AFGHANISTAN

Nutrition & Mortality SMART Survey Final Report Jawzjan Province, Afghanistan 28th March to 16th April 2017

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Action Against Hunger
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ABBREVIATIONS

ACF	Action contra la Faim/Action against Hunger
BCG	Bacillus Calmette Guerin
CDR	Crude Death Rate
CSO	Central Statistics Organization
ENA	Emergency Nutrition Assessment
GAM	Global Acute Malnutrition
HH	Household
IYCF	Infant and Young Child Feeding
MUAC	Mid Upper Arm Circumference
MW	Mean Weight
NNS	National Nutrition Survey
PPS	Proportional Population Size
PLW	Pregnant and Lactating Women
RC	Reserve Cluster
SAF	Solidarity for Afghan Families
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

1. EXACUTIVE SAMMARY

Nutrition and mortality SMART survey was conducted in the entire province of Jawzjan from 28th March to 16th April 2017. It was based on Standardized Monitoring and Assessment of Relief and Transition (SMART) methodology and was a cross- sectional anthropometric survey fallowing a two-stage cluster sampling method.

Out of 641 households and 592 children (6-59 months) planned in the survey, 613 households (95.6%) were surveyed and included 784 children aged 6-59 months (132.4 %) for anthropometric assessment.

Summary findings

784 children aged 6-59 months were assessed in **613** selected households in the survey.

- Prevalence of Global acute malnutrition (GAM) and Severe acute malnutrition (SAM) based on WHZ was at **10.5% (8.0-13.5 95% CI)** and **2.0% (1.1- 3.7 95% CI)** respectively.
- Prevalence of oedema was at **0.0%**. No cases of oedema were identified.
- Prevalence Global acute malnutrition (GAM) based on Mid Upper Arm Circumference (MAUC) was at **7.0% (4.7 - 10.4 95% C.I.)** and **1.3 % (0.7 - 2.4 95% C.I.)** respectively.
- Prevalence of combine MUAC and WHZ based on both criteria revealed GAM and SAM rate was at **15.3% (12.8-17.8 95% CI) and 3.2% (2.0-4.4 95% CI)** respectively.
- Prevalence of stunting or chronic malnutrition based on HAZ was at **43.6% (39.8 - 47.5 95% C.I.)** and **13.7 % (11.2 - 16.7 95% C.I.)** respectively.
- Prevalence of underweight based on (WAZ) was at **20.0 % (17.8- 24.0 95% C.I.)** and Sever underweight was at **4.2 % (2.8 - 6.3 95% C.I.)**.
- Maternal malnutrition status of pregnant and lactating women (n=413) based on MUAC <230 mm was at **20.1% (16.2-24.0 95% CI) and severe malnutrition (MUAC <210) was at 3.6% (1.8-5.4 95% CI) respectively**
- Crude death rate (CDR) was at **0.21 (0.11-0.41 95% CI)** while under five death rate (U5DR) was at **0.85 (0.34-2.10 95% CI)** respectively.
- Immunization Coverage of measles for children aged 9-59 months by both recall and cards were at **85.3%.** While BCG scar (aged 0-59 months) was at **83.1%**, PENTA 3 (aged 3.5 to 59 months) was at **63.3%** and Polio immunization coverage (0-50 months) was at **89.1%.**

2. INTRODUCTION

Jawzjan is one of the 34 provinces of Afghanistan; this province is located in the northern part of Afghanistan, bordering Turkmenistan in the north, Balkh province in the east, Sar-e Pol province in the south and Faryab province in the west. Jawzjan province has More than one quarter of mountainous or semi mountainous terrain, while more than two thirds of the area is made up of flat land.

The population of Jawzjan province is about 540,255[1]. Which is multi-ethnic and mostly agricultures society, with the main ethnic groups living in the province are Turkmen followed by Uzbek, Pashtun, Tajik and possibly a few others. The languages spoken in the province are Dari, Turkmeni, Uzbeki, and Pashto.

Jawzjan province divided by 11 districts such as Aqcha, Darzab, Fayzabad, Khamyab, Khaniqa, Khwaja Du Koh , Mardyan, Mingajik, Qarqin, Qush Tepa, and Sheberghan the capital of the province.

The nutrition SAMRT survey was conducted in spring (April 2016) covering the entire Jawzjan province. Action Against hunger technically supported SAF to implement this survey to investigate Jawzjan province of the entire (11 districts) in the nutrition and mortality assessment.

2.1 Context and Justification

The justification of the proposed assessment is to estimate the current prevalence of under-nutrition among vulnerable populations (i.e. Children U5 and PLWs) in Jawzjan province. The survey also investigated the current mortality rates (CDR and U5DR), child health status (morbidity, immunization and vitamin A supplementation), nutritional status of pregnant and lactating women, IYCF and WASH practices. The last assessment that provided information on nutritional status of under-fives was conducted through the National Nutrition Survey in 2013 and

[1] CSO update population for 1394 2015 – 2016.

