girls
AGE (mo)	No.	%	No.	%	No.	%	Boy:Girl
6-17	117	53.4	102	46.6	219	22.7	1.1
18-29	123	53.0	109	47.0	232	24.1	1.1
30-41	120	52.9	107	47.1	227	23.5	1.1
42-53	95	53.4	83	46.6	178	18.5	1.1
54-59	59	54.6	49	45.4	108	11.2	1.2
Total	514	53.3	450	46.7	964	100.0	1.1

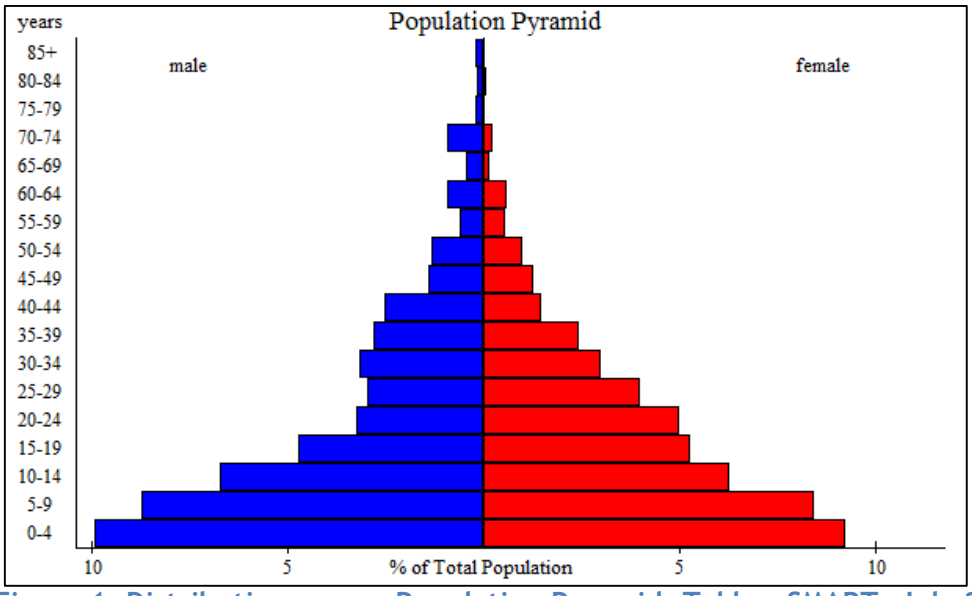


Figure 1: Distribution curves Population Pyramid, Takhar SMART, July 2017

9.2. Quality of anthropometric data

The anthropometric data were analyzed using ENA for SMART Software (version 2011, 9th July 2015 updated). The plausibility check report is available in **Annex 1.**

The summery of mean z score with Standard deveaitions, the design effects and number of the out of range data per index is indicating in table below.

Table 8: Mean z-scores, Design Effects and excluded subjects in children age under 6-59 months, Takhar SMART, July 2017

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	957	-0.58±1.06	1.66	0	7
Weight-for-Age	959	-1.38±0.89	2.24	0	5
Height-for-Age	951	-1.73±1.05	1.58	0	13

* contains for WHZ and WAZ the children with Oedema.

Table 9: Mean z-scores, Design Effects and excluded subjects in children age under 0-59 months, Takhar SMART, July 2017

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	1047	-0.62±1.08	1.46	0	8
Weight-for-Age	1049	-1.35±0.90	2.35	0	6
Height-for-Age	1036	-1.62±1.09	1.59	0	19

* contains for WHZ and WAZ the children with edema.

9.3. Prevalence of Acute malnutrition based on weight for height z - score:

The sex and age disaggregated results are presented in table 10 and 11 respectively. The Prevalence of wasting is higher among boys as compared to girls. The younger Children (6-29months) 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-scores (and/or oedema) and by sex children age 6-59 months, Takhar SMART, July 2017.

	All n = 957	Boys n = 511	Girls n = 446
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	(93) 9.7 % (7.5 - 12.5 95% C.I.)	(61) 11.9 % (9.3 - 15.2 95% C.I.)	(32) 7.2 % (4.7 - 10.9 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(76) 7.9 % (6.0 - 10.5 95% C.I.)	(50) 9.8 % (7.4 - 12.9 95% C.I.)	(26) 5.8 % (3.7 - 9.1 95% C.I.)

Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	(17) 1.8 % (1.1 - 2.9 95% C.I.)	(11) 2.2 % (1.2 - 3.8 95% C.I.)	(6) 1.3 % (0.6 - 2.9 95% C.I.)

The prevalence of oedema is 0.0 %

Table 11: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema in children age 6-59 months, Takhar SMART, July 2017

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	214	13	6.1	43	20.1	158	73.8	0	0.0
18-29	232	2	0.9	14	6.0	216	93.1	0	0.0
30-41	225	1	0.4	8	3.6	216	96.0	0	0.0
42-53	178	1	0.6	7	3.9	170	95.5	0	0.0
54-59	108	0	0.0	4	3.7	104	96.3	0	0.0
Total	957	17	1.8	76	7.9	864	90.3	0	0.0

Table 12: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema in children age 0-59 months, Takhar SMART, July 2017

	All n = 1047	Boys n = 547	Girls n = 500
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	(113) 10.8 % (8.7 - 13.4 95% C.I.)	(73) 13.3 % (10.7 - 16.6 95% C.I.)	(40) 8.0 % (5.5 - 11.4 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(93) 8.9 % (6.9 - 11.3 95% C.I.)	(59) 10.8 % (8.2 - 14.0 95% C.I.)	(34) 6.8 % (4.7 - 9.8 95% C.I.)
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	(20) 1.9 % (1.2 - 3.0 95% C.I.)	(14) 2.6 % (1.5 - 4.3 95% C.I.)	(6) 1.2 % (0.6 - 2.6 95% C.I.)

The prevalence of oedema is 0.0 %

Table 13: Distribution of acute malnutrition and oedema based on weight-for-height z-scores in age 6-59 months, Takhar SMART July 2017

	<-3 z-score	>=-3 z-score
Oedema present	**Marasmic kwashiorkor No. 0 (0.0 %)**	**Kwashiorkor No. 0 (0.0 %)**

Oedema absent	**Marasmic No. 21 (2.2 %)**	**Not severely malnourished No. 943 (97.8%)**

Table 14: Distribution of acute malnutrition and oedema based on weight-for-height z-scores in age 0-59 months, Takhar SMART July 2017

	<-3 z-score	>=-3 z-score
Oedema present	**Marasmic kwashiorkor No. 0 (0.0 %)**	**Kwashiorkor No. 0 (0.0 %)**
Oedema absent	**Marasmic No. 25 (2.4 %)**	**Not severely malnourished No. 1030 (97.6 %)**

Table 15: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex in children 6-59 months, Takhar SMART, July 2017

	All n = 964	Boys n = 514	Girls n = 450
Prevalence of global acute malnutrition (< 125 mm and/or oedema)	(114) 11.8 % (9.3 - 14.9 95% C.I.)	(45) 8.8 % (6.2 - 12.2 95% C.I.)	(69) 15.3 % (11.8 - 19.6 95% C.I.)
Prevalence of moderate acute malnutrition (< 125 mm and >= 115 mm, no oedema)	(93) 9.6 % (7.7 - 12.1 95% C.I.)	(34) 6.6 % (4.5 - 9.6 95% C.I.)	(59) 13.1 % (10.1 - 16.9 95% C.I.)
Prevalence of severe acute malnutrition (< 115 mm and/or oedema)	(21) 2.2 % (1.2 - 3.8 95% C.I.)	(11) 2.1 % (1.2 - 3.8 95% C.I.)	(10) 2.2 % (1.1 - 4.5 95% C.I.)

9.4. Prevalence of acute malnutrition based on MUAC cut off classification

The prevalence of acute malnutrition by age, based on MUAC cut offs and/ or oedema among younger children (6-29 months) seem to be more affected than older (30-59 months).

Table 16: Prevalence of acute malnutrition by age, based on MUAC cut offs and/or oedema, Samangan SMART, March 2017

		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	219	13	5.9	53	24.2	153	69.9	0	0.0
18-29	232	3	1.3	37	15.9	192	82.8	0	0.0
30-41	227	4	1.8	2	0.9	221	97.4	0	0.0
42-53	178	1	0.6	1	0.6	176	98.9	0	0.0
54-59	108	0	0.0	0	0.0	108	100.0	0	0.0

Total	964	21	2.2	93	9.6	850	88.2	0	0.0

9.5. Prevalence of underweight based on Weight for Age Z-score (WAZ) (WHO 2006)

The underweight is defined by weight for age Z score (WAZ), the sex and age disaggregated results are present in the table below.

Table 17: Prevalence of underweight based on weight-for-age z-scores by sex in children age 6-59 months, Takhar SMART, July 2017

	All n = 959	Boys n = 510	Girls n = 449
Prevalence of underweight (<-2 z-score)	(210) 21.9 % (18.1 - 26.2 95% C.I.)	(115) 22.5 % (18.7 - 27.0 95% C.I.)	(95) 21.2 % (16.3 - 27.0 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(170) 17.7 % (15.0 - 20.9 95% C.I.)	(90) 17.6 % (14.7 - 21.0 95% C.I.)	(80) 17.8 % (14.0 - 22.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(40) 4.2 % (2.7 - 6.3 95% C.I.)	(25) 4.9 % (3.2 - 7.4 95% C.I.)	(15) 3.3 % (1.7 - 6.3 95% C.I.)

Table 18: Prevalence of underweight by age, based on weight-for-age z-scores Takhar SMART, July 2017

		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	217	20	9.2	52	24.0	145	66.8	0	0.0
18-29	232	13	5.6	58	25.0	161	69.4	0	0.0
30-41	224	4	1.8	29	12.9	191	85.3	0	0.0
42-53	178	3	1.7	20	11.2	155	87.1	0	0.0
54-59	108	0	0.0	11	10.2	97	89.8	0	0.0
Total	959	40	4.2	170	17.7	749	78.1	0	0.0

9.6. Prevalence of stunting based on height for age Z score (HAZ)

The stunting or chronic malnutrition is defined by height for age Z score (HAZ), the sex and age disaggregated results are presented in table below.

Table 19: Prevalence of stunting based on height-for-age z-scores and by sex, Takhar SMART, July 2017

	All n = 951	Boys n = 505	Girls n = 446
Prevalence of stunting (<-2 z-score)	(362) 38.1 % (34.2 - 42.1 95% C.I.)	(201) 39.8 % (34.8 - 45.0 95% C.I.)	(161) 36.1 % (30.7 - 41.8 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(255) 26.8 % (24.1 - 29.7 95% C.I.)	(142) 28.1 % (24.3 - 32.3 95% C.I.)	(113) 25.3 % (21.1 - 30.1 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(107) 11.3 % (9.0 - 13.9 95% C.I.)	(59) 11.7 % (8.8 - 15.3 95% C.I.)	(48) 10.8 % (7.8 - 14.6 95% C.I.)

Table 20: Prevalence of stunting by age based on height-for-age z-scores, Takhar SMART, July 2017

		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	213	18	8.5	34	16.0	161	75.6
18-29	229	41	17.9	81	35.4	107	46.7
30-41	223	29	13.0	73	32.7	121	54.3
42-53	178	15	8.4	42	23.6	121	68.0
54-59	108	4	3.7	25	23.1	79	73.1
Total	951	107	11.3	255	26.8	589	61.9

Figure 2 shows the distribution of HAZ of the observed population (SMART flags excluded) compared to WHO Reference curve. In Takhar. Further analysis (**Figure 3**) suggests that linear growth retardation is at its highest in the lower age group of children (18-29 months)

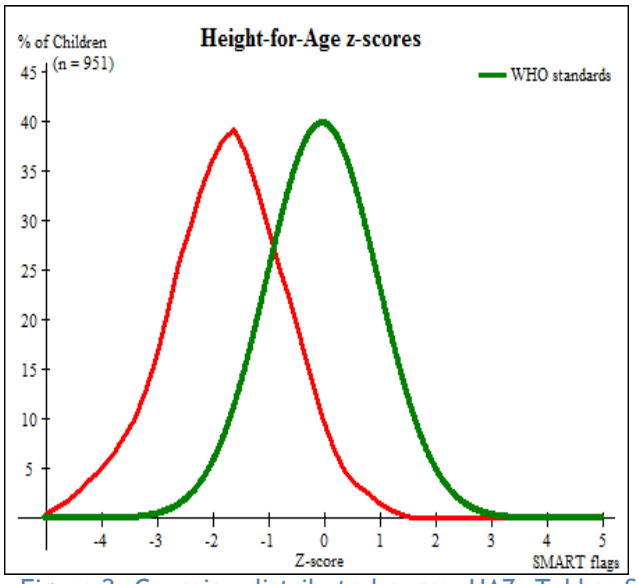


Figure 2: Gaussian distributed curve, HAZ, Takhar SMART

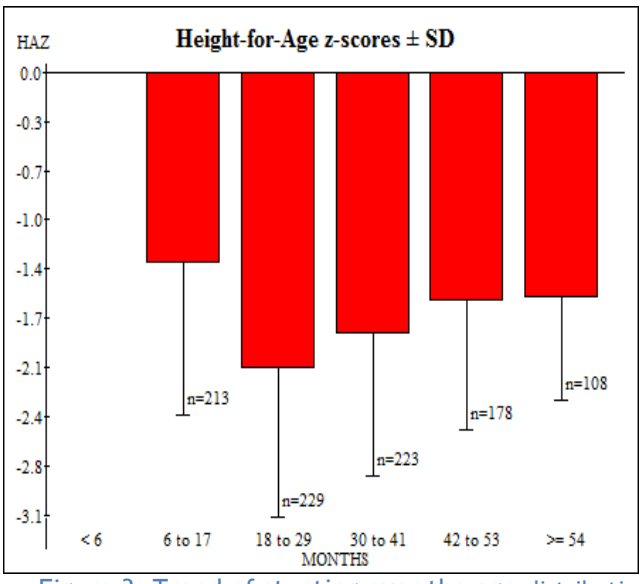


Figure 3: Trend of stunting over the age distribution

9.9. Maternal Nutrition status of Pregnant and Lactating Women's (PLW)

725 mothers and care takers were living in the selected households have been surveyed, the survey results presented in table below as a proportion from the 495 total number of pregnant and lactating measured women using MUAC cut off 230 mm and 210 mm. While to classify the early stage of nutrition status for referral OPD-MAM enrolment criteria the unique cut off less than 230 mm is used in Afghanistan.

