AFGHANISTAN

ANTHROPOMETRIC AND MORTALITY SMART SURVEY FINAL REPORT

Khost Province, Afghanistan

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EXECUTIVE SUMMARY

Khost is one of the 34 provinces of Afghanistan. Khost province is located in the eastern part of country next to Pakistan's Federally Administered Tribal Areas (FATA).The capital of Khost province is Matoon. The total population of the province is around 546,800[1]. Pashton people make up to 99 % of the total population and 1 % being Tajik and others. There are various tribes living in Khost, some of these tribes are Zadran, Zormat, Mangal, Zazi, Tani, Gurbaz, Maqbal, Sabari etc.

The province has 13 districts: Mandozi (Esmail khail), Gurbuz, Tanya, Mosa khail, Nadir sha kot, Sabari (Yaqobi), Terzayee (Ali shir), Baak, Qalander, Spera, Shamal Jaji, and Maidan.

Health Net Afghanistan with technical support from Action Contre la Faim (ACF) conducted a Nutrition, Mortality and IYCF SMART assessment from June 2-11, 2015. The survey covers 3 out of 13 districts of Khost province namely: Matoon (Khost), Tanya and Mandozi (Ismail khail). These included about 45.8% of the total population (246500[2]), the remaining areas were classified inaccessible due to insecurity.

A two stage cluster sampling methodology was used. A total of 1108 children aged 6-59 months from 554 households in 39 clusters/villages were examined for anthropometry assessment, mortality, IYCF, morbidity and WASH indicators.

The prevalence of Global Acute malnutrition (GAM) in those 3 districts in Khost was 6.5 % (95 CI: 5.2- 8.1), and sever acute malnutrition (SAM) rate (based on WHZ<-3 score and/ or oedema) was 0.8 % (95% CI: 0.5-1.5).

The results of the nutrition assessments in 3 districts of Khost indicated GAM rate is poor according to WHO[3] classification.

[1] Estimated Population of Afghanistan CSO 2012-2013
[2] Estimated Population of Afghanistan CSO 2012-2013
[3] WHO threshold: Wasting <5% is normal/low , 5-9.9 % is Alert /medium, 10-14.9 % is serious/high, >15 % is critical/very high
Stunting <20 % is normal/low, 20-29.9 % is Alert /medium ,30-39.9 % is serious/high , >40 % is critical/very high
Underweight <10 % is normal/low, 10-19.9% Alert /medium is, 20-29.9 % is serious/high, >30 % is critical/very high

The prevalence of Global Acute Malnutrition, based on MUAC < 125-115 mm and / or oedema, was 9.1 % (95 % CI: 6.3-13.0) and severe Malnutrition (MUAC < 115 mm) was 1.6 % (95 % CI: 1.0- 2.8).

The prevalence of Chronic malnutrition (HAZ < -2 Score) was 30.8 % (95 %CI: 26.8-35.0) and severe stunting (HAZ < -3 score) was 12.2 % (95 % CI: 9.7-15.3), the results of the stunting in 3 districts of Khost indicated serious situation according to WHO classification.

The prevalence of underweight, based on WAZ < -2 score, was 19.6 % (95 % CI: 16.8-22.8) and severe underweight (WAZ < -3 score) was 4.2 % (96 % CI: 2.9- 5.9). The results of underweight are alert according to WHO classification.

The crude mortality rate (CMR) was 0.48/10000/day and under 5 years mortality rate (U5MR) was 0.71/10000/day. Both the CMR and under 5 mortality rates are below the WHO alert threshold 1/10,000/day and 2/10,000 respectively.
Although the survey did not collect information on the causes of death, informal interviews with Health-net Afghanistan health management staff indicated that the main reason for high death of children under the age of 5 years in Khost are due to diarrhea, measles outbreaks, and pregnancy related complications.

The overall morbidity rate was 20.2% among children 0-59 months, including fever (13 %), ARI (48 %) , Watery diarrhea (38%) and others diseases (1%)
The coverage of measles vaccination (Children 9-59 months) was 84.4 %. Only 25.4 % cases were confirmed by cards and the other through the mother's/ caregivers recall.
The coverage of BCG vaccination (children 0 – 59 months) was 87.5 %.

The survey indicates that the children in Khost province are under acute and chronic nutritional stress, especially chronic malnutrition. These require of immediate and appropriate public health interventions with focus on nutrition. The findings of this survey have important implications for policy-makers, public health planners and organizations seeking to meet national and international developmental targets.

A few recommendations include:

- Increase geographical coverage by increasing the number of HFs providing SAM treatment services for children 0-59 months.
- Mothers or community Shuras can be trained on MUAC measurements and be engaged in referring children from the community to the facility.
- Increase outreach activities to reach national target for the coverage of deworming
- Community mobilization activities to increase awareness on maternal health and nutrition with focus on regular ANC visits.
- Trainings for the HF staffs on breastfeeding counselling and support to the mothers.
- Provision of home visits by CHWs to pregnant and lactating women regularly
- Involve community Shuras and Family Health Action Groups (FHAGs) to better mobilize the community on exclusive breastfeeding and proper IYCF practices.
- Promote mother to mother support groups to support lactating mothers on breastfeeding.
- Reinforce health and nutrition education both facility and community levels regularly.

INTRODUCTION

Khost (Pashto: خوست) is one of the 34 provinces of Afghanistan. Khost province is located in the eastern part of country is next to Pakistan's Federally Administered Tribal Areas (FATA). Khost province was used to be a part of Paktia province in the past. The capital of Khost province is Matoon. Khost is mountainous region bordering Pakistan in the East and Paktia and Paktika in the South and West. The total population of the province is around 546,800[4], Pashton inhabitants make up to 99 % of the total population and 1 % is Tajik and others. There are various tribes living in Khost such as Zadran, ZTormat, Mangal, Zazi, Tani, Gurbaz, Maqbal, Sabari etc.

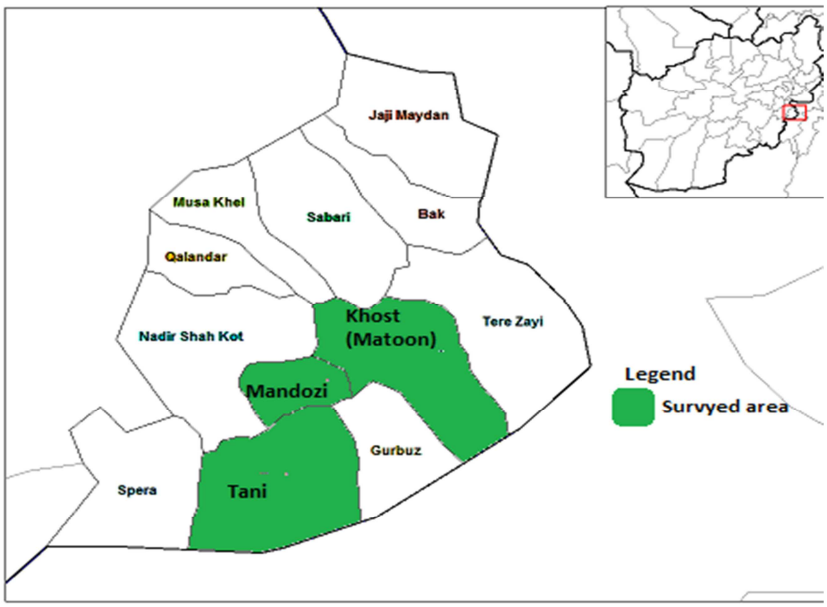


Figure 1: Map of Khost indicating districts covered

The province has 13 districts: Mandozi (Esmail khail), Gurbuz, Tanya, Mosa khail, Nadir sha kot, Sabari (Yaqobi), Terzayee (Ali shir), Baak, Qalander, Spera, Shamal Jaji, and Maidan.

Khost is located about 150 kilometres south of Kabul and 100 kilometres southeast of Gardez. The town of Khost is located on plateau of minimally 3,300ft of altitude that extends to the east for about 40 kilometres until the Bannu Pakistan border.

[4] Estimated Population of Afghanistan CSO 2012-2013

Table 1: List of Covered districts[5]

District	Total Population (inhabitants)
Matoon (khost)	133,700
Tanya	58,000
Mandozi (Ismail khail)	54,800
Total	**246500**

OBJECTIVES

The main objective of the survey was to determine the prevalence of acute and chronic malnutrition amongst children aged 0-59 months.

The specific objectives were to:

- Estimate the crude and under five death rates.
- Determine the prevalence of under nutrition among children 0-59 months.
- Determine the core IYCF practice of children 0-23 months.
- Determine the nutrition status of pregnant and lactating women (PLW).
- Understand the household WASH situation, such as households storages of water households use of water and hand washing practices.
- Estimate the coverage of Vitamin A supplementation and deworming in the last 6 months among children under five and the coverage of Iron/folate supplementation among pregnant women.
- Estimate the morbidity pattern among children 0-59 months.

JUSTIFICATION OF THE SURVEY

The survey was aimed to investigate the nutritional situation of under 5 children together with their mortality information and IYCF practices.

The latest National Nutrition Survey (NNS) was conducted in 2013. Till date no updated information was available on the nutritional situation in Khost. This survey is to shade more lights on the nutritional status of Under 5 Children and Pregnant and Lactating Women (PLW) in Khost. In addition, the findings from this survey would allow the implementing partners and other actors to review their implementation strategy to fulfil the gaps, if any.

[5] Estimated Population of Afghanistan CSO 2012-2013

METHODOLOGY

Sample size for the anthropometry and the mortality survey

The sample size of households to survey is determined by using the ENA for SMART 2011 software (21st April 2015 updated). The table below summarizes all parameters used for sample size calculation.

Table 2: Parameters for sample size calculation for anthropometry, SMART-Khost 2015

Parameters for Anthropometry	Value	Assumptions based on context
Estimated Prevalence of GAM (%)	6.1 %	According to the MoPH National Nutrition Survey-2013[6], the Global Acute Malnutrition prevalence is estimated at 18.2% (95% CI 13.12-24.63). The standard deviation of these results was remaining quite largely out of the limit of 1.2 (2.9).Therefore the prevalence of a neighboring province (Paktika) was adopted based on the most recent SMART survey data[7] which indicated a 6.1% GAM rate for 5 districts in the province. This was therefore used as the estimated prevalence for purposes of sampling as recommended by SMART methodology
Desired precision	±2.5%	Based on the estimated prevalence chosen, SMART recommends the following. In case of selection of estimated prevalence lower than 5%, a desired precision of 2 is recommended. In case of estimated prevalence between 5 and 10%, the recommended desired precision is ±2.5. Since the estimated prevalence for this survey is 6.1% then a desired precision of 2.5 was selected as per SMART recommendation.
Design Effect	1.5	The population living in the 3 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	575	Children at least 6-59 months old. However to avoid possible bias of selection for younger age group, all children from 0 to 59 months old found in the selected households were surveyed.
Average HH Size	7	According to CSO population data 2012-2013, the average household size is 8. According to the National Nutrition Survey 2013, the average household size is **7.33** - most recent result. According to the National Mortality Survey of 2010, the average household size is 7.8. According to the National Vulnerability Assessment of Afghanistan 2014, the average HH size is **7.3**[8]. Therefore, based on these 4 sources, an average household size of 7 was used based on 2 more recent results.

[6] National Nutrition Survey of Afghanistan, UNICEF, 2013
[7] SMART survey Paktika May 2015
[8] National vulnerability assessment of Afghanistan, 2014

% Children under-5	15.6%	According to the National Nutrition Policy and CSO estimation[9], the proportion of children under five was estimated at 20% . However, the estimated U5 population according to the Afghanistan Mortality Survey 2010 was 15.6%, providing a more conservative and accurate percentage[10]. Therefore, 15.6% was used and considered the more conservative and accurate estimate.
% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%. Using the same percentage as of the National Nutrition Survey for Afghanistan (2013)[11]
Households included	622	Households
Parameter	**Mortality survey**	**Rationale**
Estimated death rate	0.5/10000/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	0.3	In order to meet set mortality objectives and in line with the estimated death rate
Design effect	1.5	Cater for heterogeneity in the county population being sampled is homogeneous
Recall period	120	Start point of recall period (Jawza solar month 1394 i.e. 4 months ago).
Average HH size	7	National Vulnerability Assessment of Afghanistan -2014 and National Nutrition Survey 2013
Per cent of non-respondent	6%	Past experience from assessments in Afghanistan due to cultural challenges. Anticipated community mobilization is expected to create further awareness
Population to be included	2904	People
Households to be Included	407	Households

IYCF Sampling

The sample size for information on IYCF indicators were calculated by developing a stratified proportionate sampling methodology (using the Care International Sampling Spread

[9] CSO: Central Statistics Office of Afghanistan, 2010-2011
[10] Afghanistan Mortality survey, 2010
[11] National Nutrition Survey of Afghanistan, UNICEF, 2013

Document) so as to cater for the sample sizes required for the various indicators of IYCF practices, which are disaggregated by age. Four main IYCF indicators (WHO, 2010)[12] were used to calculate the sample size. The prospected prevalence rates of the four indicators:

- Exclusive Breastfeeding Rate;
- Timely Initiation of Breastfeeding;
- Minimum Dietary Diversity and
- Minimum Meal Frequency (Table 3).

The same desired precision levels were used for the each of the four IYCF indicators and a design effect of 1.5 was used for the cluster methodology (Table 2). Information on the proportion of the under-fives and the average household size was solicited from the Afghanistan Mortality Survey 2010.

A non-response rate estimated at 6% (based on rationale provided above) was used for the calculation of the sample size. The sample size for the four IYCF indicators is shown in Table 2 below

In order to estimate the actual population for children 0-23 months the IYCF calculator has factored the percentage of children in this group by assuming that 40% of children under 5 years are between 0-23 months.

In this case the calculation was:

$$\boldsymbol{Total\ \#\ of\ HH} = (\left(\frac{\boldsymbol{sample\ size\ of children}}{\frac{\boldsymbol{average\ HH\ size x\ \%\ under5years}}{\mathbf{100}}}\right)\boldsymbol{x}\ \mathbf{0.4} + \left(\frac{\boldsymbol{sample\ size\ of children}}{\frac{\boldsymbol{average\ HH\ size\ x\ \%\ under5years}}{\mathbf{100}}}\right)\boldsymbol{x}\ \mathbf{0.4}\ ))\ \boldsymbol{x}\ \%\ \boldsymbol{non\ response\ rate}$$

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

Table 3: IYCF sample size calculation

Indicator	Estimated prevalence (%)	± desired precision	Design effect	Sample size (children 0-23 m)	Households to be included
Exclusive breastfeeding	50	8	2	327	326
Timely initiation of breastfeeding	50	8	2	327	326
Minimum dietary diversity	50	8	2	327	326
Minimum meal frequency	50	8	2	327	326

For the exclusive breast feeding indicator, the survey applied the questionnaire to all illegible children found in the households.

