AFGHANISTAN

Nutrition & Mortality SMART Survey

Preliminary report

Uruzgan Province, Afghanistan

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Abbreviations

AAH/ACF	Action Against hunger/Action Contre la Faim
AIM-WG	Assessment Information Management Working Group
AHDS	Afghan Health and Development Services
AfDHS	Afghanistan Demographic and health survey
AHDS	Afghanistan Health Development Services
BCG	Bacillus Calmette Guerin
BHC	Basic Health Center
BPHS	Basic Package of Health Services
CDR	Crude Death Rate
CHC	Comprehensive Health center
CSO	Central Statistics Organization
CHW	Community Health Worker
ENA	Emergency Nutrition Assessment
ERM	Emergency Response Mechanism
FCS	Food consumption Score
FSL	Food Security and livelihoods
GAM	Global Acute Malnutrition
HH	Household
HQ	Head Quarter
IYCF	Infant and Young Child Feeding
PENTA	Pertussis, Diphtheria, Tetanus, Hepatitis B and Hemophilia's influenza type B
PND	Public Nutrition Department
MOPH	Ministry of Public Health
PPHD	Provincial Public Health Directorate
MUAC	Mid Upper Arm Circumference
MW	Mean Weight
NNS	National Nutrition Survey
PPS	Proportional Population Size
RC	Reserve Cluster
SAM	Severe Acute Malnutrition

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

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1. EXECUTIVE SUMMARY

A Nutrition and SMART mortality survey was conducted in the entire province of Uruzgan, between 7th to 26th February 2018 in the winter season. It was based on the standardized Monitoring and Assessment of Relief and Transition (SMART) methodology and was a cross sectional survey following two-stage cluster sampling method. This preliminary report is an analysis of under-five nutrition status, mortality, morbidity, immunization, PLWs nutrition status, WASH and FSL. The final report will include a comprehensive analysis of all collected data after validation of Action Against Hunger (ACF) HQ Paris in the month of April. The summary of the key findings is shown in the table below.

1.1 Summary findings

Child nutrition status (N= 868 among 6-59 months)	
GAM rate among children 6-59 months old based on weight for height- Z-Score <-2SD	15.0% (12.3-18.2 95% CI)
SAM rate among children 6-59 months old based on weight for height- Z-Score<-3SD	4.3% (3.0- 6.0 95% CI)
GAM rate among children 6-59 months old based on MUAC <125mm	17.8% (14.7-21.3 95% CI)
SAM rate among children 6-59 months old based on MUAC <115 mm	4.4% (3.0- 6.2 95% CI)
GAM rate among children 6-59 months old based on both criteria (MUAC< 125 mm and WH <-2 Z score)	26.5% (23.6-29.5 95% CI)
SAM rate among children 6-59 months old based on both criteria (MUAC < 115mm and WH <-3 Z Score	7.6% (5.7-9.3 95% CI)
Global Stunting among children 6-59 months based on height for age- Z-Score <-2SD	49.0% (43.7-54.5 95% CI)
Global underweight among children 6-59 months based on Weight for Age Z-Score <-2SD	34.7% (30.5-39.2 95% CI)
Child Health and immunization (N=957 among 0-59 months)	
Children aged 0-59 months that reported of being sick during the past 14 days to the survey	50.1%
Children aged 0-59 months that reported of having fever during the past 14 days to the survey	39.5%
Children aged 0-59 months that reported of having ARI during the past 14 days to the survey	27.0%
Children aged 0-59 months that reported of having Diarrhea during the past 14 days to the survey	16.2%
Measles vaccination status for the children aged 9-59 months based on recall and vaccination cards confirmed	65.5%
BCG vaccination status based on scar confirmation for children aged 0-59 months	66.2%
Polio vaccination status based on recall and card confirmation for children aged 0-59 months.	81.9%
PENTA 3 vaccination status based on recall and card confirmation for children aged 3.5 – 59 months.	62.5%
Deworming of children aged 24-59 months received in the last six months	57.9%

(based on recall).	
Vitamin A received in the last six months for children 6-59 months, based on recall.	56.5%
Nutrition status among pregnant and lactating Women (N=506 PLWS)	
Undernutrition among only pregnant women based on MUAC <230 mm	(22)13.3% (8.1-18.5 95% CI)
Undernutrition among only lactating women based on MUAC < 230 mm	(49)14.4% (10.6-18.1 95% CI)
Undernutrition among pregnant and lactating women (PLWs) based on MUAC <230mm	(71)14.0% (11.0-17.1 95% CI)
Infant and Young Children Feeding Practice (N=402 among 0-23 months)	
Ever breastfed children 0-23 months	99.5%
Initiated breastfed children 0-23 months within 1 hour of birth	67.0%
Exclusive breastfeeding children less than 6 months	70.9%
Provision of colostrum in the first 3 days of birth	91.5%
Still breast feeding at 1 year	87.6%
Introduction of Solid and Semisolids to children 6-8 months	37.8%
Crude and U5 Mortality Rate	
Crude mortality rate	0.75 % (0.53-1.08, 95% CI)CI)
Under five mortality rate	2.27 % (1.34-3.81,95% CI)

2. INTRODUCTION

Uruzgan is one of the thirty-four provinces of Afghanistan located in the southern of the country. Trinkot is the capital of the province. The population is culturally and tribally the same than Kandahar province. The estimate of the population is 362,253[1]. The population is not homogenous as the province's society is a tribal society. The main ethnic is Pashtun (Popalzai, Achakzai, Barakzai). Some Hazara also live in the province. Most of the people speak Pashto.

In 2004, the new Daikundi province was curved out of an area in the north, leaving Uruzgan with a majority Pushton population and Daikundi with a majority of Hazara. The province bounded with Zabul and Kandahar to the south, Helmand to the southwest, Daikundi to the north and Ghazni province to the east. Uruzgan covers an area of 12,640 KM^2. Most of the province is mountains or semi-mountains terrain, while the rest of the area is made of plate land. Due to security issue, many people moved from insecure internal area to the city of the province (Tarinkot). They are also some returnees.

The province is divided by 7 districts including the capital of the province (Trinkot) such as Dih Rawud, Chora, Oshey (Charchino), Khas Uruzgan, Gizab and Chinarto.

The nutrition SMART survey was conducted in winter (Feb 2018) covering the entire province in insecure, partially secure and completely secure areas. ACF technically supported AHDS to implement this survey to investigate the nutrition status of under five children and pregnant and lactating women in the survey area.

2.1. Objective of the survey

2.1.1. Broad objective

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

2.1.2. Specific objective

- To determine prevalence of under nutrition among children aged 6-59 months
- To determine the nutritional status of pregnant and lactating women based on MUAC assessment.
- To estimate Crude Death Rate(CDR) and Under five Death Rate(U5DR)
- To determine core Infant and Young Child Feeding(IYCF) practices among children aged <24months
- To assess institutional birth attendance in the province.
- To assess Water, Sanitation and Hygiene (WASH) proxy indicators: household water storage, water use and caregiver hand washing practices.
- To assess morbidity among children 0-59 months based on a two weeks recall period.
- To assess food access and consumption on seven days recall period: households levels.

2.1.3. Justification

- The Uruzgan province was selected by the Nutrition Cluster in 2017 as having a lack of up to date nutritional data since the 2013 NNS. The results of the 2013 National Nutrition Survey revealed a GAM rate of 21.6% (17.9-25.8 95 % CI) based on WHZ, with 2.6 SD (higher than

[1] CSO: Estimated population 1396 (2017- 2018

the recommended limit of 0.85-1.2) and classified as Emergency level as per the WHO severity classification.

- There was a need to investigate the current prevalence of under-nutrition in the province. The Survey findings will be used to inform future programming in the province.
- It was also a good opportunity for building the capacity of AHDS and other stakeholders.

2. METHODOLOGY

2.1. Sample Size

As the survey area is large and the population is dispersed, a two-stage cluster methodology was applied as follows.

The first stage involved a random selection of **clusters/villages** from a list of villages using probability proportion to size (PPS) method. The sample size of household's survey was determined using ENA for SMART software version 2011 (up dated 9th July 2015). This was done before starting the data collection at the office by the team. "Village" was the primary sampling unit for the proposed survey.

The second stage of methodology, involved systematic random selection of **households** (13 households) from an updated list of households. This was conducted at the field level. "Household" was the basic sampling unit for the proposed survey in the selected villages/Clusters.

The table 1 and 2 highlights sample size calculation for anthropometric and mortality surveys.

Table 1: Parameters for sample size calculation of anthropometric indicators

Parameters for Anthropometry	Value	Assumptions based on context
Estimated prevalence of GAM (%)	17.9%	The survey team referred to the NNS 2013 assessment for the planning stage of this survey (GAM was 21.6% (17.6-25.8, 95% CI) but as the SD was above (2.6) the recommended limit of 0.85-1.2. so we used 17.6 % of lower interval with caution for the planning stage.
± Desired precision	3.5	It was based on survey objectives in line to estimated prevalence and SMART methodology recommendations.
Design Effect *(if applicable)*	1.5	The population living in the targeted districts was considered as having similar living conditions and the same access to food and social conditions. Nevertheless, access to health facilities was not 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 included	*753*	Minimum sample size for children aged 6-59 months. (However to avoid possible bias of selection for younger age group, all children from 0 to 59 months old found in the selected households were surveyed.)
Average HH Size	8	Based on AfDH[2] survey.
% Children 6 – 59 Months	15.5%	Based on CSO updated population for Afghanistan 1396 (2017-2018)
% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%, using the last experience of the SMART surveys in the different provinces.
Households to included	**717**	Minimum sample size-Households to survey.