Table 21: Nutrition status of reproductive women based on MUAC cut off, Takhar SMART,July 2017

PLWs MUAC cut off (N=495)	Frequency	Results 95% CI
Global Acute Malnutrition MUAC <230 mm	124	25.1% (21.2-28.9 95% CI)
Moderate acute malnutrition MUAC >210 mm - <230 mm	109	22.0% (18.4-25.7 95% CI)
Sever acute malnutrition MUAC< 210 mm	15	3.0% (1.5-4.5 95% CI)

Table 22:Physiological status of women of reproductive age (15 – 49 years), (n=725), Takhar SMART, July 2017

Status	Frequency	%
Pregnant	118	16.3 %
Lactating	377	52.0 %
Non-pregnant & non-lactating	230	31.7 %

Table 23: Iron folate for pregnant women based on available answers, (n=118), Takhar SMART, July 2017

Iron-folate for PLW	Frequency	%
Yes	56	47.5 %
No	62	52.5 %
Don't know	0	0.0 %

Table 24: ANC visits in the last pregnancy, (N=725), Takhar SMART, July 2017

ANC Visit (N=725)	Frequency	%
ANC visited by WHOM	**Frequency**	**%**
Health professional	433	59.7 %
Traditional birth attendant	23	3.2 %
Community health worker	7	1.0 %
Relative/Friends	16	2.2 %
Not visited (No ANC) during pregnancy	246	33.9 %

Table 25: Skill birth Attendance (SBA), (N=725), Takhar SMART, July 2017

		Frequency	%
Delivery at health facilities		414	57.1 %
Delivery at Home	**Professional staff (midwife, community midwife, Doctor and Nurse).**	14	1.9 %
	None professional staff (CHWs , TBA and relatives)	297	41.0 %

9.10. Child health and immunization

Retrospective morbidity data was collected among children 0-59 months with two weeks recall period to assess for the prevalence of main disease. The survey finding shows that **52.9%** of children had at least one episode of illness in the 2 weeks period to the survey. The major illnesses reported such as fever diarrhea and ARI as a highlighted in table below.

Table 26: Major illnesses reported among children 0-59 months, Takhar SMART, July 2017

Parameter	Frequency (558)	Results
Acute Respiratory infection (ARI)	102	9.7 %
Fever	420	39.8 %
Diarrhea	466	44.2%

Table 27: Immunization coverages for BCG, measles and Polio, Takhar SMART, July 2017

Indicators	Class	Frequency	Results
Measles (children form 9-59 months) (N= 898)	Yes by cards	349	38.9 %
	Yes by recall	473	52. %
	Both by cards and recall	822	91.5 %
	No	75	8.4 %
	Don't know	1	0.1 %
Polio (children from 0-59 months) (N= 1,055)	Yes by cards	504	47.8 %
	Yes by recall	497	47.1 %
	Both by cards and recall	1,001	94.9 %
	No	51	4.8 %
	Don't Know	3	0.3 %
PENTA 3 (children from 3.5-59 months) (N=994)	Yes by cards	394	39.6 %
	Yes by recall	472	47.5 %
	Both by cards and recall	866	87.1 %
	No	**123**	12.4 %
	Don't Know	**5**	0.5 %
BCG scares (children 0-59 months (N=1,055)	By scare confirmation	**1,011**	95.8 %

9.11. Vitamin-A Supplementation and Deworming

Vitamin A supplementation was quite good, deworming was also very good. See the table below.

Table 28: Vitamin A supplementation and Deworming for under five children, Takhar SMART, July 2017

Indicators	Class	Frequency	Results
Vitamin A supplementation 6-59 months (N= 964)	**Yes**	923	95.7 %
	No	38	3.9 %
	Don't know	3	0.3 %
Deworming 24-59 months (N=647)	**Yes**	588	90.9 %
	No	57	8.8 %

	Don't know	2	0.3 %

9.12. IYCF Indicators

Indicators for infant and young child feeding (IYCF) practices included all children less than 24 months. 408 children's were included in the sample. The results are presented as percentage (See Table below).

Table 29: Infant and Young Child Feeding Practice, Takhar SMART, July 2017

CORE INDICATORS	DEFINITION	n	%
Child ever breastfed (N=408)	Proportion of children who have ever received breast milk	**408**	**100 %**
Timely initiation of breastfeeding (N=408)	Proportion of children born in the last 23 months who were put to the breast within one hour of birth	**204**	**50.0 %**
Provision of colostrum within first 3 days (N=408)	Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth	**388**	**95.1 %**
Still breast feeding at 1 year (N=56)	Proportion of children 12-15 months of age who are fed breast milk.	**53**	**94.6 %**
Exclusive breast feeding (N=91)	Proportion of infants 0-5 months of age who are fed exclusively with breast milk.	**71**	**78.0 %**
Introduction of solid, semi-solid or soft foods (N=66)	Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods.	**24**	**36.4 %**

9.13. Crude 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 30: Mortality rate by age category with design effect, Takhar SMART, July 2017

	Crude Death Rate (95% CI)	Design Effect
'Overall	**0.34 (0.22-0.53)**	**1.00**
'Sex		
'Male	**0.46 (0.26-0.82)**	**1.09**
'Female	**0.22 (0.10-0.49)**	**1.00**
'Years		
'0-4	**0.28 (0.09-0.87)**	**1.00**
'5-11	**0.16 (0.02-1.19)**	**1.99**
'12-17	**0.13 (0.02-0.96)**	**1.00**
'18-49	**0.39 (0.18-0.82)**	**1.12**
'50-64	**0.72 (0.17-2.95)**	**1.00**
'65-120	**0.74 (0.09-5.64)**	**1.05**

9.14. WASH Indicators

696 responders, representing 673 households and 4,808 individuals, included, either male or female. The information collected from household's regarding total amount of water consumption in liter per household, excluded those water used by animals, and subsequently organized into range of liters used. The results were then divided into the quantity of water in liters available to each household member per day; refer to figures 4 and 5 below.

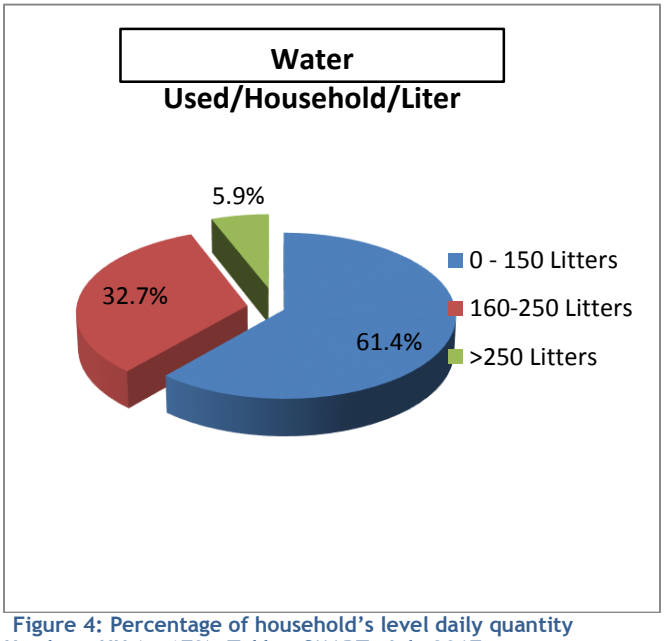


Figure 4: Percentage of household's level daily quantity Used per HH (n=673), Takhar SMART, July 2017

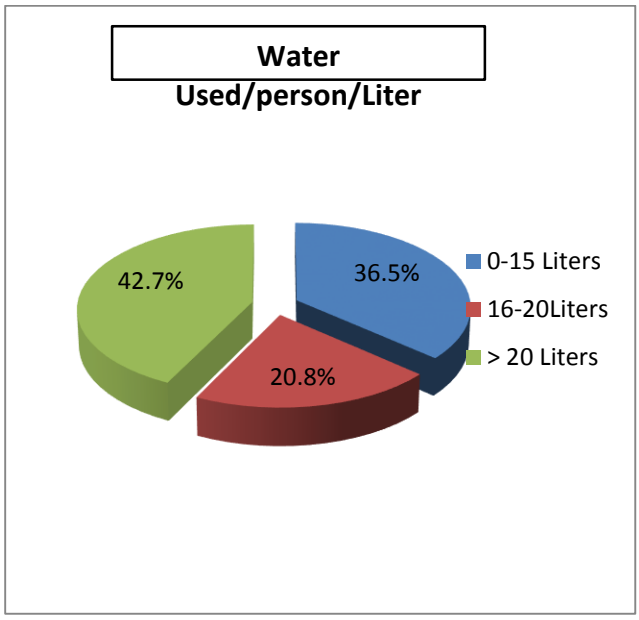


Figure 5: Percentage of access to water daily used in Liter/person/day, Takhar SMART, July 2017

Table 31: Percentage of households with access to water treatment (n=673), Takhar SMART, July 2017

Water treatment	Frequency	%
Boil	109	16.2 %
Chlorine	22	3.3 %
Strain into the cloths	36	5.3 %
Water filter	0	0.0 %
Stand and settle	405	60.2%
Nothing used from the above	101	15.0 %

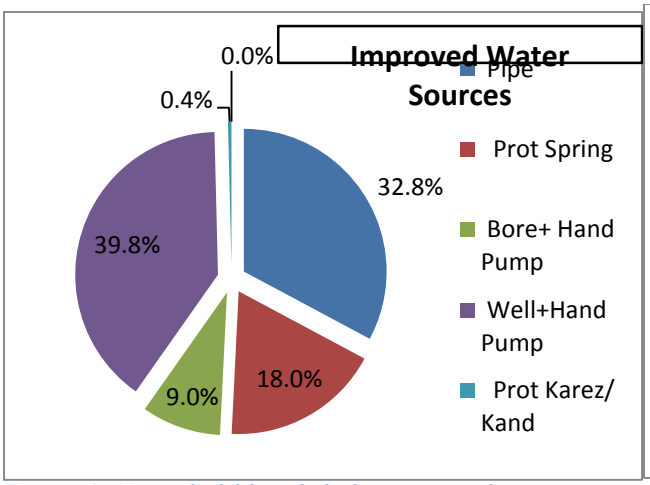


Figure 6: Household level daily-improved water sources (n=512), Takhar July 2017

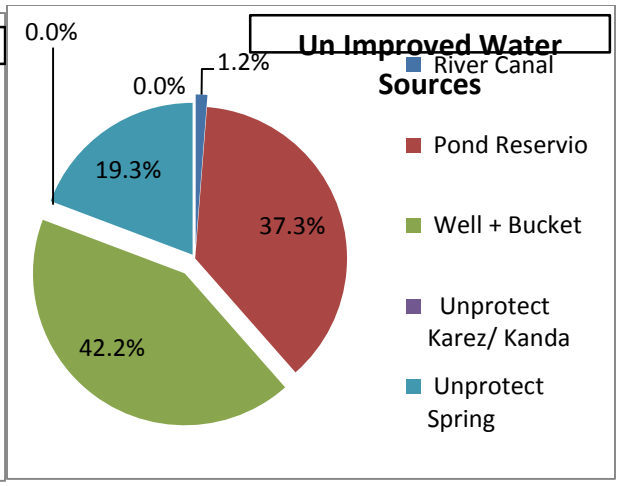


Figure 7: Households level daily-unimproved water sources (n =161), Takhar SMART, July 2017

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

Table 32: Hand washing practice, Takhar SMART, July 2017

Hand Washing care takers (n=725)	Frequency	%
Only water	339	46.8%
Soap/ASH with water	385	53.1%
Wash both hands	551	76.0%
Rubs hands together at least three times	65	9.0%
Dries hands hygienically by air-drying or using a clean cloth	53	7.3%

Table 33: Hand washing practice at 5 critical moments, (n=725), Takhar SMART, July 2017

Response	Frequency	%
Wash hands at all 5 critical moments	65	9.0%
After Toilet/latrines	537	74.1%
After clean baby	257	35.4%
Before food preparation	370	51.0%
Before eat	652	89.9%
Before feed child	84	11.6%

*: 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.