Based on the parameters indicated above, anthropometric sample was used as the overall sample size is the highest and therefore qualifies to represent the other indicators. Therefore with the selection of the highest sample size (622 HHs), the other indicators would represent within the larger sample size selected.

Sampling procedure

Selecting clusters

A two stage sampling methodology was employed. The first stage was cluster selection. Clusters were sampled using probability proportional to population size (PPS).

It is estimated that one team could cover 16 households per day. By targeting 16 households per cluster per day, a total of 39 clusters are expected to be reached over the duration of the survey (622 HHs/16HHs/day=38.87 clusters), which was rounded up to 39 clusters in order to reach the required number of 622 households. This allowed the survey to reach the minimum sample required of 575 children (0-59 months) for the anthropometric data.

Out of total villages, 39 villages, corresponding to 39 clusters, were included in the survey. Reserve Clusters (RCs) were selected by ENA software version 2011 updated Nov 2014. Reserve clusters would only be used if 10% or more clusters are impossible to reach during the survey.

Selecting households and children

Simple random sampling method was used, where an up-to-date list of the households in each village was created to select the households randomly. All households were enumerated and given numbers by the survey team. The 16 households were chosen from these enumerated households randomly by drawing from a hat or using a random number table. In each selected village, one or more community member(s) were asked to help the survey teams to conduct their work by providing information about the village with regard to the geographical organization or the number of households.

In cases where it 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.

In cases where there were large villages in a cluster, the villages were 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 such as market, schools, mosques etc.

All the children living in the selected house in the correct age range (0 to 59 months for anthropometric measurement and 0-23 months for IYCF were included, regardless of their height). If more than one eligible child is found in a household, both were included, even if there were twins. Eligible orphans living in the selected households were also surveyed.

All of the selected households were included in the mortality survey as well as response to questions concerning the households as a whole (e.g. water storage).

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

Case definitions and inclusion criteria

The household was the basic sampling unit. A 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 were 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 were multiple cooking areas to determine which members of the household/compound should be included in the study.

Different parameters were used to assess the nutritional status of an individual. Weight, height, Mid Upper Arm Circumference and bilateral oedema are the most commonly used parameters which are often linked to sex and age.

For each selected child, the following information was collected:

Age (in months): Only children 0 - 59 months of age were included. Height was not considered as a valid criterion in absence of age due to the high stunting rates in Khost province[13]. 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 Khost province was used to determine age and recorded 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 were asked to stand on the weighing scale and their weight recorded. In a situation when the child could not stand up, the double weighing methods were applied.

Height (in cm): Measuring board was used to measure bare headed and barefoot children. The precision of the measurement is 1 mm. Children less than 2 years of age were measured

[13] Stunting rate was 28.9% - National nutrition survey 2013

in lying down position and those equal to or above 2 years of age were measured by standing up position.

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

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

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

Acute malnutrition

Acute malnutrition in children 0-59 months can be expressed by using 2 indicators: Weight for Height (W/H) or Mid Upper Arm Circumference (MUAC), as described below.

Weight-for-height index (W/H): A child's nutritional status is estimated by comparing it to the weight-for-height curves of a reference population (WHO standards data14). 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 data collection, the weight-for-height index in Z-score was calculated in the field for each child in order to refer malnourished cases to the appropriate center if needed. Moreover, the results were presented in Z-score using WHO reference in the final report.

Mid Upper Arm Circumference (MUAC): The mid upper arm circumference does not need to be related to any other anthropometric measurements. It is a reliable indicator of the muscular status of the child and is mainly used to identify children with risk of mortality. The MUAC is an indicator of malnutrition only for children more or equal to 6 months.

[14] WHO: World Health Organization, WHO growth curves for children, 2006

Table 4: Cut offs points of MUAC, children 6-59 months, WHO Recommendations

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

Bilateral oedema: 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 severely malnourished regardless of their weight-for-height index. The table below defines the acute malnutrition according to W/H index, MUAC and oedema.

Table 5: Definition of acute malnutrition according to weight-for-height index (W/H), expressed as a Z-score according to WHO standards

Severe Acute Malnutrition (SAM)
W/H <-3 z-score and /or bilateral oedema and/or MUAC < 115 mm
Moderate Acute Malnutrition
W/H <-2 z-score and >= -3 z-score and absence of bilateral oedema and/or MUAC >= 115mm and <125mm
Global Acute Malnutrition (GAM)
W/H <-2 z-score and /or bilateral oedema and MUAC < 125 mm

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 prolonged nutritional history of a child 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 6.

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

Mortality Indicator Calculation

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

Crude death rate (CDR): Number of persons in the total population that dies over a defined period of time.

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

Under-5 death rate (U5DR): The probability of the children, aged 0-5 years, to die during a specific time interval. Calculated as:

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

Additional Indicators – Health & WASH

Beside anthropometric data, additional information was collected as follows:

Immunization status, deworming and vitamin A supplementation: Mothers/caretakers of all children were asked if the 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 were also recorded using samples (Tablets).

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

Mothers nutritional status and Iron/Folate supplementation for pregnant: Women of child bearing age were assessed for their nutritional status based on MUAC using the cut-off of 230 mm.

Water storage and Usage: Household heads were asked what type of container they use for storing drinking water and also how much water did they use in the HH in the last 24 hours in order to assess the use of water per person per day.

Hand washing practices: The mothers were asked on what occasions they wash their hands and also what do they use to wash their hands to determine the hand washing practices in the surveyed area.

Infant and Young Child Feeding Practices Indicators (IYCF)

The following IYCF indicators were used to identify the IYCF practices among children 0-23 months:

Child ever breastfed: Proportion of children who have ever received breast milk.

Timely initiation of breastfeeding: Proportion of children, born in the last 23 months, who were put to the breast within one hour of birth.

Provision of colostrum in the first 3 days of life: Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth.

Exclusive breastfeeding under 6 months: Proportion of infants, 0-5 months, who are fed exclusively with breast milk.

Continued breastfeeding at 1 year: Proportion of children, 12 – 15 months, who are fed with breast milk.

Individual Dietary Diversity Score: Proportion of 6-23 months children consumed a minimum 4 food groups in last 24 hours.

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

Continued breastfeeding at 2 years: Proportion of children, 20–23 months, who are fed breast milk.

Questionnaire, training and supervision

Four teams of three members conducted the field data collection. Each team was composed of one Health Net Afghanistan team leader and two Health Net Afghanistan data collectors. 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[15] to facilitate the work of the female data collectors at the community level. The teams were supervised by ACF and Health Net Afghanistan nutrition program manager/nutrition focal points.

The entire teams received a 7-days training on the survey methodology and all its practical aspects; conducted by ACF Surveillance Manager. One day standardization test was conducted using 10 healthy children in order to evaluate the accuracy and the precision of the team members in taking the anthropometrics measurements. One-day field test was conducted by the teams in order to evaluate their work in real field conditions. Feedback was provided to the team in regard to the results of the field test; particularly in relation to digit preferences and data collection. Refresher training on the anthropometric measurement and filling of the questionnaires and the household's selection were organized on the last day of the training by ACF to ensure overall comprehension before going to the field.

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

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

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

Data analysis

The anthropometric and mortality data were analyzed using ENA software 2011 version, November 2014 update. Survey results were presented in reference to WHO standards for overall final analysis.

Other indicators were analyzed using Excel version 2010 and were expressed in percentage.

SURVEY FINDING

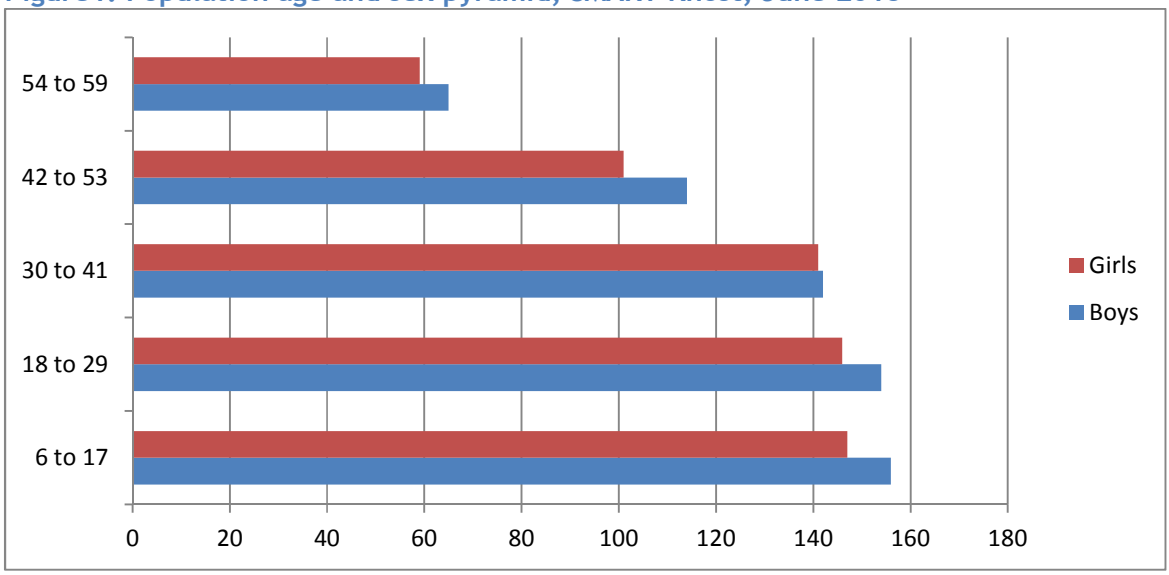
Child health and Nutrition

Description of the sample

Anthropometric data was collected from a total of 1108 children 6-59 months age. Non-response rate was 1.5 %. The overall boy to girl ratio was 1.1, indicating that sampling was unbiased and within expected range of values (0.8 – 1.2) (Table 7).

The age distribution showed a good representation among the age groups. The sex and age pyramid (Figure 2) follow a normal shape.

Figure1: Population age and sex pyramid, SMART Khost, June 2015



Characteristics of the Sample (households and children)

A total of 1225 children (631 boys and 594 girls), aged 6-59 months, drawn from 554 households in 39 clusters were assessed for anthropometry, mortality and morbidity in 3 districts of Khost.

The distribution of the assessed children by age and sex shows that the younger (6-29 months) and older (30-59 months) were equally represented as was the boys and girls, both with the ratio of around 1.06 (**Table 7**).

Table 7: Distribution of age and sex of sample, SMART-Khost, June 2015

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	156	51.5	147	48.5	303	24.7	1.1
18-29	154	51.3	146	48.7	300	24.5	1.1
30-41	142	50.2	141	49.8	283	23.1	1.0
42-53	114	53.0	101	47.0	215	17.6	1.1
54-59	65	52.4	59	47.6	124	10.1	1.1
Total	**631**	**51.5**	**594**	**48.5**	**1225**	**100.0**	**1.1**

Anthropometric results

Data quality

The anthropometric data were analyzed using ENA for SMART Software (version 2011, 21st April 2015 updated). The plausibility check report is available in Annex 2.

A summary of the statistical parameters by index is in the table below.

Table 8: Mean z-scores, Design Effects and excluded subjects, SMART-Khost, June 2015

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	1195	-0.36±1.05	1.00	1	29
Weight-for-Age	1199	-0.94±1.16	1.68	1	25
Height-for-Age	1108	-1.27±1.36	2.12	0	117

* contains for WHZ and WAZ the children with edema

Prevalence of Acute Malnutrition based on Weight-for-Height Z scores (WHZ)

The sex and age disaggregated results are presented in Table 9 and 10 respectively. The prevalence of wasting was observed to be higher among girls as compared to boys. There were no edematous cases **(Table 9).**

Table 9: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex, SMART-Khost. June 2015.

	All n = 1196 (CI: 95%)	Boys n = 613 (CI: 95%)	Girls n = 583 (CI: 95%)
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	6.5% (78) (5.2 - 8.1)	5.7% (35) (4.2 - 7.8)	7.4% (43) (5.5 - 9.7)
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score, no oedema)	5.7% (68) (4.4 - 7.3)	5.2% (32) (3.8 - 7.1)	6.2% (36) (4.3 - 8.8)
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	0.8% (10) (0.5 - 1.5)	0.5% (3) (0.2 - 1.5)	1.2% (7) (0.6 - 2.4)

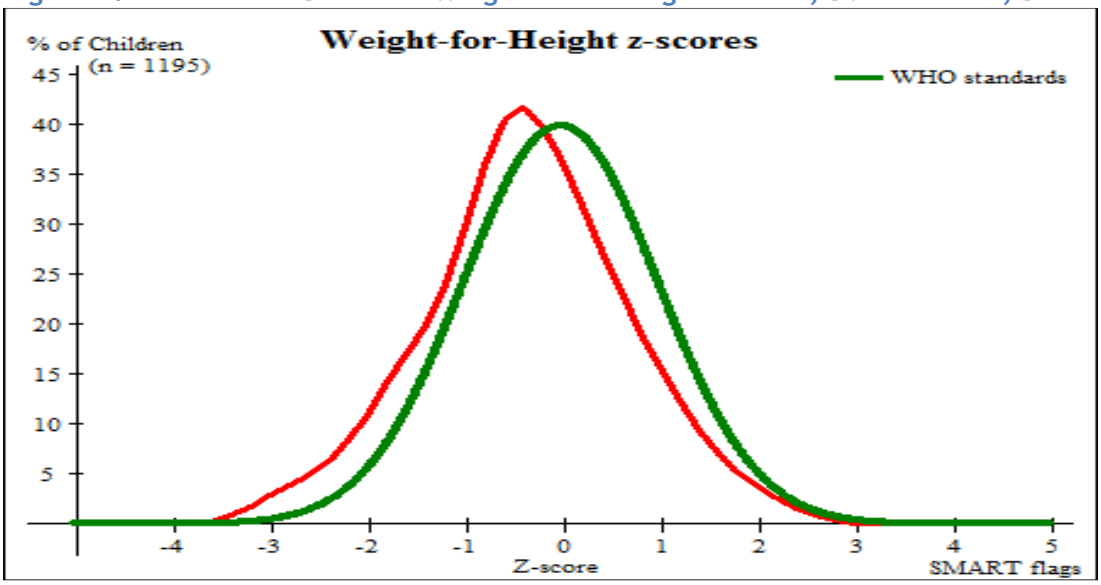
Table 10: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema, SMART-Khost, June 2015

		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	295	3	1.0	28	9.5	264	89.5	0	0.0
18-29	293	2	0.7	17	5.8	274	93.5	0	0.0
30-41	277	1	0.4	13	4.7	263	94.9	0	0.0
42-53	212	1	0.5	5	2.4	205	96.7	1	0.5
54-59	119	2	1.7	5	4.2	112	94.1	0	0.0
Total	**1196**	**9**	**0.8**	**68**	**5.7**	**1118**	**93.5**	**1**	**0.1**

Table 11: Distribution of acute malnutrition and oedema based on weight-for-height z-scores, SMART-Khost, June 2015

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 1 (0.1 %)
Oedema absent	Marasmic No. 21 (1.7 %)	Not severely malnourished No. 1203 (98.2 %)

Figure 2: Distribution Curve for Weight - for - height Z score, SMART-Khost, June 2015



MUAC cut-off classification and/or oedema:

The prevalence of acute malnutrition based on MUAC cut-off is presented in **Table 12**. The younger children (6-29 months) seem to be more affected than older (30-59 months; **Table12**).