GAM rate was 6.3% (4.36-8.92, 95% CI) was at poor levels of WHO classification. There was need to investigate on the current prevalence of under-nutrition in the province. The Survey findings Will used to inform future programing in the Jawzjan province. It was also serve as a good opportunity of building the capacity of SAF and other stakeholders.

2.2. Survey objectives

a. Broad objective

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

b. Specific objective

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

3. METHODOLOGY

3.1. Sampling Methodology

A two-stage cluster sampling methodology was implemented.

Stage 1: random selection of clusters/villages was chosen using probability proportion to size; (PPS) used ENA for SMART software version 2011 of (9 July 2015). A list of all updated complete and partially secure villages that the local people can go there was amounted into the ENA for SMART software where PPS was applied. The villages with large population had a higher chance of being selected than villages with small population and vice versa. Reserve Clusters (RCs) was also selected by ENA software version 2011(updated 9 July 2015). But we did not have 10 % missed clusters for using Reserve clusters, only one cluster was missed due to insecurity during the data collection, **see Annex 3** for selected clusters . In each selected village, one or more community member(s) was asked to help the survey teams to conduct their work by providing information about the village with regard to the geographical organization or the number of households. In cases where there were large villages in a cluster, the village was divided into smaller segments and a segment was selected randomly to represent the cluster. This division was done based on existing administrative units e.g. neighborhoods, or streets or natural landmarks like river, road, or public places like market, schools, and mosques.

Stage 2: Systematic random selection of households from updated and complete list of households within a given village. In this case the actual survey data collection, was incorporate 613 households randomly selected based on survey parameters calculation for anthropometric. Based on total sample size each team covered effectively 13 households in a day. In this assessment, six teams were engaged during the assessments, while data collection was to last 10 days. All households were enumerated and given numbers by the survey team. The 13 households was chosen systematic randomly from these enumerated households, by systematic random sampling

was used to identify the households to be surveyed. The teams were trained on both methods of sampling (simple and systematic random sampling).
All the children living in the selected house aged (0 to 59) months old was included for anthropometric measurements. Children aged (0-23.99) months were included for IYCF measurements. If more than one eligible child were found in a household, both were included, even if there was twins. Eligible orphans living in the selected Households were also surveyed. All of the selected HH was included in the mortality survey as well as responded 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 was not subsequently found was not included in the survey. A cluster control form used to record all these missed and absent households.

Table 1: Details of proposed and actual sample size achieved, Jawzjan SMART, April 2017

Number of HH planned	Number of HH surveyed	% of HH surveyed/ Planned	Number of children 6-59 months planned	Number of surveyed children 6-59 month surveyed	% of surveyed children 6-59 months/planned
641	613	95.6%	592	784	132.4%

The household were 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 is often defined and/or used synonymous with a compound – which potentially represents more than one household as defined here. In this case, a two-step process were ensured with the village leaders/community elders and then identifying compound together with the use of the list of households within the community, asking if there were multiple cooking areas to determine what members of the household/compound should be included in the study.

3.2. Sample Size for anthropometric and mortality calculation

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

Table 2: Parameters for sample size calculation of anthropometric indicators, Jawzjan SMART, April 2017

Parameters for Anthropometry	Value	Assumptions based on context

Estimated prevalence of GAM (%)	6.3%	The survey team was referred to the National Nutrition Survey (NNS), 2013. Global Acute Malnutrition (GAM) prevalence (WHZ) for Jawzjan SMART survey was estimated at 6.3% (95% CI: 4.3-8.9) with a Standard Deviation (SD) of 1.3. The SD was not in the range of recommended limit of 0.85-1.2. There was no any up dated data, For this reason we were used (6.3 %) for the planning stage with carefully.
± Desired precision	2.5%	It was based on survey objectives in line to estimated prevalence and SMART methodology recommendations. If we use an estimate, point prevalence of 6.3% as our predicted GAM prevalence then a precision of. ±2.5 is recommended.
Design Effect *(if applicable)*	1.5	The population living in the targeted districts is considered as having similar living conditions and the same access to food and social conditions. Nevertheless, access to health facilities cannot be estimated as similar within the targeted population as some remote areas are not well served by health facilities. Hence the design effect was estimated at 1.5.
Children to be included	*592*	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 were surveyed.)
Average HH Size	7	Based on National Nutrition Survey (NNS) 2013, the average household size was 7; It's the most recent result data available.
% Children 6 – 59 Months	15.6%	The 15.6% estimated U5 population is calculating based on mortality survey conducted on 2010
% 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. The non-response rate was catering for unforeseen circumstances to include refusal, absenteeism or population movements National Nutrition Survey of Afghanistan, UNICEF, 2013.
Households to be included	**641**	Minimum sample size- Households to be surveyed. Households were the basic sampling unit for the SMART survey.