10. Food Security and livelihood Results

10.1. Food Consumption Scores and Food Based Coping Strategies

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)[2] as a description for the current short-term household food security situation is triangulated with the food-based or reduced Coping Strategy Index (rCSI)[3] 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.

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 Security ***(Table)[4].***

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

10.2. Food security situation

[2] 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.

[3] 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).

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

Based on triangulation of Food Consumption Score (FSC) with the food-based or reduced Coping Strategy Index (rCSI), the survey finding shows 4% of households have severely food insecurity and 15 % of households were moderately food insecurity see figure below for more details.

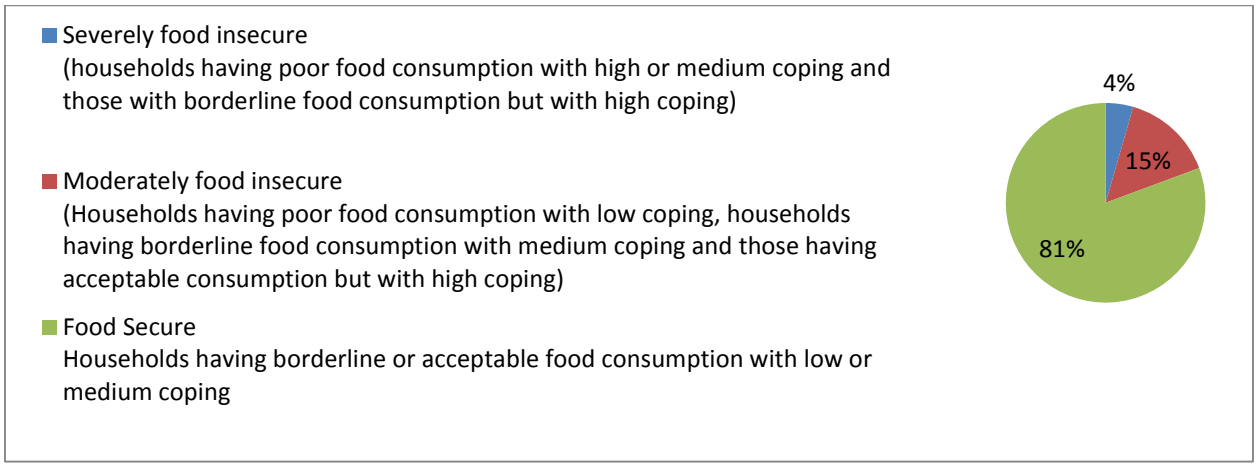
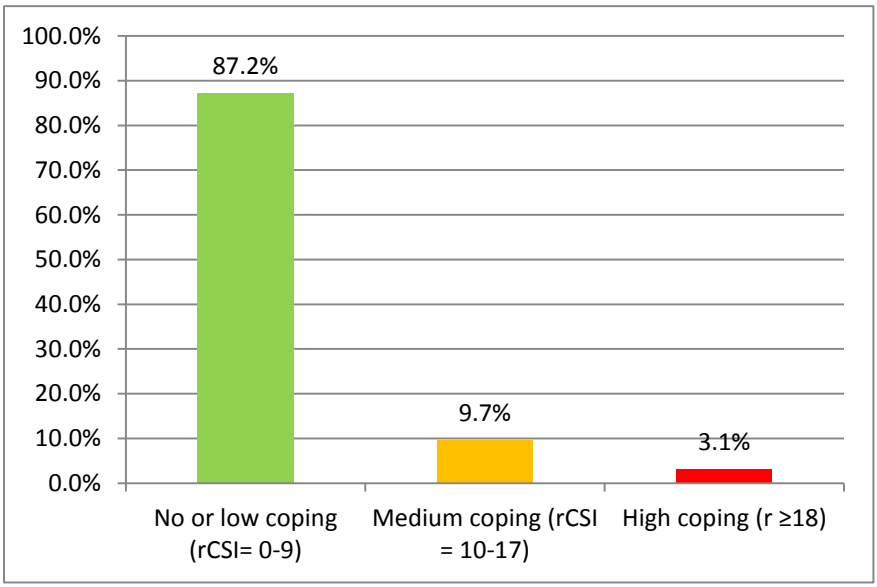


Figure 8: Food Security Situation (Based on FCS & rSCI)

10.3. Reduced Coping Strategy Index[5]

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

- ✓ 3.1% of HHs with a high level of coping (rCSI ≥18 score).
- ✓ 9.7% 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).

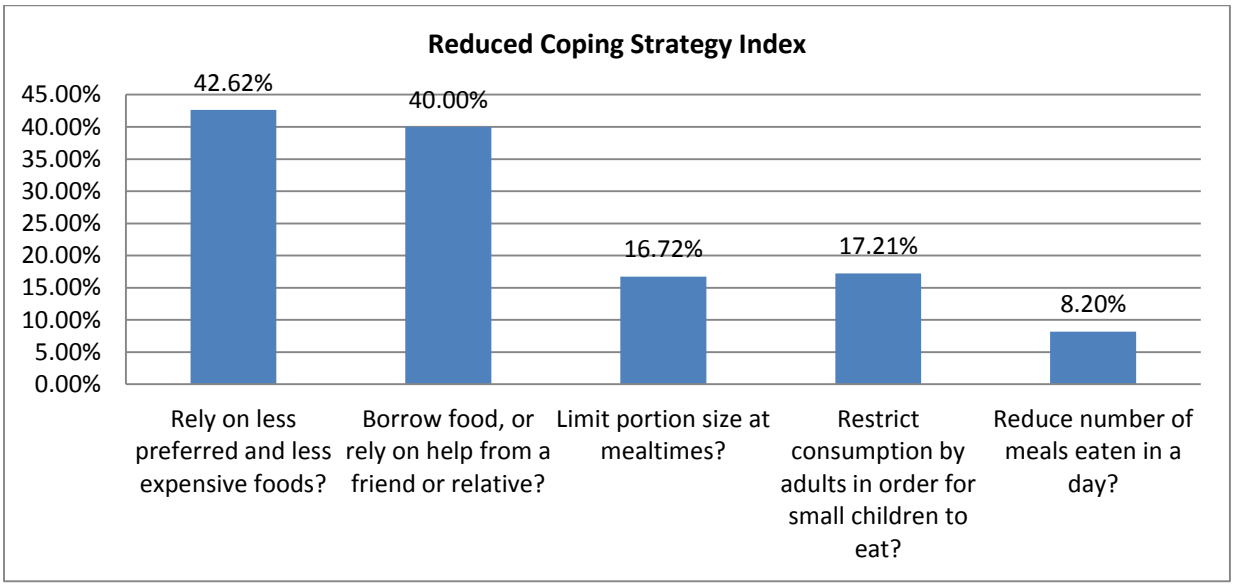


Figure 9: Reduced coping strategy index, Takhar SMART, July 2017

10.4. Food Consumption Score:

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

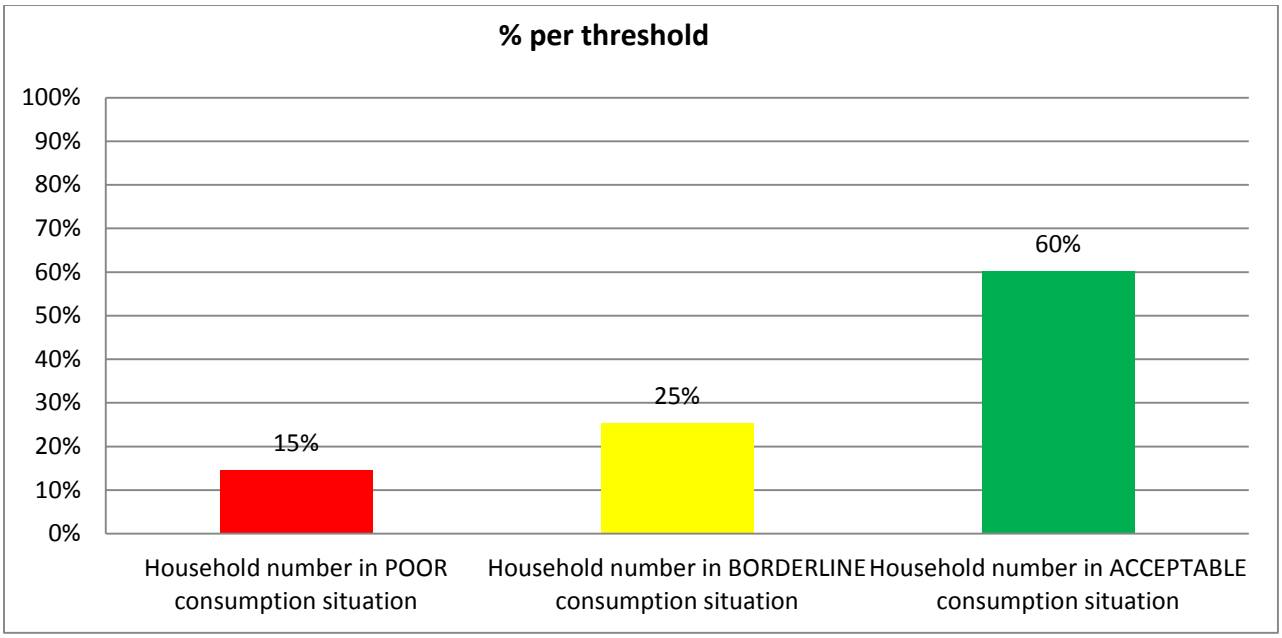


Figure 10: Food Consumption scores per HH, Takhar SMART, and July 2017

- ✓ 15% households surveyed have Poor consumption scores (FCS = 1.0 to 28).
- ✓ 25% households surveyed have Border line consumption scores (FCS = 28.1 to 42).
- ✓ 60% households surveyed have acceptable food consumption scores (FCS = >42.0).

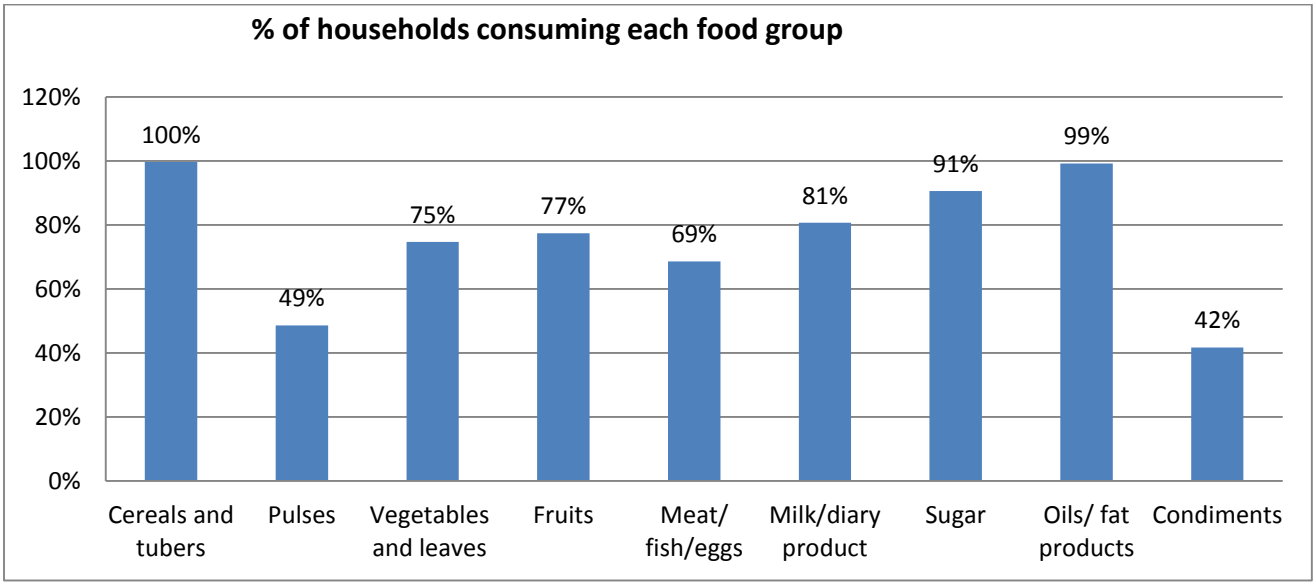


Figure 11: Households consuming each food group, Takhar SMART, July 2017

10.5. Food stock

Out of 696 households 673 households responded for the food stock, for more detail refer to table below;

Table 34: food stock in households level, (n=673), Takhar SMART survey, July 2017

	N	%
No food stock in the households	124	18.4 %
Less than a week stock in the HH	133	19.8 %
Food stock in HHs from 1 to 3 weeks	221	32.8 %
Food stock in HHS up to 3 months	68	10.1 %
Food stock in HHs more than 3 months	127	18.9 %

10.6. Food Main Sources

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

Table 35: Food main sources, Takhar SMART, July 2017

	Own production	Cash	Credit	Battering	Gift/ charity	Wild food	Food Aid	Total
Cereals and tubers	288	379	2	0	2	0	2	673
Pulses/ Nuts	76	252	1	0	2	0	0	331
Vegetables and leaves	123	370	0	0	10	0	0	503
Fruits	105	404	0	2	10	0	0	521
Meat/ fish/eggs	44	417	0	0	1	0	0	462
Milk/diary product	337	172	2	0	34	0	0	545
Sugar / Honey	9	597	0	1	1	0	2	610
Oils/ fat products	24	636	2	0	1	1	3	667
Condiments	12	270	0	1	0	0	1	284

11. Demography

The mortality questionnaires in SMART designed in a way that some additional useful demography data can be withdrawn. Summery is highlighted in tables below. A total of 4808 individuals and 1595 School age children (6-18) years) were presented in the surveyed households out of them 1031 children were attend the school in the last 4 days.