Out of 91 children identified by MUAC<125 mm, only 23 were by WHZ<-2, representing only 25.2% of the acutely malnourished children in the sample.

Prevalence of acute Malnutrition based on Mid Upper Arm Circumference (MUAC)

As shown in Table 12, the prevalence of global acute malnutrition, based on MUAC (<125mm), and/or oedema was 9.1% (CI: 6.3 - 13.0) and the prevalence of severe acute malnutrition

(MUAC<115mm and/or oedema) was 1.6 % (CI: 1.0 - 2.8). Table 13 shows the distribution of acute malnutrition based on MUAC by age.

Table 12: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex, SMART-Khost, June 2015

	All n = 1219 (CI: 95%)	Boys n = 628 (CI: 95%)	Girls n = 591 (CI: 95%)
Prevalence of global acute malnutrition (< 125 mm and/or oedema)	9.1% (111) (6.3 - 13.0)	7.5% (47) (4.8 - 11.5)	10.8% (64) (7.3 - 15.8)
Prevalence of moderate acute malnutrition (< 125 mm and >= 115 mm, no oedema)	7.5% (91) (4.8 - 11.4)	5.9% (37) (3.6 - 9.6)	9.1% (54) (5.8 - 14.1)
Prevalence of severe acute malnutrition (< 115 mm and/or oedema)	1.6% (20) (1.0 - 2.8)	1.6% (10) (0.8 - 3.1)	1.7% (10) (0.8 - 3.6)

Table 13: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema, SMART-Khost, June 2015.

		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	297	12	4.0	54	18.2	231	77.8	0	0.0
18-29	300	6	2.0	26	8.7	268	89.3	0	0.0
30-41	283	1	0.4	8	2.8	274	96.8	0	0.0
42-53	215	0	0.0	2	0.9	213	99.1	1	0.5
54-59	124	0	0.0	1	0.8	123	99.2	0	0.0
Total	**1219**	**19**	**1.6**	**91**	**7.5**	**1109**	**91.0**	**1**	**0.1**

Prevalence of Underweight based on Weight-for-Age Z scores (WAZ)

The underweight is defined by weight-for-age z-scores (WAZ). The sex and age disaggregated results are represented in **Table 14 and 15**.

Table 14: Prevalence of underweight based on weight-for-age z-scores by sex, SMART-Khost, June 2015.

	All n = 1199 (CI: 95%)	Boys n = 620 (CI: 95%)	Girls n = 579 (CI: 95%)
Prevalence of underweight (<-2 z-score)	19.6% (235) (16.8 - 22.8)	20.2% (125) (17.0 - 23.7)	19.0% (110) (15.1 - 23.6)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	15.4% (185) (12.9 - 18.4)	15.6% (97) (12.6 - 19.3)	15.2% (88) (11.5 - 19.8)
Prevalence of severe underweight (<-3 z-score)	4.2% (50) (2.9 - 5.9)	4.5% (28) (3.1 - 6.6)	3.8% (22) (2.2 - 6.5)

Table 15: Prevalence of underweight by age, based on weight-for-age z-scores, SMART-Khost, June 2015.

		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	297	12	4.0	54	18.2	231	77.8	0	0.0
18-29	300	6	2.0	26	8.7	268	89.3	0	0.0
30-41	283	1	0.4	8	2.8	274	96.8	0	0.0
42-53	215	0	0.0	2	0.9	213	99.1	1	0.5
54-59	124	0	0.0	1	0.8	123	99.2	0	0.0
Total	**1219**	**19**	**1.6**	**91**	**7.5**	**1109**	**91.0**	**1**	**0.1**

Prevalence of Stunting based on Height-for-Age Z scores (HAZ)

The chronic malnutrition or stunting is defined by Height-for-age Z-scores (HAZ) <-2. The sex and age disaggregated results are represented in **Table 16 and 17**.

Table 16: Prevalence of stunting based on height-for-age z-scores and by sex, SMART-Khost, June 2015.

	All n = 1108 (CI: 95%)	Boys n = 564 (CI: 95%)	Girls n = 544 (CI: 95%)
Prevalence of stunting (<-2 z-score)	30.8% (341) (26.8 - 35.0)	29.4% (166) (24.3 - 35.1)	32.2% (175) (27.5 - 37.2)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	18.6% (206) (16.6 - 20.8)	17.6% (99) (14.4 - 21.2)	19.7% (107) (16.5 - 23.3)
Prevalence of severe stunting (<-3 z-score)	12.2% (135) (9.7 - 15.3)	11.9% (67) (8.8 - 15.8)	12.5% (68) (9.8 - 15.9)

Table 17: Prevalence of stunting by age based on height-for-age z-scores, SMART-Khost, June 2015.

		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	271	25	9.2	41	15.1	205	75.6
18-29	264	46	17.4	59	22.3	159	60.2
30-41	250	39	15.6	62	24.8	149	59.6
42-53	201	21	10.4	37	18.4	143	71.1
54-59	122	4	3.3	7	5.7	111	91.0
Total	**1108**	**135**	**12.2**	**206**	**18.6**	**767**	**69.2**

Figure 3 shows the distribution of HAZ of the observed population (SMART flags excluded) compared to WHO Reference curve. In Khost, it was strongly shifted to the left, suggesting restricted linear growth of the observed population.

Figure 3: Gaussian (normal) distribution curve, HAZ, SMART -Khost, June 2015

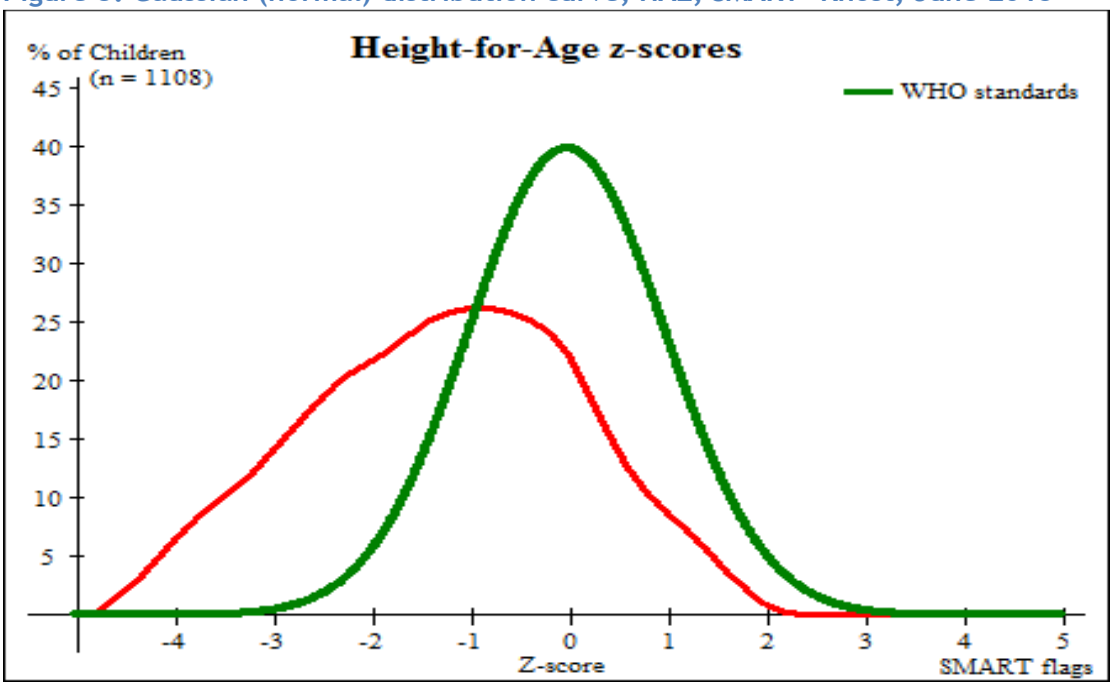
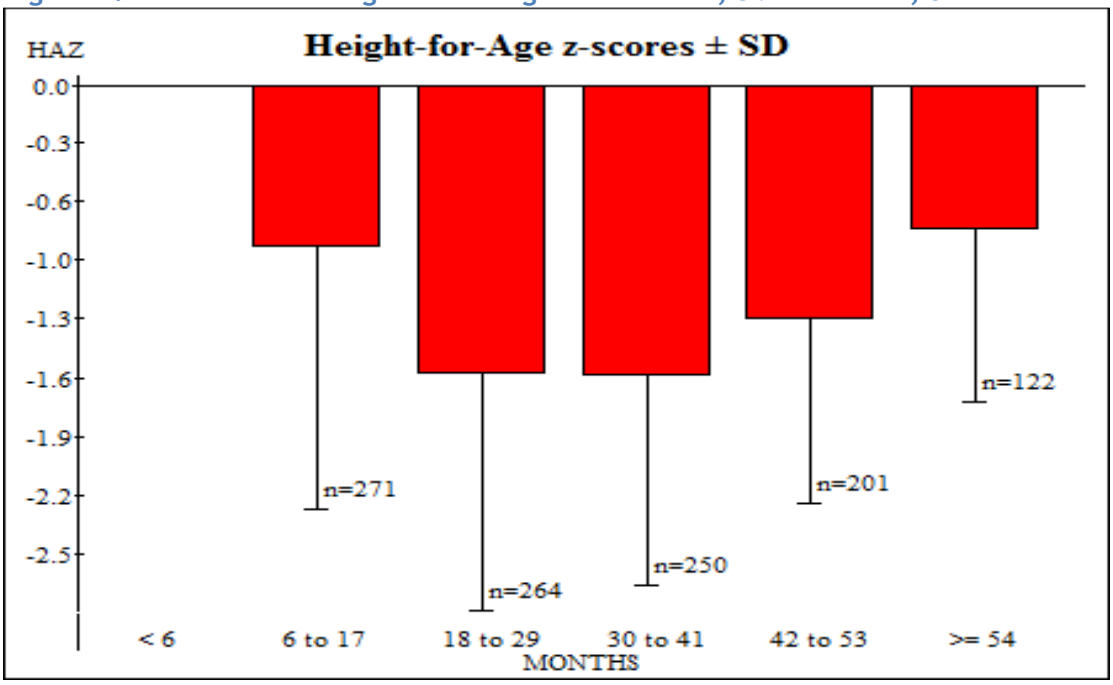


Figure 4: Trends of stunting over the age distribution, SMART-Khost, June 2015



Prevalence of overweight based on weight for height cut offs and by sex (no oedema):

The prevalence of overweight is based on weight-for-height in z-score >2 and found to remain low.

Table 18: Prevalence of overweight based on weight for height cut offs and by sex (no oedema), SMART-Khost, June 2015

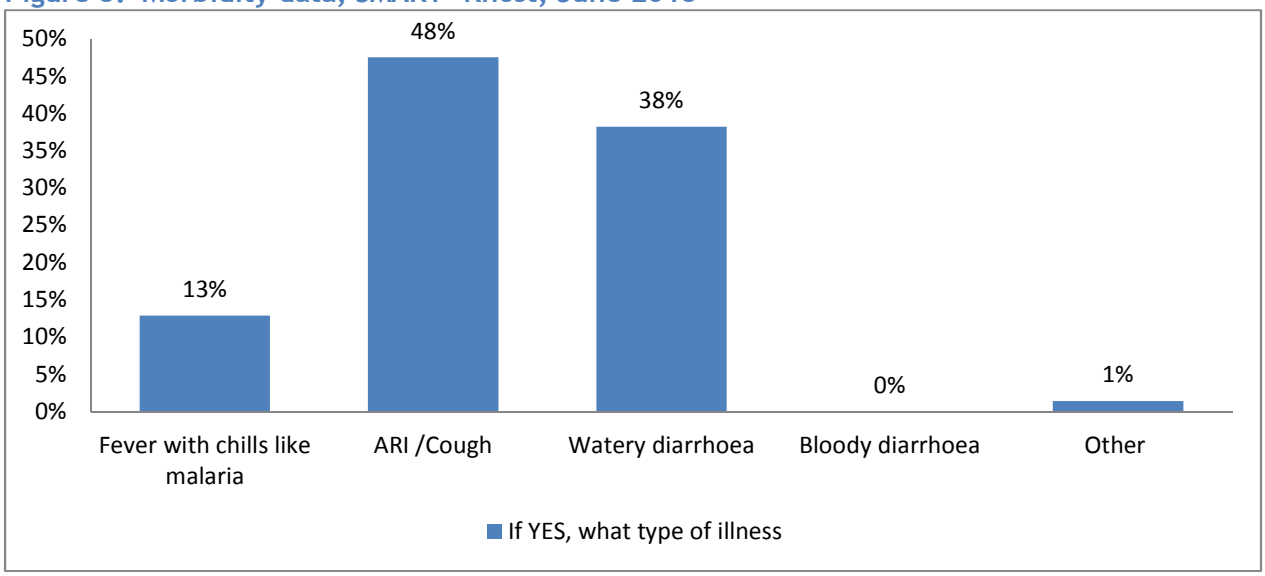
	All n = 1196 (CI: 95%)	Boys n = 613 (CI: 95%)	Girls n = 583 (CI: 95%)
Prevalence of overweight (WHZ > 2)	1.3% (16) (0.7 - 2.5)	1.0% (6) (0.4 - 2.5)	1.7% (10) (0.9 - 3.1)
Prevalence of severe overweight (WHZ > 3)	0.0% (0) (0.0 - 0.0)	0.0% (0) (0.0 - 0.0)	0.0% (0) (0.0 - 0.0)

Child health indicators

Two weeks recall morbidity (children 0-59 months)

A total of 1314 respondents answered on whether they experienced health issue in the last 2 weeks prior to the day of visit of the survey team, **20.2%** responded with "yes". The frequencies of the symptoms are presented in the figure below.

Figure 5: Morbidity data, SMART -Khost, June 2015



Immunization

Immunization, supplementation and deworming are proxy indicators informing community health outreach and health seeking behaviours (Table 19).