Table 3: Sample size calculation for mortality surveys, Jawzjan SMART, April 2017

Parameters for Mortality	Value	Assumptions based on context
Estimated Death Rate /10,000/day	0.5/10000 /day	No updated death rate at population level; Recommended in cases where there is no specific mortality data for the area to be surveyed.
± Desired precision /10,000/day	0.3%	Based on survey objectives and inline to estimated death rate.
Design Effect *(if applicable)*	1.5	This were caters for heterogeneity in the population being sampled.
Recall Period in days	**120**	Starting point of recall period were done. 16th Qaws 1395 the date of recall is equivalent to 6th December 2016 as per Gregorian calendar.
Population to be included	**2,904**	Population
Average HH Size	**7**	Average HH size 7 is calculated based on National Nutrition survey conducted on 2013.
% 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. The non-response rate was catered for unforeseen circumstances to include refusal, absenteeism or population movements National Nutrition Survey of Afghanistan, UNICEF, 2013.
Households to be included	**441**	Households

3.3. Training, team composition and supervision

Six teams comprised of total four members in each team conducted the field data collection. Each team was composed of one supervisor, one team leader and two data collectors. Each team had at least one female data collector to ensure acceptance of the team amongst the surveyed households; particularly for IYCF questionnaires. Each female member of the survey team was accompanied with a mahram[2] to facilitate the work of the female data collectors at the community level. The teams were supervised by Action Against Hunger Nutrition SMART Deputy Program managers and Public Nutrition Officer.

The entire teams received a 7-days training on the survey methodology and all its practical aspects; the training was facilitate by two ACF staffs (Nutrition SMART Senior Program Manager and deputy program manager). A standardization test was conducted over the course of 1day, measuring 9 children, in order to evaluate the accuracy and the precision of the team members in taking the anthropometrics measurements. A one-day field test was conducted by the teams in order to evaluate their work in real field conditions. Feedback was provided to the team in regard to the results of the field test; particularly in relation to digit preferences and data collection. Refresher training on the anthropometric measurement and on the filling of the questionnaires

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

and the household's selection was organized on the last day of the training by ACF to ensure overall comprehension before going to the field.

One field guidelines document with instructions and household definition and selection document was provided to each team member. All documents, such as local event calendar, questionnaires or consent forms were translated in Dari, for better understanding and to avoiding direct translation during the data field collection.

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

3.4. Data entry and analysis

The anthropometric and mortality data was analyzed used ENA for SMART software 2011 version (9th July 2015). Survey results was interpreted in reference to WHO standards, analysis of other indicators to include IYCF, WASH, demographic and food security was done using Microsoft excel version 2010. Information generated from these indicators was used to explain the outcome indicators to include; nutritional status of under-fives and mortality (CDR and U5DR). Contextual information generated from routine monitoring was used in complementing survey findings.

4. INDICATORS: DEFINITION, CALCULATION AND INTERPRETATION

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

4.1.1. Acute Malnutrition

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

Weight-for-height (W/H) index

A child's nutritional status is estimated by comparing it to the weight-for-height curves of a reference population (WHO standards data[3]). These curves have a normal shape and are characterized by the median weight (value separating the population into two groups of the same size) and its standard deviation (SD). The expression of the weight-for-height index as a Z-score (WHZ) compares the observed weight (OW) of the surveyed child to the mean weight (MW) of the reference population, for a child of the same height. The Z-score represents the number of standard deviations (SD) separating the observed weight from the mean weight of the reference population: WHZ = (OW - MW) / SD.
During the field data collection, the weight-for-height index in Z-score was calculated on the field for each child in order to refer malnourished cases to appropriate center if needed. Moreover, the results were presented in Z-score using WHO reference in the final report. The classification of acute malnutrition based on WHZ is well illustrated in table 4.

Mid Upper Arm Circumference (MUAC)

The mid upper arm circumference does not need to be related to any other anthropometric measurement. It is a reliable indicator of the muscular status of the child and is mainly used to identify children with a risk of mortality. The MUAC is an indicator of malnutrition only for children greater or equal to 6 months. Table 4 provides the cut-off criteria for categorizing acute

[3] WHO standard 2006

malnutrition cases.

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

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

Nutritional bilateral "pitting" oedema

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

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

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

4.1.2. Chronic Malnutrition

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

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 6.

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

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

4.2 Mortality Indicator Calculation

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

Crude death rate (CDR)

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

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

Under-5 death rate (U5DR)

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

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

5. HEALTH

Beside anthropometric data, additional information were collected as follows:

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

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

- **Morbidity**

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

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

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

WASH

- **Water storage and Usage**

House hold heads were 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 were 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.

6. INFANT AND YOUNG CHILD FEEDING PRACTICES INDICATORS (IYCF)

The IYCF indicators used in the measurement of infant and young child feeding practices asked to the mothers/caretakers of children aged 0-23.99 months described as follows.

