AFGHANISTAN

Nutrition & Mortality SMART Survey
Final Report
Daikundi Province, Afghanistan
8 to 26 August, 2017

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2. ABBREVIATIONS

ACF	Action contra la Faim/Action against Hunger
BCG	Bacillus Calmette Guerin
CDR	Crude Death Rate
CSO	Central Statistics Organization
AfDHS	Afghanistan Demographic and health survey
CHA	Coordination of Humanitarian Assistance
ENA	Emergency Nutrition Assessment
GAM	Global Acute Malnutrition
HH	Household
IYCF	Infant and Young Child Feeding
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

3. EXECUTIVE SUMMARY

Nutrition and mortality SMART survey conducted in the entire province of Daikundi province (10 districts including two new added districts) from eighth to 26 August 2017. It was based on the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology and was a cross-sectional survey following a two-stage cluster sampling method.

- **Summary findings**
- 861 children aged 0-59 months among them 767 children aged 6-59 months were assessed in 721 households in the survey.
- Global acute malnutrition (GAM) and severe acute malnutrition (SAM) prevalence based on WHZ was at 14.8% (11.7-18.4 95% CI) and 3.7% (2.5- 5.6 95% CI) receptively.
- Prevalence of oedema was at 0.0%
- GAM and SAM prevalence based on Mid Upper Arm Circumference (MUAC) was 19.4% (15.3-24.3 95% CI) and 4.4% (3.1- 6.4 95% CI) respectively.
- The combined MUAC and WHZ based on both criteria revealed GAM and SAM rates 26.9% (23.7-30.0 95% CI) and 7.4% (5.6-9.3 95% CI) respectively.
- Prevalence of stunting (HAZ) was at 42.3% (38.3-46.5 95% CI) while severe stunting was at 14.9% (12.4-17.8 95% CI) respectively.
- Prevalence of underweight (WAZ) was 30.7% (26.1-35.7 95% CI) and severe underweight was 9.9% (7.2-13.5 95% CI).
- Maternal Malnutrition prevalence among the pregnant and lactating women based on MUAC <230 mm was 35.9% (31.5-40.2 95% CI).
- Crude Mortality Rate (CMR) was 0.42% (0.25-0.68 95% CI) with 1.63 design effect Under 5 mortality rate was 0.66 (0.29 – 1.51) with a design effect of 1.21.
- The coverage of Immunization (measles aged 9-59 months) both by cards and recalls , Polio (aged 0-59 months) both by cards and recalls , BCG scare (aged 0-59 months) and PENTA 3 (aged 3.5-59 months) were 80.3%, 88.9%, 82.9% and 78.0% respectively .

4. INTRODUCTION

Daikundi is one of the thirty-four province of Afghanistan, located in the central part of the country. It has a population of about 475,848[1], which is a Hazara Province.

Daikundi Province falls into the traditionally ethnic Hazara region known as the Hazrajat and the provincial has eight districts such as Ashtarlay, Kijran, Khider, Kiti, Meramor, Sangtakht, Shahrestan and NIli the capital of the province and the new SEHAT project two districts included in Daikundi one from Helmand and one from Ghazni province. Ghor surrounds it in the northwest, Bamyan in the northeast, Ghazni in the southeast, Urozgan in the south, and Helmand province in west.

The nutrition SMART survey conducted in summer (August 2017) covering the entire province. ACF technically supported Move Welfare organization to implement this survey to investigate in the entire districts of Daikundi province through this integrated nutrition and mortality assessment.

Survey objectives

4.1. Main objective

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

4.2. Specific objective

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

[1] CSO updated population of Afghanistan 1396 (2017-2018)

4.3. Justification

The justification of the proposed assessment is to estimate the current prevalence of under-nutrition among vulnerable populations in the province. The survey also investigated the current mortality rates, child health status (morbidity, immunization and supplementation), nutritional status of women of reproductive age (15-49 years) with special focus on pregnant and lactating women, IYCF and WASH practices. The last assessment that provided information on nutritional status of under-fives conducted through the National Nutrition Survey in 2013 and GAM rates 5.3% (3.76-7.38 95% CI) was at poor levels of WHO severity classification. There is need to investigate on the current prevalence of under-nutrition in the province. The Survey findings will use to inform future programing in the province. It will also serve as a good opportunity of building the capacity of Move Welfare and other stakeholders.

5. METHODOLOGY

5.1. Sample Size

The sample size of household's survey determined using ENA for SMART software version 2011 (up dated 9th July 2015). A two-stage cluster methodology applied. In first stage, it involves random selection of clusters/villages (50 clusters) from total list of villages using probability proportion to size (PPS) method. This was done before starting the data collection at the office or training hall. Villages will be the primary sampling unit for the proposed survey. In the second stage of methodology, it was involve systematic random selection of household (15 households) from an updated list of households. This onducted at the field level. Households will be the basic sampling unit for the proposed survey. The table 2 and 3 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 (%)	5.3%	The survey team will refer to the NNS 2013 assessment for the planning stage of this survey (GAM was 5.0 % (3.44-7.16 95% CI) due to any updated data. The SD was in the (1.1) of recommended limit of 0.85-1.2.
± Desired precision	2%	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 considered as having similar living conditions and the same access to food and social conditions. Nevertheless, access to health facilities could not estimate 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	*787*	Minimum sample size-children aged 6-59 months. (However to avoid possible bias of selection for younger age group, all children from 0 to 59 months old found in the selected households will be surveyed.)
Average HH Size	8	Based on AfDH[2] survey the mostly frequent of the HH was 8.
% Children 6 – 59 Months	15.5%	Based on CSO updated population Afghanistan 1396 (2017-2018)
% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%. Using the last experience of the SMART surveys in the deferent provinces.
Households to be included	750	Minimum sample size-Households to be surveyed. Households will be the basic sampling unit for the SMART survey

Table 2: Sample size calculation for mortality surveys

Parameters for Mortality	Value	Assumptions based on context
Estimated Death Rate /10,000/day	0.05/10000/day	AfDH survey 2015
± Desired precision /10,000/day	0.1	Based on survey objectives and inline to estimated death rate.
Design Effect *(if applicable)*	1.5	This will caters for heterogeneity in the population being sampled.
Recall Period in days	130	Starting point of recall period will be done (from the beginning of Now Rose).1st Hamal 1396 the date of recall is equivalent to 21st March 2017 as per Gregorian calendar.
Population to be included	2,413	Population
Average HH Size	8	Based on AfDH survey the mostly frequent of the HH was 7.

[2] Afghanistan Demographic and Health survey 2015

% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%. Using the last experience of the SMART surveys in the deferent provinces.
Households to be included	321	Households

Note all additional variables data (IYCF, Mortality, FSL, women nutrition status, HHs water usages and children health and immunization was collected based on anthropometric sample size.

5.2. Sampling Methodology

A two-stage cluster sampling methodology has been implemented.

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 amounted into the ENA for SMART software where PPS was applied. The villages with large population have a higher chance of selected than villages with small population and vice versa. Reserve Clusters (RCs) will also be selected by ENA software version 2011(updated 9th July 2015). Reserve clusters is only used if 10% but we had one missed cluster and it was less than 10% in that case we did need to cover the RC, see Annex 2 for selected cluster. Total 49 clusters covered, each survey team completes anthropometric measurements in 15 households in a day (721). In each selected village, one or more community member(s) was asked to help the survey teams to conduct their work by providing information about the village with regard to the geographical organization or the number of households. In cases where there are large villages in a cluster, the village was divided into smaller segments and a segment will be selected randomly to represent the cluster. This division was done based on existing administrative units e.g. neighborhoods, or streets or natural landmarks like river, road, or public places like market, schools, and mosques.

Stage 2: Random selection of households from updated and complete list of households within a given village. In this case the actual survey data collection incorporated 750 households randomly selected based on survey parameters calculation for anthropometric. Based on total sample size each team can cover effectively 15 households in a day. In this assessment, six teams engaged during the assessments, the data collection continued for 11 days with movement due to fare distance between selected clusters and districts in the province. All households enumerated and were given numbers by the survey team. The 15 households was chosen randomly from these enumerated households, by systematic random sampling used to identify the households surveyed. The teams were trained on both methods of sampling (simple and systematic random sampling) and they was offered with materials to assist in determining the households during the data collection exercise.

All the children living in the selected house aged 0 to 59 months old included for anthropometric measurements while MUAC for children 6-59 months. Children aged <24 months were included for IYCF assessments. If more than one eligible child found in a household, both were included even if there are twins. Eligible orphans living in the selected Households surveyed. All of the selected HH was be included in the mortality survey as well as will respond to questions concerning the HH as a whole (ex. 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 will not be subsequently found will not be included in the survey. A cluster control form used to record all these missed and absent households, however the abandoned HH excluded from the total HHs list at the beginning in the field. This information provided to the teams by elder of the villages in the villages.

Table 3: Details of proposed and actual sample size achieved, Daikundi SMART, August 2017.

Number of HH planned	Number of HH surveyed	% of surveyed / planned	Number of children 6-59 months planned	Number of children 6-59 months surveyed	% of surveyed children 6-59 months/Planned
750	721	96.1%	787	767	97.5%

The household was the basic sampling unit. The term household defined as all people eating from the same pot and living together (WFP definition). In Afghanistan, the term household 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 ensured with the village leaders/community elders and then identifying compound together with the use of the list of households within the community, asking if there are multiple cooking areas to determine what members of the household/compound should be included in the study.

5.3. Maternal Health and Nutrition

Women in childbearing age assessed for their nutritional status based on MUAC measurements. The nutritional status of pregnant and lactating mothers derived using the MUAC cut-off of 230 mm.

The indicator for iron-folate supplementation derived from dividing the total number of pregnant mothers supplemented with Iron-folate in the last 90 days by total number of pregnant mothers.

5.4. Training, team composition and supervision

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

The entire teams received a 6-days training on the survey methodology and all its practical aspects; the training was facilitate by two ACF technical staffs. A standardization test was conducted over the course of 1day, measuring 8-10 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 about the results of the field test; particularly in relation to digit preferences and data collection. Refresher training on the anthropometric measurement and on the filling of the questionnaires and the household's selection 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 provided to each team member. All documents, such as local event calendar, questionnaires or consent forms 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 will be pre-tested during the field test. Alterations made as necessary.

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

5.5. Data analysis

The anthropometric and mortality data was analyzed using ENA for SMART software 2011 version (9th July 2015). Survey results is interpreted in reference to WHO standards, analysis of other indicators to include IYCF, WASH, demographic and food security will be done using Microsoft excel version 2016. Information generated from these indicators used to explain the outcome indicators to include; nutritional status of under-fives and mortality (CDR and U5DR). Contextual information generated from routine monitoring used in complementing survey findings.

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

6. RESULTS

Anthropometric results (based on WHO standard)

Anthropometric results presented with exclusion of SMART flags: Z score values ranging outside-form the observed mean for all three indexes (WHZ, HAZ and WAZ). Survey finding showed the distribution of the boys and girls in the sample was equally represented with p-value = 0.263. the percentage of values flagged with SMART flags was WHZ: 2.0%, HAZ: 3.3% and WAZ: 1.0 %, age ratio of 6-29 months to 30-59 months: were significant diffrenece with P-Value=0.000 and shows bios, younger children were missed due to Almond harvest in the area for more details refer to ANNEX 1 plausibility report.

Table 4 : Distribution of age and sex of sample children aged 6-59 months, Daikundi SMART, August 2017

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	125	53.6	108	46.4	233	30.4	1.2
18-29	87	50.3	86	49.7	173	22.6	1.0
30-41	75	48.4	80	51.6	155	20.2	0.9
42-53	81	55.5	65	44.5	146	19.0	1.2
54-59	31	51.7	29	48.3	60	7.8	1.1
Total	399	52.0	368	48.0	767	100.0	1.1

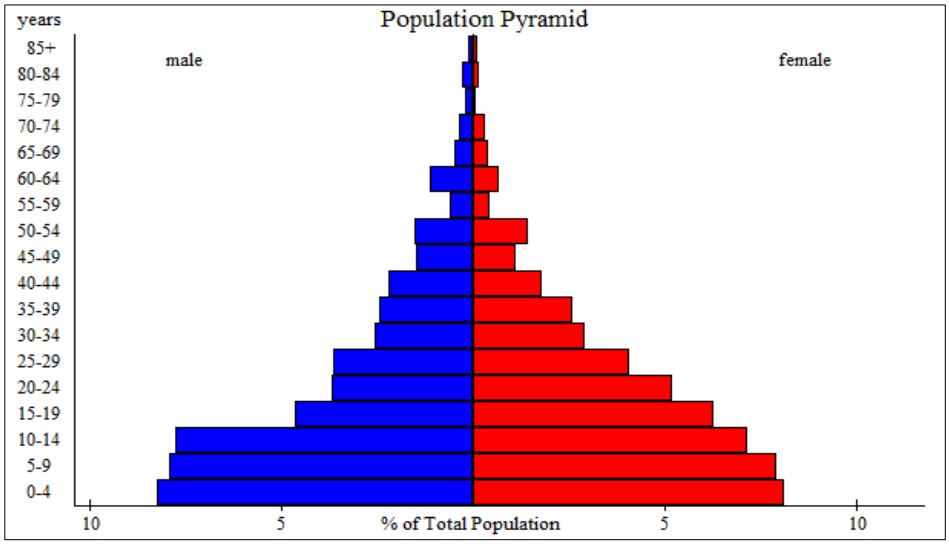


Figure 1: Distribution curves population pyramid, Daikundi SMART, August 2017

5.1. Data quality of anthropometric

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

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

Table 5: Mean z-scores, Design Effects and excluded subjects, Daikundi SMART, August 2017

Indicator	N	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	752	-0.87±1.08	1.63	0	15
Weight-for-Age	759	-1.54±1.04	2.03	0	8
Height-for-Age	737	-1.69±1.22	1.27	0	30

* contains for WHZ and WAZ the children with edema.