Table 2: Sample size calculation for mortality survey

Parameters for Mortality	Value	Assumptions based on context
Estimated Death Rate /10,000/day	0.5/10000/day	No updated death rate in this province. Rate recommended when there is no specific death rate in the population for surveyed area
± Desired precision /10,000/day	0.3	Based on survey objectives and in line with estimated death rate.
Design Effect *(if applicable)*	1.5	This was catered for heterogeneity between clusters in the population sampled.
Recall Period in days	**120**	Recall period started form 20th Mezan 1396 in Solar dates is equivalent to 12th October 2017 as per Gregorian calendar
Population to included	**2,904**	**Population**
Average HH Size	**8**	Based on AfDH survey the mostly frequent of the HH was 8.
% Non-response Households	**6%**	The percentage of non-respondent households is estimated at 6%, using the last experience of the SMART surveys in the different provinces.
Households to included	**386**	Households

[2] Afghanistan Demographic and Health survey 2015

NOTE: all additional variables data (IYSF, Mortality, FSL, PLWs nutrition status, WASH and children health and immunization) were collected based on anthropometric sample size.

2.2. Sampling Methodology

The surveyed province has a scattered population, therefore a two-stage cluster sampling methodology was chosen. With the above assumptions, the number of children was 753, converted into 717 households to survey.

Stage 1: random selection of clusters/villages was chosen using probability proportion to size (PPS) using ENA for SMART software version 2011 of (9th July, 2015). A list of all updated villages was amounted into the ENA for SMART software where PPS was applied. The villages with a large population had a higher chance of being selected than villages with small population and vice versa. Reserve Clusters (RCs) were also selected by ENA software version 2011 (updated 9 July 2015). 717 /13 =55.15 round dawn to 55 clusters were supposed to be surveyed, each team could complete anthropometric measurements in 13 HHs in a day. Finally a total of 52 Clusters were surveyed out of 55 clusters: three clusters were missed due to ongoing fighting. As the nonresponse cluster was less than 10 % we did not used the reserve clusters as the reserve clusters was supposed to be used if 10% or more clusters were impossible to reach during the survey as per SMART methodology. The selected clusters are highlighted in Annex 2**.** In each selected cluster/village, one or more community member(s) was asked to help the survey teams to conduct their work by providing information about the village with regard to the geographical organization or the number of households. For large villages, the village was divided into smaller segments and a segment was selected randomly to represent the cluster. This division was done based on existing administrative units e.g. neighborhoods, or streets or natural landmarks like river, road, or public places like market, schools, and masjid.

Stage 2: households to survey were randomly selected in each cluster/village using the **systematic random sampling** method. Based on the total sample size, each team could effectively cover 13 households in a day. In this assessment, 6 teams were engaged during the assessments, while data collection was reached to 11 days. The survey team were enumerated and given numbers to all households. The 13 households were randomly selected from these enumerated households, by systematic random sampling to identify the households to survey. The teams were trained on both methods of sampling (simple and systematic random sampling) and they were provided with materials to assist in determining the households during the data collection exercise.

All the children living in the selected house, aged 0 to 59 months old, were included for anthropometric measurements. Children aged <24 months were included for IYCF measurements. To ensure that every child had the same chance to be surveyed, if more than one eligible child was found in a household, all children were included, even if there were twins. Eligible orphans living in the selected Households were also surveyed. All the selected HH were included in the mortality survey as well as to answer to questions concerning the HH as a whole (ex. water storage, WASH and FSL).

Any empty households, or households with missing or absent children were revisited at the end of the sampling day in each cluster; any missing or absent child that was not subsequently found was not included in the survey. A cluster control form was used to record all the temporary empty households. The abandoned ones were excluded from the total HHs list at the beginning of the field work. This information was provided to the teams by the village elders.

The household was the basic sampling unit. The term household was defined as all people eating from the same pot and living together (WFP definition). In Afghanistan, the term household often defined and/or used in synonymous with a compound – which potentially represents more than one household as defined here. In this case, a two-step process was ensured with the village leaders/community elders and then identifying compound together with the use of the list of households within the community, asking if there are multiple cooking areas to determine what members of the household/compound included in the study.

2.3. Training, team composition and supervision

Six teams of four members conducted the field data collection. Each team was composed of one supervisor, one team leader and two data collectors. Each team had at least one female data collector 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[3] to facilitate the work of the female data collectors at the community level. The teams were supervised by ACF, Partner and PPHD staffs.

The entire teams received a 6-days training on the survey methodology and all its practical aspects; the training was facilitated by two ACF technical staffs. A standardization test was conducted over the course of 1day, measuring 8 children, in order to evaluate the accuracy and the precision of the team members in taking the anthropometrics measurements. The teams conducted a one-day field test in order to evaluate their work in real field conditions. Feedback was provided to the team in regard to the results of the field test; particularly in relation to digit preferences and data collection. Refresher training on the anthropometric measurement and on the filling of the questionnaires and the household's selection was organized on the last day of the training by ACF to ensure overall comprehension before going to the field.

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

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

2.4. Data analysis

The anthropometric and mortality data were analyzed by using ENA for SMART software 2011 version (9th July 2015). Survey results were interpreted in reference to WHO standards. The software automatically generated assessment result report for mortality and undernutrition for children <5 years - acute malnutrition (WHZ and MUAC), stunting (HAZ) and underweight (WAZ).

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

Analysis of IYCF, WASH and food security indicators was done using Microsoft excel version 2010. Contextual information generated from routine monitoring was used in complementing survey findings.

3. LIMITATION OF THE SURVEY

- Insecurity was one of the major limitation of the assessment in the province as some clusters to survey were situated in very insecure areas. As a result, three clusters were missed due to ongoing fighting at the time of the data collection. This prevented SMART surveys team to work, and limited ACF staffs to provide direct supervision and on job training activities in the field.
- The low education and knowledge levels of the people especially for females in the districts resulted in the fact that female staff could not work in the community as it was considered as taboo for some families. For this survey, we found that six female enumerators had a lot of difficulties
- Some areas to be surveyed were situated very far from the city of Uruzgan province (Tarinkot) and the team could not come to the office to perform daily database supervision and data quality check especially for Khas Uruzgan and Gezab districts,

4. SURVEY FINDINGS

4.1. Description of sample

Among the 55 clusters that were planned to be surveyed, three clusters were missed due to ongoing conflict. Data were collected from 52 clusters, 649 households, 873 children aged 6-59 months, 402 children aged 0-23 months and 676 women of reproductive age (15-49 years).

The number of households and children from 6-59 months planned and the number of households with completed interviews and measured children shown in Table 3.

Table 3: Details of proposed and actual sample size achieved, Uruzgan SMART, Feb 2018

Number of households planned	Number of households surveyed	% of surveyed/ Planned	Number of children 6-59 months Planned	Number of children 6-59 months surveyed	% of surveyed /Planned
717	649	90.5%	753	873	115.9%

4.2. Data quality

The plausibility check highlighted an acceptable quality of the measurements with an overall score of 21%. Data were collected from 90.5% of households selected for the survey.

The overall sex ratio was found equally represented with a P value of 0.210. 51.1% of children interviewed were found to have an exact date of age (day month and year) while the rest of children age distribution used local event calendars (based on the result of the Plausibility Check of ENA).

However, the age ratio of 6-29 months to 30-59 months of 1,14 shows a significant difference (P-Value=0.000) while the value should be around 0.85, meaning that there were more children aged 6-29 months surveyed than children 30-59 months.

The data quality was done also based on observed means excluding SMART flags (± 3 for WHZ, HAZ and WAZ). SMART flags (-3/+3 Z-scores) test was used to calculate the proportion of extreme values. This proportion was very low 0,6% for WHZ and scored excellent. The percentage of values flagged with SMART flags was HAZ: 3.1 % and WAZ: 0.9 %

Standard deviation for the distribution of Weight-for-Height (1.15) is classified as good, and Weight-for-Age (1.05) classified as excellent. However Height-for-Age (1.26) is classified as problematic as above 1.2 and we may be cautious with the estimate of the prevalence of the stunting (49%).

4.3. Undernutrition

The nutritional status of children was analyzed using the WHO Child Growth Standards 2006.

Table 4 shows the Z-scores, design effect, and the number of children with flag signs and were excluded in the analysis.

Table 4: Mean z-scores, Design Effects and excluded subjects in children among, Uruzgan SMART, February 2018.

Indicator	N	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	868	-0.78±1.15	1.45	0	5
Weight-for-Age	858	-1.60±1.05	1.76	10	5
Height-for-Age	836	-1.95±1.26	2.44	10	27

* contains for WHZ and WAZ the children with oedema.

The design effect of 2.44 of HAZ is reflecting heterogeneity of the surveyed population. The index of dispersion does suggest that there are pockets of under nutrition within the sample areas as HAZ < -2: ID=1.58 (p=0.005) and HAZ < -3: ID=1.90 (p=0.000)

4.3.1. Prevalence of Global Acute Malnutrition (GAM)

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

The analysis of GAM rate was generated on children aged 6-59 months. A further analysis of the GAM rate based on weight for height Z score was done between children 6-23 months (19.0%) and children aged 24-59 months (12.5%) and showed there these rates were significantly different.it means children less than 24 months were more effected than older children. For more details, refer to tables below.

Table 5; Prevalence of Acute Malnutrition by age and sex disaggregated results based on Weight for height Z score.

Table 6; Prevalence of acute malnutrition based on weight-for-height z-scores (and/or edema) and by sex among children 6-23 months and 24-59 months.

Table 8; Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex age, among children 6-59 months

Table 9; prevalence of acute malnutrition based on both criteria (WHZ+MUAC) among children 6-59 months

Table 5: Prevalence of acute malnutrition based on weight-for-height z-scores and by sex among children 6-59 months, Uruzgan SMART, February 2018.

	All n = 868	Boys n = 454	Girls n = 414
Prevalence of global acute malnutrition (<-2 z-score)	(130) 15.0 % (12.3 - 18.2 95% C.I.)	(82) 18.1 % (14.2 - 22.6 95% C.I.)	(48) 11.6 % (8.8 - 15.1 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score,)	(93) 10.7 % (8.8 - 13.0 95% C.I.)	(62) 13.7 % (10.6 - 17.4 95% C.I.)	(31) 7.5 % (5.6 - 9.9 95% C.I.)
Prevalence of severe acute malnutrition (<-3 z-score)	(37) 4.3 % (3.0 - 6.0 95% C.I.)	(20) 4.4 % (3.0 - 6.5 95% C.I.)	(17) 4.1 % (2.5 - 6.8 95% C.I.)