Table 19 Immunization age based on vaccination, SMART -Khost, June 2015

Types of Vaccine	Yes by card/ Yes by Recall /No/DNK	Percentage of coverages
Measles immunization coverage (>=9 months = 1157)	Verification by cards	25.4
	Both by cards and recalls	84.4
BCG immunization coverage 0-59 months = 1314)	Scar	87.5
Polio immunization coverage (0-59 months = 1314)	Verification by cards	32.0%
	Both by cards and recalls	89.6

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

Table 20: Vitamin A and Deworming coverage, SMART -Khost, June 2015

	Class	Frequency	%
Vitamin A supplementation aged 6-59 months (6 months recall) , n=1225	Yes	1100	89.8
	No	125	10.2
Deworming aged 12-59 months (6 months recall), n=1073	Yes	686	63.9
	No	387	36.1

IYCF Indicators

Indicators for infant and young child feeding (IYCF) practices included all children 0 - 23 months. A total of 911 children included in the sample. The results are presented in **Table 21**.

Table 21: Infant and Young Child Feeding Practice, SMART -Khost, June 2015

Core Indicators	Definition	N	%
Child ever breastfed (n=911)	Proportion of children who have ever received breast milk	896	98.3%
Timely initiation of breastfeeding (n=892)	Proportion of children born in the last 23 months who were put to the breast within one hour of birth	595	66.8%
Provision of colostrum within first 3 days (n=908)	Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth	893	98.3%
Still breast feeding at 1 year (n=202)	Proportion of children 12-15 months of age who are fed breast milk.	136	67.3%
Exclusive breast feeding (n=167)	Proportion of infants 0-5 months of age who are fed exclusively with breast milk.	1	0.6%
Introduction of solid, semi-solid or soft foods (n=154)	Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods.	84	54.5%

Maternal Nutrition status and hand washing

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

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

The results are presented in the tables below.

Table 22: Physiological status of women of reproductive age (15 - 49 years), (n=813), SMART -Khost, June 2015

Status	Frequency	%
Pregnant	184	22.6
Lactating	309	38.0
Pregnant & Lactating	87	10.7
Non-pregnant & non-lactating	233	28.7

Table 23: Nutritional status of women of reproductive age based on Mid-upper arm

MUAC Cutoff	Frequency	%
MUAC <230 mm	306	27.8
MUAC =or > 229 mm	794	72.2

Table 24: Iron folate for pregnant women based on available answers, (n=1024), SMART - Khost, June 2015

Iron-folat for PLW	Frequency	%
Yes	239	23.3
No	735	71.8
Do not know	50	4.9

Appropriate hand washing is a general measure that contributes to the prevention and control of communicable disease. During the survey a total of 613 mothers or caretakers surveyed for concisely, see table below.

Table 25: Hand washing at 4 critical moments, (n=613), SMART -Khost, June 2015

Response	Frequency (N = 613)	%
Wash hands at all 4 critical moments	458	83
After Toilet/latrines	545	99
Before cooking	513	93
Before eating	548	99
After taking children to the toilet	466	84

NB: This information was largely knowledge/recall based, there is no practical verification process to know if mothers/caretakers actually practiced proper hand washing at all 4 critical points or if they were largely recalling times to which they were previously informed.

Table 26: Hand washing, SMART -Khost, June 2015, SMART -Khost, June 2015

Hand Washing care takers	Frequency (N = 613)	%
Only water	190	34%
Soap	235	43%
Soap when I can afford it	119	22%
Traditional herb	4	1%
Other	4	1%

Mortality and Demographics

Mortality

The crude mortality rate (CMR) was **0.48** (95% CI: 0.35-0.66) and the under-five mortality rate (U5MR) was **0.71** (CI: 0.36-1.41) **(Table 27)**. Both CMR and U5MR rates are below the WHO's *emergency* thresholds of 1/10,000/day and 2/10,000/day respectively.

Table 27: Mortality Rate, SMART -Khost, June 2015

Retrospective Mortality in 120 days prior to survey	Results	CI 95 %
CMR (total deaths/10,000 people / day	0.48	0.35-0.66
U5MR (deaths in children under five/10,000 children under five / day	0.71	0.36-1.41

Demography

The mortality questionnaire in SMART is designed in a way that some additional useful demographic data can be withdrawn. Summary is available in **Table 28**. A total of 7691 Individuals were surveyed and 1314 were reported to have children under age of 5 years.

Table 28: Short summary of demographics, SMART- Khost, June 2015

Indicator	Value
Average HH size	12.5
Children under 5	17.3 %
Most frequent HH size	8
Min HH Size	2
Min HH Size	85

Household information

Several questions concerning the surveyed households were collected which included structure and type of households, livelihoods, access and storage of water etc.

Structure and type of household

This information is presented in the table below:

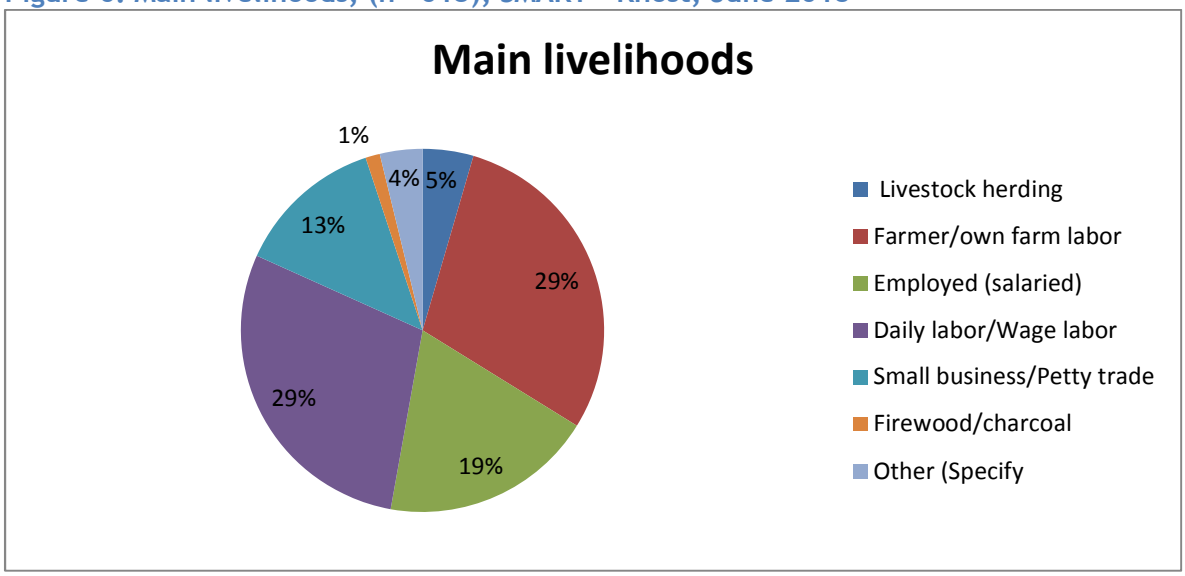
Table 29: Structure and type of households, (n=613) SMART - Khost, June 2015

Head of HH	Frequency	%
Male	497	89.7%
Female	8	1.4%
Both	20	3.6%
Others	29	5.2%
Family type		
Monogamous	526	94.9%
Polygamous	27	4.9%
Single parent	1	0.2%

Main lively hoods

The main livelihoods were defined as those of the family heads. The livestock herding was of 5% **(Figure 6)**.

Figure 6: Main livelihoods, (n= 613), SMART - Khost, June 2015



DISCUSSIONS AND CONCLUSION

Nutritional Status

Global Acute Malnutrition

This SMART Nutrition Survey was conducted in 3 districts of Khost province in June, 2015. The GAM rate, based on WHZ was of 6.5 % (CI: 5.2 - 8.1). It is lower than the WHO emergency threshold of 15%, and might be classified as poor. The SAM rate, based on WHZ, was 0.8% (CI: 0.5 - 1.5), also lower than the 4% level, used in the context of Afghanistan to trigger emergency.

The GAM rate based on MUAC was 9.1% (CI: 6.3 - 13.0), slightly high from the GAM rate based on WHZ, and this difference is significant. It can be classified as poor based on the WHO standards.

Chronic malnutrition

Chronic malnutrition trends in Khost province remain worrying. The results of the present survey show that, the overall prevalence of stunting is 30.8% (CI: 26.8 - 35.0). One in every 3 children included in the survey were found to be stunted. The very high stunting rates can probably be due to the reported prevalence of diseases (20.2% children reported of being ill 2

weeks prior to survey) and poor infant feeding practices (exclusive breastfeeding was found to be 0.6%). The overall rate of stunting in Khost has increased from 28.9% (NNS 2013) to 30.8% (current survey) from 2013 to 2015 respectively.

In order to reduce the high stunting rates, long term nutrition interventions is necessary combined with IYCF practices, scaling up the coverage of deworming as well encouraging timely health seeking behavior. Maternal nutrition and reproductive health also needs to be improved significantly in order to have better impact on high stunting among children.

Maternal nutritional status

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 used to approximately identify their status. In this survey 27.8 % of the mothers were found to have a MUAC<230 mm, which suggest that a considerable number of PLWs in Khost are malnourished. The main concern was iron supplementation among pregnant women, which was found to be very low (23.3%). 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 their life. The Iron/Folate supplementation for pregnant women needs to be increased significantly by reinforcing ANC and PNC as well as home visits of PLW by the CHWs.

Mortality Rates

The crude mortality rate (CMR) was 0.48 (95% CI: 0.35-0.66) and the under-five mortality rate (U5MR) was 0.71 (CI: 0.36-1.41). Both CMR and U5MR rates are below the WHO's emergency thresholds of 1/10,000/day and 2/10,000/day respectively.

Although the questionnaires used in the survey did not allow to collect more information related to the causes of deaths, informal discussions with the community, health workers and Health-net Afghanistan health management staff were informed that the main reason for high death among children under 5 years in Khost was due to diarrhea, measles outbreaks, and pregnancy related complications while adults deaths were more due to fighting and insecurity related causalities.

Risk Factors

Morbidity, immunization, supplementation and deworming

More than half of the sampled children were reported to have illness such as diarrhea, fever and cough. Health and nutrition education needs to focus home management of some common diseases such as diarrhea, fever etc. both facilities and communities regularly.

The coverage of Vitamin A supplementation, 6 months prior to the survey, was good. About 89.8% children received Vitamin A supplementation. One of the core functions of Vitamin A is to boost an individuals' immune system. Building awareness on Vitamin A is of importance to maintain the high rate found in the survey.

The proportion of children, aged 12-59 months, received deworming in the last 6 months was 63.9% indicating low coverages compared to the National target of 80% Worm infections is one of the major contributing factors for under nutrition among children.

Infant and young child feeding practices

Optimal infant and young child feeding practices, especially exclusive breastfeeding up to 6 months of age, is estimated to prevent 1.4 million[16] 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 1 year were well practiced by the mothers. However, exclusive breastfeeding rate of 0.6% is a concern as this might contribute to the stunting among children in the first two years of life. The complementary feeding, is quite poor and often mixed with tea (inhibits iron absorption). These two practices need to be significantly improved in a targeted manner.

Water Hygiene and Sanitation (WASH)

The WASH indicators collected in this survey were mostly limited to the most pragmatic and easy to collect, using a SMART methodology. It is important to note that due to the limited scope of WASH questions and indicators included in the questionnaire, a more general

[16] Lancet Series 2013

conclusion of the WASH situation is difficult to draw. Also the survey did not include observation of the hand washing practices. Therefore, the responses are more likely to be knowledge-based than practice-based hence need to be interpreted with caution. In order to understand better the WASH situation better, an in depth WASH assessment is necessary.

In conclusion, this survey provided evidence that the children in Khost province are under acute and chronic nutritional stress, especially chronic malnutrition indicating the requirement of immediate and appropriate public health interventions with focus on nutrition. The findings of this survey have important implications for policy-makers, public health planners and organizations seeking to meet national and international developmental targets.

RECOMMENDATION

The recommendations have been drawn after the context analysis as a bellow.

Survey finding	Recommendations	Responsible
Poor GAM rates (WHZ base=6.5 % and MUAC base=9.1 %) High stunting rate 30.8 %	- Active case finding and referral; and passive screening at health facilities level through community engagement need to be improved. Mothers or community Shuras can be trained on MUAC measurements and be engaged in referring children from the community to the facility - Increase the number of HFs providing IMAM services in order to provide better assess to SAM treatment services. - Promote massive community screening regularly for early detection of malnutrition. - Target Supplementary Feeding Program (TSFP) to provide support to the moderately malnourished children in order to prevent them to become severely malnourished.	MOPH, Nutrition Cluster BPHS implementers, WFP
Immunization (measles coverages=84.4 %, BCG=87.5 %,Polio=89.6 % Deworming coverages = 63.9 %	- Increase awareness through community mobilization and health education activities focusing on the benefits of immunization both community and facility levels. - Increase outreach activities to reach national target for the coverage of deworming - Strengthening distribution points of vitamin A and deworming supplies together with improve monitoring and evaluation system of immunization activities	MOPH , WHO, BPHS implementers
Childhoods illness (Child illness =20.2 %)	- Strengthen health education by reinforcing health seeking behavior for management of some common diseases among children such as diarrhea, fever, cough etc. - Promote health education and awareness activities focusing on personal and household hygiene and sanitation education in all levels	MOPH, BPHS implementer

Maternal Nutrition status (MUAC base = 27.8 %) and Iron folate supplementation for PLWs= 23.3%	- Community mobilization activities to increase awareness on maternal health and nutrition with focus on regular ANC visits. - Trainings for the HF staffs on breastfeeding counselling and support to the mothers. - Provision of home visits by CHWs to pregnant and lactating women regularly	MOPH, BPHS and EPHS implementers
Improper IYCF practices, especially low exclusive breastfeeding (0.6%) for children 0-6 months of age	- Involve community Shuras and Family Health Action Groups (FHAGs) to better mobilize the community on exclusive breastfeeding and proper IYCF practices. - Promote mother to mother support groups to support lactating mothers on breastfeeding	BPHS implementer, Nutrition cluster, and PND

ANNEXES

Annex 1: Cluster selection for Khost SMART survey –June 2015.