- **Child ever breastfed**

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

the number of mothers who ever breast fed their children. This indicator was based on historic recall.

- **Timely initiation of breastfeeding**

Proportion of children born in the last 23 months who were put to the breast within one hour of birth. Proportion of children born in the last 24 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 were also be based on historical recall

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

Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth. Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth. This indicator was look at the number of mothers with children 0-23.99 months who fed their children with Colostrum within the first 3 days after birth.

- **Exclusive breastfeeding under 6 months**

Proportion of infants 0-5 months of age who are fed exclusively with breast milk. Proportion of infants 0-5 months of age who are fed exclusively with breast milk. **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. Proportion of children 12 – 15 months of age who are fed with breast milk. It's calculated by dividing the total number of children aged 12–15 months who received breast milk during the previous day by total children aged 12–15 months

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

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

- **Continued breastfeeding at 2 years**

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

6.1. . Maternal Health and Nutrition

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

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

7. RESULTS

7.1. Under nutrition

7.1.1 Anthropometric results (based on WHO standard)

Anthropometric results are presented with exclusion of SMART flags: Z score values ranging outside-form the observed mean for all three indexes (WHZ, HAZ and WAZ). The survey finding showed the overall sex ratio: the boys and girls in the sample were equally represented with p-value = 0.497, Overall age distribution: p-value = 0.060, were significant differens for more details refer to ANNEX 1 plausibility report.

Table 6: Distribution of age and sex of sample, Jawzjan SMART, April 2017

	Boys	%	Girls	%	Total	%	Ratio, boys : girls
AGE (mo)	no.	%	no.	%	no.	%	
6-17	98	50.8	95	49.2	193	24.6	1.0
18-29	107	54.9	88	45.1	195	24.9	1.2
30-41	81	48.5	86	51.5	167	21.3	0.9
42-53	65	47.4	72	52.6	137	17.5	0.9
54-59	51	55.4	41	44.6	92	11.7	1.2
Total	402	51.3	382	48.7	784	100.0	1.1

7.1.2. Data quality

The anthropometric data were analyzed using ENA for SMART Software (version 2011, 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 7: Mean z-scores, Design Effects and excluded subjects, Jawzjan SMART, April 2017

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	784	-0.44±1.15	1.52	0	0
Weight-for-Age	783	-1.20±1.01	1.13	0	1
Height-for-Age	759	-1.65±1.24	1.11	0	25

* contains for WHZ and WAZ the children with oedema.

7.1.3. Prevalence of acute malnutrition based on weight for height z – score:

The sex and age disaggregated results are presented in tables below respectively.

Table 8: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex, Jawzjan SMART, April 2017.

	All n = 784	Boys n = 402	Girls n = 382
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(82) 10.5 % (8.0 - 13.5 95% C.I.)	(47) 11.7 % (8.3 - 16.2 95% C.I.)	(35) 9.2 % (6.6 - 12.7 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(66) 8.4 % (6.3 - 11.1 95% C.I.)	(40) 10.0 % (6.9 - 14.2 95% C.I.)	(26) 6.8 % (4.7 - 9.7 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(16) 2.0 % (1.1 - 3.7 95% C.I.)	(7) 1.7 % (0.7 - 4.5 95% C.I.)	(9) 2.4 % (1.3 - 4.3 95% C.I.)

The prevalence of oedema is 0.0 %

Table 9: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema, Jawzjan SMART, April 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	193	3	1.6	25	13.0	165	85.5	0	0.0
18-29	195	2	1.0	9	4.6	184	94.4	0	0.0
30-41	167	8	4.8	14	8.4	145	86.8	0	0.0
42-53	137	2	1.5	11	8.0	124	90.5	0	0.0
54-59	92	1	1.1	7	7.6	84	91.3	0	0.0
Total	784	16	2.0	66	8.4	702	89.5	0	0.0

Table 10: Distribution of acute malnutrition and oedema based on weight-for-height z-scores, Jawzjan SMART, April 2017

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 16 (2.0 %)	Not severely malnourished No. 768 (98.0 %)