Table 36: Short Summery of demography, Takhar SMART, July 2017

Indicators	Value
Average households size	7.1 %
Children under five	20.9 %
People have Tazkera	35.4%

12. Returnees

The information collected from households regarding returnees and IDPs due to different reasons, in the survey no collected data for the reason of IDPs, see below table for more details.

Table 37: percentage of Returnees and IDPs, (N=673), Takhar SMART, July 2017

Residential status of Households	Permanent residential	649	96.4 %
	Internal Displacement	19	2.8 %
	Returnees	5	0.7 %

13. Discussions

13.1. Nutrition status

The GAM rate, based on WHZ and Oedema was found **9.7% (7.5-12.5 95% CI)** which classify the situation as poor (WHO Crisis Classification of GAM rates[6]). The SAM rate, based on WHZ, was **1.8 % (1.1-2.9 95% CI)**. The GAM rate based on MUAC<125 mm was) 11.8 % (9.3-14.9 95% C.I.) While the SAM rate was 2.2% (1.2 - 3.8 95% C.I) in depth analysis indicated that the WHZ and MUAC prevalence are not based on the same Children and GAM rate for children 0-59 months based on WHZ and Oedema was found 10.8% (8.7-13.4 95% CI) which is classify the situation as serious (WHO Crisis Classification of GAM rates). The SAM rate for children 0-59 months based on WHZ was 1.9% (1.2-3.0 95% CI). **Figure-12** schematically proves this difference.

[6] WHO 2000 classification; <5% normal, 5-9.9% poor, 10-14.9% Serious and >15% critical

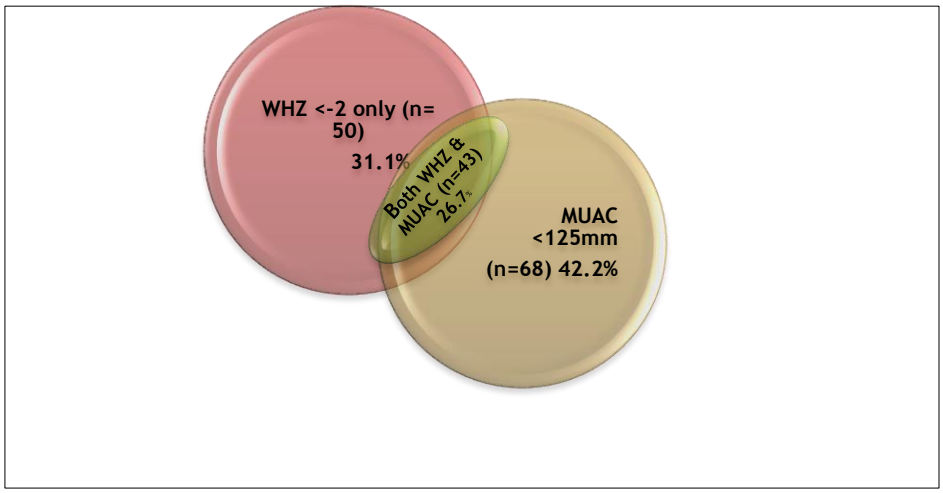


Figure 12 : Overlapping WHZ<-2 and MUAC<125, Takhar SMART, July

Only 26.7% children in the sample were detected as acutely malnourished according both criteria, children classified as wasted by WHZ only were 31.1% and those wasted by MUAC only were 42.2%. Therefore, it is likely that MUAC based community screenings are not enough to detect all acutely malnourished children eligible for treatment according to the criteria stipulated in the Afghanistan National IMAM Guidelines. In that regard, exploring innovation methods of community detection and screening is a must.

The use of only MUAC or only WHZ based rates might lead to under estimation of caseload when comes to programming. Data were analyzed to get the combined WHZ/MUAC GAM and SAM rates to inform better programming in Takhar province. Thus, combined **GAM was of 16.8% (14.4-19.2 95% CI) and 3.3% (2.2-4.5 95% CI).** These rates directly classify the situation in Takhar province as serious need to strength IMAM program.

Chronic malnutrition trends in Takhar province remain worrying. The results of the present survey clearly showed that stunting was of **38.1% (34.2-42.1 95% CI)**. One in each 3 children included in the survey were found to be stunted, while 1 in each 5 children was underweight. The high stunting rates are in line with high morbidity (52.9% reported of being ill in 2 weeks prior to survey), and poor infant feeding practices (exclusive breastfeeding was found to be 78.0% and timely complementary feeding was of 36.4%) have been known to expose children under nutrition and its potential consequences.

13.2. Maternal nutritional status

There are no commonly accepted international standards for maternal nutrition status. In line with the Afghanistan National Guideline, the MUAC cutoff for pregnant and lactating women of 230 mm is used to approximately identify their status. In this survey 25.1% (21.2- 28.9, 95 % CI) of pregnant and lactating women were found to have a MUAC <230mm, which suggest that a considerable number of PLWs in

Takhar province are likely to have High nutritional status. The main concern was iron supplementation among pregnant women which was found to be very low (47.5%). The Iron supplementation prevent anemia during pregnancy and eventual life-threatening complications during delivery. Therefore, it decreases maternal mortality, prenatal and perinatal infant loss and prematurity, which can be directly related to child stunting in the first 2 years of life. The Iron/Folate supplementation for pregnant women needs to be increase significantly by reinforcing the usual channels for that in BPHS/CBHC. The BPHS Implementing partner needs to make immediately significant progress by reinforcing ANC and CHW home visits to PLW.

13.3. IYCF practice

Optimal infant and young child nutrition, especially exclusive breastfeeding is estimate to prevent potentially deaths every year among children under five years old. Infant and young child feeding nutrition in this area still needs to be improved.

Findings so far have indicated that timely initiation of breastfeeding, colostrum feeding and continuous breastfeeding up to the first year of life were well practice by the mothers. However, exclusive breastfeeding rate of 78.0% is of real concern as these potentially contribute to stunting in the first two years of life. The introduction of complementary feeding after 6 months of EBF period remain relatively poor (36.4%) and often mixed with tea (inhibits iron absorption). These two practices need to be significantly improved in a targeted manner. Further analysis of the quality of the complementary food has to be done.

13.4. Death rates

The survey showed that the Crude Mortality Rate (CMR) and under five mortality rate (U5MR) were 0.34 (0.22-0.53) and 0.28 (0.09-0.87) respectively. Both CMR and U5MR rates were below the WHO's emergency thresholds of 2/10,000/day and 4/10,000/day respectively.

13.5. Risk 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. Diseases weaken an individual immune system causing them have other side effects such as reduced food intake and diarrhea. In the entire Takhar province, more than half of the sampled children had suffered from 1 form of illness or another (52.9%) such as diarrhea, fever, cough and skin infection.

The coverage of Vitamin-A supplementation, 6 months prior to the survey, was very good. About 95.7% children received vitamin A supplementation. One of the core functions of Vitamin A is to boost an individuals' immunity hence important of supplement. Building awareness on Vitamin A is of importance as the current rates are high compare to the recommended WHO target of 80%, vitamin A coverage that probably happened due to effectiveness of the integrated NIDs campaign.

14. Conclusion

The survey findings revealed that the prevalence of Global Acute Malnutrition (GAM) based on weight-for-height z-scores (WHZ) children age under 6-59 month was at 9.7 % (7.5 - 12.5 95% C.I.) and SAM was at 1.8 % (1.1 - 2.9 95% C.I.) indicating a "Poor" according to WHO classification of acute malnutrition nutrition situation and Prevalence of Global Acute Malnutrition (GAM) based on weight-for-height z-scores (WHZ) children age under 0-59 month was at 10.8 % (8.7 - 13.4 95% C.I.) and SAM was at 1.9 % (1.2 - 3.0 95% C.I.) indicating a "Serious" according to WHO classification of acute malnutrition nutrition situation, Prevalence of GAM based on MUAC cut-offs was 11.8 %(9.3 - 14.9 95% C.I.) And SAM was at 2.2 % (1.2-3.8 95% CI) respectively. The situation of the province need to strength the current IMAM program and need to focus on the SAM treatment and prevention of under five children.

If both criteria are combine, overall rate of children likely to be eligible for SAM and MAM management increases to **16.8% (14.4-19.2 95% CI)**, SAM combined rates is estimated to be **3.3% (2.2-4.5 95% CI)**. It is recommended to use the combined rates for estimation of GAM and SAM caseload in the province for program design and caseload calculation. Further analysis of the data suggests that these rates do not refer to the same children. Children classified, as wasted based WHZ are not fully overlapping with those classified wasted based on MUAC.

Stunting and underweight prevalence in the province can be consider emergency, although poor Micronutrient supplementation and deworming, low maternal nutrition status as observed in Takhar province that need to addressed if not can be contribute to growth the level of chronic malnutrition. The fact that chronic malnutrition is not give the attention in the health facilities could be a factor to aggravate the situation. Currently there is no clear guidance in Afghanistan on how to address chronic malnutrition and need to involve the multi sectors (agriculture, WASH and food security Etc...) for reducing chronic malnutrition.

There are no commonly accepted standards for maternal nutrition status. In line with the Afghanistan National Guideline, the MUAC cutoff for women of 230 mm is use to proximately identify their nutrition status. This malnutrition and mortality survey showed for Pregnant and lactating women nutrition status was 25.1% (21.2-28.9 95% CI), which suggest that considerable number of PLWs in Takhar province are

likely to have low nutrition status. The main concern was Iron supplementation prevent anemia during pregnancy and life- threatening complication during the delivery. Therefore, it decreases maternal mortality, prenatal infant loss and prematurity, which can be directly relate to child stunting in the first 2 years of life.

Crude Death Rate and Under-five Death rate was at 0.34 (0.22-0.53) and 0.28 (0.09-0.87)/10,000/per day. The rates are both below SPHERE emergency thresholds.

The survey revealed that fever and ARI were major illnesses reported among to under-five, with above 50% of children reported to have been suffering from different diseases (i.e. Fever, ARI, Diarrhea etc.) prior to the survey period. See below for summary recommendation.

15. Recommendation

15.1. Under nutrition

- ✓ Prioritize activities addressing chronic malnutrition (serious stunting rates) at the community level through food security/agricultural, WASH, nutrition cooking demonstrations, IYCF, appropriate supplementation, growth monitoring, and improving maternal health and nutrition.
- ✓ Reinforcing of health education including home management of diarrhea and ARI, hygiene at both facility and community levels.
- ✓ To strength the TSFP program and increase referral system through CHWs in the community level.
- ✓ 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.

15.2. Maternal nutrition status

- ✓ Continue SFP to address PLW having MUAC <230 mm and potentially prevent child under nutrition
- ✓ To strengthen awareness of iron folate supplementation.
- ✓ To strengthen referral system for Antenatal care and health seeking visits during pregnancy trough CHWs in the community level.