5.2. Prevalence of acute malnutrition based on Weight for Height Z-score (WHZ) among children 6-59 months:

The sex and age disaggregated results from 6-59 months are presented in tables below respectively. The prevalence of wasting in higher among boys than girls. It's also notable that the GAM prevalence is not significantly different from the 0-59 months age.

Table 6: Prevalence of acute malnutrition among children 6-59 months based on weight-for-height z-scores (WHZ) and/or oedema and by sex, Daikundi SMART, August 2017.

	All n = 752	Boys n = 391	Girls n = 361
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(111) 14.8 % (11.7 - 18.4 95% C.I.)	(68) 17.4 % (13.3 - 22.4 95% C.I.)	(43) 11.9 % (8.6 - 16.3 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(83) 11.0 % (8.5 - 14.2 95% C.I.)	(51) 13.0 % (9.6 - 17.4 95% C.I.)	(32) 8.9 % (6.1 - 12.7 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(28) 3.7 % (2.5 - 5.6 95% C.I.)	(17) 4.3 % (2.6 - 7.1 95% C.I.)	(11) 3.0 % (1.7 - 5.5 95% C.I.)

The prevalence of oedema is 0.0 %

Table 7: Prevalence of acute malnutrition by age, based on weight-for-height Z score (WHZ) and /or oedema among children 6-59 months, Daikundi SMART, August 2017

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	227	9	4.0	29	12.8	189	83.3	0	0.0

18-29	170	9	5.3	24	14.1	137	80.6	0	0.0
30-41	152	1	0.7	12	7.9	139	91.4	0	0.0
42-53	144	7	4.9	12	8.3	125	86.8	0	0.0
54-59	59	2	3.4	6	10.2	51	86.4	0	0.0
Total	752	28	3.7	83	11.0	641	85.2	0	0.0

Table 8: Distribution of acute malnutrition and oedema based on weight-for-height z-scores, Daikundi SMART, August 2017

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 37 (4.8 %)	Not severely malnourished No. 730 (95.2 %)

Prevalence of acute malnutrition based on MUAC cut off and/ or Oedema among children 6-59 months:

The prevalence of acute malnutrition based on MUAC cut off is presented in table below.

Table 9: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex among children 6-59 months, Daikundi SMART, August 2017

	All n = 767	Boys n = 399	Girls n = 368
Prevalence of global malnutrition (< 125 mm and/or oedema)	(149) 19.4 % (15.3 - 24.3 95% C.I.)	(70) 17.5 % (12.7 - 23.7 95% C.I.)	(79) 21.5 % (16.7 - 27.2 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(115) 15.0 % (11.6 - 19.1 95% C.I.)	(55) 13.8 % (9.9 - 18.9 95% C.I.)	(60) 16.3 % (12.3 - 21.3 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(34) 4.4 % (3.1 - 6.4 95% C.I.)	(15) 3.8 % (2.2 - 6.4 95% C.I.)	(19) 5.2 % (3.4 - 7.8 95% C.I.)

Table 10: prevalence of acute malnutrition by age, based on MUAC cut offs and /or oedema among children 6-59 months, Daikundi SMART, August 2017

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	233	29	12.4	58	24.9	146	62.7	0	0.0
18-29	173	4	2.3	36	20.8	133	76.9	0	0.0
30-41	155	1	0.6	10	6.5	144	92.9	0	0.0
42-53	146	0	0.0	9	6.2	137	93.8	0	0.0
54-59	60	0	0.0	2	3.3	58	96.7	0	0.0
Total	767	34	4.4	115	15.0	618	80.6	0	0.0

Prevalence of underweight based on Weight for Age Z-score (WAZ):

Table 11: Prevalence of underweight based on weight-for-age z-scores (WAZ) by sex among children 6-59 months, Daikundi SMART, August 2017

	All n = 759	Boys n = 394	Girls n = 365
Prevalence of underweight (<-2 z-score)	(233) 30.7 % (26.1 - 35.7 95% C.I.)	(131) 33.2 % (27.8 - 39.1 95% C.I.)	(102) 27.9 % (22.2 - 34.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(158) 20.8 % (17.7 - 24.3 95% C.I.)	(88) 22.3 % (18.2 - 27.0 95% C.I.)	(70) 19.2 % (14.9 - 24.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(75) 9.9 % (7.2 - 13.5 95% C.I.)	(43) 10.9 % (7.6 - 15.3 95% C.I.)	(32) 8.8 % (5.5 - 13.6 95% C.I.)

Table 12: prevalence of undernutrition by age, based on weight-for-age z score (WAZ) among children 6-59 months, Diakunidi SMART, August 2017

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	231	19	8.2	42	18.2	170	73.6	0	0.0

18-29	170	25	14.7	34	20.0	111	65.3	0	0.0
30-41	154	12	7.8	41	26.6	101	65.6	0	0.0
42-53	144	17	11.8	26	18.1	101	70.1	0	0.0
54-59	60	2	3.3	15	25.0	43	71.7	0	0.0
Total	759	75	9.9	158	20.8	526	69.3	0	0.0

5.3. Prevalence of stunting based on Height for Age Z-score (HAZ) among children 6-59 months

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

Table 13: Prevalence of stunting based on height-for-age z-scores and by sex, Daikundi SMART, August 2017

	All n = 737	Boys n = 378	Girls n = 359
Prevalence of stunting (<-2 z-score)	(312) 42.3 % (38.3 - 46.5 95% C.I.)	(168) 44.4 % (38.8 - 50.2 95% C.I.)	(144) 40.1 % (34.4 - 46.1 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(202) 27.4 % (24.2 - 30.9 95% C.I.)	(106) 28.0 % (23.2 - 33.4 95% C.I.)	(96) 26.7 % (22.1 - 31.9 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(110) 14.9 % (12.4 - 17.8 95% C.I.)	(62) 16.4 % (12.5 - 21.2 95% C.I.)	(48) 13.4 % (10.0 - 17.6 95% C.I.)

Table 14: prevalence of stunting based on height for age z score (HAZ) among children 6-59 months, Daikundi SMART, August 2017

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	225	30	13.3	46	20.4	149	66.2
18-29	162	34	21.0	48	29.6	80	49.4
30-41	149	22	14.8	54	36.2	73	49.0
42-53	141	17	12.1	35	24.8	89	63.1
54-59	60	7	11.7	19	31.7	34	56.7
Total	737	110	14.9	202	27.4	425	57.7

Figure-2 shows the distribution of HAZ of the observed population (SMART flags excluded) compared to WHO Reference, curve was shifted to the left, suggesting restricted linear growth of the observed population. Further analysis (**Figure 3**) suggests that linear growth retardation is at its highest in the age group of children (18-41 months).

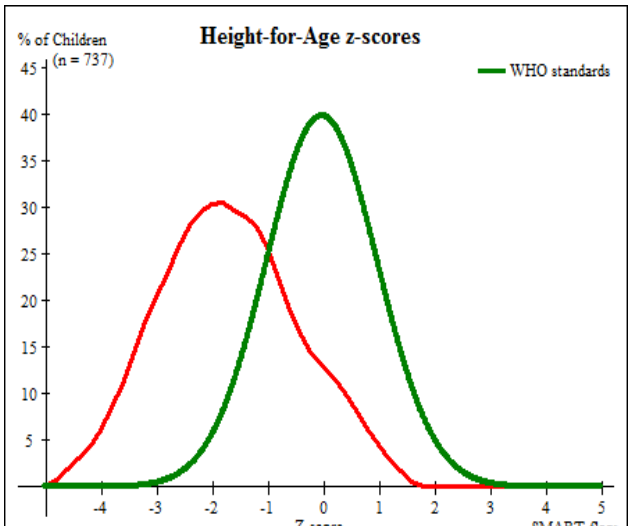


Figure 2: Gaussian distribution curve(HAZ), Daikundi SMART

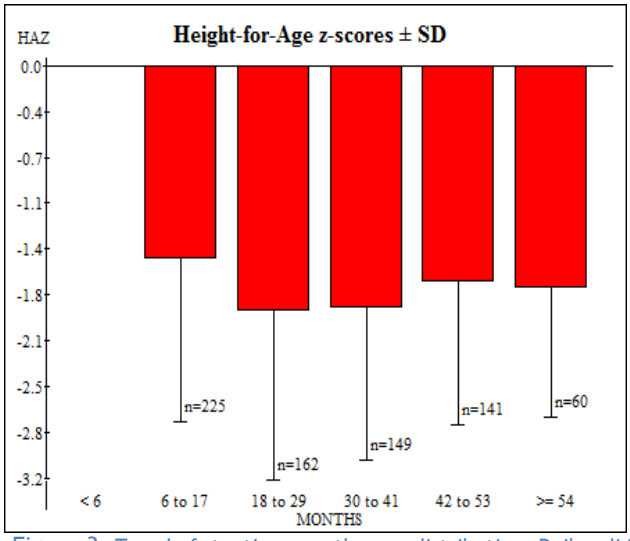


Figure 3: Trend of stunting over the age distribution, Daikundi SMART

5.4. Maternal nutrition status among women of childbearing age (CBA)

759 mothers and caretakers were living in the selected households surveyed. The survey result is proportion from the 471 total number of pregnant land lactating women (PLW) measured using MUAC <230 mm. Maternal nutrition status for referral to OPD-MAM enrolment criteria is the unique cut-off of 230 mm in Afghanistan.

Table 15: Nutrition status of pregnant and lactating women (PLW) based on MUAC cut off, Daikundi SMART, August 2017

Indicators (N=471)	Frequency	Results
Global Acute Malnutrition MUAC<230 mm	**169**	35.9 % (31.5-40.2, 95% CI)
Moderate acute malnutrition MUAC ≥210 mm - <230 mm	**131**	27.8% (23.8-31.9, 95% CI)
Sever acute malnutrition MUAC <210 mm	**38**	8.1% 5.6-10.5,95 % CI)

Table 16: Iron folate for pregnant women based on available answers Daikundi SMAR, August 2017

Iron- folate for Pregnant (N=114)	Frequency	Results
Yes	41	36.0%
No	73	64.0%

Table 17: ANC visits in the last pregnancy, Daikundi SMART, August 2017

ANC visited by whom (n=390)	Frequency	Results
Health professional	332	85.1%
Traditional birth attendant	24	6.2%
Community health worker	26	6.7%
Relative/Friends	8	2.1%
Others	0	0%

ANC Visit (n=728)	Frequency	Percentage
Yes	390	53.6%
No	338	46.4%

** "ANC visited by whom" responses came from the women who actually had ANC check-up.*

Table 18: Skill Births Attendance (SBA) status for the last baby

Status (n=724)		Frequency	Results
Delivery at health facilities		266	36.7%
Delivery at home	Professional staff (midwife, community midwife, Doctor and Nurse)	0	0.0%
	None professional staff (CHWs, TBA and relative)	458	63.3%

5.5. Child health and immunization

Retrospective morbidity data among children 0-59 months with two weeks recall period was collected to assess the prevalence of main disease. The survey finding shows that 63.8% of children had at least one episode of illness in the 2 weeks recall period to the survey. The major illnesses reported such as fever diarrhea and ARI as a highlighted in table below.

Table 19: Major illnesses reported among children 0-59 months, Daikundi SMART, August 2017

Parameter (N=861)	Frequency	Results
Acute Respiratory infection (ARI)	218	25.3%
Fever	404	46.9%
Diarrhea	348	40.4%

Table 20: Immunization coverages for BCG, measles and Polio, Daikundi SMART, August 2017

Indicators	Class	Frequency	Results
Measles immunization (children form 9-59 months) (N= 714)	Yes by cards	397	55.6%
	Yes by recall	176	24.6%
	Both by cards and recall	573	80.3 %
	No	141	19.7%
	Don't know	0	0.0%
Polio immunization(children from 0-59 months) (N= 861)	Yes by cards	536	62.3%
	Yes by recall	229	26.6%
	Both by cards and recall	765	88.9 %
	No	96	11.1%
	Don't know	0	0.0%
PENTA 3 immunization (children from 3.5-59 months) (N=803)	Yes by cards	430	53.5%
	Yes by recall	196	24.4%
	Both by cards and recall	626	78.0%
	No	176	21.9%
	Don't know	1	0.1%
BCG scares (children 0-59 months (N=861)	By scare confirmation	714	82.9%
	No	147	17.1%
	Don't Know	0	0.0%

Table 21: Vitamin A supplementation and Deworming for under five children, Daikundi SMART, August 2017

Indicators	Class	Frequency	Results
Vitamin A supplementation 6-59 months (N= 767)	Yes	665	86.7%
	No	98	12.8%
	Don't know	4	0.5%
Deworming 12-59 months (N=466)	Yes	309	66.3%
	No	114	24.5%
	Don't know	43	9.2%

Vitamin A supplementation was quite satisfactory while deworming was significantly low as per the table above.