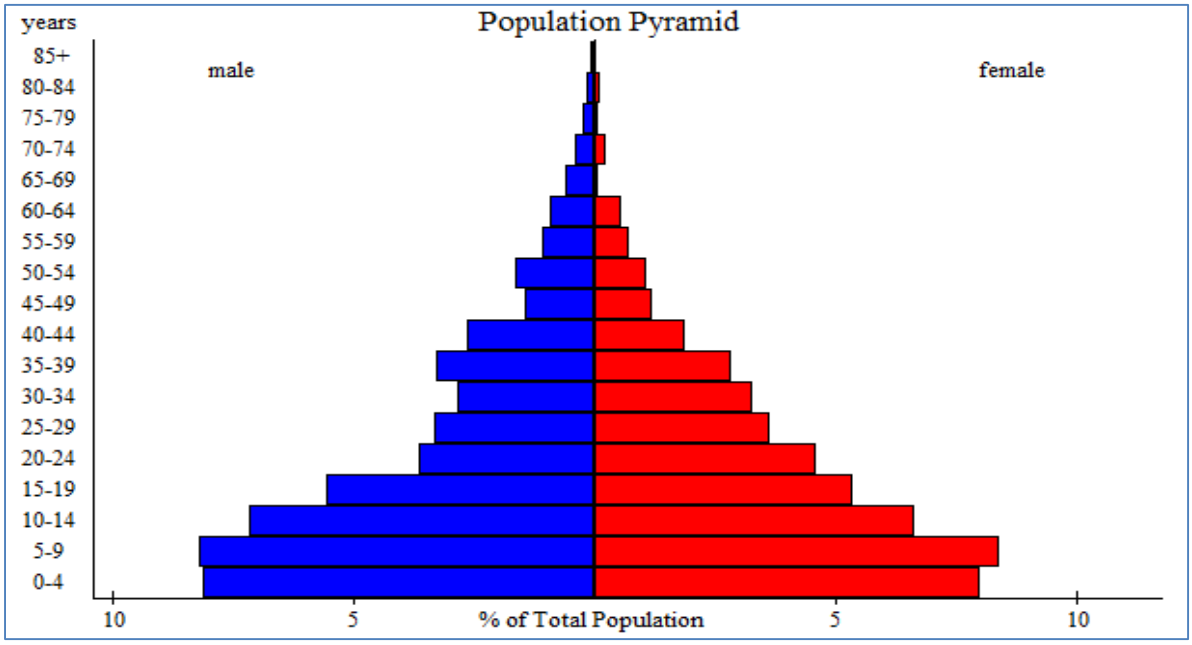


Figure 1: Population age and sex pyramid, Jawzjan SMART, April 2017

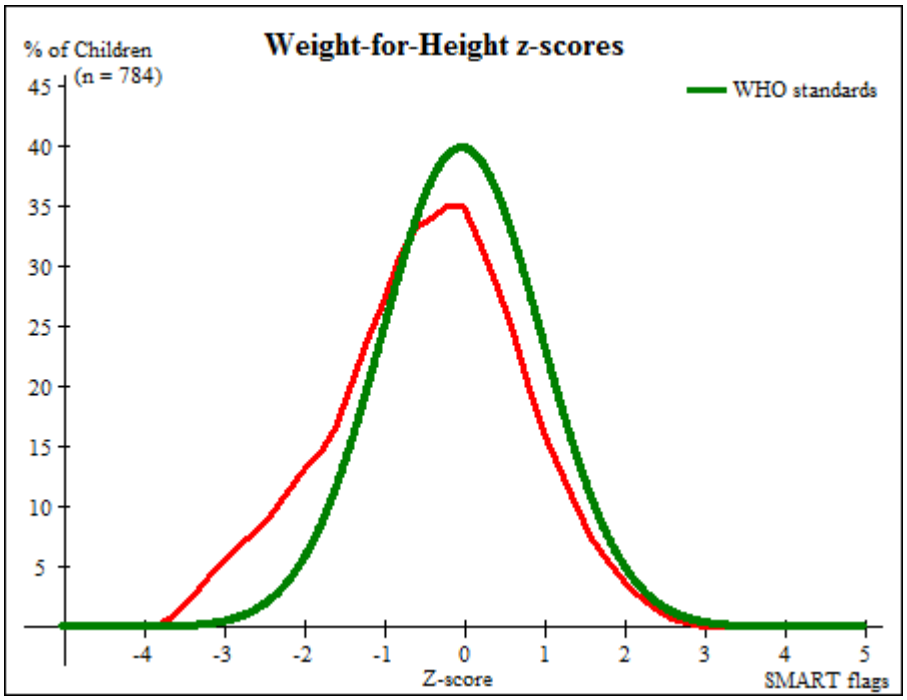


Figure 2: Distribution curves weight –for-height, Jawzjan SMART, April 2017

7.1.4. Prevalence of MUAC cut off classification and/ Or oedema:

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

Table 11: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex, Jawzjan SMART, April 2017

	All n = 784	Boys n = 402	Girls n = 382
Prevalence of global malnutrition (< 125 mm and/or oedema)	(55) 7.0 % (4.7 - 10.4 95% C.I.)	(27) 6.7 % (4.0 - 11.0 95% C.I.)	(28) 7.3 % (4.8 - 11.0 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(45) 5.7 % (3.7 - 8.8 95% C.I.)	(25) 6.2 % (3.6 - 10.6 95% C.I.)	(20) 5.2 % (3.3 - 8.3 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(10) 1.3 % (0.7 - 2.4 95% C.I.)	(2) 0.5 % (0.1 - 2.0 95% C.I.)	(8) 2.1 % (1.0 - 4.4 95% C.I.)