Geographical unit	Population size	Cluster
Baran Khail	1666	1
Dakano Kalay	889	2
Degan	1057	3
Khair Abad	1680	4
Lalmi Haji Salim Ya Dasht Haid	3066	5
Maqbel	2457	6
Mohammad Hassan	2380	7
Shadal	1155	8
Toura Wari	2828	9
Zari Tarkha	700	10
Darwal Kalay	1771	11
Badiye Khail	462	12
Cheni	1435	13
Dab Kalay	1820	14
Dolan	742	15
Kajeri Kalay	2555	16
Khalesa Tabon	1127	RC
Khost City Nahia 01	17220	17,RC,RC
Koz Koryan	1470	18
Kundi	6076	19
Mahmod Khail	2093	20
Mardi Khail	1960	21
Mazar Kalay	1575	22
Moulayano Kalay	847	23
Pairano Kalay	1806	RC
Qala Hendo	469	24
Sakhi Jan Kalay	210	25
Tolay Meshe Kalay	217	26
Atmanzai	679	27
Dakhai	5663	28
Dayer Malik	1085	29
Gosha	770	30
Hesarak Kotke	2100	31
Majnoon Kaly	630	32
Dragi Markaz(Walswali)	4900	33

Mussa Khan Kalay	420	34
Nazir Kalay	630	35
Sher Ali Khan Kalay	210	36
Toor Khail	5600	37
Walam	1204	38
Laghori Kotkai	630	39

Annex 2: Plausibility check

Plausibility check for: Khost Province SMART & Mortality Survey.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** (2.4 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.290)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**4** (p=0.021)
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** (7)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (6)
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** (1.05)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.04)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.05)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.148)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**4** %

The overall score of this survey is 4 %, this is excellent.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 74 %

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=11/ID=1:	HAZ (-4.350), Height may be incorrect
Line=30/ID=1:	HAZ (-5.748), Height may be incorrect
Line=31/ID=2:	**WHZ (2.679)**, Height may be incorrect
Line=32/ID=3:	HAZ (5.056), Age may be incorrect
Line=53/ID=2:	HAZ (2.924), Height may be incorrect
Line=54/ID=1:	HAZ (3.209), Age may be incorrect
Line=72/ID=2:	HAZ (-4.680), Height may be incorrect
Line=90/ID=1:	HAZ (7.341), WAZ (2.575), Age may be incorrect
Line=109/ID=1:	**WHZ (2.687)**, Weight may be incorrect
Line=110/ID=1:	HAZ (2.917), Height may be incorrect
Line=141/ID=1:	HAZ (-5.069), WAZ (-4.675), Age may be incorrect
Line=143/ID=2:	HAZ (-4.744), Age may be incorrect
Line=150/ID=7:	HAZ (-4.688), Age may be incorrect
Line=154/ID=1:	HAZ (-4.583), Age may be incorrect
Line=168/ID=1:	HAZ (3.113), Age may be incorrect
Line=188/ID=4:	HAZ (7.140), WAZ (2.746), Age may be incorrect
Line=207/ID=1:	HAZ (-4.618), Age may be incorrect
Line=215/ID=4:	HAZ (1.986), Age may be incorrect
Line=225/ID=1:	HAZ (2.108), Age may be incorrect
Line=226/ID=2:	HAZ (-4.459), Age may be incorrect
Line=227/ID=1:	HAZ (-4.653), Age may be incorrect
Line=228/ID=2:	HAZ (-5.177), Age may be incorrect
Line=233/ID=3:	HAZ (-5.468), Age may be incorrect
Line=241/ID=1:	HAZ (2.108), Height may be incorrect
Line=242/ID=2:	HAZ (1.816), Age may be incorrect
Line=246/ID=1:	HAZ (-5.648), WAZ (-3.975), Age may be incorrect
Line=248/ID=3:	HAZ (2.641), Age may be incorrect
Line=261/ID=1:	HAZ (2.141), Age may be incorrect
Line=264/ID=1:	HAZ (2.770), Age may be incorrect
Line=265/ID=2:	HAZ (3.065), Age may be incorrect
Line=269/ID=4:	HAZ (-5.089), Age may be incorrect
Line=273/ID=4:	HAZ (2.685), Height may be incorrect
Line=276/ID=3:	HAZ (2.164), Age may be incorrect

Line=283/ID=2: HAZ (2.589), Age may be incorrect
Line=284/ID=3: HAZ (2.015), Age may be incorrect
Line=292/ID=2: HAZ (1.735), Age may be incorrect
Line=366/ID=2: HAZ (2.131), Age may be incorrect
Line=371/ID=4: HAZ (3.668), Height may be incorrect
Line=376/ID=3: HAZ (1.840), Height may be incorrect
Line=388/ID=2: HAZ (-4.351), Age may be incorrect
Line=392/ID=2: HAZ (-4.754), Age may be incorrect
Line=395/ID=2: HAZ (-5.042), Age may be incorrect
Line=398/ID=1: HAZ (-5.063), Age may be incorrect
Line=427/ID=1: HAZ (1.992), Age may be incorrect
Line=453/ID=1: HAZ (2.872), Height may be incorrect
Line=460/ID=3: HAZ (1.892), Height may be incorrect
Line=474/ID=4: HAZ (-4.416), WAZ (-4.314), Age may be incorrect
Line=477/ID=1: HAZ (-4.834), Height may be incorrect
Line=486/ID=2: WAZ (-4.172), Age may be incorrect
Line=487/ID=1: HAZ (1.754), Height may be incorrect
Line=494/ID=1: HAZ (-4.799), Age may be incorrect
Line=503/ID=2: HAZ (2.084), Age may be incorrect
Line=505/ID=2: HAZ (-5.742), Age may be incorrect
Line=513/ID=1: HAZ (1.838), Age may be incorrect
Line=519/ID=1: HAZ (-4.558), Age may be incorrect
Line=524/ID=1: HAZ (1.990), Age may be incorrect
Line=535/ID=1: HAZ (-4.450), Height may be incorrect
Line=548/ID=2: HAZ (4.889), WAZ (2.148), Age may be incorrect
Line=549/ID=3: HAZ (5.269), WAZ (2.201), Age may be incorrect
Line=565/ID=2: HAZ (3.003), Age may be incorrect
Line=585/ID=1: HAZ (-7.440), Age may be incorrect
Line=629/ID=1: HAZ (-5.558), Age may be incorrect
Line=646/ID=1: HAZ (-4.385), WAZ (-4.105), Age may be incorrect
Line=648/ID=1: HAZ (-6.169), WAZ (-4.682), Age may be incorrect
Line=652/ID=1: HAZ (-5.324), Age may be incorrect
Line=659/ID=2: HAZ (-4.421), Age may be incorrect
Line=664/ID=1: HAZ (-5.633), Age may be incorrect
Line=682/ID=2: HAZ (-4.722), Age may be incorrect
Line=693/ID=1: HAZ (-4.717), Height may be incorrect
Line=710/ID=2: **WHZ (5.911)**, HAZ (-4.584), Height may be incorrect
Line=711/ID=1: HAZ (3.551), Age may be incorrect
Line=713/ID=1: **WHZ (5.776)**, HAZ (-4.421), Height may be incorrect
Line=715/ID=1: **WHZ (5.966)**, HAZ (-4.345), Height may be incorrect
Line=719/ID=2: **WHZ (-4.953)**, Weight may be incorrect
Line=725/ID=2: HAZ (-5.294), Age may be incorrect
Line=726/ID=1: HAZ (-5.049), Height may be incorrect
Line=728/ID=3: **WHZ (-5.850)**, WAZ (-4.322), Weight may be incorrect
Line=730/ID=1: HAZ (-4.435), Age may be incorrect
Line=738/ID=1: **WHZ (-5.110)**, HAZ (1.882), Height may be incorrect

Line=743/ID=1: **WHZ (4.060)**, Weight may be incorrect
Line=757/ID=2: HAZ (1.992), Age may be incorrect
Line=765/ID=2: HAZ (-5.180), Age may be incorrect
Line=766/ID=1: HAZ (2.330), Height may be incorrect
Line=768/ID=1: HAZ (2.195), Age may be incorrect
Line=779/ID=2: HAZ (1.790), Height may be incorrect
Line=793/ID=1: **WHZ (-4.364)**, Weight may be incorrect
Line=795/ID=3: **WHZ (3.263)**, Height may be incorrect
Line=802/ID=2: HAZ (-4.688), Age may be incorrect
Line=803/ID=1: **WHZ (-3.345)**, Weight may be incorrect
Line=808/ID=3: HAZ (2.877), Age may be incorrect
Line=821/ID=2: **WHZ (-3.656)**, Weight may be incorrect
Line=827/ID=3: **WHZ (4.056)**, HAZ (-6.171), Height may be incorrect
Line=828/ID=1: **WHZ (3.595)**, Height may be incorrect
Line=829/ID=2: **WHZ (4.213)**, Height may be incorrect
Line=832/ID=1: **WHZ (3.405)**, Weight may be incorrect
Line=833/ID=1: **WHZ (3.765)**, Weight may be incorrect
Line=836/ID=1: HAZ (-6.512), WAZ (-4.012), Age may be incorrect
Line=848/ID=2: HAZ (-4.329), Age may be incorrect
Line=849/ID=1: HAZ (-7.662), WAZ (-5.038), Age may be incorrect
Line=850/ID=2: HAZ (-4.949), Height may be incorrect
Line=872/ID=1: **WHZ (-3.565)**, Weight may be incorrect
Line=880/ID=1: **WHZ (-3.941)**, Height may be incorrect
Line=896/ID=2: HAZ (-6.700), WAZ (-5.442), Age may be incorrect
Line=912/ID=1: HAZ (-4.878), WAZ (-5.082), Age may be incorrect
Line=940/ID=1: **WHZ (-4.332)**, HAZ (3.266), Height may be incorrect
Line=941/ID=2: HAZ (2.005), Age may be incorrect
Line=943/ID=1: HAZ (3.803), Age may be incorrect
Line=945/ID=3: **WHZ (3.164)**, Height may be incorrect
Line=947/ID=2: **WHZ (4.092)**, HAZ (-7.702), Height may be incorrect
Line=952/ID=3: HAZ (-7.373), Height may be incorrect
Line=953/ID=1: HAZ (1.843), Age may be incorrect
Line=957/ID=1: HAZ (2.263), Age may be incorrect
Line=958/ID=2: HAZ (2.842), WAZ (2.065), Age may be incorrect
Line=961/ID=2: **WHZ (3.529)**, Weight may be incorrect
Line=962/ID=1: HAZ (3.204), WAZ (2.707), Age may be incorrect
Line=969/ID=2: HAZ (-5.972), WAZ (-3.967), Age may be incorrect
Line=971/ID=2: HAZ (-5.278), Age may be incorrect
Line=989/ID=1: HAZ (-5.536), Age may be incorrect
Line=1020/ID=1: HAZ (1.772), WAZ (2.532), Age may be incorrect
Line=1021/ID=2: HAZ (2.393), Age may be incorrect
Line=1031/ID=2: HAZ (2.933), WAZ (2.366), Age may be incorrect
Line=1044/ID=4: HAZ (2.004), Height may be incorrect
Line=1082/ID=1: HAZ (3.971), Age may be incorrect
Line=1085/ID=1: **WHZ (-3.802)**, Weight may be incorrect
Line=1108/ID=2: HAZ (-5.486), Age may be incorrect

Line=1111/ID=1: HAZ (3.174), Age may be incorrect
Line=1144/ID=3: **WHZ (3.132)**, HAZ (-4.938), Height may be incorrect
Line=1150/ID=3: HAZ (1.949), Age may be incorrect
Line=1152/ID=1: HAZ (-5.824), WAZ (-4.458), Age may be incorrect
Line=1172/ID=2: **WHZ (-3.871)**, Height may be incorrect
Line=1175/ID=1: HAZ (3.007), Height may be incorrect
Line=1194/ID=1: HAZ (-5.224), WAZ (-4.203), Age may be incorrect
Line=1202/ID=1: HAZ (-5.858), WAZ (-4.424), Age may be incorrect
Line=1215/ID=3: **WHZ (-3.537)**, Weight may be incorrect
Line=1229/ID=4: HAZ (2.811), Age may be incorrect
Line=1284/ID=2: HAZ (2.018), Age may be incorrect
Line=1293/ID=1: HAZ (-6.589), WAZ (-5.044), Age may be incorrect
Line=1300/ID=2: **WHZ (3.387)**, Weight may be incorrect
Line=1302/ID=1: HAZ (-6.117), WAZ (-4.925), Age may be incorrect

Percentage of values flagged with SMART flags:WHZ: 2.4 %, HAZ: 9.6 %, WAZ: 2.0 %

Age distribution:

Month 6 : #####
Month 7 : #############
Month 8 : #############
Month 9 : ###############
Month 10 : #############
Month 11 : #############
Month 12 : ##################
Month 13 : #############
Month 14 : ################
Month 15 : #########
Month 16 : ##########
Month 17 : ########
Month 18 : ######################
Month 19 : ############
Month 20 : ########
Month 21 : #######
Month 22 : ########
Month 23 : #########
Month 24 : ############################
Month 25 : ################
Month 26 : ############
Month 27 : ##########
Month 28 : ######
Month 29 : ##########
Month 30 : ####################################
Month 31 : ########

Month 32 : ############
Month 33 : ########
Month 34 : ##############
Month 35 : ########
Month 36 : ####################
Month 37 : ########
Month 38 : ########
Month 39 : ######
Month 40 : ####
Month 41 : ######
Month 42 : ##################################
Month 43 : ###
Month 44 : ######
Month 45 : ####
Month 46 : ########
Month 47 : ########
Month 48 : ##############
Month 49 : ##########
Month 50 : ######
Month 51 : ######
Month 52 : ####
Month 53 : ######
Month 54 : ############
Month 55 : #####
Month 56 : ########
Month 57 : #######
Month 58 : ################
Month 59 : ##############

Age ratio of 6-29 months to 30-59 months: 0.97 (The value should be around 0.85).:
p-value = 0.021 (significant difference)

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

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	156/146.4 (1.1)	147/137.8 (1.1)	303/284.2 (1.1)	1.06
18 to 29	12	154/142.7 (1.1)	146/134.4 (1.1)	300/277.1 (1.1)	1.05
30 to 41	12	142/138.4 (1.0)	141/130.2 (1.1)	283/268.6 (1.1)	1.01
42 to 53	12	114/136.2 (0.8)	101/128.2 (0.8)	215/264.3 (0.8)	1.13
54 to 59	6	65/67.3 (1.0)	59/63.4 (0.9)	124/130.7 (0.9)	1.10
6 to 59	54	631/612.5 (1.0)	594/612.5 (1.0)		1.06

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

Overall sex ratio: p-value = 0.290 (boys and girls equally represented)
Overall age distribution: p-value = 0.009 (significant difference)
Overall age distribution for boys: p-value = 0.258 (as expected)
Overall age distribution for girls: p-value = 0.073 (as expected)

Overall sex/age distribution: p-value = 0.005 (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: 0.086

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

Evaluation of Standard deviation, Normal distribution, Skewness and Kurtosis using the 3 exclusion (Flag) procedures

.	no exclusion	exclusion from reference mean (WHO flags)	exclusion from observed mean (SMART flags)
.			
.			
WHZ			
Standard Deviation SD:	1.22	1.17	1.05
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	7.3%	7.1%	6.4%
calculated with current SD:	8.8%	7.9%	6.0%
calculated with a SD of 1:	4.9%	4.9%	5.1%
HAZ			
Standard Deviation SD:	1.83	1.73	1.36
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	32.7%	32.2%	30.8%
calculated with current SD:	34.6%	33.1%	29.6%
calculated with a SD of 1:	23.5%	22.5%	23.3%
WAZ			
Standard Deviation SD:	1.25	1.25	1.16
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	20.6%	20.6%	19.6%
calculated with current SD:	20.4%	20.4%	17.9%
calculated with a SD of 1:	15.1%	15.1%	14.4%

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

WHZ	p= 0.000	p= 0.000	p= 0.037
HAZ	p= 0.000	p= 0.003	p= 0.000
WAZ	p= 0.022	p= 0.022	p= 0.002

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

Skewness

WHZ	0.29	0.12	-0.04
HAZ	0.04	0.08	-0.12
WAZ	-0.17	-0.17	-0.04

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

Kurtosis

WHZ	2.73	1.28	0.05
HAZ	1.20	0.33	-0.66
WAZ	0.22	0.22	-0.40

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=1.24 (p=0.148)
WHZ < -3: ID=0.79 (p=0.819)
Oedema: ID=1.00 (p=0.469)
GAM: ID=1.18 (p=0.202)
SAM: ID=0.76 (p=0.853)
HAZ < -2: ID=1.93 (p=0.000)
HAZ < -3: ID=1.73 (p=0.003)
WAZ < -2: ID=1.66 (p=0.007)
WAZ < -3: ID=1.68 (p=0.005)

Subjects with SMART flags are excluded from this analysis.