15.3. 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.
- ✓ Increasing of Health education on community and Health Facility level

15.4. WASH

- ✓ Ensure access to safe drinking water through WASH interventions that are sustainable and easy to maintain to address low water access rates in rural areas
- ✓ Intervention programmers for improving water, sanitation and hygiene practices including health education to educate the community on domestic treatment of drinking water
- ✓ Integrate key hygiene actions (safe drinking water, hand-washing practice with soap, safe disposal of excreta, and food hygiene) as essential components in all targeted nutrition programs.

16. Annex

Annex 1: Plausibility Check report

Plausibility check for: Takhar_SMART_ASSESSMENT_JULY_2017_AFGHANISTAN.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 (0.8 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	4 (p=0.039)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.602)
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 and	<1.15 and	<1.20 and	>=1.20 or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	0 (1.08)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (-0.10)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (-0.18)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	1 (p=0.031)

OVERALL SCORE WHZ =	0-9	10-14	15-24	>25	5 %

The overall score of this survey is 5 %, this is excellent.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 52 %

Age/Height out of range for WHZ:

MONTHS:
Line=3/ID=1: 0.99 mo
Line=22/ID=2: 4.63 mo

Line=29/ID=1: 1.97 mo
Line=44/ID=1: 4.14 mo
Line=53/ID=2: 1.91 mo
Line=61/ID=3: 5.42 mo
Line=67/ID=2: 0.99 mo
Line=74/ID=1: 4.44 mo
Line=82/ID=2: 4.47 mo
Line=84/ID=2: 1.74 mo
Line=93/ID=3: 2.30 mo
Line=109/ID=1: 2.60 mo
Line=126/ID=1: 1.84 mo
Line=143/ID=1: 2.73 mo
Line=155/ID=1: 2.76 mo
Line=163/ID=2: 3.78 mo
Line=164/ID=1: 3.12 mo
Line=193/ID=1: 1.48 mo
Line=195/ID=1: 4.73 mo
Line=198/ID=1: 2.73 mo
Line=199/ID=1: 2.63 mo
Line=230/ID=1: 3.55 mo
Line=240/ID=1: 4.01 mo
Line=247/ID=1: 3.42 mo
Line=258/ID=1: 0.95 mo
Line=278/ID=3: 2.43 mo
Line=280/ID=2: 3.19 mo
Line=350/ID=2: 3.78 mo
Line=360/ID=1: 1.00 mo
Line=369/ID=2: 4.76 mo
Line=376/ID=1: 1.94 mo
Line=384/ID=1: 3.58 mo
Line=397/ID=1: 4.53 mo
Line=417/ID=3: 0.85 mo
Line=422/ID=2: 4.60 mo
Line=441/ID=1: 0.82 mo
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Line=454/ID=2: 3.00 mo
Line=466/ID=3: 2.50 mo
Line=473/ID=1: 2.00 mo
Line=498/ID=1: 1.18 mo
Line=501/ID=2: 3.45 mo
Line=515/ID=2: 4.93 mo
Line=518/ID=2: 5.00 mo
Line=535/ID=2: 2.50 mo
Line=550/ID=1: 2.92 mo
Line=563/ID=1: 1.31 mo
Line=578/ID=3: 0.30 mo
Line=617/ID=2: 1.00 mo
Line=621/ID=1: 2.00 mo
Line=633/ID=2: 3.58 mo
Line=635/ID=4: 4.00 mo
Line=639/ID=1: 1.18 mo
Line=671/ID=2: 4.40 mo
Line=674/ID=2: 3.00 mo
Line=700/ID=2: 4.04 mo
Line=709/ID=1: 1.35 mo
Line=719/ID=1: 0.82 mo
Line=725/ID=3: 1.12 mo
Line=726/ID=1: 1.68 mo
Line=738/ID=1: 4.70 mo
Line=750/ID=1: 2.96 mo
Line=757/ID=1: 3.55 mo
Line=761/ID=1: 0.33 mo
Line=775/ID=3: 3.02 mo
Line=781/ID=1: 2.00 mo
Line=792/ID=3: 1.38 mo
Line=800/ID=2: 2.20 mo
Line=802/ID=1: 0.13 mo
Line=804/ID=1: 3.25 mo
Line=809/ID=3: 1.12 mo
Line=817/ID=2: 1.68 mo
Line=822/ID=3: 0.99 mo
Line=836/ID=3: 0.43 mo
Line=847/ID=1: 0.76 mo

Line=849/ID=1: 1.71 mo
Line=863/ID=3: 4.73 mo
Line=864/ID=1: 1.61 mo
Line=865/ID=1: 3.19 mo
Line=873/ID=3: 3.15 mo
Line=921/ID=3: 1.25 mo
Line=936/ID=2: 2.43 mo
Line=940/ID=2: 2.17 mo
Line=941/ID=3: 2.17 mo
Line=956/ID=2: 1.31 mo
Line=965/ID=2: 4.53 mo
Line=978/ID=2: 4.27 mo
Line=989/ID=3: 3.29 mo
Line=999/ID=1: 3.00 mo
Line=1008/ID=1: 1.00 mo
Line=1040/ID=1: 5.00 mo
HEIGHT:
Line=617/ID=2: 48.90 cm

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 (-6.183), Height may be incorrect
Line=30/ID=2: HAZ (-5.588), Height may be incorrect
Line=32/ID=1: HAZ (-4.703), Height may be incorrect
Line=46/ID=1: WHZ (-5.683), HAZ (-4.878), WAZ (-6.673)
Line=53/ID=2: HAZ (1.448), Age may be incorrect
Line=84/ID=2: HAZ (1.635), Height may be incorrect
Line=126/ID=1: HAZ (2.185), Height may be incorrect
Line=128/ID=2: HAZ (2.696), Height may be incorrect
Line=130/ID=1: HAZ (-5.342), Age may be incorrect
Line=146/ID=2: HAZ (-4.798), Age may be incorrect
Line=161/ID=2: WHZ (-3.706), Height may be incorrect
Line=177/ID=1: HAZ (-4.692), Age may be incorrect
Line=208/ID=1: WAZ (2.205), Weight may be incorrect
Line=231/ID=1: WHZ (-3.738), Weight may be incorrect
Line=245/ID=1: HAZ (-4.683), Age may be incorrect
Line=264/ID=2: HAZ (1.559), Age may be incorrect
Line=337/ID=1: WHZ (2.925), Weight may be incorrect
Line=359/ID=3: WHZ (-3.648), Weight may be incorrect
Line=464/ID=1: HAZ (2.871), Age may be incorrect
Line=495/ID=1: HAZ (-5.550), WAZ (-4.361), Age may be incorrect
Line=537/ID=1: HAZ (-4.877), WAZ (-4.499), Age may be incorrect
Line=726/ID=1: HAZ (1.464), Age may be incorrect
Line=744/ID=1: HAZ (1.556), WAZ (2.082), Age may be incorrect
Line=881/ID=1: WHZ (4.454), Weight may be incorrect
Line=966/ID=1: WHZ (2.472), HAZ (-5.093), Height may be incorrect
Line=967/ID=2: HAZ (-5.688), WAZ (-4.784), Age may be incorrect

Percentage of values flagged with SMART flags:WHZ: 0.8 %, HAZ: 1.8 %, WAZ: 0.6 %

Age distribution:

Month 1 : ####################
Month 2 : ####################
Month 3 : ##################
Month 4 : #############
Month 5 : ############
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: 0.88 (The value should be around 0.85).:
p-value = 0.602 (as expected)

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

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	117/119.3 (1.0)	102/104.4 (1.0)	219/223.7 (1.0)	1.15
18 to 29	12	123/116.3 (1.1)	109/101.8 (1.1)	232/218.1 (1.1)	1.13
30 to 41	12	120/112.7 (1.1)	107/98.7 (1.1)	227/211.4 (1.1)	1.12
42 to 53	12	95/110.9 (0.9)	83/97.1 (0.9)	178/208.0 (0.9)	1.14
54 to 59	6	59/54.9 (1.1)	49/48.0 (1.0)	108/102.9 (1.0)	1.20
6 to 59	54	514/482.0 (1.1)	450/482.0 (0.9)		1.14

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

Overall sex ratio: p-value = 0.039 (significant excess of boys)
Overall age distribution: p-value = 0.151 (as expected)
Overall age distribution for boys: p-value = 0.478 (as expected)
Overall age distribution for girls: p-value = 0.503 (as expected)
Overall sex/age distribution: p-value = 0.026 (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: 0.040 (significant difference)

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: 0.036 (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:	1.13	1.11	1.08
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	11.2%	11.0%	10.8%
calculated with current SD:	11.2%	10.6%	10.0%
calculated with a SD of 1:	8.4%	8.3%	8.3%
HAZ			
Standard Deviation SD:	1.18	1.18	1.09
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	35.8%	35.8%	35.4%
calculated with current SD:	37.7%	37.7%	36.4%
calculated with a SD of 1:	35.6%	35.6%	35.3%
WAZ			
Standard Deviation SD:	0.94	0.93	0.90
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:			
calculated with current SD:			

calculated with a SD of 1:

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

WHZ	p= 0.000	p= 0.055	p= 0.081
HAZ	p= 0.004	p= 0.004	p= 0.183
WAZ	p= 0.000	p= 0.000	p= 0.001

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

Skewness

WHZ	-0.18	-0.01	-0.10
HAZ	-0.04	-0.04	-0.02
WAZ	-0.34	-0.19	-0.20

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

Kurtosis

WHZ	0.93	0.25	-0.18
HAZ	0.63	0.63	-0.10
WAZ	1.57	0.83	0.43

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=1.41 (p=0.031)
WHZ < -3: ID=1.11 (p=0.271)
GAM: ID=1.41 (p=0.031)
SAM: ID=1.11 (p=0.271)
HAZ < -2: ID=1.41 (p=0.031)
HAZ < -3: ID=1.39 (p=0.039)
WAZ < -2: ID=2.14 (p=0.000)
WAZ < -3: ID=1.77 (p=0.001)

Subjects with SMART flags are excluded from this analysis.

The Index of Dispersion (ID) indicates the degree to which the cases are aggregated into certain clusters (the degree to which there are "pockets"). If the ID is less than 1 and p > 0.95 it indicates that the cases are UNIFORMLY distributed among the clusters. If the p value is between 0.05 and 0.95 the cases appear to be randomly distributed among the clusters, if ID is higher than 1 and p is less than 0.05 the cases are aggregated into certain cluster (there appear to be pockets of cases). If this is the case for Oedema but not for WHZ then aggregation of GAM and SAM cases is likely due to inclusion of oedematous cases in GAM and SAM estimates.

Are the data of the same quality at the beginning and the end of the clusters?
Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster per day is measured then this will be related to the time of the day the measurement is made).

Time point	SD for WHZ 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: 1.16 (n=49, f=1)	###############
02: 1.11 (n=49, f=1)	#############
03: 1.18 (n=49, f=1)	###############
04: 1.41 (n=49, f=1)	##########################
05: 1.20 (n=49, f=0)	################
06: 1.17 (n=49, f=0)	###############
07: 1.26 (n=49, f=1)	##################
08: 1.02 (n=49, f=0)	########
09: 0.96 (n=49, f=0)	#######
10: 0.93 (n=48, f=0)	#####
11: 1.08 (n=48, f=0)	###########
12: 1.19 (n=48, f=0)	################
13: 1.34 (n=48, f=2)	######################
14: 1.08 (n=48, f=0)	###########

15: 1.05 (n=48, f=0) ##########
16: 1.12 (n=47, f=0) ##########
17: 1.13 (n=46, f=1) ##########
18: 1.08 (n=42, f=0) ##########
19: 1.12 (n=37, f=0) ##########
20: 1.02 (n=32, f=0) ########
21: 0.95 (n=30, f=0) ######
22: 1.01 (n=29, f=0) ########
23: 1.01 (n=21, f=0) OOOOOOOOO
24: 1.21 (n=13, f=0) ~~~~~~~~~~~~~~~~~~
25: 0.68 (n=11, f=0)
26: 1.81 (n=07, f=0) ~~~~~~
27: 1.03 (n=04, f=0) ~~~~~~~~~
28: 1.00 (n=04, f=0) ~~~~~~~~
29: 0.02 (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 =	204	179	182	167	164	159
Percentage of values flagged with SMART flags:						
WHZ:	1.0	0.0	1.1	1.8	0.6	0.0
HAZ:	2.9	3.9	1.1	1.2	0.0	1.3
WAZ:	1.5	0.0	0.0	0.6	0.6	0.6
Age ratio of 6-29 months to 30-59 months:						
	0.99	0.66	0.97	1.09	0.84	0.78
Sex ratio (male/female):						
	1.29	1.06	1.12	0.90	1.28	0.94
Digit preference Weight (%):						
.0 :	7	9	8	12	11	9
.1 :	13	12	14	11	12	7
.2 :	9	8	8	11	10	8
.3 :	12	12	9	10	8	11
.4 :	6	7	9	7	14	13
.5 :	15	7	14	8	14	14
.6 :	6	10	8	8	7	8
.7 :	11	11	9	8	9	8
.8 :	11	12	10	12	9	10
.9 :	10	11	10	13	7	12
DPS:	9	7	8	6	8	8
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Digit preference Height (%):						
.0 :	1	24	23	5	7	15
.1 :	18	5	12	14	12	11
.2 :	11	11	9	7	5	16
.3 :	12	12	11	11	7	11
.4 :	11	7	9	14	6	11
.5 :	11	12	15	10	14	11
.6 :	8	8	7	8	19	10
.7 :	9	8	4	7	12	8
.8 :	8	6	7	11	8	4
.9 :	11	6	3	13	10	4
DPS:	14	18	19	10	13	12
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Digit preference MUAC (%):						
.0 :	3	4	12	5	1	12
.1 :	14	8	12	10	10	8
.2 :	15	13	6	7	9	12
.3 :	12	10	11	14	11	6
.4 :	15	15	8	14	7	10
.5 :	6	11	21	5	11	10
.6 :	10	8	9	12	14	11
.7 :	8	13	7	12	9	11
.8 :	10	8	9	12	10	9
.9 :	8	10	5	10	17	12
DPS:	13	10	14	10	13	6
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Standard deviation of WHZ:						