Table 12: Prevalence of acute malnutrition by age, based on MUAC cut offs and/or oedema, Farah SMART, March 2017

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (month)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	193	9	4.7	34	17.6	150	77.7	0	0.0
18-29	195	0	0.0	8	4.1	187	95.9	0	0.0
30-41	167	0	0.0	2	1.2	165	98.8	0	0.0
42-53	137	1	0.7	0	0.0	136	99.3	0	0.0
54-59	92	0	0.0	1	1.1	91	98.9	0	0.0
Total	784	10	1.3	45	5.7	729	93.0	0	0.0

7.1.5. Prevalence of underweight (WHO 2006)

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

Table 13: Prevalence of underweight based on weight-for-age z-scores by sex, Jawzjan SMART, April 2017

	All n = 783	Boys n = 402	Girls n = 381
Prevalence of underweight (<-2 z-score)	(162) 20.7 % (17.8 - 24.0 95% C.I.)	(92) 22.9 % (19.2 - 27.0 95% C.I.)	(71) 18.6 % (14.5 - 23.7 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(129) 16.5% (14.1 - 19.1 95% C.I.)	(75) 18.7 % (15.3 - 22.6 95% C.I.)	(54) 14.2% (10.8% - 18.4 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(33) 4.2% (2.8 - 6.3 95% C.I.)	(17) 4.2% (2.5 - 7.1 95% C.I.)	(16) 4.2% (2.5 - 7.1 95% C.I.)

Table 14: Prevalence of underweight by age, based on weight-for-age z-scores Jawzjan SMART, and April 2017

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (month)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	192	11	5.7	41	21.4	140	72.9	0	0.0
18-29	195	5	2.6	26	13.3	164	84.1	0	0.0
30-41	167	10	6.0	26	15.6	131	78.4	0	0.0
42-53	137	6	4.4	19	13.9	112	81.8	0	0.0
54-59	92	1	1.1	17	18.5	74	80.4	0	0.0
Total	783	33	4.2	129	16.5	621	79.3	0	0.0

7.1.6. Prevalence of stunting based on height for age z score (HAZ)

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

Table 15: Prevalence of stunting based on height-for-age z-scores and by sex, Jawzjan SMART, April 2017

	All n = 759	Boys n = 391	Girls n = 368
Prevalence of stunting (<-2 z-score)	(331) 43.6% (39.8 - 47.5 95% C.I.)	(177) 45.3% (40.2 - 50.4 95% C.I.)	(154) 41.8% (35.4 - 48.6 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(227) 29.9% (27.1 - 32.9 95% C.I.)	(119) 30.4% (26.5 - 34.7 95% C.I.)	(108) 29.3% (24.3 - 35.0 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(104) 13.7% (11.2 - 16.7 95% C.I.)	(58) 14.8% (11.3 - 19.3 95% C.I.)	(46) 12.5% (9.2 - 16.7 95% C.I.)

Table 16: Prevalence of stunting by age based on height-for-age z-scores, Jawzjan SMART, and April 2017

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (months)	Total no.	No.	%	No.	%	No.	%
6-17	183	12	6.6	47	25.7	124	67.8
18-29	187	31	16.6	61	32.6	95	50.8
30-41	161	31	19.3	43	26.7	87	54.0
42-53	136	22	16.2	42	30.9	72	52.9
54-59	92	8	8.7	34	37.0	50	54.3
Total	759	104	13.7	227	29.9	428	56.4

Figure 3 shows the distribution of HAZ of the observed population (SMART flags excluded) compared to WHO Reference curve. In Jawzjan, it was shifted to the left, suggesting restricted linear growth of the observed population. Further analysis (**Figure 4**) suggests that linear growth retardation is at its highest in the lower age group of children (18-29 months).