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

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

```
Time                                        SD for WHZ
point               0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.47 (n=39, f=3)  ############################
02: 0.83 (n=37, f=0)  #
03: 1.47 (n=39, f=1)  ############################
04: 1.23 (n=34, f=0)  ##################
05: 1.43 (n=37, f=1)  ############################
06: 1.08 (n=37, f=0)  ############
07: 0.80 (n=37, f=0)
08: 1.26 (n=37, f=1)  ###################
09: 1.70 (n=36, f=3)  ######################################
10: 1.58 (n=34, f=1)  ################################
11: 1.29 (n=34, f=0)  ####################
12: 1.32 (n=38, f=1)  ######################
13: 1.23 (n=34, f=0)  ##################
14: 1.00 (n=35, f=1)  ########
15: 1.34 (n=35, f=2)  ########################
16: 1.06 (n=36, f=0)  ###########
17: 0.98 (n=37, f=1)  #######
18: 1.18 (n=34, f=2)  ################
19: 0.88 (n=34, f=0)  ###
```

```
20: 0.96 (n=36, f=0)  #######
21: 1.31 (n=35, f=1)  ####################
22: 1.47 (n=36, f=2)  ############################
23: 0.73 (n=35, f=0)
24: 0.87 (n=34, f=0)  ###
25: 1.36 (n=33, f=1)  ########################
26: 1.43 (n=31, f=2)  #########################
27: 1.39 (n=30, f=1)  ########################
28: 1.30 (n=27, f=1)  ####################
29: 1.04 (n=26, f=0)  ##########
30: 1.30 (n=23, f=1)  ####################
31: 1.28 (n=20, f=0)  ###################
32: 1.33 (n=17, f=1)  ####################
33: 1.46 (n=16, f=2)  0000000000000000000000000000
34: 1.27 (n=15, f=0)  00000000000000000000
35: 0.85 (n=12, f=0)  00
36: 1.15 (n=12, f=0)  000000000000000
37: 1.29 (n=12, f=0)  00000000000000000000
38: 1.34 (n=11, f=0)  000000000000000000000000
39: 0.99 (n=08, f=0)  ~~~~~~~~
40: 1.05 (n=10, f=0)  0000000000
41: 0.72 (n=09, f=0)
42: 0.57 (n=06, f=0)
43: 1.28 (n=05, f=0)  ~~~~~~~~~~~~~~~~~~~~
44: 1.40 (n=03, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~
45: 1.46 (n=04, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~
46: 1.03 (n=05, f=0)  ~~~~~~~~~~
47: 1.05 (n=03, f=0)  ~~~~~~~~~~
48: 1.27 (n=04, f=0)  ~~~~~~~~~~~~~~~~~~~~
49: 1.11 (n=04, f=0)  ~~~~~~~~~~~~~~
50: 1.37 (n=03, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~
51: 0.55 (n=02, f=0)
52: 0.39 (n=02, f=0)
53: 0.63 (n=02, f=0)
54: 0.02 (n=02, f=0)
55: 0.75 (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**
n =	258	324	343	300
Percentage of values flagged with SMART flags:				
WHZ:	1.6	1.9	0.9	3.0
HAZ:	9.3	8.6	11.4	4.7
WAZ:	1.6	2.2	2.6	0.7
Age ratio of 6-29 months to 30-59 months:				
	1.10	0.88	1.04	0.89
Sex ratio (male/female):				
	1.13	0.96	1.08	1.10
Digit preference Weight (%):				
.0 :	4	7	9	7
.1 :	16	8	8	11
.2 :	8	9	13	14
.3 :	13	9	10	9

.4 :	10	10	11	11
.5 :	8	15	12	9
.6 :	10	11	8	11
.7 :	9	9	9	9
.8 :	9	10	10	9
.9 :	13	11	9	8
DPS:	10	7	6	6

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

Digit preference Height (%):

.0 :	7	13	5	15
.1 :	17	13	4	15
.2 :	11	15	15	11
.3 :	10	11	20	10
.4 :	9	10	10	9
.5 :	7	8	12	7
.6 :	11	9	8	9
.7 :	10	6	8	7
.8 :	7	9	4	7
.9 :	10	6	13	10
DPS:	10	10	17	9

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

Digit preference MUAC (%):

.0 :	9	14	15	11
.1 :	12	9	10	10
.2 :	11	13	10	14
.3 :	9	7	11	10
.4 :	12	9	9	11
.5 :	11	11	18	9
.6 :	7	11	10	9
.7 :	9	7	5	5
.8 :	10	8	6	11
.9 :	9	11	6	9
DPS:	5	8	12	7

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

Standard deviation of WHZ:

SD	1.09	1.30	0.96	1.46

Prevalence (< -2) observed:

%	7.8	6.5		9.0

Prevalence (< -2) calculated with current SD:

%	7.0	8.3		12.0

Prevalence (< -2) calculated with a SD of 1:

%	5.3	3.6		4.3

Standard deviation of HAZ:

SD	1.75	1.79	1.92	1.78

observed:

%	31.4	26.9	39.9	32.0

calculated with current SD:
% 34.8 28.3 39.6 35.2
calculated with a SD of 1:
% 24.6 15.3 30.6 24.9

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	35/31.8 (1.1)	33/28.1 (1.2)	68/59.9 (1.1)	1.06
18 to 29	12	38/31.0 (1.2)	29/27.4 (1.1)	67/58.4 (1.1)	1.31
30 to 41	12	29/30.0 (1.0)	28/26.5 (1.1)	57/56.6 (1.0)	1.04
42 to 53	12	20/29.6 (0.7)	23/26.1 (0.9)	43/55.7 (0.8)	0.87
54 to 59	6	15/14.6 (1.0)	8/12.9 (0.6)	23/27.5 (0.8)	1.88
6 to 59	54	137/129.0 (1.1)	121/129.0 (0.9)		1.13

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

Overall sex ratio: p-value = 0.319 (boys and girls equally represented)
Overall age distribution: p-value = 0.198 (as expected)
Overall age distribution for boys: p-value = 0.282 (as expected)
Overall age distribution for girls: p-value = 0.512 (as expected)
Overall sex/age distribution: p-value = 0.051 (as expected)

Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	43/36.9 (1.2)	36/38.3 (0.9)	79/75.2 (1.1)	1.19
18 to 29	12	35/36.0 (1.0)	38/37.3 (1.0)	73/73.3 (1.0)	0.92
30 to 41	12	39/34.9 (1.1)	40/36.2 (1.1)	79/71.0 (1.1)	0.98
42 to 53	12	30/34.3 (0.9)	28/35.6 (0.8)	58/69.9 (0.8)	1.07
54 to 59	6	12/17.0 (0.7)	23/17.6 (1.3)	35/34.6 (1.0)	0.52
6 to 59	54	159/162.0 (1.0)	165/162.0 (1.0)		0.96

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

Overall sex ratio: p-value = 0.739 (boys and girls equally represented)
Overall age distribution: p-value = 0.538 (as expected)
Overall age distribution for boys: p-value = 0.474 (as expected)
Overall age distribution for girls: p-value = 0.430 (as expected)
Overall sex/age distribution: p-value = 0.113 (as expected)

Team 3:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	44/41.3 (1.1)	38/38.3 (1.0)	82/79.6 (1.0)	1.16
18 to 29	12	46/40.3 (1.1)	47/37.3 (1.3)	93/77.6 (1.2)	0.98

30 to 41	12	38/39.0 (1.0)	39/36.2 (1.1)	77/75.2 (1.0)	0.97
42 to 53	12	40/38.4 (1.0)	28/35.6 (0.8)	68/74.0 (0.9)	1.43
54 to 59	6	10/19.0 (0.5)	13/17.6 (0.7)	23/36.6 (0.6)	0.77
6 to 59	54	178/171.5 (1.0)	165/171.5 (1.0)		1.08

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

Overall sex ratio: p-value = 0.483 (boys and girls equally represented)
Overall age distribution: p-value = 0.068 (as expected)
Overall age distribution for boys: p-value = 0.253 (as expected)
Overall age distribution for girls: p-value = 0.234 (as expected)
Overall sex/age distribution: p-value = 0.022 (significant difference)

Team 4:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	34/36.4 (0.9)	40/33.2 (1.2)	74/69.6 (1.1)	0.85
18 to 29	12	35/35.5 (1.0)	32/32.3 (1.0)	67/67.9 (1.0)	1.09
30 to 41	12	36/34.4 (1.0)	34/31.4 (1.1)	70/65.8 (1.1)	1.06
42 to 53	12	24/33.9 (0.7)	22/30.9 (0.7)	46/64.7 (0.7)	1.09
54 to 59	6	28/16.8 (1.7)	15/15.3 (1.0)	43/32.0 (1.3)	1.87
6 to 59	54	157/150.0 (1.0)	143/150.0 (1.0)		1.10

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

Overall sex ratio: p-value = 0.419 (boys and girls equally represented)
Overall age distribution: p-value = 0.045 (significant difference)
Overall age distribution for boys: p-value = 0.031 (significant difference)
Overall age distribution for girls: p-value = 0.383 (as expected)
Overall sex/age distribution: p-value = 0.003 (significant difference)

Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster per day is measured then this will be related to the time of the day the measurement is made).

Team: 1

```
Time                                        SD for WHZ
point               0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.10 (n=10, f=0)  #############
02: 1.09 (n=10, f=0)  ############
03: 1.41 (n=10, f=0)  ##########################
04: 0.85 (n=08, f=0)  ##
05: 0.75 (n=09, f=0)
06: 1.00 (n=09, f=0)  ########
07: 0.51 (n=10, f=0)
08: 1.55 (n=10, f=1)  ################################
09: 1.04 (n=09, f=0)  ##########
10: 1.91 (n=07, f=0)  ################################################
11: 1.15 (n=09, f=0)  ###############
12: 1.38 (n=10, f=1)  ########################
13: 1.27 (n=08, f=0)  ####################
14: 0.61 (n=10, f=0)
```