The Weight-for Height in Z-scores distribution curve is shifted to the left (p value = -0.18), indicating that the observed population is slightly more wasted than the WHO reference.

The prevalence of oedema is 0.0 %

Table 6: Prevalence of acute malnutrition based on weight-for-height z-scores and by sex among children 6-23 months and 24-59 months, Uruzgan SMART, February 2018.

6-23 months aged	All n = 337	Boys n = 179	Girls n = 158
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	(64) 19.0% (15.0-23.7 95% CI)	(42) 23.5% (18.0-30.0 95% CI)	(22)13.9% (9.4-20.1 95% CI)
24-59 months aged	**All n = 530**	**Boys n = 274**	**Girls n = 256**
Prevalence of moderate acute malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(66) 12.5% (9.8-15.7 95% CI)	(40) 14.6% (10.7-19.6 95% CI)	(26) 10.2% (7.2-14.1 95% CI)

Table 7: Distribution of acute malnutrition and oedema based on weight-for-height z-scores (WHZ) among children 6-59 months, Uruzgan SMART, February 2018.

<-3 z-score	>=-3 z-score

Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 37 (4.2 %)	Not severely malnourished No. 836 (95.8 %)

Table 8: Prevalence of acute malnutrition based on MUAC cut off's and by sex age, among children 6-59 months, Uruzgan SMART, February 2018.

	All n = 873	Boys n = 455	Girls n = 418
Prevalence of global malnutrition (< 125 mm and/or oedema)	(155) 17.8 % (14.7 - 21.3 95% C.I.)	(72) 15.8 % (12.5 - 19.8 95% C.I.)	(83) 19.9 % (15.3 - 25.4 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(117) 13.4 % (10.9 - 16.4 95% C.I.)	(58) 12.7 % (9.9 - 16.3 95% C.I.)	(59) 14.1 % (10.2 - 19.2 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(38) 4.4 % (3.0 - 6.2 95% C.I.)	(14) 3.1 % (1.8 - 5.2 95% C.I.)	(24) 5.7 % (3.7 - 8.8 95% C.I.)

Weight for height Z score is considered basic measures for Global Acute Malnutrition, but it should be certainly noted that there is no gold standard measure for acute malnutrition. Beside, Based on 2005 WHO and UNICEF Joint Statement on Child Growth Standards and the identification of SAM in infants and children, MUAC measured of less than 115mm among children 6 to 59 months old is documented as severe acute malnutrition. MUAC less than 115mm indicates a high-elevated risk of mortality and morbidity than weight for height. To compare, MUAC SAM rate results for the Uruzgan province is higher than weight for height Z score SAM rate result and create a problem for the health system in the province. Hence, it is important to use both criteria (MUAC+WHZ) of malnutrition for IMAM case loading; the table 8 shows the GAM rate by both criteria.

Table 9: prevalence of acute malnutrition based on both criteria (WHZ+MUAC) among children 6-59 months, Uruzgan SMART, February 2018

Parameters	No	% 95%, CI
Prevalence of Global Acute Malnutrition Based on Both criteria (MUAC<125 mm + WHZ<-2 SD)	230	26.5 % (23.6-29.5 95% CI)
Prevalence of Sever Acute Malnutrition Based on both criteria (MUAC <115 mm + WHZ <-3SD)	65	7.5 % (5.7-9.3 95% CI)

4.3.2. Prevalence of chronic malnutrition (stunting)

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

Table 10: Prevalence of stunting based on height-for-age z-scores (HAZ) and by sex, among children, 6-59 months, Uruzgan SMART, February 2018.

	All n = 836	Boys n = 432	Girls n = 404
Prevalence of stunting (<-2 z-score)	(410) 49.0 % (43.7 - 54.5 95% C.I.)	(210) 48.6 % (42.3 - 55.0 95% C.I.)	(200) 49.5 % (43.1 - 55.9 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(219) 26.2 % (22.7 - 30.0 95% C.I.)	(114) 26.4 % (21.7 - 31.7 95% C.I.)	(105) 26.0 % (21.8 - 30.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(191) 22.8 % (18.7 - 27.6 95% C.I.)	(96) 22.2 % (17.6 - 27.7 95% C.I.)	(95) 23.5 % (18.4 - 29.5 95% C.I.)

The distribution of HAZ of the observed population (SMART flags excluded) compared to WHO Reference curve shows that it was strongly shifted to the left, suggesting restricted linear growth of the observed population. Further analysis suggests that linear growth retardation is at its highest in the group of children aged 18-29 months (n=223) to then decrease with the increase of age. However, height-for-Age SD (1.26) is classified as problematic as above 1.2 and we may be cautious with the estimate of the prevalence of the stunting (49%).

4.3.3. Prevalence of underweight

Underweight is a compound index of height-for-age and weight-for-height. It takes into account both acute and chronic malnutrition. While underweight or weight-for-age is used for monitoring the Millennium Development Goals, it is no longer in use for monitoring individual children as it cannot detect children who are stunted but of normal weight; furthermore, it does not detect acute malnutrition that threatens children's lives. The underweight results are presented in table 11 for more details.

Table 11: Prevalence of underweight based on weight-for-age z-scores (WAZ) by sex, among children 6-59 months, Uruzgan SMART, February 2018

	All n = 858	Boys n = 446	Girls n = 412
Prevalence of underweight (<-2 z-score)	(298) 34.7 % (30.5 - 39.2 95% C.I.)	(162) 36.3 % (31.1 - 41.9 95% C.I.)	(136) 33.0 % (27.5 - 39.1 95% C.I.)

Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(209) 24.4 % (21.3 - 27.7 95% C.I.)	(117) 26.2 % (21.8 - 31.2 95% C.I.)	(92) 22.3 % (18.2 - 27.0 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(89) 10.4 % (7.8 - 13.7 95% C.I.)	(45) 10.1 % (7.1 - 14.1 95% C.I.)	(44) 10.7 % (7.5 - 15.0 95% C.I.)

4.3.4. Women nutrition status

In the survey all women aged 15-49 years, child barrier age (CBA), were included, so a total of 676 women that were measured for nutrition status and iron folate supplementation. But the analysis was done only for pregnant and lactating women for nutrition status, and only for pregnant women for iron folate supplementation. Adequate nutrition is critical for women especially during pregnancy and lactation because inadequate nutrition causes damage not only to women's own health but also to their children and the development of the next generation. The results for PLWs are presented in tables 11 and 12.

Table 12: Maternal nutrition prevalence of PLWs Uruzgan SMART, February 2018

PLWs MUAC cut off (N=506)	Frequency	Results 95% CI
Global acute malnutrition MUAC< 230 mm	71	14 % 11.0 -17.1 95% CI
Moderate acute malnutrition MUAC ≥210mm to< 230 mm	56	16.2 % 13.7-18.3 95% CI
Severe acute malnutrition MUAC < 210mm	15	3.0 % 1.5-4.4 95% CI

Table 13: Iron folate for pregnant women based on available answers Uruzgan SMART, February 2018

Iron- folate for Pregnant women (N=165)	Frequency	Results
Yes	95	57.6%
No	57	34.5%
Don't Know	13	7.9%

3.4. Crude and U5 mortality rate

The mortality data was also included in the survey to know the rate of CMR and U5R. The survey estimated plan was to survey 2904 individuals in 386 households. So it was less than the sample size for anthropometric, the teams referred for all additional variables including mortality data based on anthropometric sample size. A total of 649 households with 4,765

individuals were assessed. The CMR and U5MR are lower than WHO emergency threshold[4] as shown in the table below.

Table 14: Mortality rate by age category with design effect, Uruzgan SMART, February 2018

	Crude Death Rate (95% CI)	Design Effect
'Overall	0.75 (0.52-1.08)	1.43
'Sex		
'Male	0.77 (0.50-1.19)	1.17
'Female	0.73 (0.43-1.23)	1.3
'Years		
'0-4	2.27 (1.34-3.81)	1.87
'5-11	0.16 (0.04-0.66)	1
'12-17	0.00 (0.00-0.00)	1
'18-49	0.27 (0.13-0.58)	1
'50-64	1.03 (0.33-3.16)	1
'65-120	3.91 (1.44-10.08)	1.21

[4] WHO's emergency thresholds of CMR 2/10,000/day and U5MR 4/10,000/day respectively.

5.3. Child health and immunization

3.5.1. Morbidity

The survey found that of the 957 children, 50.1% reported to have illness in the last 14 days prior to the survey, the major illnesses reported were diarrhea, ARI and Fever as a highlighted in the table below.

Table 15: Morbidity status among under-fives, Uruzgan SMART, February 2018.

Parameter (n= 957)	Frequency	Results (%)
Acute respiratory Infection (ARI)	258	27.0%
Fever	378	39.5%
Diarrhea	155	16.2%

3.5.2. Child immunization

Immunization is an important public health intervention that protects children from illness and disability. As part of the Expanded Program on Immunization (EPI), measles vaccination is given to infants aged between 9th and 18th months, BCG is given to infant on birth time and PENTA 3 is given to infant on 14 weeks of birth for fully immunization. 957 under five children were assessed in 649 HHs, the immunization results of this survey are presented in the table 15 below.