SD	1.08	1.09	1.22	1.19	1.14	1.03
Prevalence (< -2) observed:						
%	13.2	8.4	12.1	12.6	10.4	10.1
Prevalence (< -2) calculated with current SD:						
%	13.5	8.9	12.0	14.0	9.1	9.2
Prevalence (< -2) calculated with a SD of 1:						
%	11.7	7.1	7.5	9.8	6.3	8.6
Standard deviation of HAZ:						
SD	1.20	1.28	1.15	1.16	1.12	1.10
observed:						
%	44.1	31.8	33.0	33.5	33.5	37.7
calculated with current SD:						
%	46.1	33.7	37.0	37.6	34.8	35.1
calculated with a SD of 1:						
%	45.3	29.5	35.2	35.8	33.1	33.7

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	35/24.4 (1.4)	16/18.6 (0.9)	51/42.9 (1.2)	2.19
18 to 29	12	20/23.8 (0.8)	21/18.1 (1.2)	41/41.9 (1.0)	0.95
30 to 41	12	24/23.0 (1.0)	16/17.5 (0.9)	40/40.6 (1.0)	1.50
42 to 53	12	16/22.7 (0.7)	18/17.3 (1.0)	34/39.9 (0.9)	0.89
54 to 59	6	10/11.2 (0.9)	9/8.5 (1.1)	19/19.7 (1.0)	1.11
6 to 59	54	105/92.5 (1.1)	80/92.5 (0.9)		1.31

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

Overall sex ratio: p-value = 0.066 (boys and girls equally represented)
Overall age distribution: p-value = 0.654 (as expected)
Overall age distribution for boys: p-value = 0.118 (as expected)
Overall age distribution for girls: p-value = 0.908 (as expected)
Overall sex/age distribution: p-value = 0.013 (significant difference)

Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	15/20.4 (0.7)	17/17.6 (1.0)	32/38.1 (0.8)	0.88
18 to 29	12	21/19.9 (1.1)	12/17.2 (0.7)	33/37.1 (0.9)	1.75
30 to 41	12	21/19.3 (1.1)	21/16.7 (1.3)	42/36.0 (1.2)	1.00
42 to 53	12	18/19.0 (0.9)	18/16.4 (1.1)	36/35.4 (1.0)	1.00
54 to 59	6	13/9.4 (1.4)	8/8.1 (1.0)	21/17.5 (1.2)	1.63
6 to 59	54	88/82.0 (1.1)	76/82.0 (0.9)		1.16

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

Overall sex ratio: p-value = 0.349 (boys and girls equally represented)
Overall age distribution: p-value = 0.535 (as expected)
Overall age distribution for boys: p-value = 0.544 (as expected)
Overall age distribution for girls: p-value = 0.579 (as expected)
Overall sex/age distribution: p-value = 0.144 (as expected)

Team 3:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	25/20.6 (1.2)	16/18.6 (0.9)	41/39.2 (1.0)	1.56
18 to 29	12	22/20.1 (1.1)	20/18.1 (1.1)	42/38.2 (1.1)	1.10
30 to 41	12	23/19.5 (1.2)	21/17.5 (1.2)	44/37.1 (1.2)	1.10
42 to 53	12	13/19.2 (0.7)	14/17.3 (0.8)	27/36.5 (0.7)	0.93
54 to 59	6	6/9.5 (0.6)	9/8.5 (1.1)	15/18.0 (0.8)	0.67
6 to 59	54	89/84.5 (1.1)	80/84.5 (0.9)		1.11

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

Overall sex ratio: p-value = 0.489 (boys and girls equally represented)
Overall age distribution: p-value = 0.317 (as expected)
Overall age distribution for boys: p-value = 0.287 (as expected)
Overall age distribution for girls: p-value = 0.758 (as expected)
Overall sex/age distribution: p-value = 0.110 (as expected)

Team 4:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	17/17.4 (1.0)	21/18.6 (1.1)	38/36.0 (1.1)	0.81
18 to 29	12	20/17.0 (1.2)	23/18.1 (1.3)	43/35.1 (1.2)	0.87
30 to 41	12	16/16.4 (1.0)	15/17.5 (0.9)	31/34.0 (0.9)	1.07
42 to 53	12	14/16.2 (0.9)	10/17.3 (0.6)	24/33.4 (0.7)	1.40
54 to 59	6	8/8.0 (1.0)	11/8.5 (1.3)	19/16.5 (1.1)	0.73
6 to 59	54	75/77.5 (1.0)	80/77.5 (1.0)		0.94

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

Overall sex ratio: p-value = 0.688 (boys and girls equally represented)
Overall age distribution: p-value = 0.267 (as expected)
Overall age distribution for boys: p-value = 0.930 (as expected)
Overall age distribution for girls: p-value = 0.216 (as expected)
Overall sex/age distribution: p-value = 0.138 (as expected)

Team 5:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	10/19.7 (0.5)	13/13.9 (0.9)	23/33.6 (0.7)	0.77
18 to 29	12	26/19.2 (1.4)	17/13.6 (1.3)	43/32.8 (1.3)	1.53
30 to 41	12	19/18.6 (1.0)	12/13.2 (0.9)	31/31.8 (1.0)	1.58
42 to 53	12	17/18.3 (0.9)	12/12.9 (0.9)	29/31.3 (0.9)	1.42
54 to 59	6	13/9.1 (1.4)	6/6.4 (0.9)	19/15.5 (1.2)	2.17
6 to 59	54	85/72.5 (1.2)	60/72.5 (0.8)		1.42

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

Overall sex ratio: p-value = 0.038 (significant excess of boys)
Overall age distribution: p-value = 0.111 (as expected)
Overall age distribution for boys: p-value = 0.062 (as expected)
Overall age distribution for girls: p-value = 0.891 (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	15/16.7 (0.9)	19/17.2 (1.1)	34/33.9 (1.0)	0.79
18 to 29	12	14/16.3 (0.9)	16/16.7 (1.0)	30/33.0 (0.9)	0.88
30 to 41	12	17/15.8 (1.1)	22/16.2 (1.4)	39/32.0 (1.2)	0.77
42 to 53	12	17/15.5 (1.1)	11/16.0 (0.7)	28/31.5 (0.9)	1.55
54 to 59	6	9/7.7 (1.2)	6/7.9 (0.8)	15/15.6 (1.0)	1.50
6 to 59	54	72/73.0 (1.0)	74/73.0 (1.0)		0.97

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

Overall sex ratio: p-value = 0.869 (boys and girls equally represented)
Overall age distribution: p-value = 0.696 (as expected)
Overall age distribution for boys: p-value = 0.917 (as expected)
Overall age distribution for girls: p-value = 0.369 (as expected)
Overall sex/age distribution: p-value = 0.257 (as expected)

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: 0.99 (n=09, f=0) ########
02: 1.04 (n=09, f=0) ##########
03: 0.95 (n=09, f=0) ######
04: 1.67 (n=09, f=1) ##################################
05: 1.20 (n=09, f=0) ################
06: 1.60 (n=09, f=0) ###############################
07: 1.53 (n=09, f=0) ##############################
08: 0.65 (n=09, f=0)
09: 0.90 (n=09, f=0) ####
10: 0.68 (n=09, f=0)
11: 0.63 (n=09, f=0)
12: 0.80 (n=09, f=0)
13: 1.07 (n=09, f=0) ###########
14: 1.13 (n=09, f=0) ############
15: 0.81 (n=09, f=0) #
16: 1.20 (n=09, f=0) ################
17: 1.26 (n=09, f=0) ##################
18: 0.99 (n=09, f=0) ########
19: 0.93 (n=09, f=0) #####
20: 0.83 (n=07, f=0) #
21: 0.58 (n=07, f=0)
22: 1.21 (n=07, f=0) ################
23: 0.67 (n=05, f=0)
24: 0.51 (n=03, f=0)
25: 0.99 (n=03, f=0) ~~~~~~~~

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

Team: 2

Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.71 (n=08, f=0)
02: 1.08 (n=08, f=0) ###########
03: 0.80 (n=08, f=0)
04: 0.89 (n=08, f=0) ####
05: 1.27 (n=08, f=0) ###################
06: 1.31 (n=08, f=1) ####################
07: 1.34 (n=08, f=0) ######################
08: 0.94 (n=08, f=0) ######
09: 0.88 (n=08, f=0) ###
10: 1.33 (n=08, f=0) ####################
11: 1.32 (n=08, f=0) ####################
12: 1.15 (n=08, f=0) ##############
13: 1.26 (n=08, f=0) ###################
14: 1.10 (n=08, f=0) ############
15: 0.93 (n=08, f=0) #####
16: 1.15 (n=08, f=0) ##############
17: 0.94 (n=08, f=0) ######
18: 1.21 (n=08, f=0) ################
19: 1.10 (n=07, f=0) ############
20: 0.74 (n=06, f=0)
21: 1.38 (n=06, f=0) ######################
22: 1.19 (n=05, f=0) OOOOOOOOOOOOOOOO
23: 0.69 (n=05, f=0)
24: 0.71 (n=03, f=0)
25: 0.73 (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: 1.21 (n=08, f=0) ################
02: 1.09 (n=08, f=1) ############
03: 0.99 (n=08, f=0) ########
04: 1.16 (n=08, f=0) ##############
05: 1.22 (n=08, f=0) #################
06: 1.19 (n=08, f=0) ################

07: 1.18 (n=08, f=0) ###############
08: 1.52 (n=08, f=0) ############################
09: 1.05 (n=08, f=0) #########
10: 0.97 (n=08, f=0) #######
11: 0.97 (n=08, f=0) #######
12: 1.42 (n=08, f=0) ########################
13: 2.22 (n=08, f=1) ##
14: 1.36 (n=08, f=0) ########################
15: 1.13 (n=08, f=0) ############
16: 1.18 (n=08, f=0) ###############
17: 1.14 (n=08, f=0) ############
18: 0.95 (n=06, f=0) ######
19: 1.34 (n=06, f=0) ######################
20: 0.84 (n=06, f=0) ##
21: 0.58 (n=05, f=0)
22: 0.66 (n=05, f=0)
23: 1.80 (n=04, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
24: 1.93 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
25: 0.49 (n=03, f=0)
26: 2.51 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
27: 1.17 (n=02, f=0) ~~~~~~~~~~~~~~~
28: 0.88 (n=02, f=0) ~~~

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

Team: 4

Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.67 (n=08, f=1) ###################################
02: 0.79 (n=08, f=0)
03: 2.14 (n=08, f=1) ##
04: 1.26 (n=08, f=0) ##################
05: 0.87 (n=08, f=0) ###
06: 0.49 (n=08, f=0)
07: 0.93 (n=08, f=0) #####
08: 1.12 (n=08, f=0) #############
09: 1.07 (n=08, f=0) ##########
10: 0.69 (n=08, f=0)
11: 1.14 (n=08, f=0) #############
12: 1.33 (n=08, f=0) ####################
13: 1.24 (n=08, f=0) ##################
14: 0.90 (n=08, f=0) ####
15: 0.98 (n=08, f=0) ########
16: 1.12 (n=07, f=0) #############
17: 0.87 (n=07, f=0) ###
18: 1.25 (n=06, f=0) ##################
19: 1.17 (n=06, f=0) ###############
20: 1.09 (n=05, f=0) OOOOOOOOOOOO
21: 1.02 (n=05, f=0) OOOOOOOOO
22: 1.25 (n=05, f=0) OOOOOOOOOOOOOOOOOOO
23: 1.37 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOO
24: 1.81 (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: 5

Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.31 (n=08, f=0) ####################
02: 0.74 (n=08, f=0)
03: 0.91 (n=08, f=0) #####
04: 1.84 (n=08, f=0) ##
05: 1.48 (n=08, f=0) ############################
06: 0.81 (n=08, f=0) #
07: 1.18 (n=08, f=0) ################
08: 0.80 (n=08, f=0)
09: 0.98 (n=08, f=0) ########
10: 0.88 (n=07, f=0) ####
11: 1.30 (n=07, f=0) ####################

12: 1.43 (n=07, f=0) ########################
13: 1.27 (n=07, f=0) ###################
14: 0.98 (n=07, f=0) #######
15: 1.23 (n=07, f=0) ##################
16: 1.03 (n=07, f=0) ##########
17: 1.79 (n=07, f=1) ##
18: 0.92 (n=07, f=0) #####
19: 1.44 (n=05, f=0) ##########################
20: 0.45 (n=04, f=0)
21: 0.43 (n=03, f=0)
22: 0.66 (n=03, f=0)
23: 0.11 (n=02, f=0)
24: 1.11 (n=02, f=0) ~~~~~~~~~~~~~~
25: 0.70 (n=02, f=0)
26: 1.86 (n=02, f=0) ~~~~~~
27: 0.95 (n=02, f=0) ~~~~~~
28: 0.14 (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: 0.98 (n=08, f=0) ########
02: 1.07 (n=08, f=0) ###########
03: 0.83 (n=08, f=0) #
04: 1.51 (n=08, f=0) ##############################
05: 1.38 (n=08, f=0) ########################
06: 1.16 (n=08, f=0) ###############
07: 0.95 (n=08, f=0) ######
08: 0.90 (n=08, f=0) ####
09: 0.51 (n=08, f=0)
10: 1.04 (n=08, f=0) ##########
11: 0.64 (n=08, f=0)
12: 0.99 (n=08, f=0) ########
13: 0.88 (n=08, f=0) ####
14: 1.01 (n=08, f=0) #########
15: 0.81 (n=08, f=0)
16: 1.21 (n=08, f=0) #################
17: 0.84 (n=07, f=0) ##
18: 1.15 (n=06, f=0) ###############
19: 0.96 (n=04, f=0) OOOOOOO
20: 1.07 (n=04, f=0) OOOOOOOOOOO
21: 1.34 (n=04, f=0) OOOOOOOOOOOOOOOOOOOOOOO
22: 0.75 (n=04, f=0)
23: 0.41 (n=02, f=0)

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

(for better comparison it can be helpful to copy/paste part of this report into Excel)

Annex 2: Map of the province

Annex 3: local event calendar for Bamyan Province

نام ماه ها	ماه	1391	ماه	1392	ماه	1393	ماه	1394	ماه	1395	ماه	1396
حمل		جشن نوروزاول نوروز روزدهقان دوم نوروز روزها ی بارانی ,گل کردن درختان چو چه کردن گوسفند نهال شانی	52	جشن نوروزاول نوروز روزدهقان دوم نوروز روزها ی بارانی ,گل کردن درختان چوچه کردن گوسفند شروع مکاتب ودانشگاه	40	جشن نوروزاول نوروز روزدهقان دوم نوروز روزها ی بارانی ,گل کردن درختان چوچه کردن گوسفند شروع مکاتب ودانشگاه	28	جشن نوروزاول نوروز روزدهقان دوم نوروز روزها ی بارانی ,گل کردن درختان چوچه کردن گوسفند شروع مکاتب ودانشگاه	16	جشن نوروزاول نوروز روزدهقان دوم نوروز روزها ی بارانی ,گل کردن درختان چوچه کردن گوسفند شروع مکاتب ودانشگاه	4	جشن نوروزاول نوروز روزدهقان دوم نوروز روزها ی بارانی ,گل کردن درختان چوچه کردن گوسفند شروع مکاتب ودانشگاه
ثور		باران شدیدوسیلاب ها، بادهای شدید سرگشیدن غله جات، پاشیدن شالی کودتای نافرجام کمونیستی غوره پز، رواش پز، میله ارغوان هفت ثورداخل شدن کمونیست ها هشت ثورفیروزی مجاهدین	51	باران شدیدوسیلاب ها، بادهای شدید سرگشیدن غله جات، پاشیدن شالی کودتای نافرجام کمونیستی غوره پز، رواش پز، میله ارغوان هفت ثورداخل شدن کمونیست ها هشت ثورفیروزی مجاهدین	39	باران شدیدوسیلاب ها، بادهای شدید سرگشیدن غله جات، پاشیدن شالی کودتای نافرجام کمونیستی غوره پز، رواش پز، میله ارغوان هفت ثورداخل شدن کمونیست ها هشت ثورفیروزی مجاهدین	27	باران شدیدوسیلاب ها، بادهای شدید سرگشیدن غله جات، پاشیدن شالی کودتای نافرجام کمونیستی غوره پز، رواش پز، میله ارغوان هفت ثورداخل شدن کمونیست ها هشت ثورفیروزی مجاهدین	15	باران شدیدوسیلاب ها، بادهای شدید سرگشیدن غله جات، پاشیدن شالی کودتای نافرجام کمونیستی غوره پز، رواش پز، میله ارغوان هفت ثورداخل شدن کمونیست ها هشت ثورفیروزی مجاهدین	3	باران شدیدوسیلاب ها، بادهای شدید سرگشیدن غله جات، پاشیدن شالی کودتای نافرجام کمونیستی غوره پز، رواش پز، میله ارغوان هفت ثورداخل شدن کمونیست ها هشت ثورفیروزی مجاهدین
جوزا		جو و گندم درومیشود,شروع پختن میوه جات ,روزهای مادران، شالی شاندن رفتن به پالیز، عیدسعیدفطر	50	جو و گندم درومیشود,شروع پختن میوه جات ,روزهای مادران، شالی شاندن رفتن به پالیز، عیدسعیدفطر	38	جو و گندم درومیشود,شروع پختن میوه جات ,روزهای مادران، شالی شاندن رفتن به پالیز، عیدسعیدفطر	26	جو و گندم درومیشود,شروع پختن میوه جات ,روزهای مادران، شالی شاندن رفتن به پالیز، عیدسعیدفطر	14	جو و گندم درومیشود,شروع پختن میوه جات ,روزهای مادران، شالی شاندن رفتن به پالیز، عیدسعیدفطر	2	جو و گندم درومیشود,شروع پختن میوه جات ,روزهای مادران، شالی شاندن رفتن به پالیز، عیدسعیدفطر
سرطان		آغازفصل تابستان ,فصل نهال شانی شالی شانی , اغازامتحانات مکاتب وپوهنتون ها پخته شدن میوه جات (انگور)	49	آغازفصل تابستان ,فصل نهال شانی شالی شانی , اغازامتحانات مکاتب وپوهنتون ها پخته شدن میوه جات (انگور)	37	آغازفصل تابستان ,فصل نهال شانی شالی شانی , اغازامتحانات مکاتب وپوهنتون ها پخته شدن میوه جات (انگور)	25	آغازفصل تابستان ,فصل نهال شانی شالی شانی , اغازامتحانات مکاتب وپوهنتون ها پخته شدن میوه جات (انگور)	13	آغازفصل تابستان ,فصل نهال شانی شالی شانی , اغازامتحانات مکاتب وپوهنتون ها پخته شدن میوه جات (انگور)	1	آغازفصل تابستان ,فصل نهال شانی شالی شانی , اغازامتحانات مکاتب وپوهنتون ها پخته شدن میوه جات (انگور)
اسد		رخصتی های تابستانی	48	رخصتی های تابستانی	36	رخصتی های تابستانی	24	رخصتی های تابستانی	12	رخصتی های تابستانی		رخصتی های تابستانی

۲۸ اسدروز استقلال کشور		۲۸ اسدروز استقلال کشور		۲۸ اسدروز استقلال کشور		۲۸ اسدروز استقلال کشور		۲۸ اسدروز استقلال کشور		۲۸ اسدروز استقلال کشور		۲۸ اسدروز استقلال کشور			
۱۸سنبله روزشهادت احمدشاه مسعود هفته شهدا رخصتی های تابستانی , عیدقربان		۱۸سنبله روزشهادت احمدشاه مسعود هفته شهدا رخصتی های تابستانی , عیدقربان	11	۱۸سنبله روزشهادت احمدشاه مسعود هفته شهدا رخصتی های تابستانی , عیدقربان	23	۱۸سنبله روزشهادت احمدشاه مسعود هفته شهدا رخصتی های تابستانی , عیدقربان	35	۱۸سنبله روزشهادت احمدشاه مسعود هفته شهدا رخصتی های تابستانی , عیدقربان	47	۱۸سنبله روزشهادت احمدشاه مسعود هفته شهدا رخصتی های تابستانی , عیدقربان	59	سنبله
برگ ریزی , کوچ کردن ازپالیز کوچ کردن ازباغ, عاشوری ,روزمعلم		برگ ریزی , کوچ کردن ازپالیز کوچ کردن ازباغ, عاشوری ,روزمعلم	10	برگ ریزی , کوچ کردن ازپالیز کوچ کردن ازباغ, عاشوری ,روزمعلم	22	برگ ریزی , کوچ کردن ازپالیز کوچ کردن ازباغ, عاشوری ,روزمعلم	34	برگ ریزی , کوچ کردن ازپالیز کوچ کردن ازباغ, عاشوری ,روزمعلم	46	برگ ریزی , کوچ کردن ازپالیز کوچ کردن ازباغ, عاشوری ,روزمعلم	58	میزان
شالی درو، کاگل بامها, شروع سردی هوا ذخیره کردن موادسوخت زمستان برامدن ستاره خنک		شالی درو، کاگل بامها, شروع سردی هوا ذخیره کردن موادسوخت زمستان برامدن ستاره خنک	9	شالی درو، کاگل بامها, شروع سردی هوا ذخیره کردن موادسوخت زمستان برامدن ستاره خنک	21	شالی درو، کاگل بامها, شروع سردی هوا ذخیره کردن موادسوخت زمستان برامدن ستاره خنک	33	شالی درو، کاگل بامها, شروع سردی هوا ذخیره کردن موادسوخت زمستان برامدن ستاره خنک	45	شالی درو، کاگل بامها, شروع سردی هوا ذخیره کردن موادسوخت زمستان برامدن ستاره خنک	57	عقرب
امتحان سالانه مکاتب , شروع برف باری روزمولودشریف, شاندن بخاری شب یلدا		امتحان سالانه مکاتب , شروع برف باری روزمولودشریف, شاندن بخاری شب یلدا	8	امتحان سالانه مکاتب , شروع برف باری روزمولودشریف, شاندن بخاری شب یلدا	20	امتحان سالانه مکاتب , شروع برف باری روزمولودشریف, شاندن بخاری شب یلدا	32	امتحان سالانه مکاتب , شروع برف باری روزمولودشریف, شاندن بخاری شب یلدا	44	امتحان سالانه مکاتب , شروع برف باری روزمولودشریف, شاندن بخاری شب یلدا	56	قوس
تجاورفشون سرخ شوروی ,ریزشت برف های سنگین, رخصتی زمستانی، چله ای کلان		تجاورفشون سرخ شوروی ,ریزشت برف های سنگین, رخصتی زمستانی، چله ای کلان	7	تجاورفشون سرخ شوروی ,ریزشت برف های سنگین, رخصتی زمستانی، چله ای کلان	19	تجاورفشون سرخ شوروی ,ریزشت برف های سنگین, رخصتی زمستانی، چله ای کلان	31	تجاورفشون سرخ شوروی ,ریزشت برف های سنگین, رخصتی زمستانی، چله ای کلان	43	تجاورفشون سرخ شوروی ,ریزشت برف های سنگین, رخصتی زمستانی، چله ای کلان	55	جدی
خارج شدن قشون سرخ شوروی چله ای خورد, یخبندی شدیدوکم شدن آب دریا ها		خارج شدن قشون سرخ شوروی چله ای خورد, یخبندی شدیدوکم شدن آب دریا ها	6	خارج شدن قشون سرخ شوروی چله ای خورد, یخبندی شدیدوکم شدن آب دریا ها	18	خارج شدن قشون سرخ شوروی چله ای خورد, یخبندی شدیدوکم شدن آب دریا ها	30	خارج شدن قشون سرخ شوروی چله ای خورد, یخبندی شدیدوکم شدن آب دریا ها	42	خارج شدن قشون سرخ شوروی چله ای خورد, یخبندی شدیدوکم شدن آب دریا ها	54	دلوه
شروع مکاتب در۱۵ حوت		شروع مکاتب در۱۵ حوت	5	شروع مکاتب در۱۵ حوت	17	شروع مکاتب در۱۵ حوت	29	شروع مکاتب در۱۵ حوت	41	شروع مکاتب در۱۵ حوت	53	حوت

پاشیدن گندم فصل بهاری ونهال شانی ۱۷ حوت روزجهانی زن		پاشیدن گندم فصل بهاری ونهال شانی ۱۷ حوت روزجهانی زن		پاشیدن گندم فصل بهاری ونهال شانی ۱۷ حوت روزجهانی زن		پاشیدن گندم فصل بهاری ونهال شانی ۱۷ حوت روزجهانی زن		پاشیدن گندم فصل بهاری ونهال شانی ۱۷ حوت روزجهانی زن		پاشیدن گندم فصل بهاری ونهال شانی ۱۷ حوت روزجهانی زن		پاشیدن گندم فصل بهاری ونهال شانی ۱۷ حوت روزجهانی زن			

Annex 4: Survey Questionnaires

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. (Month/day/year).
2. **Name of the village:** Indicate the name of the sampled village that is visited on the particular day of data collection.
3. **Cluster number:** Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation was done together with the team at the training hall. Important to note that once Cluster number has been assigned it cannot be changed.
4. **Team ID number:** Teams was formed during the training session. Each team was assigned a unique number ranging from 1-5. Each team must indicate the team number on the questionnaires they administer.
5. **Household number:** Each HH in the selected cluster was assigned a number. There are a total of 13 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit (e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10^{th} HH in the village)
6. **Starting time of the interview:** This is indicated the time of start of the interview in the selected HH.
7. **Consent:** Each team was provided with a consent form that they were required to ask for permission to conduct the survey in each HH. This is meant to seek permission from the HH head or caregiver to be allowed to conduct the assessment. It is important to note the reason for refusal in case the HH does not accept the interview.
8. **School age education:** each team was asked in the selected HH from the HHs member about the number of school aged children in the HH. A further question to check how many children are attended school in the last 4 days in the last 7 days.
9. **National ID cards:** each team was asked in the selected households how many members in the HH have Tazkera.