```
15: 1.54 (n=08, f=1)  ###############################
16: 1.08 (n=09, f=0)  ############
17: 0.70 (n=09, f=0)
18: 1.01 (n=10, f=0)  #########
19: 0.48 (n=09, f=0)
20: 0.74 (n=10, f=0)
21: 1.45 (n=09, f=0)  ###########################
22: 1.00 (n=09, f=0)  ########
23: 0.46 (n=08, f=0)
24: 0.71 (n=09, f=0)
25: 0.79 (n=08, f=0)
26: 1.66 (n=07, f=1)  ####################################
27: 1.05 (n=06, f=0)  ###########
28: 1.07 (n=04, f=0)  00000000000
29: 1.19 (n=03, f=0)  0000000000000000
30: 0.13 (n=02, f=0)
31: 1.08 (n=03, f=0)  000000000000
```

(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: 0.96 (n=10, f=0)  #######
02: 0.90 (n=10, f=0)  ####
03: 2.37 (n=10, f=1)  ################################################################
04: 1.07 (n=09, f=0)  ###########
05: 1.14 (n=09, f=0)  ##############
06: 0.83 (n=09, f=0)  #
07: 0.69 (n=08, f=0)
08: 1.24 (n=09, f=0)  ###################
09: 2.48 (n=08, f=1)  ################################################################
10: 1.43 (n=09, f=0)  ##########################
11: 1.48 (n=08, f=0)  ############################
12: 0.91 (n=10, f=0)  #####
13: 1.23 (n=07, f=0)  ##################
14: 1.33 (n=08, f=0)  ######################
15: 1.33 (n=10, f=0)  ######################
16: 1.06 (n=10, f=0)  ###########
17: 1.25 (n=09, f=0)  ###################
18: 1.63 (n=06, f=0)  ###################################
19: 1.21 (n=08, f=0)  #################
20: 0.93 (n=08, f=0)  #####
21: 1.35 (n=08, f=0)  #######################
22: 2.52 (n=08, f=1)  ################################################################
23: 0.86 (n=08, f=0)  ##
24: 0.85 (n=06, f=0)  ##
25: 1.27 (n=07, f=0)  ####################
26: 0.76 (n=06, f=0)
27: 0.46 (n=06, f=0)
28: 1.36 (n=05, f=0)  #######################
29: 0.97 (n=06, f=0)  #######
30: 0.62 (n=06, f=0)
31: 2.02 (n=04, f=0)  000000000000000000000000000000000000000000000000000
32: 1.51 (n=05, f=0)  ##############################
33: 0.74 (n=04, f=0)
34: 1.46 (n=04, f=0)  0000000000000000000000000000
35: 1.01 (n=05, f=0)  #########
36: 1.31 (n=05, f=0)  #####################
37: 0.90 (n=05, f=0)  ####
38: 1.58 (n=04, f=0)  000000000000000000000000000000000
39: 1.22 (n=04, f=0)  000000000000000000
40: 1.46 (n=04, f=0)  0000000000000000000000000000
41: 0.98 (n=04, f=0)  0000000
42: 0.43 (n=03, f=0)
43: 0.90 (n=03, f=0)  0000
44: 1.84 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
45: 1.06 (n=02, f=0)  ~~~~~~~~~~
46: 1.07 (n=03, f=0)  OOOOOOOOOO
47: 1.05 (n=03, f=0)  OOOOOOOOO
48: 1.54 (n=03, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOOOOO
49: 1.18 (n=03, f=0)  OOOOOOOOOOOOOOO
50: 1.69 (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: 1.42 (n=10, f=1)  ##########################
02: 0.66 (n=10, f=0)
03: 0.81 (n=10, f=0)
04: 1.03 (n=10, f=0)  ##########
05: 1.29 (n=10, f=0)  ####################
06: 0.78 (n=10, f=0)
07: 0.69 (n=10, f=0)
08: 0.79 (n=10, f=0)
09: 0.63 (n=10, f=0)
10: 1.42 (n=10, f=0)  ##########################
11: 1.24 (n=09, f=0)  ##################
12: 1.29 (n=10, f=0)  ####################
13: 1.24 (n=10, f=0)  ##################
14: 0.69 (n=09, f=0)
15: 0.88 (n=10, f=0)  ###
16: 1.28 (n=09, f=0)  ####################
17: 0.76 (n=10, f=0)
18: 0.56 (n=09, f=0)
19: 0.86 (n=09, f=0)  ##
20: 1.14 (n=10, f=0)  ##############
21: 0.52 (n=10, f=0)
22: 0.72 (n=10, f=0)
23: 0.87 (n=10, f=0)  ###
24: 0.77 (n=10, f=0)
25: 0.87 (n=10, f=0)  ###
26: 0.55 (n=10, f=0)
27: 0.54 (n=10, f=0)
28: 0.94 (n=10, f=0)  ######
29: 0.50 (n=09, f=0)
30: 1.73 (n=09, f=1)  ########################################
31: 0.74 (n=07, f=0)
32: 1.44 (n=07, f=1)  ############################
33: 0.52 (n=06, f=0)
34: 0.52 (n=05, f=0)
35: 0.51 (n=03, f=0)
36: 1.33 (n=04, f=0)  OOOOOOOOOOOOOOOOOOO
37: 1.58 (n=04, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
38: 1.66 (n=04, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
39: 0.43 (n=03, f=0)
40: 0.17 (n=03, f=0)
41: 0.06 (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: 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: 2.01 (n=09, f=2)  ####################################################
02: 0.55 (n=07, f=0)
03: 0.90 (n=09, f=0)  ####
04: 1.48 (n=07, f=1)  ############################
```

```
05: 1.95 (n=09, f=1)  ##############################################
06: 1.58 (n=09, f=1)  ################################
07: 1.21 (n=09, f=0)  ################
08: 1.44 (n=08, f=0)  ##########################
09: 2.03 (n=09, f=2)  ####################################################
10: 1.77 (n=08, f=1)  ##########################################
11: 1.32 (n=08, f=0)  ####################
12: 1.44 (n=08, f=0)  ##########################
13: 1.18 (n=09, f=0)  ################
14: 1.39 (n=08, f=1)  ########################
15: 1.65 (n=07, f=1)  ###################################
16: 0.93 (n=08, f=0)  #####
17: 0.96 (n=09, f=0)  #######
18: 1.56 (n=09, f=1)  ###############################
19: 0.97 (n=08, f=0)  #######
20: 0.97 (n=08, f=0)  #######
21: 1.78 (n=08, f=1)  ########################################
22: 1.44 (n=09, f=1)  ##########################
23: 0.61 (n=09, f=0)
24: 1.16 (n=09, f=0)  ###############
25: 2.22 (n=08, f=1)  ##############################################################
26: 2.22 (n=08, f=2)  ##############################################################
27: 2.15 (n=08, f=1)  ##########################################################
28: 1.78 (n=08, f=1)  ########################################
29: 1.47 (n=08, f=0)  ############################
30: 1.12 (n=06, f=0)  ############
31: 1.57 (n=06, f=0)  ###############################
32: 0.80 (n=04, f=0)
33: 2.57 (n=05, f=2)  ######################################################################
34: 1.85 (n=05, f=0)  ##########################################
35: 0.79 (n=03, f=0)
36: 1.03 (n=02, f=0)  ~~~~~~~~~~
37: 2.15 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
38: 0.89 (n=03, f=0)  OOOO
40: 0.78 (n=03, f=0)
41: 0.08 (n=02, f=0)
42: 0.43 (n=02, f=0)
43: 1.78 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
45: 1.17 (n=02, f=0)  ~~~~~~~~~~~~~~~~
46: 0.68 (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 3: Local Event Calendar

1394	ماهای	1393	ماهای	1392	ماهای	1391	ماهای	1390	ماهای	1389	میاشتی	د میاشتو نومونه
د نوروز ورځ	3	د نوروز ورځ	15	د نوروز ورځ	27	د نوروز ورځ	39	د نوروز ورځ	51	د نوروز ورځ		حمل
د نیالونه د کشینولو وخت		د نیالونه د کشینولو وخت		د نیالونه د کشینولو وخت		د نیالونه د کشینولو وخت		د نیالونه د کشینولو وخت		د نیالونه د کشینولو وخت		
دمکتبونو د شورع کیدو وخت		دمکتبونو د شورع کیدو وخت		دمکتبونو د شورع کیدو وخت		دمکتبونو د شورع کیدو وخت		دمکتبونو د شورع کیدو وخت		دمکتبونو د شورع کیدو وخت		
سخي صاحب میله		سخي صاحب میله		سخي صاحب میله		سخي صاحب میله		سخي صاحب میله		سخي صاحب میله		
دونو د ګلانو د غوړیدو وخت		دونو د ګلانو د غوړیدو وخت		دونو د ګلانو د غوړیدو وخت		دونو د ګلانو د غوړیدو وخت		دونو د ګلانو د غوړیدو وخت		دونو د ګلانو د غوړیدو وخت		
د مجاهدینو د کامیابی ورځ	2	د مجاهدینو د کامیابی ورځ	14	د مجاهدینو د کامیابی ورځ	26	د مجاهدینو د کامیابی ورځ	38	د مجاهدینو د کامیابی ورځ	50	د مجاهدینو د کامیابی ورځ		ثور
د کوچیانو د راختلو وخت		د کوچیانو د راختلو وخت		د کوچیانو د راختلو وخت		د کوچیانو د راختلو وخت		د کوچیانو د راختلو وخت		د کوچیانو د راختلو وخت		
د ختیو وخت یا میاشت		د ختیو وخت یا میاشت		د ختیو وخت یا میاشت		د ختیو وخت یا میاشت		د ختیو وخت یا میاشت		د ختیو وخت یا میاشت		
ډ خدای میاشت	1	ډ خدای میاشت	13	ډ خدای میاشت	25	ډ خدای میاشت	37	ډ خدای میاشت	49	ډ خدای میاشت		جوزا
د غنمو د لو دخت		د غنمو د لو دخت		د غنمو د لو دخت		د غنمو د لو دخت		د غنمو د لو دخت		د غنمو د لو دخت		
ډیوی میاشت		ډیوی میاشت		ډیوی میاشت		ډیوی میاشت		ډیوی میاشت		ډیوی میاشت		
معلم ورځ		معلم ورځ		معلم ورځ		معلم ورځ		معلم ورځ		معلم ورځ		
د روژي میاشت		د روژي میاشت	12	د روژي میاشت	24	د روژي میاشت	36	د روژي میاشت	48	د روژي میاشت		سرطان
د ګرمی موسم		د ګرمی موسم		د ګرمی موسم		د ګرمی موسم		د ګرمی موسم		د ګرمی موسم		
کوچنی اختر		کوچنی اختر	11	کوچنی اختر	23	کوچنی اختر	35	کوچنی اختر	47	کوچنی اختر	59	اسد
سیلابونه وخت ، د جشن ورځ		سیلابونه وخت ، د جشن ورځ		سیلابونه وخت ، د جشن ورځ		سیلابونه وخت ، د جشن ورځ		سیلابونه وخت ، د جشن ورځ		سیلابونه وخت ، د جشن ورځ		
د درمندو وخت		د درمندو وخت	10	د درمندو وخت	22	د درمندو وخت	34	د درمندو وخت	46	د درمندو وخت	58	سنبله
د میوو د پخیدو وخت		د میوو د پخیدو وخت		د میوو د پخیدو وخت		د میوو د پخیدو وخت		د میوو د پخیدو وخت		د میوو د پخیدو وخت		

Team Leader Name_____Signature _____

د غنمو د کروخت		د غنمو د کروخت	9	د غنمو د کروخت	21	د غنمو د کروخت	33	د غنمو د کروخت	45	د غنمو د کروخت	57	میزان	
د حج د تګ وخت		د حج د تګ وخت		د حج د تګ وخت		د حج د تګ وخت		د حج د تګ وخت		د حج د تګ وخت			
د جوارو لو وخت ، دمیزان ستوری		د جوارو لو وخت ، دمیزان ستوری		د جوارو لو وخت ، دمیزان ستوری		د جوارو لو وخت ، دمیزان ستوری		د جوارو لو وخت ، دمیزان ستوری		د جوارو لو وخت ، دمیزان ستوری			
دحسن او حسین میاشت		دحسن او حسین میاشت	8	دحسن او حسین میاشت	20	دحسن او حسین میاشت	32	دحسن او حسین میاشت	44	دحسن او حسین میاشت	56	عقرب	
د ژمی لپاره د تیاری وخت ، د پانو د تویدو وخت (منی)، د لاندي وخت		د ژمی لپاره د تیاری وخت ، د پانو د تویدو وخت (منی)، د لاندي وخت		د ژمی لپاره د تیاری وخت ، د پانو د تویدو وخت (منی)، د لاندي وخت		د ژمی لپاره د تیاری وخت ، د پانو د تویدو وخت (منی)، د لاندي وخت		د ژمی لپاره د تیاری وخت ، د پانو د تویدو وخت (منی)، د لاندي وخت		د ژمی لپاره د تیاری وخت ، د پانو د تویدو وخت (منی)، د لاندي وخت			
د اوبو د یخ وهلو وخت		د اوبو د یخ وهلو وخت	7	د اوبو د یخ وهلو وخت	19	د اوبو د یخ وهلو وخت	31	د اوبو د یخ وهلو وخت	43	د اوبو د یخ وهلو وخت	55	قوس	
زیات بادونه وی ، دواوری دشروع وخت ،او یخ شروع کیږی		زیات بادونه وی ، دواوری دشروع وخت ،او یخ شروع کیږی		زیات بادونه وی ، دواوری دشروع وخت ،او یخ شروع کیږی		زیات بادونه وی ، دواوری دشروع وخت ،او یخ شروع کیږی		زیات بادونه وی ، دواوری دشروع وخت ،او یخ شروع کیږی		زیات بادونه وی ، دواوری دشروع وخت ،او یخ شروع کیږی			
د کورنو ګرمولو وخت ، ښځو ورځ ، د مکتبونو د رخصت وخت		د کورنو ګرمولو وخت ، ښځو ورځ ، د مکتبونو د رخصت وخت		د کورنو ګرمولو وخت ، ښځو ورځ ، د مکتبونو د رخصت وخت		د کورنو ګرمولو وخت ، ښځو ورځ ، د مکتبونو د رخصت وخت		د کورنو ګرمولو وخت ، ښځو ورځ ، د مکتبونو د رخصت وخت		د کورنو ګرمولو وخت ، ښځو ورځ ، د مکتبونو د رخصت وخت			
د غنمو د ژرنده کولو وخت		د غنمو د ژرنده کولو وخت		د غنمو د ژرنده کولو وخت		د غنمو د ژرنده کولو وخت		د غنمو د ژرنده کولو وخت		د غنمو د ژرنده کولو وخت			
د روسانو د راتګ ورځ ،وچه ځیله یا سپیره ځیله		د روسانو د راتګ ورځ ،وچه ځیله یا سپیره ځیله	6	د روسانو د راتګ ورځ ،وچه ځیله یا سپیره ځیله	18	د روسانو د راتګ ورځ ،وچه ځیله یا سپیره ځیله	30	د روسانو د راتګ ورځ ،وچه ځیله یا سپیره ځیله	42	د روسانو د راتګ ورځ ،وچه ځیله یا سپیره ځیله	54	جدی	
میلادو نبی یا د مړو شپه ، د واورو میاشت		میلادو نبی یا د مړو شپه ، د واورو میاشت		میلادو نبی یا د مړو شپه ، د واورو میاشت		میلادو نبی یا د مړو شپه ، د واورو میاشت		میلادو نبی یا د مړو شپه ، د واورو میاشت		میلادو نبی یا د مړو شپه ، د واورو میاشت			
د روسانو د وتلو خت ، بادوری		د روسانو د وتلو خت ، بادوری	5	د روسانو د وتلو خت ، بادوری	17	د روسانو د وتلو خت ، بادوری	29	د روسانو د وتلو خت ، بادوری	41	د روسانو د وتلو خت ، بادوری	53	دلوه	
ځیله ، باما او سخت یخ شروع کیږی		ځیله ، باما او سخت یخ شروع کیږی		ځیله ، باما او سخت یخ شروع کیږی		ځیله ، باما او سخت یخ شروع کیږی		ځیله ، باما او سخت یخ شروع کیږی		ځیله ، باما او سخت یخ شروع کیږی			
د یخونو د ختمیدو وخت		د یخونو د ختمیدو وخت	4	د یخونو د ختمیدو وخت	16	د یخونو د ختمیدو وخت	28	د یخونو د ختمیدو وخت	40	د یخونو د ختمیدو وخت	52	حوت	
دجرې وخت		دجرې وخت		دجرې وخت		دجرې وخت		دجرې وخت		دجرې وخت			
د مرغانو د راتګ وخت		د مرغانو د راتګ وخت		د مرغانو د راتګ وخت		د مرغانو د راتګ وخت		د مرغانو د راتګ وخت		د مرغانو د راتګ وخت			

Team Leader Name_____Signature _____

Annex 4: Questionnaires