5.6. IYCF indicators

Indicators for infant and young child feeding practice (IYCF) included all children from 0-23.99 months. The total (395) 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=395)	Proportion of children who have ever received breast milk	391	99.0%
Timely initiation of breastfeeding (n=390)	Proportion of children born in the last 23 months who were put to the breast within one hour of birth	217	55.6%
Provision of colostrum within first 3 days of delivered(n=395)	Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth	365	92.4%
Still breast feeding at one year(n=69)	Proportion of children 12–15 months of age who fed breast milk.	66	95.7%
Exclusive breast feeding (n=94)	Proportion of infants 0–5 months of age who fed exclusively with breast milk.	64	68.1%
Introduction of solid, semi solid or soft foods (n=41)	Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods.	26	63.4%

5.7. Crude and U5 mortality rate

The crude and U5 mortality rates were below the emergency thresholds, see table below mortality rate disaggregated by sex and age.

Table 22: Mortality rates disaggregated by age and sex with design effect, Daikundi SMART, August 2017

	Crude Death Rate (95% CI)	Design Effect
'Overall	0.42 (0.25-0.68)	1.65
'Sex		
'Male	0.35 (0.15-0.79)	1.91
'Female	0.49 (0.28-0.84)	1.17
'Years		
'0-4	0.66 (0.29-1.51)	1.21
'5-11	0.07 (0.01-0.53)	1.00
'12-17	0.00 (0.00-0.00)	1.00
'18-49	0.37 (0.17-0.78)	1.26
'50-64	1.86 (0.85-4.01)	1.08
'65-120	1.90 (0.56-6.21)	1.11

5.8. WASH indicators

721 representing households and 4,987 individuals, included in the survey, either male or female. The information collected from households regarding total amount of water consumption in liters per households and person. Analysis excluded those water used by animals, and subsequently organized into range of liters used. The results were then divided in quantity of water in liters available to each household's member per day, refer to the figures below

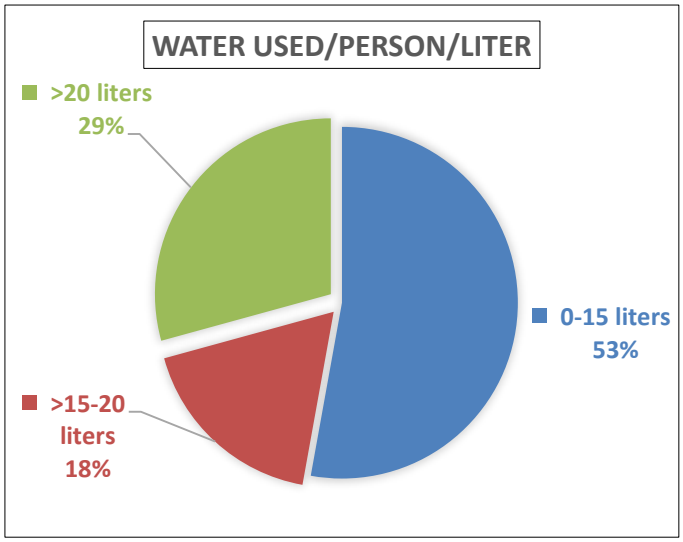


Figure 4: percentage of access to water used in liter/person/day

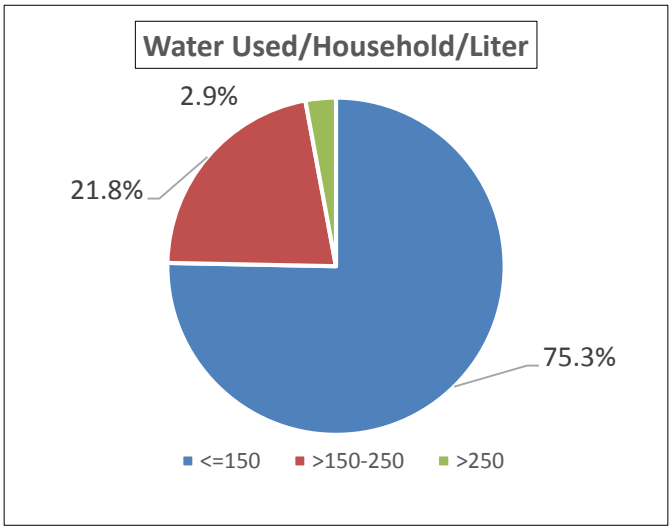
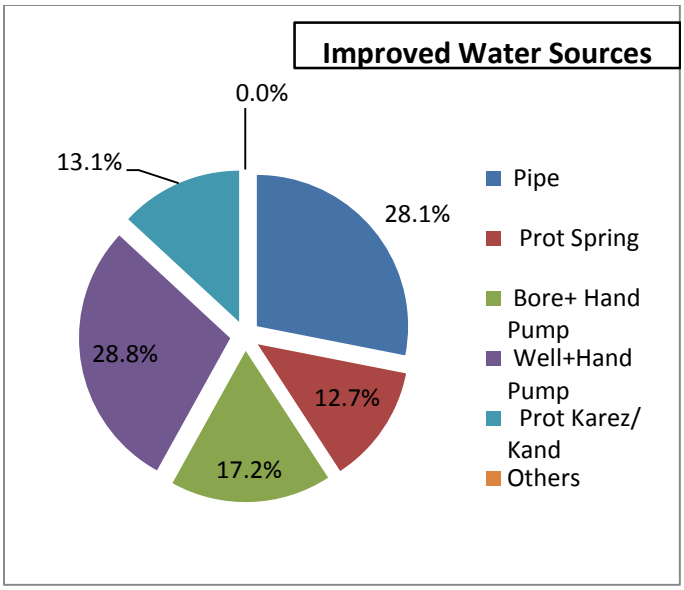


Figure 5: percentage of HHs level dailly quantity used per HH/day

Table 23: percentage of households with access to water treatment, Daikundi SMART, August 2017

Water treatment	Frequency	Results
Boil	38	5.3%
Chlorine	14	1.9%
Strain into the cloths	0	0.0%
Water filter	3	0.4%
Stand and settled	583	80.9%
Nothing for treatment	83	11.5%



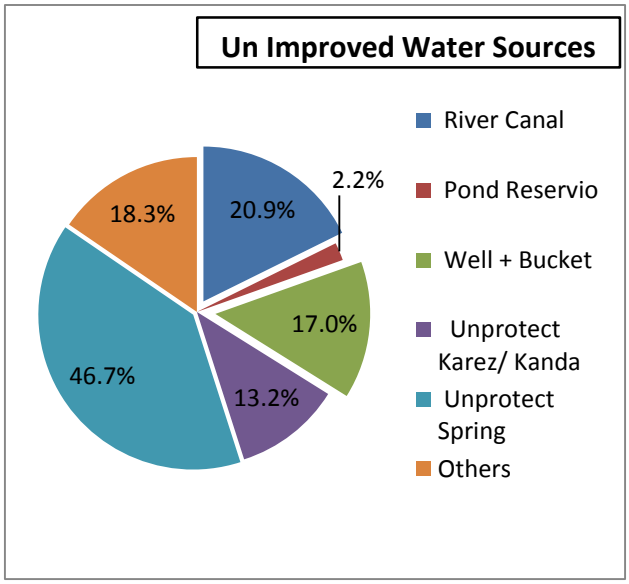


Figure 6: households level daily -improved water sources

Figure 7: households level daily-unimproved water source

Hand washing practice before and after events indicated in the table below.

Table 24: hand-washing practices by the mothers/caretakers, Daikundi SMART, August 2017

Hand washing practices by mothers/caretakers (N=759)	Frequency	Results
Only clean with water	479	63.1%
Soap/Ash with clean water	280	36.9%
Wash both hands	540	71.1%
Rubs hands together at least 3 times	330	43.5%
Dries hand hygienically by air- drying or using a clean cloths	33	4.3%

Table 25: hand wash practice by mothers/caretakers at critical time, Daikundi SMART, August 2017

Response (n=759)	Frequency	Results
Wash hands at 5 critical moments	42	5.5%
After defecation	439	57.8%
After clean baby	447	58.9%
Before food preparation	517	68.1%
Before eat	626	82.5%

Before feed child	91	11.2%

***This was multiple response questions; percentages do not add up to 100.**

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

7. FOOD SECURITY AND LIVELIHOOD

7.1. Food Consumption Scores and Food Based Coping Strategies

Food Consumption Scores and Food Based Coping Strategies Food security exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food for a healthy and active life. In this survey, food consumption based on the Food Consumption Score (FCS)[4] as a description for the current short-term household food security situation is triangulated with the food-based or reduced Coping Strategy Index (rCSI)[5] to provide an indication of the food security status of the household. The triangulation of these two food security proxy indicators, instead of only food consumption, allows for capturing the interaction between household food consumption and coping strategies adopted, and hence, more properly reflects the food security situation in Ghor province.

As a result, households having poor food consumption with high or medium coping and those with borderline food consumption but with high coping are considered as ***severely food insecure***. Households having poor food consumption with low coping, households having borderline food consumption with medium coping and those having acceptable consumption but with high coping are considered as ***moderately food insecure***. Households having borderline or acceptable food consumption with low or medium coping are considered as Food Security ***(Table)***[6].

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[4] 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.

[5] 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).

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

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

7.2. 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 3% of households have severely food insecurity and 18 % of households were moderately food insecurity see figure for more details.

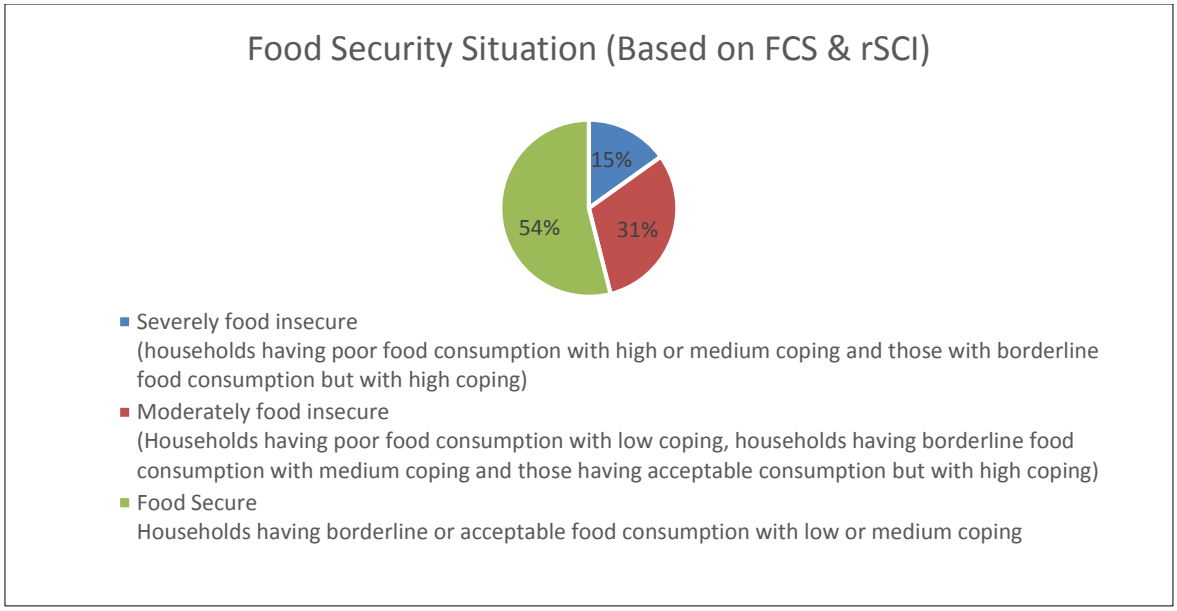
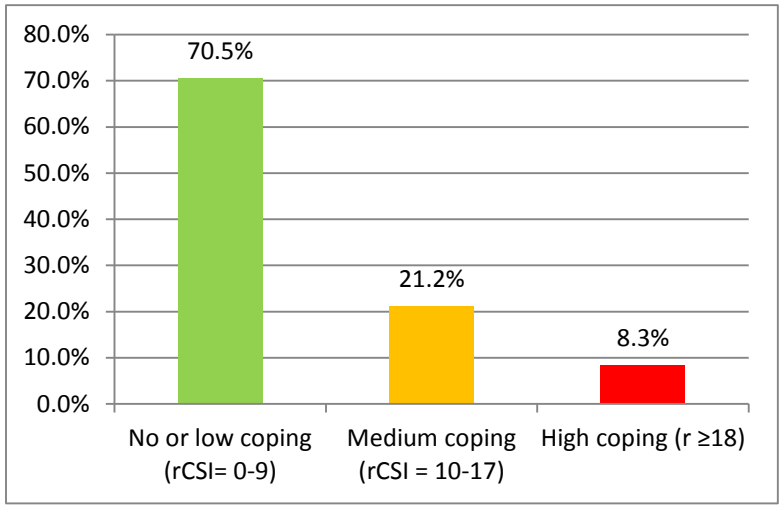


Figure 8: Food security situation (Based on FCS & rSCI)

7.3. Reduced Coping Strategy Index[7]

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).