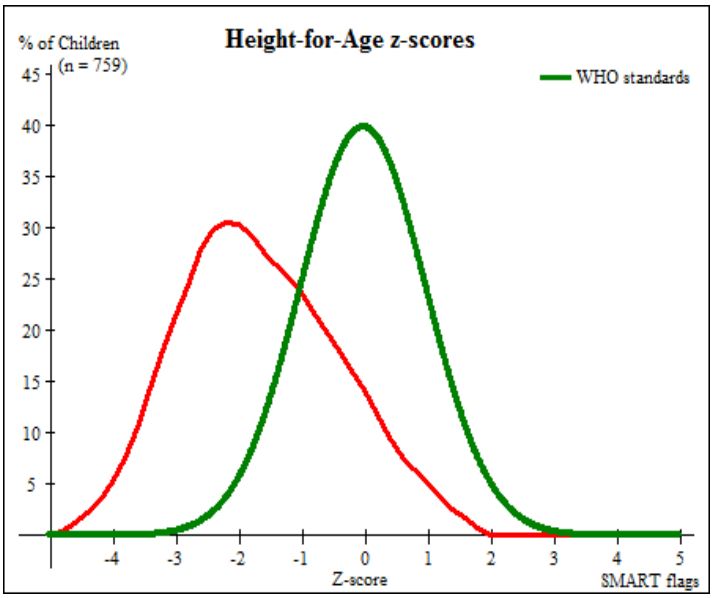


Figure 3: Gaussian distributed curve, Height for Age score

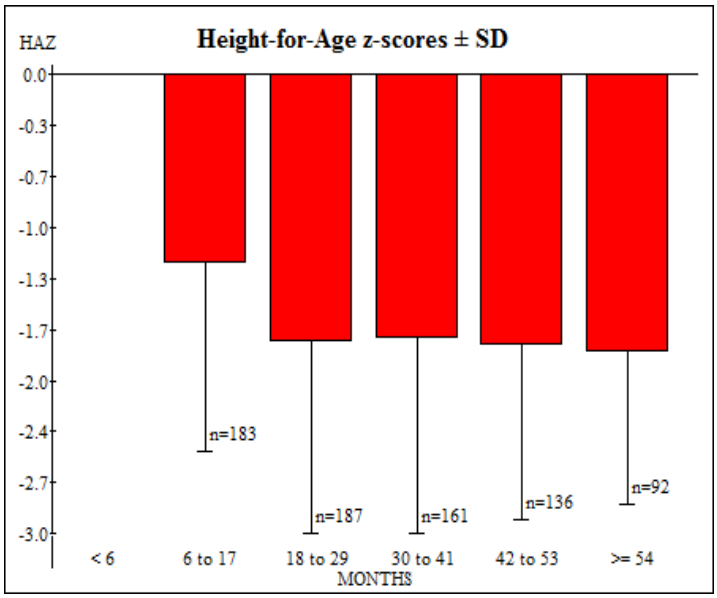


Figure 4: Trend of stunting over the age distribution

7.2. Maternal nutrition status of pregnant and lactating women

611 mothers and care takers were living in the selected households surveyed out of them 413 were found pregnant and lactating women; the survey results are presented in table below as a proportion from the total number of PLW measured using MUAC cut off 230 mm and 210 mm for moderate and < 210 mm for severe malnutrition. Focused on pregnant and lactating women, while

to classify the early stage of nutrition status for referral OPD-MAM enrolment criteria the unique cut off 230 mm is used in Afghanistan.

Table 17: Nutrition status of reproductive women based on MUAC cut off, Jawzjan SMART, and April 2017

	Frequency (N=413)	Results 95% CI
Global Acute Malnutrition MUAC<230 mm	**83**	**20.1% (16.2-24.0 95% CI)**
Moderate acute malnutrition MUAC >210 mm - <230 mm	**68**	**16.5% (12.9-20.0 95% CI)**
Sever acute malnutrition MUAC< 210 mm	**15**	**3.6% (1.8-5.4 95% CI)**

Table 18: Physiological status of women of reproductive age (15 – 49 years), (n=611), Jawzjan SMART, April 2017

Status	Frequency	%
Pregnant	108	17.7%
Lactating	305	49.9%
Non-pregnant & non-lactating	198	32.4%

Table 19: ANC visits in the last pregnancy, (N=611), Jawzjan SMART, April 2017

ANC visited by WHOM	Frequency	%
Health professional	483	79.1%
Traditional birth attendant	20	3.3%
Community health worker	3	0.5%
Relative/Friends	1	0.2%
Not visited during pregnancy	104	17.0%

Table 20: Skill birth Attendance (SBA), (N=611), Jawzjan SMART, and April 2017

		Frequency	%
Delivery at health facilities		376	61.5%
Delivery at Home	Professional staff (midwife, community midwife, Doctor and Nurse).	45	7.4%
	Non-professional staff (CHWs , TBA and relatives)	190	31.1%

7.3. Crude and U5 mortality rate

The crude and mortality rate were below the emergency thresholds, see table below mortality rate with sex and age.

Table 21: Mortality rate by age category with design effect, Jawzjan SMART, April 2017

	Crude Death Rate (95% CI)	Design Effect
'Overall	0.21 (0.11-0.41)	1.13
'Sex		
'Male	0.19 (0.08-0.44)	1.00
'Female	0.24 (0.10-0.59)	1.22
'Years		
'0-4	0.85 (0.34-2.10)	1.46
'5-11	0.00 (0.00-0.00)	1.00
'12-17	0.00 (0.00-0.00)	1.00
'18-49	0.00 (0.00-0.00)	1.00
'50-64	0.32 (0.04-2.34)	1.00
'65-120	2.92 (0.94-8.64)	1.00

7.4. Child health and immunization

In the survey morbidity data was collected among children 0-59 months with two weeks recall period to assess the prevalence of main disease. The survey finding shows that 39.6% of children

had at least one episode of illness in the 2 weeks recall prior to the survey. The major illnesses reported such as fever diarrhea and ARI as a highlighted in table below.