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

1. **Source of drinking water:** This question was asked to the respondent of the HH to find out where HH are accessing their drinking water. The sources of water are categorised into two main categories I.e. Improved sources and un-improved sources. These are based on the two main recommended categories of responses.
    - Number of HH accessing water from improved sources[7]/ total number of respondent
    - Number of HH accessing water from unimproved sources[8]/ total number of respondents.
2. **Water treatment methods:** This question was sought to find out what methods HH are using to make their drinking water safe. This indicator was show the proportion of HH practicing safe methods of water treatment in the survey area. The calculation of this was:
    - Total number of HH practicing safe water treatment methods[9]/ total number of respondents
    - Total number of HH not practicing safe water treatment methods/ total number of respondents.
3. **Water Use/Consumption at HH level:** This question was seeking to find out the amount of water consumed by each individual living in the household per day. The aim of this indicator is to check whether households are consuming the required minimum amount of water per person per day compared to the minimum threshold as defined by the WHO standard for HH water consumption.
4. **Hand washing practices:** Caregivers was asked on hand washing practices to ascertain instances in their daily activities and in the 5 critical points when they wash their hands. The caregiver should not be probed for answers/response rather they should be allowed to provide their response independently.
5. **Use of Soap:** A follow up question was asked to ascertain the hand washing practice by asking the caregiver to demonstrate how they wash their hands and what they use to wash their hands, they rubs both hands and drying by clean cloths .

Food access and consumption

1. **Food consumption scoring:** this question was seeking to find out the group of food to check whether households are consuming in the past 7 days and check the source of the food.
2. **Reduced coping of strategy index:** this question was check enough many and food to buy.

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

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 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. (Month/Day/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 was 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 was formed during the training session. Each team was assigned a unique number ranging from 1-6. Each team must indicate the team number on the questionnaires they administer.

Household number: Each HH in the selected cluster was assigned a number. There are a total of 14 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit (e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10^{th} HH in the village).

Caregiver Number: Each caregiver living in the selected HH was assigned a specific unique number. This is the same number that was appearing in the Caregiver questionnaire. In case of more than one caregiver in a HH each was assigned a unique number to identify and distinguish them from each other. Each caregiver was linked to her/his children selected in the HH to be able to link each caregiver with the children.

Child Number: Each Child Under the age of 5 years living in the selected HH was assigned a specific unique number. In case of more than one child in a HH each was assigned a unique number to identify and distinguish them from each other. Each child was linked to her/his caregiver selected in the HH to be able to link each caregiver with the children.

Age in months: Only children between 0 and 59 months old of age were included. Height was not being considered as a valid criterion in absence of age due to the high stunting rates in the province. Age was confirmed by showing a vaccination card or a birth certificate, if available. If these documents are not available, the use of a local event calendar built for the province was used to determine the age. The age was recorded into the questionnaire in months.

Sex: Male or female

Weight (in kg): Children were weighed to the nearest 0.1kg by using an Electronic Uni-scale. The children who can easily stand was asked to stand on the weighing scale and their weight recorded. In a situation when the children could not stand up, the double weighing method was applied.

Height (in cm): Measuring board was used to measure bare headed and barefoot children. The precision of the measurement is 1 mm. Children of less than 2 years of age was measured lying down and those equal to or above 2 years of age measured standing up.

Mid-Upper Arm Circumference (in mm):MUAC was used as an indicator of mortality risk for malnutrition and was measured to the nearest 1mm for all children with an indicated age of greater than 6 months, using the UNICEF MUAC strips. An adult MUAC tape was used to measure women of reproductive age (15-49 years) especially pregnant and lactating women.

Oedema: Only children with bilateral pitting nutrition oedema was recorded as having nutritional oedema this was checked by applying normal thumb pressure for at least 3 seconds to both feet.

Infant and Young Child Feeding

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

1. **Ever Breastfed:** This indicator was looking at the number of mothers who have ever breast fed their children. This was look at the last pregnancy of the mother or the current child who is less than < 24 months old.
2. **Time to Breastfeeding/Initiation to Breast milk:** This indicator was look at the amount of time it took for mothers to put their children to the breast after giving birth. The focus was on the mother's last pregnancy in which the child is less than < 24 months.
3. **Colostrum feeding:** this indicator was look at the number of mothers with children less than < 24 months who fed their children with Colostrum within the first 3 days after birth.
4. **Breast feeding Yesterday:** this indicator was 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.
5. **Other Liquids offered to the child:** This indicator was asked the mothers of children less than < 24 months what other liquids were offered to the child one day (day and night) prior to the data collection day.
6. **Minimum dietary diversity:** This indicator was asked the mothers on the types of food given to the children less than < 24 months one day (day and night) prior to the day of data collection. The food groups are categorised based on the WHO-IYCF guidelines.
7. **Complimentary feeding:** This indicator looks at the number of mothers who gave solid and semi-solid foods to children less than < 24 months one day (day and night) prior to the data collection

day.

8. **Minimum Meal frequency:** This indicator was asked mothers on the number of times they provided solid and semi-solid foods to their children less than < 24 months one day (day and night) prior to the data collection day.

Child Health status

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

1. **Type of Illness:** This question was asked about the types of illness that the children (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 collectors identify the illness correctly.
2. Vitamin A supplementation: This question was asked the caregiver of child 6-59 months on whether the child has received vitamin A tablets in the previous 6 months prior to the data collection day. Each team was provided with a Sample of the Vitamin A tablet to enable the caregivers to easily identify it.
3. **Deworming:** This question was asked the caregiver of child 24-59 months on whether the child has received deworming tablets in the previous 6 months prior to the data collection day. Each team was provided with a Sample of the deworming tablet to enable the caregivers to easily identify it.
4. **BCG vaccination:** This question was asked the caregiver on whether the child 0-59 months has received BCG vaccination.
5. **PENTA vaccination:** the question was asked the care giver on whether the child 4-24 months has received PENTA3 vaccination.
6. **Measles vaccination:** the question was asked the care giver whether the child 9-59 months has received the measles vaccination.
7. **Polio vaccination:** the question was asked the care giver whether the child 0-59 months has received the polio 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:

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

Antenatal Care, delivery assist and Health seeking behavior

Antenatal care: Caregivers between the ages of 15-49 years at household level was asked on whether they sought ante-natal care during their last pregnancy. In this case last pregnancy was considered of the last child who is still between 0-59 months for purposes of having a more precise re-call period.

1. **Delivery assisted by SBA:** caregiver who respond positive to getting assistance from Skilled Birth Attendants during the last delivery.
2. **Health seeking behaviour:** Caregivers who respond positive to seeking antenatal care was 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.
3. **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 (especially

pregnant and lactating women).

1. **MUAC measurement:** The caregivers mid – upper arm circumference was measured using the standard WFP issued adult MUAC tape.
2. **Physiological status:** Each of the caregivers was asked about their current physiological status to ascertain whether they are currently pregnant, lactating, pregnant and lactating or not pregnant.
3. **Iron – Folate supplementation:** Caregivers who report to be currently pregnant was 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.

Annex 4: selected clusters

AIMS_Pname	Distract Name	Geographical unit	Population size	Cluster
Takhar	Taluqan	JAR QABLAQ	620	1
Takhar	Taluqan	TARMA BAI	1237	2
Takhar	Taluqan	SHAHR-I-KOHNA TALUQAN	3617	3
Takhar	Taluqan	NAQELIN	679	4
Takhar	Taluqan	MIRZA BAI	617	5
Takhar	Taluqan	AFGHANAN	363	6
Takhar	Taluqan	HAYAT BACHA	1225	7
Takhar	Taluqan	SAR ASIAB	198	8
Takhar	Taluqan	TALUQAN City Nahia 01	16536	RC
Takhar	Taluqan	TALUQAN City Nahia 02	27480	9
Takhar	Taluqan	TALUQAN City Nahia 03	30147	10,11
Takhar	Taluqan	TALUQAN City Nahia 04	18849	12
Takhar	Hazar Sumuch	DASHTAKH	419	13
Takhar	Baharak	TOORGH QESHLAQ	858	14
Takhar	Baharak	KHAROTI	729	15
Takhar	Baharak	GANJAL BAGH	1363	RC
Takhar	Khwaja Ghar	MANKCHAQOUR PAYEN	1005	16
Takhar	Khwaja Ghar	SAILAWA	240	17
Takhar	Khwaja Ghar	KHOWJA GHAR City Nahia 01	6409	18
Takhar	Bangi	KADO KHOUR BOLAND ABA	804	19
Takhar	Bangi	CHAHAR CHANAR	1099	20
Takhar	Ishkamish	CHAP DARAH	971	21
Takhar	Ishkamish	SAR BAZAR ABROW	1214	22
Takhar	Chal	JAR TEPA	916	23
Takhar	Chal	ASFANCH	310	24
Takhar	Namak Ab	SAR JAR	655	25
Takhar	Farkhar	KHURAM AB BALA	985	26
Takhar	Farkhar	YAKA BAGH	819	27
Takhar	Kalafgan	DAH NAISHIB	446	28
Takhar	Kalafgan	AQ BALAQ PAYEN	1150	29
Takhar	Rustaq	AQJAAR	957	30
Takhar	Rustaq	ZOHAN BALA	433	31
Takhar	Rustaq	BASHKAN	1343	32
Takhar	Rustaq	KHOJA DAIRWAN	1061	33
Takhar	Rustaq	DASHT ABI BALA	1390	34
Takhar	Rustaq	SAMAR GHAYAN	560	35
Takhar	Rustaq	DASHT AMANI	779	36
Takhar	Rustaq	MASSAN GARAN	1122	37
Takhar	Rustaq	SARJOWI	892	38

Takhar	Rustaq	RUSTAQ City Nahia 01	11248	RC
Takhar	Chah Ab	QADAQ	1139	39
Takhar	Chah Ab	SOKHAN ABAD	3425	40
Takhar	Chah Ab	KHAILAN	6022	41
Takhar	Chah Ab	CHAHAB City Nahia 01	23371	42
Takhar	Yangi Qala	ALAM JAR JANGAL	531	43
Takhar	Yangi Qala	CHANAR KAFTAR ALI	1131	RC
Takhar	Khwaja Bahawuddin	MOMEN ABAD	861	44
Takhar	Khwaja Bahawuddin	MARKAZ WOLLUSWALY	6298	45
Takhar	Dashti Qala	CHECHKA AB.RAHMAN	369	46
Takhar	Dashti Qala	PAGHBAYAN	3144	47
Takhar	Dashti Qala	SARAQ KHORD	869	48
Takhar	Warsaj	PAYANI	1018	RC
Takhar	Warsaj	SARLOLA	181	49

17. References

- WHO 2000 thresholds (< 5 % acceptable, 5-9 % poor, 10-14 % serious, > 15 % critical).
- WHO emergency threshold of 2/10,000/day and 4/10,000/day respectively.
- WHO 2010, Indicators for Infant and Young child Feeding Practices
- National Nutrition Survey of Afghanistan, UNICEF, 2013.
- CSO: Estimated population 1394(2015-2016)