- 8.3% of HHs with a high level of coping (rCSI ≥18 score).
- 21.2% of HHs with a medium level of coping (rCSI= 10-17 score).
- 70.5% of HHs with No or Low-level coping (rCSI=0-9 score).

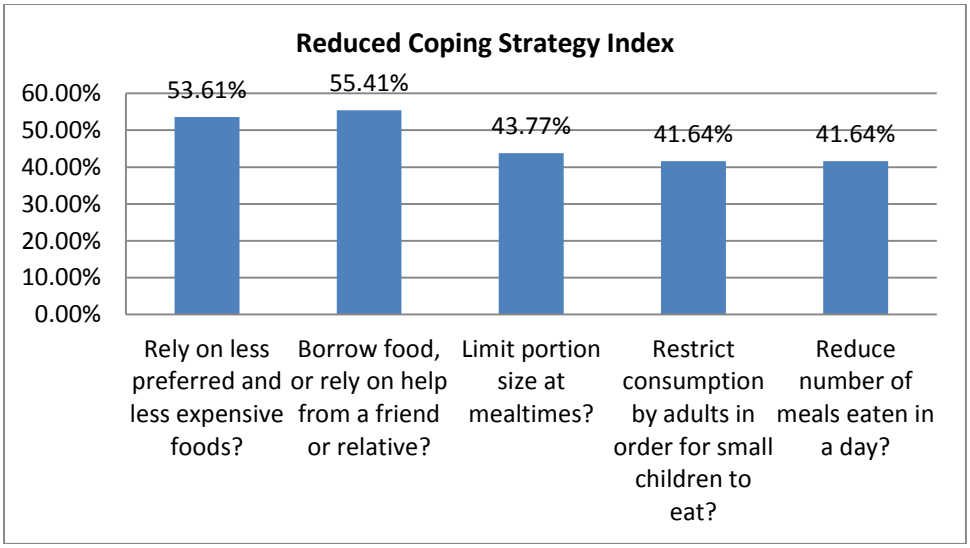


Figure 9: Reduced coping strategy index, Daikundi SMART, August 2017

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

7.4. Food Consumption Score:

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

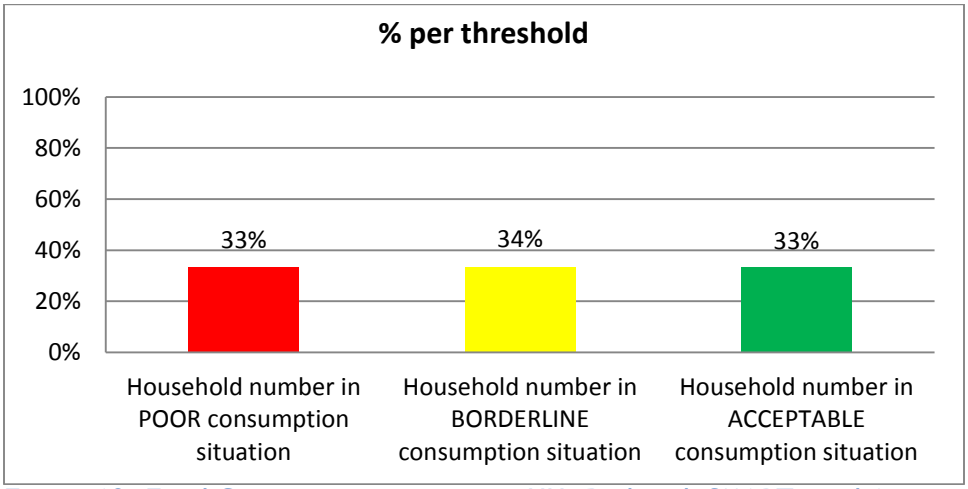


Figure 10: Food Consumption score per HH, Daikundi SMART, and August 2017

- 33 % households surveyed have Poor consumption scores (FCS = 1.0 to 28).
- 34 % households surveyed have Borderline consumption scores (FCS = 28.1 to 42).
- 33 % households surveyed have acceptable food consumption scores (FCS = >42.0).

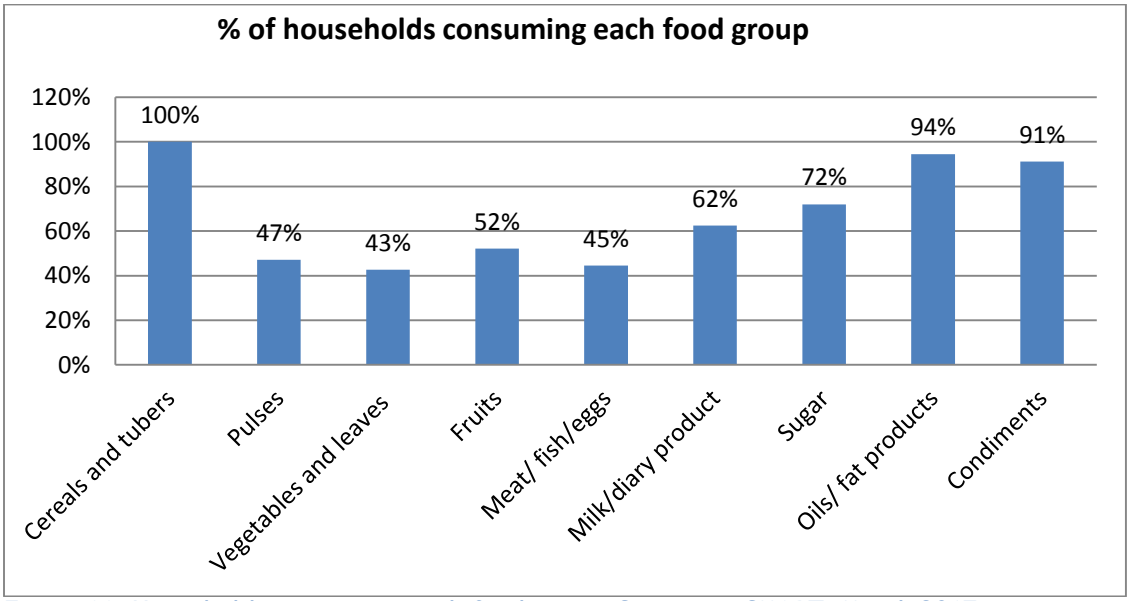


Figure 11: Households consuming each food group, Samangan SMART, March 2017

7.5. Food stock

721 households responded for the food stock, for more detail refer to table below;

Table 26: Food stock in HHs level (n=721), Daikundi SMART, August 2017

	N	%
No food stock in the households	**236**	**32.7%**
Less than a week stock in the HH	**120**	**16.6%**
Food stock in HHs from 1 to 3 weeks	**198**	**27.5%**
Food stock in HHS up to 3 months	**38**	**5.3%**
Food stock in HHs more than 3 months	**129**	**17.9%**

7.6. Food Main Sources

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

Table 27: Food main sources, Daikundi SMART, August 2017

	Own production	Cash	Credit	Battering	Gift/ charity	Wild food	Food Aid	Total
Cereals and tubers	160	451	93	7	0	0	1	**712**
Pulses/ Nuts	61	225	48	0	2	0	2	**338**
Vegetables and leaves	182	94	20	5	11	1	0	**313**
Fruits	207	126	20	7	14	0	0	**374**
Meat/ fish/eggs	79	205	22	1	20	0	0	**327**
Milk/diary product	313	77	31	1	32	0	1	**455**
Sugar / Honey	17	391	111	8	2	0	0	**529**
Oils/ fat products	21	445	208	7	1	3	1	**686**
Condiments	14	438	185	5	10	0	0	**652**

8. DEMOGRAPHY

The mortality questionnaires in SMART designed in a way that some additional useful demography data can withdraw. Summery highlighted in table below.

Table 28: short summery of demography, Daikundi SMART, August 2017

Indicators	Value
Averages households size	6.9
Children under five	17.2

8.1. Returnees

The information collected from households regarding returnees and IDPs due to deferent reason, results is presented in table below.

Residential status of households (n=721)	Permanent residential	703	97.5%
	Internal displacement	17	2.4
	Returnees	1	0.1

9. DISCUSSIONS

9.1. Global Acute Malnutrition

The nutrition and mortality SMART Survey that was done in the whole province of Diakundi in August 2017 The GAM prevalence based on WHZ unveiled by the survey **was 14.8% (11.7 - 18.4 95% C.I.)** Based on the WHO emergency threshold might be classified as serious situation in the province. The WHZ SAM rate of **3.7% (2.5-5.6 95% C.I.)** is higher than the 3% level, which has been used in the context of Afghanistan to trigger emergency.

The GAM prevalence based on MUAC **19.4% (15.3- 24.3 95 % CI)** and SAM based on MUAC was of **4.4 % (3.1-6.4 95% C.I)** was slightly higher than WHZ based GAM.

The poison test indicated that some WHZ cases of acute malnutrition were concentrated in some cluster, suggesting existence of packet wasting in the deferent districts of the province. In addition, in the province observation personal and envier, mental Hygiene were not good and it contribute to increase the malnourished cases. If both criteria are combined, overall prevalence of children likely to be eligible for SAM and MAM management in the province was 26.9% (23.7-30.0 95% CI). Combine WHZ (<-3 Z-score) and MUAC (<115mm) indicated that SAM caseloads are projected at 7.4% (5.6—9.3, 95% CI). Combine rates are recommended to be used for caseloads estimation of SAM and MAM management in the province. The acutely malnourished children are 14.8% based on WHZ criteria, and only MUAC based community screenings are not enough to detect all acutely malnourished children eligible for treatment according criteria stipulated in Afghanistan IMAM Guidelines. This has to be however further investigated. See figure 12 in the actual acute malnutrition comparing WHZ <-2 Z-score with MUAC <125 mm and there is significant difference.

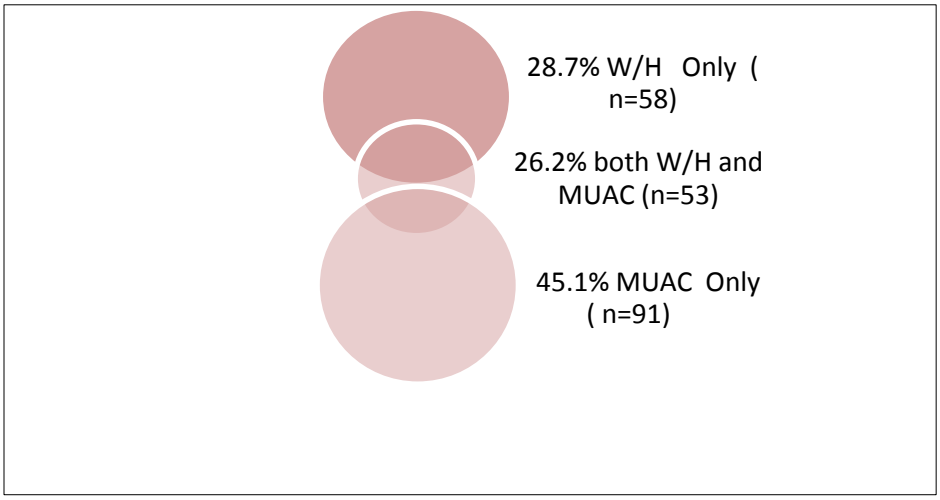


Figure 12: Overlapping WH <-2 and MUAC <125 mm, Daikundi SMART, August 2017

9.2. Chronic malnutrition

Stunting prevalence was 42.3% (38.3-46.5 95 CI), indicating very emergency based in WHO classification of the severity of malnutrition, while more one child has stunting in every three children in the province. High stunting levels are usually seen in context of with very low access to health services, low sanitation levels, low maternal nutrition status and high prevalence of disease. (In this survey, 63.8% reported ill 2 weeks prior to survey), High stunting calls for long-term nutrition interventions combined with infant and young children nutrition (IYCN) and scaling up deworming practice as well encouraging timely health seeking behavior during illness to be put in place to reverse this trend. Maternal nutrition and reproductive health have to be improved significantly in order to have any impact on high stunting.