Table 16: Immunization coverages for BCG, measles and Polio Uruzgan SMART, February 2018

Indicators	Class	Frequency	Results
Measles (children form 9-59 months (N= 833)	Yes by cards	333	40.0%
	Yes by recall	213	25.6%
	Both by cards and recall	546	65.5 %
	No	286	34.3%
	Don't know	1	0.1%
Polio (children from 0-59 months) (N= 957)	Yes by cards	396	41.4%
	Yes by recall	388	40.5%
	Both by cards and recall	784	81.9 %
	No	137	14.3%
	Don't know	36	3.8%
PENTA 3 (children from 3.5-59 months) (N=901)	Yes by cards	344	38.2%
	Yes by recall	219	24.3%
	Both by cards and recall	563	62.5 %
	No	279	31.0%
	Don't know	59	6.5%
BCG scar (children 0-59 months (N=957)	By scar confirmation	634	66.2%
	No	323	33.8%

3.5.3. Vitamin A supplementation

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

Table 17: Vitamin A supplementation among children 6-59 months, Uruzgan SMART, February 2018

Indicators	Class	Frequency	Results
Vitamin A supplementation 6-59 months (N= 878)	**Yes**	496	56.5%
	No	309	35.2%
	Don't know	73	8.3%

3.5.4. Deworming

Helminths or intestinal worms represent a serious public health problem in areas where climate is tropical, sanitation inadequate and unhygienic. Helminths cause significant malabsorption of vitamin A and aggravate malnutrition and anemia, which eventually contributes to retarded growth and poor performance in school. Children under five years old are extremely vulnerable to the deficiencies induced by worm infestations. This puts deworming as critical for the reduction of child morbidity and mortality. The proportion of children who received deworming the past 6 months is presented in table 18.

Table 18: Deworming among children 24-59 months, Uruzgan SMART, February 2018

Indicators	Class	Frequency	Results
Deworming 24-59 months (N=558)	**Yes**	323	57.9%
	No	196	35.1%
	Don't know	39	7.0%

3.6. Infant and Young Child Feeding Practice (IYCF)

Indicators for infant and young child feeding practice (IYCF) were also included in the survey for all children 0-23 months old. A total of 402 children were included in the sample. The results are presented in percentage of the total answers available.

Core indicators	Definition	Frequency	Results
Child ever breastfed (n=402)	Proportion of children who have ever received breast milk	400	99.5%
Timely initiation of breastfeeding (n=402)	Proportion of children born in the last 23 months who were put to the breast within one hour of birth	268	66.7%

Provision of colostrum within first 3 days of delivered(n=402)	Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth	366	91.0%
Still breast feeding at one year(n=105)	Proportion of children 12-15 months of age who fed breast milk.	92	87.6%
Exclusive breast feeding (n=79)	Proportion of infants 0-5 months of age who fed exclusively with breast milk.	56	70.9%
Introduction of solid, semi solid or soft foods (n=45)	Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods.	17	37.8%

3.7. Mothers/Care giver hand washing practice (WASH)

Hand washing practices were also included in the survey, this information was largely knowledge/recall based, there is no practical verification process to know if mothers/caretakers actually practiced hand washing at all critical points or if they were largely recalling times.

Table 19: hand-washing practices by the mothers/caretakers, Uruzgan SMART, February 2018

Hand washing practices by mothers/caretakers (N=676)	Frequency	Results
Only clean with water	421	62.3%
Soap/Ash with clean water	255	37.7%
Wash both hands	602	89.1%
Rubs hands together at least 3 times	591	87.4%
Dries hand hygienically by air- drying or using a clean cloths	349	51.6%

Table 20: hand wash practice by mothers/caretakers at critical time, Uruzgan SMART, February 2018

Response (n=676)	Frequency	Results
Wash hands at 5 critical moments	320	47.3%
After defecation	611	90.4%
After clean baby	536	79.3%
Before food preparation	521	77.1%
Before eat	636	94.1%
Before feed child	405	59.9%

3.8. Households Food Security and Livelihoods (FSL)

3.8.1. Food Consumption Scores and Food Based Coping Strategies

Food Consumption Scores and Food Based Coping Strategies Food security exist when all people, all the time, have physical, social and economic access to sufficient, safe and nutritious food for a healthy and active life. In this survey, food consumption based on the Food Consumption Score (FCS)[5] was used as a description of the current short-term household food security situation and was triangulated with the food-based or reduced Coping Strategy Index (rCSI)[6] to provide an indication of the food security status of the household. The triangulation of these two food security proxy indicators, instead of only food consumption, allows for capturing the interaction between household food consumption and coping strategies adopted, and hence, more properly reflects the food security situation in Ghor province.

As a result, households having poor food consumption with high or medium coping strategies and those with borderline food consumption but with high coping are considered as ***severely food insecure***. Households having poor food consumption with low coping, households having borderline food consumption with medium coping and those having acceptable consumption but with high coping are considered as ***moderately food insecure***. Households having borderline or acceptable food consumption with low or medium coping are considered as Food Security ***(Table)***[7].

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

[5] The Food Consumption Score (FCS) is an acceptable proxy indicator to measure caloric intake and diet quality at household level, giving an indication of food security status of the household if combined with other household access indicators. It is a composite score based on dietary diversity, food frequency, and relative nutritional importance of different food groups. The FCS is calculated based on the past 7-day food consumption recall for the household and classified into three categories: poor consumption (FCS = 1.0 to 28); borderline (FCS = 28.1 to 42); and acceptable consumption (FCS = >42.0). The FCS is a weighted sum of food groups. The score for each food group is calculated by multiplying the number of days the commodity was consumed and its relative weight.

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

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

3.8.2. Food security situation

Based on triangulation of Food Consumption Score (FSC) with the food-based or reduced Coping Strategy Index (rCSI), the survey finding shows 6% of households have severely food insecurity and 25 % of households were moderately food insecurity see figure for more details.

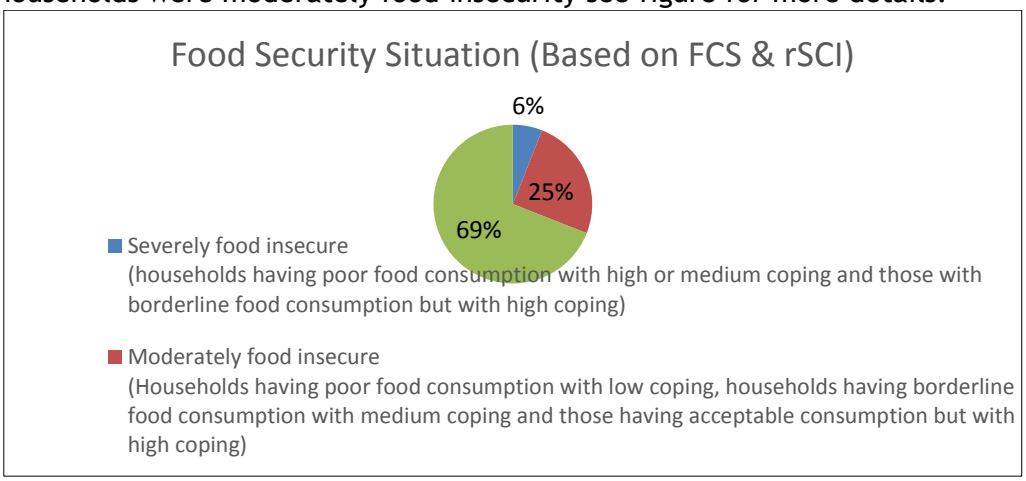
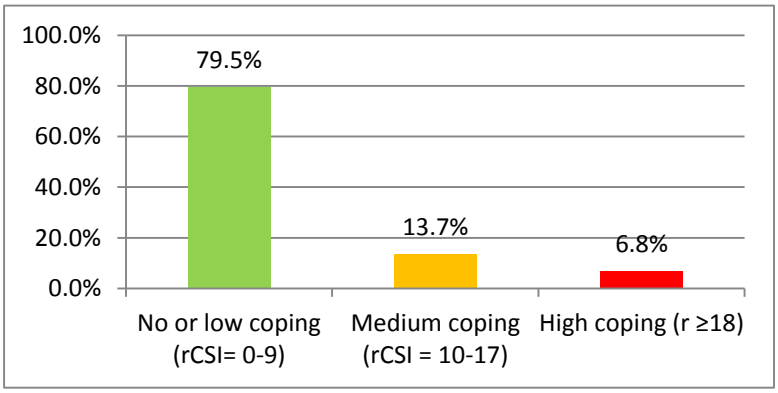


Figure 1: Food security situation (Based on FCS & rSCI)

3.8.3. Reduced Coping Strategy Index[8]

The Food Based Coping Strategy Index is based on measures of the frequency of use of food deprivation, such as the recourse to cheaper food, reductions of the quantity of meals, the act of borrowing food, as well as alterations in food distribution within the household to favor children. Each strategy is weight as per its severity with borrowing food and altering the distribution of food within the household regarded as the most severe strategies. Categories are then defined based upon these scores varying from low coping (0-9) to medium coping (10-17) and high coping (>18).



6.8% of HHs with a high level of coping (rCSI ≥18 score).
13.7% of HHs with a medium level of coping (rCSI= 10-17 score).
79.5% of HHs with No or Low-level coping (rCSI=0-9 score).

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

3.8.4. Food Consumption Score:

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

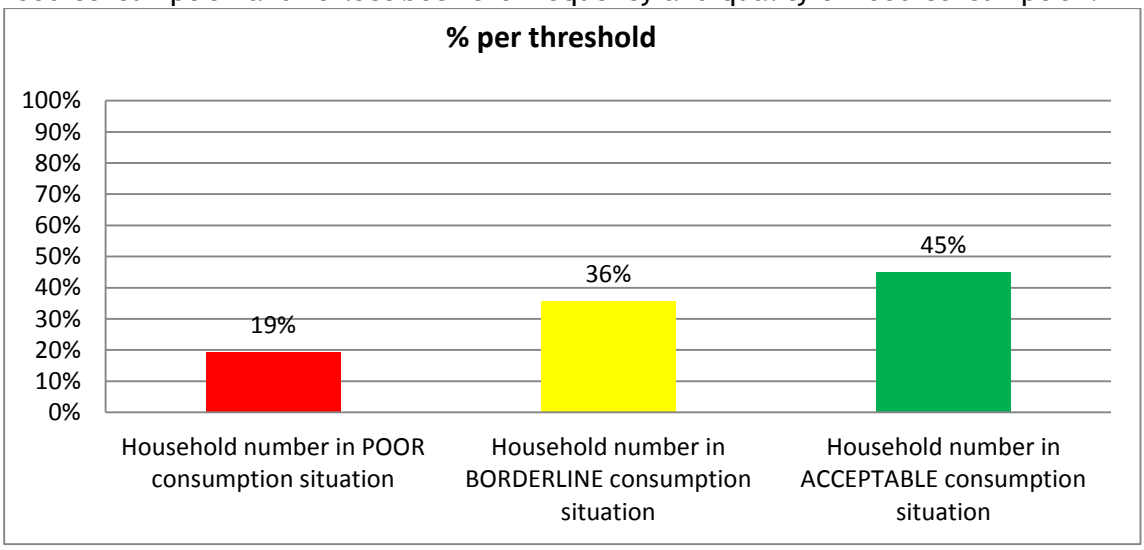


Figure 2: Food Consumption score per HH, Uruzgan SMART, February 2018

19 % households surveyed have Poor consumption scores (FCS = 1.0 to 28).
36 % households surveyed have Borderline consumption scores (FCS = 28.1 to 42).
45 % households surveyed have acceptable food consumption scores (FCS = >42.0).