1.IDENTIFICATION (هویت)

1.1 Data Collector(ارقام جمع کونکی) _____ **1.2 Team Leader**(تیم لیډر)_____ **1.3 Survey date (dd/mm/yy)** (سروی تاریخ) /___/___/___/

1.4 Province(ولایت)	1.5 District, ولسوالی	1.6 Division ناحیه	1.7 Location محل	1.8 Sub-Location محل فرعی	1.9 Village قریه	1.10 Cluster No کلستر نمبر	1.11 HH No دکورنی نمبر	1.12 Team No. دتیم نمبر

2. HOUSEHOLD STRUCTURE (دکورنی جوړښت)

2.1	**How many people live together in this household & share meals** |____| **پدی کورنی کی څومره کسان یوځای ژوند کوی او په شریکه غذا خوری ؟**	
2.2	**Who is the Head of the Household?** |____| [1=Husband, 2=Mother, 3=My parents, 4=others , specify] **د دی کورنی مشر څوک دی ؟** **[مشخص یی کړی ، نور =۴ ، مور اوپلار =۳ ، مور =۲ ، خاوند =۱]**	
2.3	**What is the structure of your family**? |____| [1=monogamy, 2=polygamy,3=single parent] **ستاسی کورنی جوړښت څه دول دی ؟** **[بواځی مور یا پلار =۳ ، څو ښځو خاوند =۲ ، یوی ښځی خاوند =۱** *If 2 go to 2.4 else, skip to 2.5* **ک چیرته ۱ او یا ۳ انتخاب شو نو ۲,۴ سوال نه تیر شی**	
2.4	**If polygamous, how many wives does your husband have?** |____| **که چیرته څو ښځیو خاوند وی ، تعداد د ښځو یی وپوښتی ؟**	
2.5	**What is the main occupation of the household head** **ستاسی د کور د مشر عمده وظیفه څه شی ده ؟** 1. Livestock herding **شپون** 2. Farmer/own farm labor **دهقان یا خپل فارم لری** 3. Employed (salaried) **(وظیفه (معاش** 4. Daily labor/Wage labor **روزمره مزدوری کوی** 5. Small business/Petty trade **وړوکی تجارت لری** 6. Firewood/charcoal **لرگی ټولوی او خرڅوی**	|____|

Team Leader Name_____Signature _____

	7. Other (Specify **نور مشخص یی کړی** _____	

3. CHILD HEALTH AND NUTRITION (ONLY FOR CHILDREN 0-59 MONTHS OF AGE; IF N/A SKIP TO SECTION 3.3) د ماشوم **N/A**وی نو ۳,۶ برخی ته مراجعه وکړی
صحت او تغذیه (یواځی ۰- ۵۹ میاشتو ماشومانو لپاره) که جواب
Instructions دستور العمل**:** *The caregiver of the child should be the main respondent for this section* دماشوم مور یا پایواز عام وتام مسولیت لری پدی برخه کی

***3.1 CHILD ANTHROPOMETRY* دماشوم اندازه ګیری**

*(**Please** fill in **ALL REQUIRED** details below.)* مهربانی وکړی ټول ضروری معلومات چې لاندی ذکر شوی دی ډک کړی

A	B	C	D	E	F	G	H	I	J
Child No. دماشوم نمبر	SEX جنس F/M	Exact Birth Date د تولد تاریخ دقیق شکل سره	Age in months عمر په میاشت	Weight (KG) XX.X وزن په کیلوګرام	Height (CM) XXX.X قد په سانتی متر	Oedema پرسوب Y= Yes N= No N = نخیر Y= بلی	MUAC (mm) XXX موک په ملی متر	Has your child (NAME) been ill in the past two weeks? If No, please skip part J and K proceed to 3.4 ایاستاسی ماشوم (نوم یی) په تیرو دوه هفتو کی ناروغ شوی که جواب نه وی د لنه تیر شی او 3.3 ته مراجعه وکړی 1=Yes (بلی) 2=No (نه)	If YES, what type of illness (multiple responses possible) که جواب بلی وی کومه نوعه ناروغی لری (امکان لری چی زیات جوابات ولری) 1 = Fever malaria تبه د لرزی سره 2 = ARI /Cough توخی / تنفسی مشکلات 3 = Watery diarrhoea اوبلن اسهال 4 = Bloody diarrhoea وینه لرونکی اسهال 5 = Other (specify) نور مشخص یی کړی *See case definitions below* لاندی تعریف ته وګوری
01									
02									
03									
04									

Fever تبه دملاریا سره : لوړه درجه تبه د لرزی سره High temperature	**Cough/ARI**(توخی / تنفسی مشکلات) **:** Any episode with severe, persistent cough or difficulty breathing دوامداره توخی یا په ساه اخسیتنه کی مشکلات	**Watery diarrhoea(اوبلن اسهال) :** Any episode of three or more watery stools per day که اوبلن غایطه مواد په ورځ کی دری یا د دری ځلو نه زیات ولری	**Bloody diarrhoea (وینه لرونکی اسهال):** Any episode of three or more stools with blood per day که چیری په ورځ کی دری یا د دری ځلو نه زیات وینه لرونکی غایطه مواد ولری

Team Leader Name_____Signature _____

3.3 Kindly maintain the same child number as part 2 and 3.1 above **د ۲ او ۳،۱ برخی دماشوم سره مشابه وی**					
	A	**B**	**C**	**D**	**E**
Child No. دماشوم نمبر	Has the child received Vitamin A in the past 6 months? (show sample) ایا ستاسی ماشوم دتیرو شپږو میاشتو راهیسی ویتامین ای کپسول اخیستی دی (نمونه ورته وښایی) 1= Yes 2= No	Has the child received drugs for worms in the past 6 months? **(12-59 Months)** *(show Sample)* ایا ستاسی ماشوم د تیرو شپږو میاشتو راهیسی د چنجو دوا اخیستی ده (**۱۲ – ۵۹ میاشتنی عمرلرونکی ماشومان**) (نمونه ورته وښایی) *1= Yes* *2= No*	Has the child received BCG vaccination? ایا ستاسی ماشوم د بی سی جی واکسین اخیستی دی **1 = scar (ندبه لری)** **2=No scar (ندبه نلری)**	Has the child received Polio vaccination (please for all polio vaccinations) ایا ستاسی ماشوم د پولیوواکسین اخیستی دی (دتولو پولیو واکسینونو لپاره) **1=Yes, Card بلی کارد** **2=Yes, Recall بلی مګر کارد نلری** **3 = No نه** **4 = Do not know نه پوهیږم**	Has the child received measles vaccination *(On the upper right shoulder)?* (**9 months and above)** ایا ستاسی ماشوم د شری واکسین اخیستی (ښی لاس پورتنی برخه)(**۹ میاشتی یا زیات عمر** **1=Yes, Card** بلی ، کارد لری **2=Yes, Recall** بلی کارد نلری **3 = No** نه **4 = Do not know** نه پوهیږم
01					
02					
03					
04					

MATERNAL NUTRITION FOR MOTHERS OF REPRODUCTIVE AGE (15-49 YEARS)*(Please insert appropriate number in the box)* **هغه ښځی چی د تولد اوتناسل عمر ولری (۱۵ – ۴۹ کلنی عمر لرونکی ښځی)** (لطفآ مناسب عدد په بکس کی ولیکی)			
3.4	**3.5**	**3.6**	**3.7**
Woman ID. نمبر دزنانه **(all ladies in the HH aged 15-49 years تولی هغه ښځی چی په کورنی کی د ۱۵ تر ۴۹ کالو عمر ولری)**	What is the mother's / caretaker's physiological status د مور یا پایواز فزیالوژیک حالت څه شی دی 1. **Pregnant** (حامله) 2. **Lactating**(شیدی ورکونکی) 3. **Pregnant and Lactating** حامله او شیدی ورکونکی) 4. **None of the above** یو هم نه	Mother/ caretaker's MUAC reading: **XXX mm** مور یا پایواز د موک اندازه په ملی متر	Have you been taking iron-folate tablets? (Only for pregnant women) ایا تاسی اوسپنی یا د کم خونی گولی اخیستی (یواځی د حامله ښځو لپاره) (نمونه وښایی) 1. **Yes** بلی 2. **No** نه 3. **Don't know** نه پوهیږم
1			
2			
3			
4			

Team Leader Name_____Signature _____

3.8	3.9
Yesterday (within last 24 hours) at what instances did you wash your hands? (MULTIPLE RESPONSE- (Use 1 if "Yes" and 2 if "No") **پرون (تیرو ۲۴ ساعتو کی) کی مو لاسونه وینځلی دی (امکان لری چی زیات جوابونه ولری) که بلی نو ۱ او که نه خیر وی نو ۲ انتخاب کړی ؟** 1. After toilet **(وروسته د کناراب نه** |____| 2. Before cooking **مخکی د اشپزی نه** |____| 3. Before eating **مخکی د خوړو نه** |____| 4. After taking children to the toilet **وروسته له دی نه چی ماشوم کناراب ته بوزم** |____| 5. Others **نور** |____|	**If the caregiver washes her hands, then probe further; what did you use to wash your hands?** **که چیرته پایواز یا مور خپل لاسونه وینځي ، بیا پوښتنه وکړی چی لاسونه په څه شی وینځی ؟** 1. Only water **یواځی په اوبو باندی** 2. Soap and water **صابون او اوبو باندی** 3. Soap when I can afford it **صابون باندی که چیرته په لاس راشی یا موجود وی** 4. traditional herb **محلی یا سنتی گیاه گانو باندی** 5. Any other specify **نور مشخص یی کړی** |____|

Team Leader Name_____Signature _____

Kindly maintain the same child number as part 2 and 3.1 above د ۲ او ۳،۱ برخی دماشوم سره مشابه وی	**To be conducted in Households with children aged 0 - 23 months** په هغه کورنی که ډک کړی چې د ۰ – ۲۳ میاشتو ماشوم ولری

Date (D/M/Y)تاریخ: ...../...../..... Division ناحیه: _____ Sub locationفرعی موقیعت: _____ Village Name قریه: _____ Cluster No کلستر نمبر_____Team No تیم نمبر:

3.10	A	B	C	D	E	F	G	H	I	J
Child No. دماشوم نمبر	**Number of people in the household** په کورنی کی دافرادو تعداد	**HH Ref-No** د کور نی نمبر	**Age (in months)** عمر په میاشت	**Has this child ever been breastfed?** ایا دی ماشوم کله دمور شیدی رودلی **1 = Yes** بلی **2 = No** نه ***If no go to question I*** که چیرته جواب نه وی سوال ته *I*نو مراجعه وکړی	**How long after birth did you first put the child to the breast** وروسته دولادت نه څومره وخت بعد دی ماشوم خپلی سینی ته واچوو **1 = Within one hour** په یو ساعت کی **2 = In first day (within 24 hours)** په لومړی ورځ کی **3 = After first day** وروسته دیوی ورځی نه**(>24 hours)**	**Did you feed your child with fluid or liquid that came from breasts in the first 3 days after birth COLOSTRUM ایا کوم مایعات چی ستاسی د سینی راوځی یعنی اورگه بعد له ولادت نه په لومړیو دری ورځو کی مو خپل ماشوم ته ورکړی** **1 = Yes** **2= No**	**Is this child still breastfeeding now?** یا تراوسه هم خپل ماشوم ته خپلی شیدی ورکوی **1 = Yes** بلی **2= No** نه	**Exclusive breast feeding: Other than breast milk, what other foods did you give the child before the age of 6 months** خالص دمور شیدو باندی تغذیه : مخکی د ۶ میاشتو نه مو بغیر دمور دشیدو نه کومه غذا ماشوم ته ورکړی ؟ **1 =None other than breast milk** بغیر دمور دشیدو نه می هیڅ نه دی ورکړی **2 = Powder/animal milk/yogurt** پودری ، حیوانی شیدی یا ماستی **3 = Cereals based diet** سیریلاک **4 = Plain water** ساده اوبه **5 = Fruit Juice** د میوی جوس **6 = Sugar water** دبوری اوبه **7 = Vegetables** ترکاری	**What foods were given to the child yesterday during the day and night?** کومه نوعه خواره مو پرون د شپی او ورځی له خوا نه ورکړی **1 =Grains, roots and tubers** حبوبات ، دانی او هغه غذای مواد چی زمکی لاندی کیږی لکه کچالو ،الو پشمک او نو ر **2 = Flesh foods (Meat/Fish/Poultry/Organ meats)** د غوښی غذا (ماهی ، غوښه ، مرغی و چرگان ، جگر او توری پښتورگی او نور **3 = Legumes and Nuts** سبزی او مغذی مواد **4 = Dairy products (milk, yoghurt, chees e)** لبنیات (شیدی ، مستی ، کوچ) **5 = Eggs** هگی **6= Vitamin A rich fruits & Vegetables** د ویتامین ای نه غنی میوه او ترگاری **7 = Other Fruits and vegetables (specify___)** نوره میوه او ترکاری واضح یی کړی **8. Nothing** هیڅ شی **9. Others (specify)** نور مشخص یی کړی **(*Multiple responses are possible*)** شاید دیر ځوابونه انتخا ب شی	**Yesterday (During the day and at night). How many times did you feed [Name] solid and semi-solid foods? No. of times child was given food to make it full.** پرون په شپه او ورځ کی څو ځلی ماشوم مو په جامدو او نیمه جامدو موادو تغذیه کړی؟ چی ماشوم یی مور کړی وی
1										
2										
3										
4										

(

Team Leader Name_____Signature _____

Annex 5: Questionnaire for mortality rate calculation (one sheet/cluster)

District _____ Village /قریه _____Date:تاریخ _____ Cluster number:کلستر نمبر _____ Team number:تیم نمبر _____ولسوالی

HH No د کور نمبر.	Total people in HH تول هغه افراد چی په کو کی ژوند کوی	Total under 5 in HH د ۵ کالو نه ښکته ماشومان په کورنی کی	Joined HH Total تعداد دافرادو چی کورنی سره یوځای شوی	Joined HH under 5 د ۵ کلونه ښکته چی کورنی سره یوځای شوی	Left HH Total تعداد دافرادو چی کورنی یی پریښی وی	Left HH under 5 دپنځو کالو نه ښکته ماشومان چی کوریی پریښی وی	No. of births in recall period د ولادتونو تعداد په یاده شوی دوره کی	Total deaths in recall period دمړو تعداد په یاده شوی دوره کی	No. < 5 deaths in recall period د ۵ کالو نه ښکته مړو شوو ماشومانو تعداد	Where do you store water for drinking? تاسی چیرته اوبه ذخیره کوی ؟ 1= Closed jerricans/containers. سربند ذخیره 2=Open jericans /container سر خلاص ذخیره	How much water did your household use YESTERDAY (excluding for animals)? پرون مو څومره اوبه مصرف کړی دی (په استثنی د حیواناتو نه) *Note :* پوښتنه وکړی چی څومره ۲۰ لیتره بوشکی بیا یی مجموعی کړی او ویی لیکی
1											
2											
3											
4											
5											
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9											

Team Leader Name_____Signature _____

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REFERENCES

- National Risk and Vulnerability Assessment (NRVA), Afghanistan, 2013
- Extended Program for Immunization (EPI) village data, 2014
- Nutrition & Mortality SMART survey Paktika May 2015
- National Risk and Vulnerability Assessment (NRVA), Afghanistan, 2007/08
- National nutrition survey 2013 GAM calculated with SD of 1
- Afghanistan Mortality survey, 2010
- National vulnerability assessment of Afghanistan -2014