9.3. Mortality

Crude Death Rate and Under-five Death rate were 0.42 (0.25-0.68)**) (95% CI)** and 0.66 (0.29-1.51) **(95% CI)**. The rates are both below SPHERE emergency thresholds.

9.4. Maternal nutritional status

There are no commonly accepted standards for maternal nutrition status. In surveys, and especially in Muslim countries, the MUAC cutoff of 230 mm is used to approximately identify their status. In this survey 35.9% of the mothers were to have MUAC <230, which suggest considerable number.

The main concern was iron supplementation among pregnant women, which the survey found to be low (36.0%). 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 (that can be directly related to child stunting in the first 2 years of life).

Although not of emergency matter, the Iron/Folate supplementation for pregnant have to significantly increase by reinforcing the usual channels for that in BPHS/CBHC. The BPHS Implementing partner Move Welfare organization have to make significant progress by reinforcing ANC, health education and CHWs home visits to PLW.

9.5. Infant Young Children Feeding Practice (IYCF)

Optimal infant and young child nutrition, especially exclusive breastfeeding is estimated to prevent potentially 1.4 million 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, colostrum feeding and continuous breastfeeding up to the first year of life were considerable above. However, the findings should be used with caution as responses provided However, exclusive breastfeeding rate children aged (0-5 months), early initiation of breastfeeding within one hour and introduction to complementary foods for children aged (6-8 months) were at 68.1%, 55.6% and 63.4% respectively. The rates are of major concern as children who do not receive optimal benefits of breast milk and timely introduction to complementary foods have high risk of child under-nutrition within the first two years of life.

9.6. Hand washing practice

An essential component of proper hand washing is the use of soap, without which it is difficult to reduce incidents of diarrhea. Soap eliminates diarrhea-inducing pathogens from the skin. In survey 36.9% of caretaker used soap in hand washing practice reported, however mothers/caretakers washed hands in 5 critical points was 5.5% reported and it is very low level. Caretaker has to significantly increase hand-washing practice in five critical points by reinforcing the usual channels. The BPHS implementing partner Move Welfare Organization have to make significant progress by reinforcing Health education health facilities and community levels.

Survey did not include observation of the practice of hand washing and the responses are suspected to be more of knowledge-based than practice-based which may mean that, these results need to be interpreted with caution. In order to understand better the WASH situation in the province, it is important to conduct a more in depth WASH assessment.

9.7. RISK FACTORS

Morbidity, immunization, Vit A supplementation and deworming

The UNICEF conceptual framework of malnutrition can be used to explain the probable causes of under nutrition in this area. Diseases weaken an individual immune system causing them to have other side effects such as reduced Food intake and diarrhea. In the province, more than half of the sampled children had suffered from one form of illness or another (63.8%) such as diarrhea, fever and ARI/cough.

Through informal discussions with health workers, diarrheal cases amongst these age groups were mainly reported to be managed through oral rehydration salts with the use of micronutrient supplementation. The same de-worming amongst children aged 24 –59 months were poor (66.3%) which is considered extremely low in the province.

10. CONCLUSION

The survey findings revealed that the prevalence of Global Acute Malnutrition (GAM) based on weight-for-height z-scores (WHZ) was at 14.8% (11.7-18.4 95% CI) indicating a "serious" malnutrition situation based on WHO[8] classification. SAM was at 3.7% (2.5- 5.6 95% CI) as per Afghanistan trigger is emergency in the province. Prevalence of GAM based on MUAC cut-offs was 19.4% (15.3-24.3 95% CI) is considered to be emergency critical public health problem. SAM prevalence by WHZ and MUAC was at 3.7% (2.5-5.6 95% CI) and 4.4% (3.1- 6.4 95% CI) respectively and an emergency critical public health problem in the area (>2%).

That cases of child morbidity are high in the province is also noted; more than one in two children ill and has one episode of diarrhea, Acute Respiratory Infection or fever were reported.

If both criteria combined, overall rate of children likely to be eligible for SAM and MAM management increases to 26.9% (23.7-30.0 95% CI). SAM combined rates is estimated to be 7.4% (5.6—9.3, 95% CI). Looking at the combined GAM and SAM prevalence (26.9% & 7.4%), Daikundi has an emergency critical level of acute malnutrition and require an immediate attention. The combined rate is recommended for estimation of GAM and SAM in the province for program design and caseload calculation. Further analysis of the data suggests that these rates do not refer to the same children.

Stunting and underweight prevalence in Daikundi is also at the emergency critical level based on WHO threshold. Although poor deworming, low maternal nutrition status and low iron folate supplementation as observed in Daikundi province that need to be addressed if not can contribute to increase the level of chronic malnutrition. The fact that chronic malnutrition is not given the attention in the health facilities could be a factor to aggravate the situation. Currently there is no clear guidance in Afghanistan on how to address chronic malnutrition and need to involve the multi sectors (agriculture, WASH and food security Etc...) for reducing chronic malnutrition.

[8] WHO 2000 thresholds (< 5 % acceptable, 5-9 % poor, 10-14 % serious, > 15 % critical).

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 proximately identify their nutrition status. Daikundi nutrition and mortality SMART survey showed for Pregnant and lactating women nutrition status was 35.9% (31.5-40.2-23.2 95% CI), which suggest that considerable number of PLWs in the province are likely to have low nutrition status. The main concern was Iron supplementation to prevent anemia during pregnancy and can be a life- threatening complication during the delivery if not administered. Therefore, it decreases maternal mortality, prenatal infant loss and prematurity that can be directly related to child stunting in the first 2 years of life.

The nutrition and mortality SAMRT survey showed that the Crude Death Rate and Under-five Death rates were at 0.42/10,000/day and 0.66/10,000/per day. Both CMR and U5MR rates were below the WHO emergency threshold of 2/10,000/day and 4/10,000/day respectively.

In conclusion, the survey has indicated that there is a problem of malnutrition in the province. From the results presented above it is notable that although the malnutrition based on (WHZ) is indicating serious nutrition situation, need to strength the current IMAM program.

11. RECOMMENDATION

Some key recommendation have been drawn after the context analysis of the preliminary results from the survey, however a complete set of detailed recommendation will be presented in the final report.

11.1. Maternal and children undernutrition rates:

- It is strongly recommended to strengthen and scale up IMAM program with a particular focus on the severe wasting management.
- To consider scale up of targeted Supplementary Feeding Programmed for children under five and Pregnant and Lactating women.
- Prioritize multi-sectorial nutrition sensitive's activities to address chronic malnutrition at community level (nutrition sensitive agriculture, cooking demonstrations targeting quality complementary feeding, promotion of appropriate IYCF, improved health seeking behavior and promotion of maternal, newborn and child preventive health and nutrition).
- Community mobilization program should be extended to remote areas as much as possible.
- Support and establish systems for community mobilization and identification and referral of acute malnutrition cases.
- Improving access to reproductive health of pregnant and lactating women with a special focus to adolescent girls.
- Reinforcing Iron-Folate supplementation at health facility level.
- Strengthening of community component by reinforcing functional FHAG (Family Health Action Groups) and home visits for peer-to-peer support and discussions.
- Improve quality of counseling during antenatal and postnatal care on key topics like anemia prevention, minimum maternal diet, and weight gain during pregnancy.

11.2. Childhoods illness

- Improve awareness and investigate more on barriers for improved health care seeking by families for management of children's infections
- Strength child health prevention (vaccination, deworming and supplementation) and referral.

12. ANNEXES

Annex 1: Plausibility check for: DAIKUNDI-AFGHANISTAN_082017_ACF.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** (2.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.263)
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=0.00
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (3)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (6)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (5)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.				and	and	and	or
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (1.08)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.16)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.03)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**1** (p=0.027)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**11** %

The overall score of this survey is 11 %, this is good.
There were no duplicate entries detected.
Percentage of children with no exact birthday: 42 %
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=6/ID=1: **WHZ (3.752)**, Height may be incorrect
Line=24/ID=1: HAZ (2.663), Age may be incorrect
Line=44/ID=2: HAZ (1.341), Age may be incorrect
Line=72/ID=2: **WHZ (-4.019)**, Weight may be incorrect
Line=77/ID=1: HAZ (2.957), Height may be incorrect
Line=84/ID=1: **WHZ (2.989)**, Weight may be incorrect
Line=92/ID=1: HAZ (-5.239), Height may be incorrect
Line=117/ID=1: HAZ (-4.974), Age may be incorrect
Line=118/ID=1: HAZ (2.175), Age may be incorrect
Line=121/ID=1: **WHZ (-4.187)**, Weight may be incorrect
Line=123/ID=1: **WHZ (3.968)**, HAZ (-6.956), Height may be incorrect
Line=135/ID=1: HAZ (-7.769), WAZ (-5.031), Age may be incorrect
Line=139/ID=1: HAZ (-5.249), Age may be incorrect
Line=143/ID=1: HAZ (2.089), Age may be incorrect
Line=184/ID=1: HAZ (1.326), Age may be incorrect
Line=209/ID=1: **WHZ (2.342)**, WAZ (1.511), Weight may be incorrect
Line=210/ID=1: HAZ (2.697), Height may be incorrect
Line=212/ID=1: **WHZ (-5.887)**, WAZ (-5.569), Weight may be incorrect
Line=216/ID=1: **WHZ (-4.344)**, Weight may be incorrect
Line=264/ID=1: HAZ (-5.173), Age may be incorrect

Line=282/ID=2: HAZ (-6.290), WAZ (-4.887), Age may be incorrect
Line=283/ID=3: HAZ (7.241), WAZ (3.589), Age may be incorrect
Line=284/ID=1: HAZ (-5.139), Age may be incorrect
Line=332/ID=2: HAZ (8.956), Age may be incorrect
Line=345/ID=2: HAZ (2.828), Age may be incorrect
Line=346/ID=3: **WHZ (2.324)**, Weight may be incorrect
Line=356/ID=1: **WHZ (-3.953)**, WAZ (-4.699), Weight may be incorrect
Line=385/ID=1: HAZ (-5.196), WAZ (-5.041), Age may be incorrect
Line=399/ID=1: **WHZ (-4.050)**, Weight may be incorrect
Line=430/ID=1: **WHZ (2.874)**, HAZ (-5.102), Height may be incorrect
Line=434/ID=1: HAZ (3.555), Age may be incorrect
Line=440/ID=1: HAZ (-4.975), Age may be incorrect
Line=445/ID=2: HAZ (-4.967), Age may be incorrect
Line=450/ID=1: HAZ (1.702), Height may be incorrect
Line=582/ID=2: HAZ (-6.143), WAZ (-4.698), Age may be incorrect
Line=593/ID=1: **WHZ (-4.240)**, Weight may be incorrect
Line=628/ID=1: HAZ (-4.766), Height may be incorrect
Line=709/ID=1: **WHZ (-3.897)**, Height may be incorrect
Line=713/ID=1: HAZ (1.627), Age may be incorrect
Line=715/ID=2: HAZ (-5.585), Age may be incorrect
Line=720/ID=1: HAZ (-5.216), Age may be incorrect
Line=734/ID=1: **WHZ (-4.292)**, Height may be incorrect
Line=768/ID=1: HAZ (1.402), Height may be incorrect
Percentage of values flagged with SMART flags:WHZ: 2.0 %, HAZ: 3.9 %, WAZ: 1.0 %

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 : ###############
Month 60 : ########
Age ratio of 6-29 months to 30-59 months: 1.12 (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	125/92.6 (1.4)	108/85.4 (1.3)	233/178.0 (1.3)	1.16
18 to 29	12	87/90.3 (1.0)	86/83.2 (1.0)	173/173.5 (1.0)	1.01
30 to 41	12	75/87.5 (0.9)	80/80.7 (1.0)	155/168.2 (0.9)	0.94
42 to 53	12	81/86.1 (0.9)	65/79.4 (0.8)	146/165.5 (0.9)	1.25
54 to 59	6	31/42.6 (0.7)	29/39.3 (0.7)	60/81.9 (0.7)	1.07
6 to 59	54	399/383.5 (1.0)	368/383.5 (1.0)		1.08

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.263 (boys and girls equally represented)
Overall age distribution: p-value = 0.000 (significant difference)
Overall age distribution for boys: p-value = 0.002 (significant difference)
Overall age distribution for girls: p-value = 0.023 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Digit preference Weight:

Digit .0 : ###################################
Digit .1 : ##
Digit .2 : ##
Digit .3 : ######################################
Digit .4 : ######################################
Digit .5 : ################################
Digit .6 : ################################

Digit .7 : ##
Digit .8 : ##
Digit .9 : ##
Digit preference score: **3** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.611

Digit preference Height:

Digit .0 : ##################################
Digit .1 : ##
Digit .2 : ##
Digit .3 : ##
Digit .4 : ###################################
Digit .5 : ################################
Digit .6 : ##
Digit .7 : ##################################
Digit .8 : ##############################
Digit .9 : ##################################
Digit preference score: **6** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.006 (significant difference)

Digit preference MUAC:

Digit .0 : ####################################
Digit .1 : ##
Digit .2 : ##
Digit .3 : ##
Digit .4 : ##
Digit .5 : ##
Digit .6 : ####################################
Digit .7 : ##############################
Digit .8 : ############################
Digit .9 : ####################################
Digit preference score: **5** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.091

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:	1.19	1.18	1.08
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	15.6%	15.5%	14.8%
calculated with current SD:	17.4%	17.0%	14.9%
calculated with a SD of 1:	13.2%	13.0%	13.0%
HAZ			
Standard Deviation SD:	1.50	1.37	1.22
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	42.8%	42.6%	42.3%
calculated with current SD:	41.8%	41.0%	40.1%
calculated with a SD of 1:	37.7%	37.7%	38.0%
WAZ			
Standard Deviation SD:	1.10	1.10	1.04
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	31.2%	31.2%	30.7%
calculated with current SD:	34.5%	34.5%	33.1%
calculated with a SD of 1:	33.0%	33.0%	32.4%

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

WHZ	p= 0.000	p= 0.000	p= 0.072
HAZ	p= 0.000	p= 0.008	p= 0.000
WAZ	p= 0.001	p= 0.001	p= 0.022

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

Skewness

WHZ	-0.11	-0.02	-0.16
HAZ	0.70	0.23	0.14
WAZ	-0.16	-0.16	-0.14

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	1.07	0.83	-0.03
HAZ	5.10	0.41	-0.49
WAZ	0.71	0.71	-0.16

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=1.43 (p=0.027)
WHZ < -3: ID=1.09 (p=0.304)
GAM: ID=1.43 (p=0.027)
SAM: ID=1.09 (p=0.304)
HAZ < -2: ID=1.03 (p=0.412)
HAZ < -3: ID=1.01 (p=0.449)
WAZ < -2: ID=1.66 (p=0.003)
WAZ < -3: ID=1.94 (p=0.000)

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

Are the data of the same quality at the beginning and the end of the clusters?