5. CONCLUSION

5.1. Undernutrition

Results may not reflect the national nutrition situation and are representative of only for the entire Province of Uruzgan.

The results of the survey showed a level of Global Acute Malnutrition of **15.0% (12.3-18.2 95% CI)** and Severe acute malnutrition (SAM) of **4.3% (3.0- 6.0 95% CI)** based on weight for height, that according to the WHO classification is considered as above the emergency threshold. The GAM and SAM prevalence were respectively **21.6% (17.9 - 25.78 95 % CI)**, and **11.2 % (7.47 - 16.5 95%CI)**, in the last 2013 NNS

The GAM prevalence based on MUAC is **17.8% (14.7-21.3 95% CI)** and SAM based on MUAC was of **4.4% (3.0- 6.2 95% CI)** was slightly higher than WHZ based GAM, but insignificantly.

GAM and SAM prevalence based on MUAC and W/H combined revealed a percentage of **26.5 % (23.6 - 29.5, 95 % CI)** and **7.8 % (5.7-9.3, 95 % CI)** respectively. The combined rate informs on estimated GAM and SAM caseload in the province for better programing. Only children in the sample were detected as acutely malnourished according to both criteria. To detect all acute malnourished children eligible for treatment, the MUAC only detection is not enough according criteria specified in Afghanistan IMAM Guidelines.
Further investigation of prevalence according to age, showed that both GAM WHZ and MUAC was higher in children under 2 years **(WHZ based =19.0% within (15.0-23.7 95% CI) and MUAC based=34.9% with 28.3-42.1 95% CI)** than to children over 2 years **(WHZ based =12.7% with 9.8-16.3 95% CI and MUAC based=6.8% with 5.0- 9.3 95% CI)**. This suggests higher vulnerability of younger children to wasting.

Chronic malnutrition in the province continue to be worrying. The results of the present survey showed that, based on WHO classification of severity of malnutrition, the overall prevalence of stunting was very high **49.0% (43.7-54.5 95% CI)**. One in every two children included in the survey were found to be stunted, while one in every three children was underweight.

5.2. Maternal nutritional status

There are no commonly accepted standards for maternal nutrition status. In surveys, the MUAC cutoff of 230 mm is used to approximately identify their status. This survey shows that **14.0% (11.0-17.2 95%CI)** of the mothers suffered from malnutrition based on MUAC<230mm.

The main concern was iron supplementation among pregnant women, which the survey found to be low **(57.6%)**. The Iron supplementation prevent anemia during pregnancy and eventual life-threatening complications during pregnancy and delivery. Therefore, it decreases maternal mortality, prenatal and perinatal infant loss and prematurity (that can be directly related to child stunting in the first 2 years of life).

5.3. Child health and immunization

The UNICEF conceptual framework of malnutrition can be used to explain the probable causes of under-nutrition in this area. Diseases weaken the individual immune system, increase nutritional needs and in the same time might be a reason of reduced food intake and absorption (diarrhea), engaging the body

in a vicious circle with malnutrition. In the Uruzgan province, half of the sampled children **(50.1 %)** had suffered from one or another form of illness symptoms such as diarrhea **(16.2%)**, fever (**39.5%)** or acute respiratory **(27.7%)** signs in the last 2 weeks prior the survey, suggesting quite high illness of basic treatable diseases.
It important to note that low child immunity system also contributes to increase the malnutrition, morbidity and mortality. The survey shows a BCG vaccination coverage of **66.2%**, a measles vaccination coverage both by recall and by card confirmation of **65.5%,** polio vaccination coverage of **81.9%** and **62.5%** for **PENTA 3** vaccination that compared to national target 90 % is considered as low. Low immunization coverages contribute to increase morbidity and mortality rates.

Worm infection in children caused mal- absorption, which can aggravate malnutrition and anemia rates and contribute to retarded growth, child morbidity and mortality. Deworming is recommended for children from 24 to 59 months of age as children in this age group are considered as a potential risk of acquiring the disease. As deworming also helps to enhance the iron status of children which eventually helps children to exercise their intellectual ability to the completest. The proportion of all children aged 24-59 months who had received deworming in the last 6 month prior to the survey was low (**57.9 %),**

Improving the Vitamin A status of deficient children through supplementation enhances their resistance to disease and can significantly reduce mortality and morbidity, therefore it can be considered as a central element of the child survival program. The proportion of all children aged 6-59 months who had received vitamin A in the last 6 months prior to the survey was **56.5 %**, which is lower than the SPHERE recommendation and WHO target of 80%.

6. RECOMMENDATIONS

- High burden of acute malnutrition (emergency based on WHO severity classification), internal displacements, and nutrition services should be expended along with IMCI and MCH services by using mobile health teams in the uncovered areas for SAM and MAM children including PLWs acute malnutrition.

- It is noted that, thirty-one percent (31%) households are severe and moderate food insecure, which is one of the key contributing factor for undernutrition. Food security and livelihood activities should be implemented in the province

- Immediate efforts should be put towards scaling up health and nutrition services coverage at health facility and community levels and through additional integrated outreach services as well as the scale up of soft and hard WASH interventions and ERM.

- Expansion of TSFP program for all health facilities (CHCs and BHCs) for preventing MAM to children as well as Pregnant and lactating women.

- Increase and Strengthen awareness of community about the benefits of immunization, micronutrient supplementation and children health care practices through CHWs (convincing of incentive) and health facilities staffs.

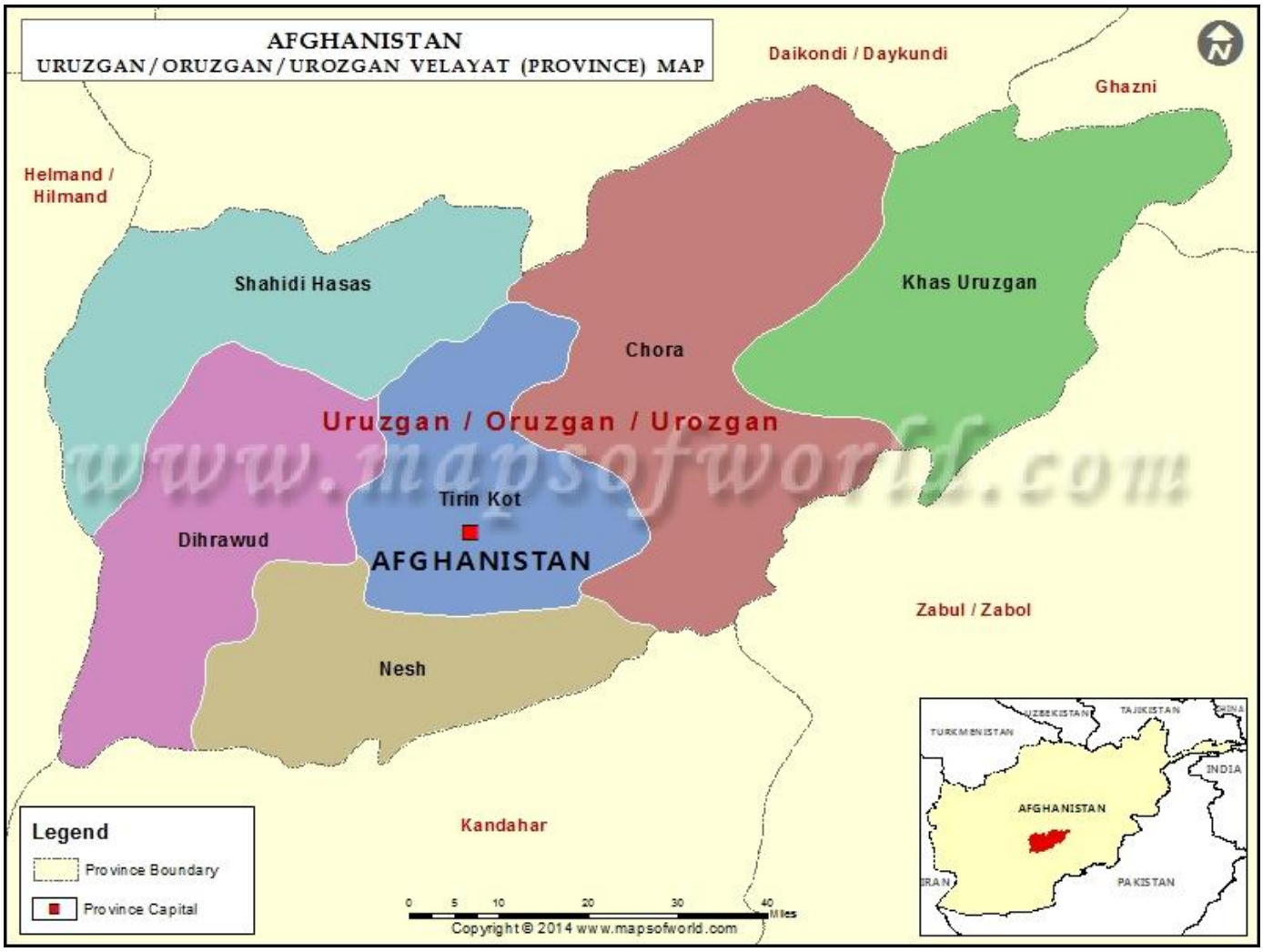
- Increase health education at community and health facilities level through CHWs and health facilities staffs, convince CHWs to strengthen active case findings through regular monthly planning in the community level.