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

]

Time point — SD for WHZ

0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.29 (n=49, f=1) ####################
02: 1.19 (n=48, f=0) #################
03: 0.90 (n=41, f=0) ####
04: 1.36 (n=42, f=1) ########################
05: 1.27 (n=45, f=2) ####################
06: 1.07 (n=43, f=1) ###########
07: 1.21 (n=41, f=0) #################
08: 1.37 (n=41, f=2) ########################
09: 1.45 (n=46, f=3) ############################
10: 1.06 (n=40, f=0) ###########
11: 0.98 (n=43, f=0) ########

12: 1.10 (n=43, f=0) ###########
13: 1.15 (n=34, f=1) ###############
14: 1.06 (n=35, f=0) ##########
15: 1.10 (n=35, f=1) ############
16: 1.22 (n=32, f=0) ################
17: 1.39 (n=24, f=1) ########################
18: 1.12 (n=21, f=0) OOOOOOOOOOOO
19: 1.46 (n=20, f=1) OOOOOOOOOOOOOOOOOOOOOOOOO
20: 1.38 (n=15, f=1) OOOOOOOOOOOOOOOOOOOOO
21: 0.76 (n=10, f=0)
22: 1.10 (n=09, f=0) ~~~~~~~~~~~~
23: 0.41 (n=05, f=0)
24: 1.25 (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)

Analysis by Team

Team	**1**	**2**	**3**	**4**	**5**	**6**
n =	175	127	129	122	106	108
Percentage of values flagged with SMART flags:						
WHZ:	0.0	2.4	3.1	0.0	1.9	5.6
HAZ:	3.4	2.4	7.8	1.6	1.9	6.5
WAZ:	1.1	0.8	0.8	0.0	1.9	1.9
Age ratio of 6-29 months to 30-59 months:						
	1.22	0.92	1.30	1.14	1.21	0.96
Sex ratio (male/female):						
	1.24	1.12	1.39	0.85	0.96	0.93
Digit preference Weight (%):						
.0 :	9	8	19	4	10	7
.1 :	14	9	9	13	10	7
.2 :	8	17	9	11	8	15
.3 :	9	12	10	10	9	9
.4 :	11	8	5	11	12	9
.5 :	9	6	7	11	7	13
.6 :	7	8	9	7	14	5
.7 :	8	14	8	16	7	13
.8 :	17	12	9	9	11	8
.9 :	9	7	16	8	11	13
DPS:	10	11	13	10	8	10

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

Digit preference Height (%):						
.0 :	6	2	15	12	8	14
.1 :	11	11	9	15	12	10
.2 :	13	11	21	14	8	13
.3 :	17	13	12	11	8	6
.4 :	12	13	5	6	8	10
.5 :	7	9	7	9	8	10
.6 :	16	5	6	16	15	8
.7 :	6	10	5	8	19	7
.8 :	5	12	10	4	9	7
.9 :	7	13	10	5	4	13
DPS:	13	12	16	13	14	8

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

Digit preference MUAC (%):						
.0 :	8	2	11	12	18	12
.1 :	11	13	10	10	12	11

.2 :	17	9	13	13	9	11
.3 :	9	17	7	10	12	8
.4 :	11	12	12	11	6	11
.5 :	7	9	13	14	11	11
.6 :	7	13	8	14	4	13
.7 :	8	9	9	6	11	6
.8 :	8	8	5	4	9	10
.9 :	14	8	12	6	7	6
DPS:	10	13	8	12	13	8

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

Standard deviation of WHZ:

SD	0.96	1.16	1.31	0.95	1.10	1.59

Prevalence (< -2) observed:

%	11.8	17.8	15.1	32.4	

Prevalence (< -2) calculated with current SD:

%	13.2	17.6	17.9	32.9	

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

%	9.7	11.1	15.6	24.1	

Standard deviation of HAZ:

SD	1.42	1.64	1.75	1.24	1.17	1.65

observed:

%	41.7	36.2	48.8	41.0	46.2	43.5

calculated with current SD:

%	44.3	36.4	47.3	37.4	42.7	40.1

calculated with a SD of 1:

%	41.9	28.3	45.4	34.5	41.5	33.9

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	29/22.5 (1.3)	20/18.1 (1.1)	49/40.6 (1.2)	1.45
18 to 29	12	27/21.9 (1.2)	20/17.6 (1.1)	47/39.6 (1.2)	1.35
30 to 41	12	21/21.3 (1.0)	17/17.1 (1.0)	38/38.4 (1.0)	1.24
42 to 53	12	15/20.9 (0.7)	17/16.8 (1.0)	32/37.8 (0.8)	0.88
54 to 59	6	5/10.4 (0.5)	4/8.3 (0.5)	9/18.7 (0.5)	1.25
6 to 59	54	97/87.5 (1.1)	78/87.5 (0.9)		1.24

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.151 (boys and girls equally represented)
Overall age distribution: p-value = 0.061 (as expected)
Overall age distribution for boys: p-value = 0.112 (as expected)
Overall age distribution for girls: p-value = 0.598 (as expected)
Overall sex/age distribution: p-value = 0.012 (significant difference)

Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	22/15.5 (1.4)	19/13.9 (1.4)	41/29.5 (1.4)	1.16
18 to 29	12	7/15.2 (0.5)	13/13.6 (1.0)	20/28.7 (0.7)	0.54
30 to 41	12	14/14.7 (1.0)	16/13.2 (1.2)	30/27.8 (1.1)	0.88
42 to 53	12	19/14.5 (1.3)	12/12.9 (0.9)	31/27.4 (1.1)	1.58
54 to 59	6	5/7.2 (0.7)	0/6.4 (0.0)	5/13.6 (0.4)	
6 to 59	54	67/63.5 (1.1)	60/63.5 (0.9)		1.12

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.535 (boys and girls equally represented)
Overall age distribution: p-value = 0.010 (significant difference)
Overall age distribution for boys: p-value = 0.057 (as expected)

Overall age distribution for girls: p-value = 0.062 (as expected)
Overall sex/age distribution: p-value = 0.001 (significant difference)

Team 3:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	28/17.4 (1.6)	19/12.5 (1.5)	47/29.9 (1.6)	1.47
18 to 29	12	18/17.0 (1.1)	8/12.2 (0.7)	26/29.2 (0.9)	2.25
30 to 41	12	12/16.4 (0.7)	13/11.8 (1.1)	25/28.3 (0.9)	0.92
42 to 53	12	15/16.2 (0.9)	11/11.7 (0.9)	26/27.8 (0.9)	1.36
54 to 59	6	2/8.0 (0.2)	3/5.8 (0.5)	5/13.8 (0.4)	0.67
6 to 59	54	75/64.5 (1.2)	54/64.5 (0.8)		1.39

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.064 (boys and girls equally represented)
Overall age distribution: p-value = 0.003 (significant difference)
Overall age distribution for boys: p-value = 0.015 (significant difference)
Overall age distribution for girls: p-value = 0.180 (as expected)
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	15/13.0 (1.2)	21/15.3 (1.4)	36/28.3 (1.3)	0.71
18 to 29	12	10/12.7 (0.8)	19/14.9 (1.3)	29/27.6 (1.1)	0.53
30 to 41	12	12/12.3 (1.0)	10/14.5 (0.7)	22/26.7 (0.8)	1.20
42 to 53	12	13/12.1 (1.1)	10/14.2 (0.7)	23/26.3 (0.9)	1.30
54 to 59	6	6/6.0 (1.0)	6/7.0 (0.9)	12/13.0 (0.9)	1.00
6 to 59	54	56/61.0 (0.9)	66/61.0 (1.1)		0.85

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.365 (boys and girls equally represented)
Overall age distribution: p-value = 0.477 (as expected)
Overall age distribution for boys: p-value = 0.918 (as expected)
Overall age distribution for girls: p-value = 0.198 (as expected)
Overall sex/age distribution: p-value = 0.084 (as expected)

Team 5:

Agecat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	17/12.1 (1.4)	15/12.5 (1.2)	32/24.6 (1.3)	1.13
18 to 29	12	14/11.8 (1.2)	12/12.2 (1.0)	26/24.0 (1.1)	1.17
30 to 41	12	8/11.4 (0.7)	11/11.8 (0.9)	19/23.2 (0.8)	0.73
42 to 53	12	9/11.2 (0.8)	8/11.7 (0.7)	17/22.9 (0.7)	1.13
54 to 59	6	4/5.5 (0.7)	8/5.8 (1.4)	12/11.3 (1.1)	0.50
6 to 59	54	52/53.0 (1.0)	54/53.0 (1.0)		0.96

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.846 (boys and girls equally represented)
Overall age distribution: p-value = 0.317 (as expected)
Overall age distribution for boys: p-value = 0.363 (as expected)
Overall age distribution for girls: p-value = 0.633 (as expected)
Overall sex/age distribution: p-value = 0.141 (as expected)

Team 6:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	14/12.1 (1.2)	14/13.0 (1.1)	28/25.1 (1.1)	1.00
18 to 29	12	11/11.8 (0.9)	14/12.7 (1.1)	25/24.4 (1.0)	0.79
30 to 41	12	8/11.4 (0.7)	13/12.3 (1.1)	21/23.7 (0.9)	0.62
42 to 53	12	10/11.2 (0.9)	7/12.1 (0.6)	17/23.3 (0.7)	1.43
54 to 59	6	9/5.5 (1.6)	8/6.0 (1.3)	17/11.5 (1.5)	1.13
6 to 59	54	52/54.0 (1.0)	56/54.0 (1.0)		0.93

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

Overall sex ratio: p-value = 0.700 (boys and girls equally represented)
Overall age distribution: p-value = 0.291 (as expected)
Overall age distribution for boys: p-value = 0.455 (as expected)
Overall age distribution for girls: p-value = 0.544 (as expected)
Overall sex/age distribution: p-value = 0.143 (as expected)

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

Team: 1

```
Time                                SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.55 (n=09, f=0)  ##############################
02: 0.86 (n=09, f=0)  ##
03: 0.76 (n=07, f=0)
04: 1.50 (n=08, f=0)  ##############################
05: 0.59 (n=09, f=0)
06: 0.62 (n=07, f=0)
07: 0.49 (n=08, f=0)
08: 0.77 (n=06, f=0)
09: 1.16 (n=09, f=0)  ###############
10: 0.76 (n=08, f=0)
11: 0.94 (n=09, f=0)  ######
12: 1.12 (n=09, f=0)  #############
13: 0.93 (n=08, f=0)  #####
14: 0.64 (n=06, f=0)
15: 0.93 (n=09, f=0)  ######
16: 1.39 (n=08, f=0)  ########################
17: 0.68 (n=06, f=0)
18: 0.91 (n=07, f=0)  #####
19: 1.02 (n=08, f=0)  #########
20: 0.88 (n=08, f=0)  ####
21: 0.71 (n=05, f=0)
22: 0.92 (n=04, f=0)  OOOOO
23: 0.24 (n=03, f=0)
24: 1.25 (n=03, f=0)  OOOOOOOOOOOOOOOOOO
```

(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: 1.40 (n=08, f=1)  ########################
02: 0.93 (n=07, f=0)  #####
03: 0.82 (n=08, f=0)  #
04: 1.75 (n=07, f=0)  ########################################
05: 1.34 (n=07, f=0)  ######################
06: 0.70 (n=07, f=0)
07: 1.08 (n=05, f=0)  ############
08: 1.00 (n=07, f=0)  ########
09: 1.06 (n=07, f=0)  ###########
10: 0.99 (n=06, f=0)  ########
11: 1.23 (n=07, f=0)  ##################
12: 0.96 (n=05, f=0)  #######
13: 1.60 (n=05, f=1)  ##################################
14: 1.01 (n=05, f=0)  #########
15: 1.45 (n=06, f=0)  ############################
16: 1.08 (n=05, f=0)  ############
17: 0.81 (n=05, f=0)
18: 0.49 (n=04, f=0)
19: 0.55 (n=05, f=0)
20: 1.81 (n=04, f=1)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
21: 0.88 (n=03, f=0)  OOO
22: 1.54 (n=03, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOO
```

(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: 0.93 (n=09, f=0) ######
02: 1.38 (n=09, f=0) ########################
03: 0.53 (n=06, f=0)
04: 1.67 (n=07, f=0) ####################################
05: 1.10 (n=09, f=0) ############
06: 0.88 (n=09, f=0) ###
07: 0.92 (n=08, f=0) #####
08: 2.20 (n=07, f=1) ##
09: 1.57 (n=08, f=1) ################################
10: 1.44 (n=08, f=0) ############################
11: 0.86 (n=09, f=0) ###
12: 1.13 (n=08, f=0) ##############
13: 0.82 (n=07, f=0) #
14: 1.40 (n=07, f=0) ########################
15: 1.78 (n=05, f=1) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
16: 1.15 (n=06, f=0) ###############
17: 2.89 (n=03, f=1) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
18: 1.50 (n=02, f=0) ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
19: 1.55 (n=02, f=0) ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

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

Team: 4

Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.36 (n=08, f=0) ########################
02: 1.03 (n=08, f=0) ##########
03: 0.70 (n=08, f=0)
04: 0.63 (n=08, f=0)
05: 0.85 (n=07, f=0) ##
06: 0.78 (n=08, f=0)
07: 0.68 (n=08, f=0)
08: 0.83 (n=08, f=0) #
09: 0.80 (n=07, f=0)
10: 0.68 (n=06, f=0)
11: 0.95 (n=06, f=0) ######
12: 0.99 (n=07, f=0) ########
13: 1.07 (n=04, f=0) OOOOOOOOOO
14: 0.60 (n=07, f=0)
15: 0.68 (n=05, f=0)
16: 0.71 (n=04, f=0)
17: 0.85 (n=04, f=0) OO
18: 1.80 (n=03, f=0) OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
19: 0.90 (n=02, f=0) ~~~~

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

Team: 5

Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.95 (n=08, f=0) ######
02: 0.80 (n=08, f=0)
03: 1.30 (n=06, f=0) ####################
04: 0.80 (n=07, f=0)
05: 1.11 (n=07, f=1) #############
06: 0.59 (n=07, f=0)
07: 1.71 (n=07, f=0) ##
08: 1.44 (n=07, f=0) ############################
09: 0.92 (n=08, f=0) #####
10: 0.89 (n=06, f=0) ####
11: 0.79 (n=06, f=0)
12: 0.89 (n=08, f=0) ####
13: 0.37 (n=04, f=0)
14: 1.29 (n=05, f=0) ####################
15: 0.43 (n=04, f=0)
16: 1.25 (n=04, f=0) OOOOOOOOOOOOOOOOOO
17: 0.15 (n=02, f=0)
18: 1.57 (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: 1.33 (n=07, f=1)  ######################
02: 1.67 (n=07, f=0)  ######################################
03: 1.20 (n=06, f=0)  #################
04: 1.71 (n=05, f=0)  ######################################
05: 1.55 (n=06, f=0)  ################################
06: 2.39 (n=05, f=1)  ##################################################################
07: 1.95 (n=05, f=0)  ##################################################
08: 1.56 (n=06, f=0)  ################################
09: 2.67 (n=07, f=2)  ##################################################################
10: 1.35 (n=06, f=0)  ######################
11: 0.84 (n=06, f=0)  ##
12: 1.55 (n=06, f=0)  ################################
13: 1.08 (n=06, f=0)  ############
14: 1.63 (n=05, f=0)  ####################################
15: 0.75 (n=06, f=0)
16: 1.32 (n=05, f=0)  ######################
17: 0.55 (n=04, f=0)
18: 0.72 (n=03, f=0)
19: 3.08 (n=03, f=1)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
20: 2.65 (n=02, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
```

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

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

Annex 2: Selected clusters/Vilages

Villages Population based on EPI	Villages Family Based on EPI	Villages Name	District Name	Cluster No
65	9	Ashoq morda	Khedir	1
1075	154	sia alom and zartali	Khedir	2
573	82	Dastani	Khedir	3
272	39	Maroqo and siak	Khedir	4
430	61	Jai Nazar and Sari Barghas	Bandar	5
645	92	Rangi and Dahni Rangi	Bandar	6
293	42	Tppm Bolagh	Bandar	7
153	22	Ghaouch Qol	Bandar	8
315	45	Chaka and Sari Chaka	Ashterly	RC
287	41	Safid sang	Ashterly	9
532	76	Baloch ha	Ashterly	10
358	51	Jowzari	Ashterly	11
1884	269	Kohna deh	Nili	12
1782	255	Zardani	Nili	13
860	123	Pai Nili	Nili	14
968	138	Zard sang wa ghouchak	Nili	15

173	25	Nasrii	Nili	16
661	94	Garo kohna	Kiti	17
518	74	Changar qoli oulia	Kiti	18
980	215	Qabchni and shinai	Kiti	RC
881	126	Qarai bator	Kiti	19
1260	180	Petah jou , Dahni koshak , deh mazar , lagharak and jari betab	Kiti	20
1174	168	Band Sang	Kejran	21
440	63	Jow wali asar	Kejran	22
2150	307	Qasim abad	Kejran	23
693	99	Wisia	Kejran	24
784	112	Mast ali soof	Kejran	25
293	42	Guldan	Shahristan	26
931	133	Sari wargah	Shahristan	27
459	66	Halo sang , Tang gahga and baidak	Shahristan	28
471	67	Miana mangoor	Shahristan	RC
717	102	Zio jok	Shahristan	29
358	51	Miana qolak	Shahristan	30
373	53	Takhstan	Meramur	31
358	51	Safid barmak	Meramur	32
102	15	Dandab	Meramur	33
307	44	Malam payen	Meramur	34
1240	177	Mosh mai nad babdana	Meramur	35
780	111	miana	Meramur	36
1620	231	Chakari zar and deh ghouchi	Meramur	37
322	46	Sorkh jow	Meramur	38
614	88	Toghmandara	Meramur	39
2440	349	Alyat and Barge and sachi gag	Meramur	40
294	42	sar jow	Meramur	41
287	41	Sai wa ahane sai	Meramur	42
252	36	Sabz jow	Meramur	43
1848	264	Sari qool	Meramur	44
420	60	Porni	Meramur	45
210	30	Bora gangak	Meramur	46

2048	293	Manbar Suliman abad	Meramur	47
215	31	Largashta	Meramur	RC
709	101	Warger oulia	Pato	48
2925	418	Haji Haidar kali	Pato	RC
2442	349	Sahor	Peto	49
490	70	Dahni Naklej	Peto	RC
1680	240	Khial now	Peto	50

نام ماه ها	ماه	1391	ماه	1392	ماه	1393	میاشتی	1394	میاشتی	1395	میاشتی	1396
حمل		عید نوروز. روز دهقان . سیلاب ها .	53	عید نوروز. روز دهقان . سیلاب ها .	41	عید نوروز. روز دهقان . سیلاب ها .	29	عید نوروز. روز دهقان . سیلاب ها .	17	عید نوروز. روز دهقان . سیلاب ها .	5	عید نوروز. روز دهقان . سیلاب ها .
ثور		کشت کر در سرد سیر . 8 ثور.	52	کشت کر در سرد سیر . 8 ثور.	40	کشت کر در سرد سیر . 8 ثور روز استقلال.	28	کشت کر در سرد سیر . 8 ثور.	16	کشت کر در سرد سیر . 8 ثور.	4	کشت کر در سرد سیر . 8 ثور.
جوزا		جمع واری علف. درو گندم . درو جو	51	جمع واری علف. درو گندم . درو جو	39	جمع واری علف. درو گندم . درو جو	27	جمع واری علف. درو گندم . درو جو	15	جمع واری علف. درو گندم . درو جو	3	جمع واری علف. درو گندم . درو جو
سرطان		اخر رمضان عید فطر . شب قدر ماه نزول قران گندم درو در سرد سیر و خرمن کوبی	50	اخر رمضان عید فطر . شب قدر ماه نزول قران گندم درو در سرد سیر و خرمن کوبی	38	اخر رمضان عید فطر . شب قدر ماه نزول قران گندم درو در سرد سیر و خرمن کوبی	26	اخر رمضان عید فطر . شب قدر ماه نزول قران گندم درو در سرد سیر و خرمن کوبی	14	اخر رمضان عید فطر . شب قدر ماه نزول قران گندم درو در سرد سیر و خرمن کوبی	2	اخر رمضان عید فطر . شب قدر ماه نزول قران گندم درو در سرد سیر و خرمن کوبی
اسد		28 اسد . تعطیلات مکتب تابیستانی. بادام تکانی یا بادام زدو	49	28 اسد . تعطیلات مکتب تابیستانی. بادام تکانی یا بادام زدو	37	28 اسد . تعطیلات مکتب تابیستانی. بادام تکانی یا بادام زدو	25	28 اسد . تعطیلات مکتب تابیستانی. بادام تکانی یا بادام زدو	13	28 اسد . تعطیلات مکتب تابیستانی. بادام تکانی یا بادام زدو	1	28 اسد . تعطیلات مکتب تابیستانی. بادام تکانی یا بادام زدو
سنبله		عید قربان . عید غدر خم . شروع محرم	48	عید قربان . عید غدر خم . شروع محرم	36	عید قربان . عید غدر خم . شروع محرم	24	عید قربان . عید غدر خم . شروع محرم	12	عید قربان . عید غدر خم . شروع محرم		عید قربان . عید غدر خم . شروع محرم
میزان	59	شب روز که یکاسان میشود . وخت کچالو و سیب جمع واری ازوم و غله جات	47	شب روز که یکاسان میشود . وخت کچالو و سیب جمع واری ازوم و غله جات	35	شب روز که یکاسان میشود . وخت کچالو و سیب جمع واری ازوم و غله جات	23	شب روز که یکاسان میشود . وخت کچالو و سیب جمع واری ازوم و غله جات	11	شب روز که یکاسان میشود . وخت کچالو و سیب جمع واری ازوم و غله جات		شب روز که یکاسان میشود . وخت کچالو و سیب جمع واری ازوم و غله جات
عقرب	58	چهار شنبی سوری در سرد	46		34		22		10			چهار شنبی سوری در سرد سیر . شروع برق باری

		چهار شنبی سوری در سرد سیر . شروع برق باری		چهار شنبی سوری در سرد سیر . شروع برق باری		چهار شنبی سوری در سرد سیر . شروع برق باری		چهار شنبی سوری در سرد سیر . شروع برق باری				سیر . شروع برق باری	
گندم کشتی در گرم سیر راه بندی		گندم کشتی در گرم سیر راه بندی	9	گندم کشتی در گرم سیر راه بندی	21	گندم کشتی در گرم سیر راه بندی	33	گندم کشتی در گرم سیر راه بندی	45	گندم کشتی در گرم سیر راه بندی	57		
شروع چله کلان . شب یلدا . اعیاد اسلامی		شروع چله کلان . شب یلدا . اعیاد اسلامی	8	شروع چله کلان . شب یلدا . اعیاد اسلامی	20	شروع چله کلان . شب یلدا . اعیاد اسلامی	32	شروع چله کلان . شب یلدا . اعیاد اسلامی	44	شروع چله کلان . شب یلدا . اعیاد اسلامی	56		
ختم چله خورد . چله کلان . وقوع برف کوچها		ختم چله خورد . چله کلان . وقوع برف کوچها	7	ختم چله خورد . چله کلان . وقوع برف کوچها	19	ختم چله خورد . چله کلان . وقوع برف کوچها	31	ختم چله خورد . چله کلان . وقوع برف کوچها	43	ختم چله خورد . چله کلان . وقوع برف کوچها	55		
ختم چله خورد اب خیزی . سبز شدن گیاه ختم سال		ختم چله خورد اب خیزی . سبز شدن گیاه ختم سال	6	ختم چله خورد اب خیزی . سبز شدن گیاه ختم سال	18	ختم چله خورد اب خیزی . سبز شدن گیاه ختم سال	30	ختم چله خورد اب خیزی . سبز شدن گیاه ختم سال	42	ختم چله خورد اب خیزی . سبز شدن گیاه ختم سال	54		

Annex 4: QUESTIONNAIRES

Household questionnaire
Make the list of the data with explanation. For example:
Identification variables: This section is mandatory to be filled to all teams in all the HH visited during the survey. The information contained in this section are:
Date of the survey: This is the date of data collection, it should be written in the standard format for all the questionnaires administered during the survey. (day/month/year
Name of the village: Indicate the name of the sampled village that is visited on the particular day of data collection.
Cluster number: Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation will be done together with the team at the **training hall.** Important to note that once Cluster number has been assigned it cannot be changed.
Team ID number: Teams will be formed during the training session. Each team will be assigned a unique number ranging from 1-5. Each team must indicate the team number on the questionnaires they administer.
Household number: Each HH in the selected cluster will be assigned a number. There are a total of 13 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit **(e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10th HH in the village)**
Starting time of the interview: This is indicated the time of start of the interview in the selected HH.
Consent: Each team will be provided with a consent form that they will be required to ask for permission to conduct the survey in each HH. This is meant to seek permission from the HH head or caregiver to be allowed to conduct the assessment. It is important to note the reason for refusal in case the HH does not accept the interview.
School age education: each team will ask in the selected HH from the HHs member about the number of school aged children in the HH. A further question to check how many children are attended school in the last 4 days in the last 7 days.
National ID cards: each team will ask in the selected households how many members in the HH have Taskera.
Wash: Description of the following key WASH indicators
Source of drinking water: This question will be asked to the respondent of the HH to find out where HH are accessing their drinking water. The sources of water are categorised into two main categories I.e. Improved sources and un-improved sources. These are based on the two main recommended categories of responses.
Number of HH accessing water from improved sources[9]/ total number of respondents.
Number of HH accessing water from unimproved sources[10]/ total number of respondents.