- Health shura sensitization about prevention, malnutrition, treatments as well as consequences of malnutrition.

- It is also recommending to carry out a SQUEAC survey to know better barriers in the health facilities and at community's level to evaluate the coverage of nutrition programs. As well as carrying out a SMART survey next year (February 2019) to compare the nutrition situation with the current one.

7. ANNEXES

Annex 1: Uruzgan Physical Map



Annex 2: selected Clusters in the Uruzgan province

SN	Province	District Name	Name of Health Facility	Villages Name	Population size	Cluster
1	Urozgan	Tarinkowt	TK PH	Toori	2880	1
2	Urozgan	Tarinkowt	TK PH	Bazar kalacha	5989	2,3
3	Urozgan	Tarinkowt	TK PH	Ghulaman	1550	RC
4	Urozgan	Tarinkowt	TK PH	Fazal haq kalacha	1565	4
5	Urozgan	Tarinkowt	TK PH	Sarchikhley	2989	RC
6	Urozgan	Tarinkowt	TK PH	Haji Habib Kalacha	1305	5
7	Urozgan	Tarinkowt	TK PH	Pooti kalach	1400	6
8	Urozgan	Tarinkowt	TK PH	Mala Hamdulah Kalacha	775	7

9	Urozgan	Tarinkowt	TK PH	Solah Haji abdul salam	455	8
10	Urozgan	Tarinkowt	TK PH	haji Fatih	530	RC
11	Urozgan	Tarinkowt	TK PH	Chanow	1045	9
12	Urozgan	Tarinkowt	TK PH	Malak Shawal kali	1050	10
13	Urozgan	Tarinkowt	TK PH	Dehzozi barikzi	876	11
14	Urozgan	Tarinkowt	TK PH	Charamgar	3150	12
15	Urozgan	Tarinkowt	TK PH	Nawabad	1050	13
16	Urozgan	Dihrawod	Dehrawod	kata khalacha	1070	14
17	Urozgan	Dihrawod	Dehrawod	Nawi shahrak	1752	15
18	Urozgan	Dihrawod	Dehrawod	kata nawabad	741	16
19	Urozgan	Dihrawod	Dehrawod	Zangalian	584	17
20	Urozgan	Dihrawod	Dehrawod	Lora sheen ghulah	716	18
21	Urozgan	Chora	Chora	Doctor salam kali	770	19
22	Urozgan	Chora	Chora	Naim kali	210	20
23	Urozgan	Chora	Chora	Paye Abey	1303	21
24	Urozgan	Chora	Chora	Sar abi	1922	22
25	Urozgan	Chora	Chora	Sourabi	1225	23
26	Urozgan	Chora	Nawi wialah	Nawi wialah	1430	24
27	Urozgan	Charchino	Oshey	Najkak	725	25
28	Urozgan	Khas Urozgan	Khas urozgan	Hazar Qadem	490	26
29	Urozgan	Khas Urozgan	Khas urozgan	Shaikha	1582	27
30	Urozgan	Khas Urozgan	Hussini	Hussiani	556	28
31	Urozgan	Khas Urozgan	Hussini	kundalan Markazey	355	29
32	Urozgan	Khas Urozgan	Gandab	Chapar	1089	RC
33	Urozgan	Khas Urozgan	Gandab	Qulbeed	665	RC
34	Urozgan	Khas Urozgan	Gandab	Gusha	790	30
35	Urozgan	Khas Urozgan	Gandab	Jangari	310	31
36	Urozgan	Khas Urozgan	Gandab	Khawaja roshnayee	710	32
37	Urozgan	Khas Urozgan	Gandab	Balagha	323	33
38	Urozgan	Khas Urozgan	Gandab	Nawjoy,toolah	455	34
39	Urozgan	Khas Urozgan	Gandab	Saye pay	2157	35

40	Urozgan	Khas Urozgan	Gandab	Sewak	637	36
41	Urozgan	Khas Urozgan	Palan	Walangak	760	37
42	Urozgan	Khas Urozgan	Palan	Bariki	1463	38
43	Urozgan	Chinarto	chinarto	Soor kariz	434	39
44	Urozgan	Chinarto	chinarto	Chini masjid	100	40
45	Urozgan	Chinarto	chinarto	Tangi	1393	41
46	Urozgan	Chinarto	chinarto	Kaja	693	42
47	Urozgan	Gizab	Gizab	Markaz chawni	1930	43
48	Urozgan	Gizab	Gardan bala	Gardan bala	439	RC
49	Urozgan	Gizab	Gizab	Qazal bash	1588	44
50	Urozgan	Gizab	Gizab	Rabat malizie	1185	45
51	Urozgan	Gizab	Gizab	Khilow now	1115	46
52	Urozgan	Gizab	Gizab	Malizie	988	47
53	Urozgan	Gizab	Neik abad	Neik abad	2150	48
54	Urozgan	Gizab	Neik abad	Haroonzie	880	49
55	Urozgan	Gizab	Neik abad	Bazar kohna	1400	50
56	Urozgan	Gizab	Neik abad	Rabatak	1400	51
57	Urozgan	Gizab	Neik abad	Sang Shiakh	1500	52
58	Urozgan	Gizab	Neik abad	Allah dad Zayee	735	53
59	Urozgan	Gizab	Gardan bala	Gardan bala	2450	54
60	Urozgan	Gizab	Gardan bala	Parastow	315	55

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

Standard/Reference used for z-score calculation: WHO standards 2006

(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	0 (0.6 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.210)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	10 (p=0.000)
Dig pref score – weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (6)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	2 (12)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	2 (12)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	5 (1.15)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (-0.18)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	1 (-0.24)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	1 (p=0.030)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	21 %

The overall score of this survey is 21 %, this is acceptable.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 49 %
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=44/ID=1: WAZ (1.476), Age may be incorrect
Line=63/ID=1: HAZ (1.525), Age may be incorrect
Line=128/ID=1: HAZ (-6.627), Age may be incorrect
Line=129/ID=2: HAZ (5.532), WAZ (2.232), Age may be incorrect
Line=131/ID=2: HAZ (-5.303), Age may be incorrect
Line=191/ID=2: HAZ (2.300), Age may be incorrect

Line=218/ID=2: HAZ (-5.609), Age may be incorrect
Line=244/ID=1: HAZ (-4.955), WAZ (-4.795), Age may be incorrect
Line=246/ID=1: HAZ (-4.997), Height may be incorrect
Line=318/ID=1: WHZ (2.675), Weight may be incorrect
Line=319/ID=2: HAZ (-5.968), Age may be incorrect
Line=327/ID=1: WHZ (2.706), Weight may be incorrect
Line=339/ID=2: HAZ (1.935), WAZ (1.783), Age may be incorrect
Line=342/ID=1: HAZ (1.351), Age may be incorrect
Line=364/ID=1: HAZ (1.162), Height may be incorrect
Line=385/ID=1: HAZ (2.409), Height may be incorrect
Line=402/ID=2: HAZ (1.240), Height may be incorrect
Line=427/ID=1: HAZ (1.135), Height may be incorrect
Line=429/ID=3: HAZ (1.876), Age may be incorrect
Line=460/ID=2: WHZ (2.246), Weight may be incorrect
Line=468/ID=4: HAZ (-5.135), Height may be incorrect
Line=471/ID=1: WHZ (3.968), HAZ (-5.547), Height may be incorrect
Line=476/ID=1: HAZ (-5.098), Height may be incorrect
Line=492/ID=1: WHZ (2.751), HAZ (-6.104), Height may be incorrect
Line=548/ID=2: HAZ (-6.687), Height may be incorrect
Line=757/ID=1: HAZ (1.405), Height may be incorrect
Line=843/ID=2: HAZ (1.633), WAZ (1.626), Age may be incorrect
Line=866/ID=4: HAZ (1.221), Age may be incorrect
Line=942/ID=2: HAZ (1.954), Age may be incorrect
Line=947/ID=1: HAZ (1.078), Age may be incorrect
Line=952/ID=1: HAZ (2.664), Age may be incorrect
Percentage of values flagged with SMART flags:WHZ: 0.6 %, HAZ: 3.1 %, WAZ: 0.6 %
Age distribution:
Month 6 : ###########
Month 7 : ##############
Month 8 : ####################
Month 9 : #################
Month 10 : ######################
Month 11 : #################
Month 12 : ##
Month 13 : ############################
Month 14 : ##################
Month 15 : ##############
Month 16 : #########
Month 17 : #######
Month 18 : ##
Month 19 : ########
Month 20 : #######
Month 21 : ##############
Month 22 : ############
Month 23 : ########################
Month 24 : ##
Month 25 : ####################################
Month 26 : #############
Month 27 : #######
Month 28 : #######
Month 29 : #######
Month 30 : ######################
Month 31 : #####
Month 32 : ############
Month 33 : ##########
Month 34 : ######################

Month 35 : ###################
Month 36 : ##
Month 37 : ##############################
Month 38 : ################
Month 39 : ####
Month 40 : ######
Month 41 : #
Month 42 : ##############
Month 43 : #####
Month 44 : ###
Month 45 : ###############
Month 46 : ####
Month 47 : ################
Month 48 : ##
Month 49 : ###################
Month 50 : ########
Month 51 : ####
Month 52 : #
Month 53 : ###
Month 54 : ######
Month 55 : #######
Month 56 : #######
Month 57 : #########
Month 58 : ####################
Month 59 : ##########
Month 60 : ##
Age ratio of 6-29 months to 30-59 months: 1.14 (The value should be around 0.85).:
p-value = 0.000 (significant difference)
Statistical evaluation of sex and age ratios (using Chi squared statistic):