[9] Piped scheme, protected springs, boreholes with hand pump, well with hand pump, protected karez

[10] River/ stream/ canal. Pond/ reservoir, well with bucket, unprotected karez, unprotected spring.

Water treatment methods: This question will seek to find out what methods HH are using to make their drinking water safe. This indicator will show the proportion of HH practicing safe methods of water treatment in the survey area. The calculation of this will be:
Total number of HH practicing safe water treatment methods[11]/ total number of respondents
Total number of HH not practicing safe water treatment methods/ total number of respondents.
Water Use/Consumption at HH level: This question will be seeking to find out the amount of water consumed by each individual living in the household per day. The aim of this indicator is to check whether households are consuming the required minimum amount of water per person per day compared to the minimum threshold as defined by the WHO standard for HH water consumption.
Hand washing practices: Caregivers will be asked on hand washing practices to ascertain instances in their daily activities and in the 5 critical points when they wash their hands. The caregiver should not be probed for answers/response rather they should be allowed to provide their response independently.
Use of Soap: A follow up question will be asked to ascertain the hand washing practice by asking the caregiver to demonstrate how they wash their hands and what they use to wash their hands, they rubs both hands and drying by clean cloths .

Food access and consumption

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

Child Questionnaire

Identification:

This section is mandatory to be filled to all teams in all the HH visited during the survey. The information contained in this section is:
Date of the survey: This is the date of data collection, it should be written in the standard format for all the questionnaires administered during the survey. (day/month/year
Name of the village: Indicate the name of the sampled village that is visited on the particular day of data collection.
Cluster number: Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation will be done together with the team at the **training hall.** Important to note that once Cluster number has been assigned it cannot be changed.
Team ID number: Teams will be formed during the training session. Each team will be assigned a unique number ranging from 1-5. Each team must indicate the team number on the questionnaires they administer.
Household number: Each HH in the selected cluster will be assigned a number. There are a total of 15 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit **(e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10th HH in the village)**
Caregiver Number: Each caregiver living in the selected HH will be assigned a specific unique number. This is the same number that will appear in the Caregiver questionnaire. In case of more than one caregiver in a HH each will be assigned a unique number to identify and distinguish them from each other.

[11] Boil, use of water filter

Each caregiver will be linked to her/his children selected in the HH to be able to link each caregiver with the children.

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

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

Sex: Male or female

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

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

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

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

Infant and Young Child Feeding

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

Ever Breastfed: This indicator will be looking at the number of mothers who have ever breast fed their children. This will look at the last pregnancy of the mother or the current child who is <24 months old.

Time to Breastfeeding/Initiation to Breast milk: This indicator will look at the amount of time it took for mothers to put their children to the breast after giving birth. The focus will be on the mother's last pregnancy in which the child is <24 months.

Colostrum feeding: this indicator will look at the number of mothers with children <24 months who fed their children with Colostrum within the first 3 days after birth.

Breast feeding Yesterday: this indicator will look at the number of mothers who breast fed their children <24 months one day (day and Night) prior to the data collection day.

Other Liquids offered to the child: This indicator will ask the mothers of children <24 months what other liquids were offered to the child one day (day and night) prior to the data collection day.

Minimum dietary diversity: This indicator will ask the mothers on the types of food given to the child <24 months one day (day and night) prior to the day of data collection. The food groups are categorised based on the WHO-IYCF guidelines.

Complimentary feeding: This indicator looks at the number of mothers who gave solid and semi-solid foods to children <24 months one day (day and night) prior to the data collection day.

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

Child Health status

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

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

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

Deworming: This question will ask the caregiver of child 24-59 months on whether the child has received deworming tablets in the previous 6 months prior to the data collection day. Each team will be provided with a Sample of the deworming tablet to enable the caregivers to easily identify it.

BCG vaccination: This question will ask the caregiver on whether the child 0-59 months has received BCG vaccination.

PENTA vaccination: the question will ask the care giver on whether the child 3.5-59 months has received PENTA3 vaccination.

Measles vaccination: the question will asked the care giver whether the child 9-59 months has received the measles vaccination.

Polio vaccination: the question will asked the care giver whether the child 0-59 months has received the polio vaccination.

Caregiver questionnaire

Identification:

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

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

Name of the village: Indicate the name of the sampled village that is visited on the particular day of data collection.

Cluster number: Indicate the number of cluster allocated for the village or area visited. This is automatically generated by ENA during the sampling stage. Sampling and cluster allocation will be done together with the team at the **training hall.** Important to note that once Cluster number has been assigned it cannot be changed.

Team ID number: Teams will be formed during the training session. Each team will be assigned a unique number ranging from 1-6. Each team must indicate the team number on the questionnaires they administer.

Household number: Each HH in the selected cluster will be assigned a number. There are a total of 15 HH in each cluster to be sampled. Each sampled HH should be indicated a number in order of their visit **(e.g. the first randomly selected HH is allocated HH number 1 regardless of whether it is the 10th HH in the village)**

Caregiver Number: Each caregiver living in the selected HH will be assigned a specific unique number. This is the same number that will appear in the Caregiver questionnaire. In case of more than one caregiver in a HH each will be assigned a unique number to identify and distinguish them from each other.

Each caregiver will be linked to her/his children selected in the HH to be able to link each caregiver with the children.

Antenatal Care, delivery assist and Health seeking behavior

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

Delivery assisted by SBA: caregiver who respond positive to getting assistance from Skilled Birth Attendants during the last delivery.

Health seeking behaviour: Caregivers who respond positive to seeking antenatal care will be asked who they sought assistance from. This question seeks to identify the health seeking pattern of the respondents from the first point of contact to the last point of contact.

Distance to Health centre: This question seeks to identify how long it takes a caregiver to access the health facility and ascertain if geographical distance is a factor affecting access to the health centre

Maternal Nutrition

This section seeks to identify the nutrition status of pregnant and lactating women.

MUAC measurement: The caregivers mid – upper arm circumference will be measured using the standard WFP issued adult MUAC tape.

Physiological status: Each of the caregivers will asked about their current physiological status to ascertain whether they are currently pregnant, lactating, pregnant and lactating or not pregnant.

Iron - Folate supplementation: Caregivers who report to be currently pregnant will be asked whether they are taking iron folate tablets or not. This is to ascertain the number of pregnant mothers who are supplemented and using iron –folate/ferrous.

INDICATORS: DEFINITION, CALCULATION and INTERPRETATION

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

Acute Malnutrition

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

Weight-for-height index (W/H)

A child's nutritional status is estimated by comparing it to the weight-for-height curves of a reference population (WHO standards data[12]). These curves have a normal shape and are characterized by the median weight (value separating the population into two groups of the same size) and its standard deviation (SD). The expression of the weight-for-height index as a Z-score (WHZ) compares the observed weight (OW) of the surveyed child to the mean weight (MW) of the reference population, for a child of the same height. The Z-score represents the number of standard deviations (SD) separating the observed weight from the mean weight of the reference population: WHZ = (OW - MW) / SD.

During the field data collection, the weight-for-height index in Z-score will be calculated on the field for each child in order to refer malnourished cases to appropriate center if needed. Moreover, the results will be presented in Z-score using WHO reference in the final report. The classification of acute malnutrition based on WHZ is well illustrated in table 5.

Mid Upper Arm Circumference (MUAC)

The mid upper arm circumference does not need to be related to any other anthropometric measurement. It is a reliable indicator of the muscular status of the child and is mainly used to identify children with a risk of mortality. The MUAC is an indicator of malnutrition only for children greater or equal to 6 months. Table 29 provides the cut-off criteria for categorizing acute malnutrition cases.

Table 29: MUAC cut-offs points for children aged 6-59 months

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

Nutritional bilateral "pitting" oedema

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

Table 30: Definition of acute malnutrition according to weight-for-height index (W/H), expressed as a Z-score based on WHO standards

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

Chronic Malnutrition

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

The height-for-age measure indicates if a child of a given age is stunted and so if he is chronically malnourished. This index reflects the nutritional history of a child rather than his/her current nutritional status. This is mainly used to identify chronic malnutrition. The same principle is used as for weight-for-height; except that a child's chronic nutritional status is estimated by comparing its height with WHO standards height-for-age curves, as opposed to weight-for-height curves. The height-for-age index of a child from the studied population is expressed in Z-score (HAZ). The HAZ cut-off points are presented in table 31.

Table 31: Cut offs points of the Height for Age index (HAZ) expressed in Z-score, WHO standards

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

Mortality Indicator Calculation

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

Crude death rate (CDR)

The number of persons in the total population that dies over specified period of time refers to the Table 2 above for Sample size calculation for mortality surveys

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

Under-5 death rate (U5DR)

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

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

Health

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

Immunization status, deworming and vitamin A supplementation

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

Morbidity

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

Mothers nutritional status and Iron/Folate supplementation for pregnant

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

WASH

Water storage and Usage

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

Hand washing practices

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

Infant and Young Child Feeding Practices Indicators (IYCF)

The IYCF indicators used in the measurement of infant and young child feeding practices asked to the mothers/caretakers of children aged <24 months are described as follows.

Child ever breastfed

Proportion of children who have ever received breast milk. The indicator refers to proportion of children who have ever received breast milk. It's calculated by dividing the number of children born in the last 24 months who were ever breastfed by all Children born in the last 24 months. The indicator is based on historical recall, and a caregiver(s) is supposed to provide information of all children living or dead who were born in the last 24 months. This indicator will be looking at the number of mothers who ever breast fed their children. This indicator will be based on historic recall.

Timely initiation of breastfeeding

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

Provision of colostrum in the first 3 days of life

Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth. This indicator will look at the number of mothers with children <24months who fed their children with Colostrum within the first 3 days after birth.

Exclusive breastfeeding under 6 months

Proportion of infants 0-5 months of age who are fed exclusively with breast milk. **It's calculated by dividing the number of all** Infants aged 0–5 months who receive only breast milk during the previous day by total infants aged 0-5 months.

Continued breastfeeding at 1 year

Proportion of children 12 – 15 months of age who are fed with breast milk. It's calculated by dividing the total number of children aged 12–15 months who received breast milk during the previous day by total children aged 12–15 months

Introduction of solid, semi-solid or soft foods:

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

Continued breastfeeding at 2 years

Proportion of children 20–23 months of age who are fed breast milk. It's calculated by dividing the number of children aged 20–23 months who received breast milk during the previous day by total children aged 20–23 months.

Maternal Health and Nutrition

Women in childbearing age will be assessed for their nutritional status based on MUAC measurements. The nutritional status of pregnant and lactating mothers will be derived using the MUAC cut-off of 230 mm.

The indicator for iron-folate supplementation will be derived from dividing the total number of pregnant mothers supplemented with Iron-folate in the last 90days by total number of pregnant mothers.

13. REFERENCES

- WHO 2000 thresholds (< 5 % acceptable, 5-9 % poor, 10-14 % serious, > 15 % critical**).**
- WHO emergency threshold of 2/10,000/day and 4/10,000/day respectively.
- Care international IYCF calculator, based on WHO, 2010.
- National Nutrition Survey of Afghanistan, UNICEF, 2013.

- CSO: updated population 2017-2018
- ENA software 2011 (updated July 2015
- Afghanistan Demography and Health Survey (AfDHS).
- EPI micro plan 2017.