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	125/105.6 (1.2)	109/97.0 (1.1)	234/202.6 (1.2)	1.15
18 to 29	12	117/102.9 (1.1)	115/94.6 (1.2)	232/197.5 (1.2)	1.02
30 to 41	12	104/99.8 (1.0)	98/91.6 (1.1)	202/191.4 (1.1)	1.06
42 to 53	12	69/98.2 (0.7)	75/90.2 (0.8)	144/188.4 (0.8)	0.92
54 to 59	6	40/48.6 (0.8)	21/44.6 (0.5)	61/93.2 (0.7)	1.90
6 to 59	54	455/436.5 (1.0)	418/436.5 (1.0)		1.09

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.210 (boys and girls equally represented)
Overall age distribution: p-value = 0.000 (significant difference)
Overall age distribution for boys: p-value = 0.003 (significant difference)
Overall age distribution for girls: p-value = 0.000 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)
Digit preference Weight:
Digit .0 : ##
Digit .1 : ##
Digit .2 : ##
Digit .3 : ##
Digit .4 : ##
Digit .5 : ##
Digit .6 : ##
Digit .7 : ##############################
Digit .8 : ##
Digit .9 : ####################################
Digit preference score: 6 (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)

p-value for chi2: 0.004 (significant difference)
Digit preference Height:
Digit .0 : ##
Digit .1 : ########################
Digit .2 : ##############################
Digit .3 : ##############################
Digit .4 : ###################
Digit .5 : ##############################
Digit .6 : ############################
Digit .7 : ########################
Digit .8 : ##########################
Digit .9 : ###################
Digit preference score: 12 (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: 12 (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:	1.18	1.18	1.15
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	14.9%	14.9%	15.0%
calculated with current SD:	14.7%	14.7%	14.5%
calculated with a SD of 1:	10.7%	10.7%	11.1%
HAZ			
Standard Deviation SD:	1.42	1.39	1.26
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	48.8%	48.6%	49.0%
calculated with current SD:	48.0%	47.5%	48.5%
calculated with a SD of 1:	47.1%	46.5%	48.1%
WAZ			
Standard Deviation SD:	1.08	1.08	1.05
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	34.6%	34.6%	34.7%
calculated with current SD:	35.3%	35.3%	35.3%
calculated with a SD of 1:	34.2%	34.2%	34.6%
Results for Shapiro-Wilk test for normally (Gaussian) distributed data:			
WHZ	p= 0.000	p= 0.000	p= 0.000
HAZ	p= 0.000	p= 0.000	p= 0.000

WAZ p= 0.356 p= 0.356 p= 0.030
(If p < 0.05 then the data are not normally distributed. If p > 0.05 you can consider the data normally distributed)
Skewness
WHZ -0.04 -0.04 -0.18
HAZ 0.28 0.38 0.14
WAZ -0.04 -0.04 -0.13
If the value is:
-below minus 0.4 there is a relative excess of wasted/stunted/underweight subjects in the sample
-between minus 0.4 and minus 0.2, there may be a relative excess of wasted/stunted/underweight subjects in the sample.
-between minus 0.2 and plus 0.2, the distribution can be considered as symmetrical.
-between 0.2 and 0.4, there may be an excess of obese/tall/overweight subjects in the sample.
-above 0.4, there is an excess of obese/tall/overweight subjects in the sample
Kurtosis
WHZ 0.09 0.09 -0.24
HAZ 0.85 0.70 -0.60
WAZ -0.06 -0.06 -0.35
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=1.40 (p=0.030)
WHZ < -3: ID=1.12 (p=0.257)
GAM: ID=1.40 (p=0.030)
SAM: ID=1.12 (p=0.257)
HAZ < -2: ID=1.58 (p=0.005)
HAZ < -3: ID=1.90 (p=0.000)
WAZ < -2: ID=1.49 (p=0.014)
WAZ < -3: ID=1.66 (p=0.002)
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: 1.35 (n=52, f=2) ########################
02: 1.25 (n=47, f=0) ####################
03: 1.09 (n=50, f=0) ############
04: 0.98 (n=45, f=0) ########
05: 1.16 (n=46, f=0) ###############
06: 1.30 (n=48, f=0) ######################
07: 1.16 (n=48, f=0) ###############
08: 1.28 (n=46, f=1) ####################
09: 1.17 (n=47, f=1) ###############
10: 1.14 (n=49, f=0) #############
11: 1.15 (n=47, f=0) ###############

12: 1.17 (n=45, f=0) ################
13: 1.23 (n=48, f=0) ##################
14: 1.28 (n=37, f=0) ####################
15: 1.15 (n=37, f=0) ###############
16: 1.13 (n=33, f=1) ##############
17: 1.27 (n=27, f=0) ####################
18: 1.37 (n=28, f=0) ########################
19: 1.04 (n=19, f=0) OOOOOOOOOO
20: 0.99 (n=12, f=0) OOOOOOOO
21: 1.39 (n=12, f=0) OOOOOOOOOOOOOOOOOOOOOOOO
22: 1.30 (n=12, f=0) OOOOOOOOOOOOOOOOOOOO
23: 1.07 (n=11, f=0) OOOOOOOOOOOO
24: 0.40 (n=07, f=0)
25: 0.68 (n=04, f=0)
26: 1.74 (n=03, f=0) ~~~~~~
27: 0.29 (n=02, f=0)
28: 0.50 (n=02, f=0)
30: 0.86 (n=02, f=0) ~~
31: 0.62 (n=02, f=0)
33: 0.69 (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)

Analysis by Team

Team	1	2	3	4	5	6
n =	190	112	130	181	119	141
Percentage of values flagged with SMART flags:						
WHZ:	0.0	0.9	0.0	0.0	1.7	1.4
HAZ:	7.1	5.4	2.3	2.2	3.4	2.9
WAZ:	4.4	0.9	0.0	1.1	0.0	1.4
Age ratio of 6-29 months to 30-59 months:						
	0.67	1.24	1.65	1.29	1.43	1.14
Sex ratio (male/female):						
	1.24	0.65	1.10	1.03	1.09	1.47
Digit preference Weight (%):						
.0 :	6	5	12	13	10	26
.1 :	11	6	12	6	13	11
.2 :	11	15	8	11	8	13
.3 :	12	19	12	10	16	11
.4 :	14	8	11	10	12	8
.5 :	9	4	8	9	13	12
.6 :	13	11	10	8	5	6
.7 :	5	13	5	7	8	5
.8 :	14	13	14	14	5	4
.9 :	7	6	8	11	10	6
DPS:	10	16	8	8	12	20

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

Digit preference Height (%):

.0 :	34	12	18	16	9	20
.1 :	2	9	15	3	8	16
.2 :	2	13	15	11	10	16
.3 :	1	27	8	10	11	13
.4 :	4	5	3	11	11	7
.5 :	14	5	10	13	17	4
.6 :	19	6	12	6	9	3
.7 :	5	9	7	13	6	6
.8 :	11	7	5	10	14	6

.9 :	7	6	7	7	4	9
DPS:	33	20	16	13	12	18

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

.0 :	18	7	18	22	12	10
.1 :	7	4	10	3	7	17
.2 :	3	21	12	8	16	16
.3 :	7	21	10	8	9	8
.4 :	12	9	6	4	14	11
.5 :	21	7	15	27	13	13
.6 :	22	6	5	5	9	4
.7 :	3	5	5	6	10	3
.8 :	2	11	14	7	6	10
.9 :	5	9	5	10	4	7
DPS:	25	18	15	25	12	15

Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
Standard deviation of WHZ:

SD	1.06	1.35	1.00	1.18	1.23	1.32

Prevalence (< -2) observed:

%	12.6	21.4	9.2	14.4	12.6	20.6

Prevalence (< -2) calculated with current SD:

%	12.5	19.4	10.4	15.3	12.4	17.8

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

%	11.1	12.2	10.3	11.4	7.8	11.1

Standard deviation of HAZ:

SD	1.31	1.51	1.22	1.31	1.35	1.40

observed:

%	24.6	58.0	46.2	63.3	57.1	49.6

calculated with current SD:

%	26.8	59.1	41.5	61.5	57.6	46.3

calculated with a SD of 1:

%	20.8	63.6	39.6	65.0	60.2	44.9

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	19/24.4 (0.8)	11/19.7 (0.6)	30/44.1 (0.7)	1.73
18 to 29	12	27/23.8 (1.1)	19/19.2 (1.0)	46/43.0 (1.1)	1.42
30 to 41	12	27/23.0 (1.2)	24/18.6 (1.3)	51/41.7 (1.2)	1.13
42 to 53	12	19/22.7 (0.8)	24/18.3 (1.3)	43/41.0 (1.0)	0.79
54 to 59	6	13/11.2 (1.2)	7/9.1 (0.8)	20/20.3 (1.0)	1.86
6 to 59	54	105/95.0 (1.1)	85/95.0 (0.9)		1.24

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.147 (boys and girls equally represented)
Overall age distribution: p-value = 0.141 (as expected)
Overall age distribution for boys: p-value = 0.527 (as expected)
Overall age distribution for girls: p-value = 0.106 (as expected)
Overall sex/age distribution: p-value = 0.014 (significant difference)
Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	15/10.2 (1.5)	21/15.8 (1.3)	36/26.0 (1.4)	0.71
18 to 29	12	10/10.0 (1.0)	16/15.4 (1.0)	26/25.3 (1.0)	0.63
30 to 41	12	7/9.6 (0.7)	18/14.9 (1.2)	25/24.6 (1.0)	0.39
42 to 53	12	10/9.5 (1.1)	11/14.7 (0.7)	21/24.2 (0.9)	0.91

54 to 59 6 2/4.7 (0.4) 2/7.3 (0.3) 4/12.0 (0.3) 1.00
---
6 to 59 54 44/56.0 (0.8) 68/56.0 (1.2) 0.65
The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.023 (significant excess of girls)
Overall age distribution: p-value = 0.048 (significant difference)
Overall age distribution for boys: p-value = 0.337 (as expected)
Overall age distribution for girls: p-value = 0.130 (as expected)
Overall sex/age distribution: p-value = 0.002 (significant difference)
Team 3:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	24/15.8 (1.5)	21/14.4 (1.5)	45/30.2 (1.5)	1.14
18 to 29	12	14/15.4 (0.9)	22/14.0 (1.6)	36/29.4 (1.2)	0.64
30 to 41	12	14/14.9 (0.9)	11/13.6 (0.8)	25/28.5 (0.9)	1.27
42 to 53	12	9/14.7 (0.6)	5/13.4 (0.4)	14/28.1 (0.5)	1.80
54 to 59	6	7/7.3 (1.0)	3/6.6 (0.5)	10/13.9 (0.7)	2.33
6 to 59	54	68/65.0 (1.0)	62/65.0 (1.0)		1.10

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.599 (boys and girls equally represented)
Overall age distribution: p-value = 0.002 (significant difference)
Overall age distribution for boys: p-value = 0.155 (as expected)
Overall age distribution for girls: p-value = 0.004 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)
Team 4:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	34/21.3 (1.6)	24/20.6 (1.2)	58/42.0 (1.4)	1.42
18 to 29	12	24/20.8 (1.2)	20/20.1 (1.0)	44/40.9 (1.1)	1.20
30 to 41	12	20/20.2 (1.0)	24/19.5 (1.2)	44/39.7 (1.1)	0.83
42 to 53	12	8/19.9 (0.4)	15/19.2 (0.8)	23/39.1 (0.6)	0.53
54 to 59	6	6/9.8 (0.6)	6/9.5 (0.6)	12/19.3 (0.6)	1.00
6 to 59	54	92/90.5 (1.0)	89/90.5 (1.0)		1.03

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.824 (boys and girls equally represented)
Overall age distribution: p-value = 0.003 (significant difference)
Overall age distribution for boys: p-value = 0.002 (significant difference)
Overall age distribution for girls: p-value = 0.436 (as expected)
Overall sex/age distribution: p-value = 0.000 (significant difference)
Team 5:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	17/14.4 (1.2)	16/13.2 (1.2)	33/27.6 (1.2)	1.06
18 to 29	12	19/14.0 (1.4)	18/12.9 (1.4)	37/26.9 (1.4)	1.06
30 to 41	12	14/13.6 (1.0)	13/12.5 (1.0)	27/26.1 (1.0)	1.08
42 to 53	12	7/13.4 (0.5)	8/12.3 (0.7)	15/25.7 (0.6)	0.88
54 to 59	6	5/6.6 (0.8)	2/6.1 (0.3)	7/12.7 (0.6)	2.50
6 to 59	54	62/59.5 (1.0)	57/59.5 (1.0)		1.09

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.647 (boys and girls equally represented)
Overall age distribution: p-value = 0.018 (significant difference)
Overall age distribution for boys: p-value = 0.224 (as expected)
Overall age distribution for girls: p-value = 0.143 (as expected)

Overall sex/age distribution: p-value = 0.013 (significant difference)
Team 6:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	16/19.5 (0.8)	16/13.2 (1.2)	32/32.7 (1.0)	1.00
18 to 29	12	23/19.0 (1.2)	20/12.9 (1.6)	43/31.9 (1.3)	1.15
30 to 41	12	22/18.4 (1.2)	8/12.5 (0.6)	30/30.9 (1.0)	2.75
42 to 53	12	16/18.1 (0.9)	12/12.3 (1.0)	28/30.4 (0.9)	1.33
54 to 59	6	7/9.0 (0.8)	1/6.1 (0.2)	8/15.0 (0.5)	7.00
6 to 59	54	84/70.5 (1.2)	57/70.5 (0.8)		1.47

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.023 (significant excess of boys)
Overall age distribution: p-value = 0.116 (as expected)
Overall age distribution for boys: p-value = 0.585 (as expected)
Overall age distribution for girls: p-value = 0.035 (significant difference)
Overall sex/age distribution: p-value = 0.002 (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 point	SD for WHZ 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.65 (n=10, f=0)	
02: 0.76 (n=09, f=0)	
03: 1.10 (n=09, f=0)	###########
04: 0.99 (n=10, f=0)	########
05: 0.68 (n=10, f=0)	
06: 1.17 (n=10, f=0)	################
07: 0.87 (n=10, f=0)	###
08: 1.22 (n=10, f=0)	##################
09: 1.26 (n=10, f=0)	##################
10: 0.80 (n=10, f=0)	
11: 1.14 (n=09, f=0)	##############
12: 1.35 (n=07, f=0)	#######################
13: 1.18 (n=09, f=0)	################
14: 0.77 (n=09, f=0)	
15: 1.31 (n=08, f=0)	#####################
16: 1.36 (n=08, f=0)	#######################
17: 1.03 (n=07, f=0)	##########
18: 1.22 (n=08, f=0)	##################
19: 0.56 (n=05, f=0)	
20: 1.36 (n=03, f=0)	OOOOOOOOOOOOOOOOOOOOO
21: 1.90 (n=02, f=0)	~~~~~~
22: 1.70 (n=03, f=0)	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
23: 1.82 (n=02, f=0)	~~~~~~
24: 0.11 (n=02, f=0)	
25: 1.05 (n=02, f=0)	~~~~~~~~~~

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)
Team: 2

Time point	SD for WHZ 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.96 (n=08, f=1)	##
02: 1.75 (n=06, f=0)	##
03: 1.13 (n=07, f=0)	##############
04: 0.58 (n=05, f=0)	

05: 0.89 (n=06, f=0) ####
06: 1.42 (n=06, f=0) ##########################
07: 1.11 (n=06, f=0) #############
08: 0.97 (n=06, f=0) #######
09: 1.08 (n=06, f=0) ############
10: 1.16 (n=08, f=0) ###############
11: 1.17 (n=06, f=0) ################
12: 0.91 (n=07, f=0) #####
13: 1.87 (n=07, f=0) ##
14: 1.65 (n=07, f=0) ###################################
15: 1.54 (n=06, f=0) ##############################
16: 1.38 (n=05, f=0) ########################
17: 1.27 (n=04, f=0) OOOOOOOOOOOOOOOOOO
18: 1.48 (n=04, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOO
19: 0.65 (n=02, f=0)
(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)
Team: 3
Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.57 (n=07, f=0)
02: 1.07 (n=06, f=0) ##########
03: 1.00 (n=07, f=0) ########
04: 0.76 (n=06, f=0)
05: 1.12 (n=07, f=0) #############
06: 1.17 (n=06, f=0) ###############
07: 0.81 (n=06, f=0)
08: 1.36 (n=06, f=0) ########################
09: 1.18 (n=07, f=0) ################
10: 1.22 (n=07, f=0) ##################
11: 0.61 (n=07, f=0)
12: 0.57 (n=07, f=0)
13: 0.73 (n=06, f=0)
14: 1.29 (n=04, f=0) ####################
15: 1.03 (n=06, f=0) ##########
16: 0.56 (n=06, f=0)
17: 1.86 (n=04, f=0) ##
18: 2.33 (n=03, f=0)
OOOOOOOOOOOOOOOOOOOO

07: 1.29 (n=12, f=0) ####################
08: 1.02 (n=10, f=0) #########
09: 1.01 (n=10, f=0) #########
10: 1.11 (n=11, f=0) #############
11: 0.97 (n=11, f=0) #######
12: 1.26 (n=11, f=0) ####################
13: 1.15 (n=12, f=0) ###############
14: 1.44 (n=07, f=0) OOOOOOOOOOOOOOOOOOOOOOOOO
15: 0.79 (n=09, f=0)
16: 1.00 (n=04, f=0) OOOOOOOO
17: 0.30 (n=05, f=0)
18: 1.43 (n=05, f=0) OOOOOOOOOOOOOOOOOOOOOOOOO
19: 0.41 (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: 5
Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.97 (n=07, f=0) #######
02: 1.36 (n=06, f=0) ########################
03: 0.97 (n=07, f=0) #######
04: 0.89 (n=06, f=0) ####
05: 1.14 (n=07, f=0) ##############
06: 1.34 (n=07, f=0) ########################
07: 0.87 (n=07, f=0) ###
08: 1.99 (n=07, f=1) ##
09: 0.75 (n=07, f=0)
10: 0.87 (n=06, f=0) ###
11: 1.64 (n=07, f=0) ####################################
12: 0.77 (n=07, f=0)
13: 1.38 (n=07, f=0) ########################
14: 1.61 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
16: 2.03 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
17: 1.06 (n=03, f=0) OOOOOOOOOOO
18: 0.51 (n=03, f=0)
19: 1.75 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
20: 0.47 (n=03, f=0)
21: 2.52 (n=03, f=0)
OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
22: 1.07 (n=02, f=0) OOOOOOOOOO
23: 1.83 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
24: 0.27 (n=02, f=0)
(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)
Team: 6
Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 2.19 (n=07, f=1) ##
02: 1.40 (n=07, f=1) ########################
03: 0.90 (n=07, f=0) ####
04: 1.21 (n=07, f=0) ################
05: 1.76 (n=07, f=0) ##
06: 1.24 (n=07, f=0) ##################
07: 1.41 (n=07, f=0) ########################
08: 0.84 (n=07, f=0) #
09: 1.39 (n=07, f=1) ########################

10: 1.55 (n=07, f=0) ################################
11: 1.49 (n=07, f=0) ##############################
12: 1.56 (n=06, f=0) ################################
13: 1.00 (n=07, f=0) ########
14: 1.08 (n=07, f=0) ############
15: 0.90 (n=07, f=0) ####
16: 0.81 (n=07, f=0)
17: 2.09 (n=04, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
18: 1.53 (n=05, f=0) ################################
19: 0.86 (n=05, f=0) ##
20: 0.68 (n=04, f=0)
21: 0.61 (n=04, f=0)
22: 1.43 (n=04, f=0) OOOOOOOOOOOOOOOOOOOOOOOOO
23: 0.46 (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)
(for better comparison it can be helpful to copy/paste part of this report into Excel)