Table 22: Major illnesses reported among children 0-59 months, Jawzjan SMART, April 2017

Parameter	Frequency (N=826)	Results
Acute Respiratory infection (ARI)	199	24.1%
Fever	560	67.8%
Diarrhea	125	15.1%

Table 23: Immunization coverages for BCG, measles and Polio, Jawzjan SMART, April 2017

Indicators	Class	Frequency	Results
Measles (children form 9-59 months) (N= 747)	Yes by cards	542	72.6%
	Yes by recall	95	12.7%
	Both by cards and recall	637	85.3%
	No	87	11.6%
	Don't know	23	3.1%
Polio (children from 0-59 months) (N= 826)	Yes by cards	519	62.8%
	Yes by recall	217	26.3%
	Both by cards and recall	736	89.1%
	No	74	9.0%
	Don't know	16	1.9%
PENTA 3 (children from 3.5-59 months) (N=804)	Yes by cards	417	51.9%
	Yes by recall	92	11.4%
	Both by cards and recall	509	63.3%
	No	261	32.5%
	Don't know	34	4.2%
BCG (children 0-59 months (N=826)	By scar confirmation	686	83.1%

Vitamin A supplementation was quite satisfactory, deworming was significantly low. Please see table below.

Table 24: Vitamin A supplementation and Deworming for under five children, Jawzjan SMART, April 2017

Indicators	Class	Frequency	Results
Vitamin A supplementation 6-59 months (N= 788)	Yes	572	72.6%
	No	200	25.4%
	Don't know	16	2.0%
Deworming 24-59 months (N=509)	Yes	306	60.1%
	No	181	35.6%
	Don't know	22	4.3%

7.5. IYCF Indicators

Indicators for infant and young child feeding (IYCF) practices included all children 0 - 23.99 months. A total of 316 children (6-23.99 months) were included in the sample. The results are presented as percentage of the total answers available with confidence interval (See Table below).

Table 25: Infant and Young Child Feeding Practice, Jawzjan SMART, and April 2017

CORE INDICATORS	DEFINITION	n	%
Child ever breastfed (N=316)	Proportion of children who have ever received breast milk	311	98.4%
Timely initiation of breastfeeding (N=311)	Proportion of children born in the last 23 months who were put to the breast within one hour of birth	231	74.3%
Provision of colostrum within first 3 days (N=316)	Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth	297	94.0%
Still breast feeding at 1 year (N=64)	Proportion of children 12-15 months of age who are fed breast milk.	60	93.8%
Exclusive breast feeding (N=31)	Proportion of infants 0-5 months of age who are fed exclusively with breast milk.	25	80.6%
Introduction of solid, semi-solid or soft foods (N=48)	Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods.	15	31.3%

5.6. WASH Indicators

Total of 613 responders, representing 613 households and 4,308 individuals included, either male or female. The information collected from household's regarding total amount of water consumption in litter per household, excluded those water used by animals, and subsequently

organized into range of litters used. The results were then divided into the quantity of water in liters available to each household member per day; refer to figures 5 and 6 below.

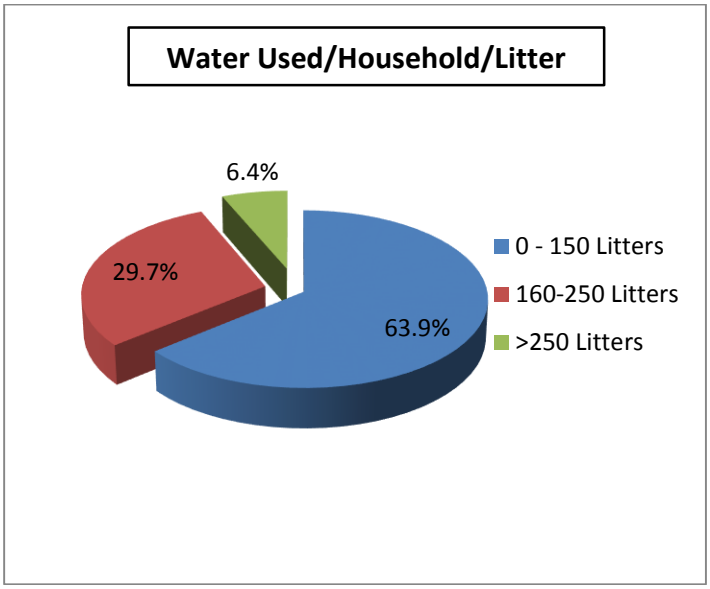


Figure 5: Percentage of household's level daily quantity Used per HH (n=613), Jawzjan SMART, April 2017

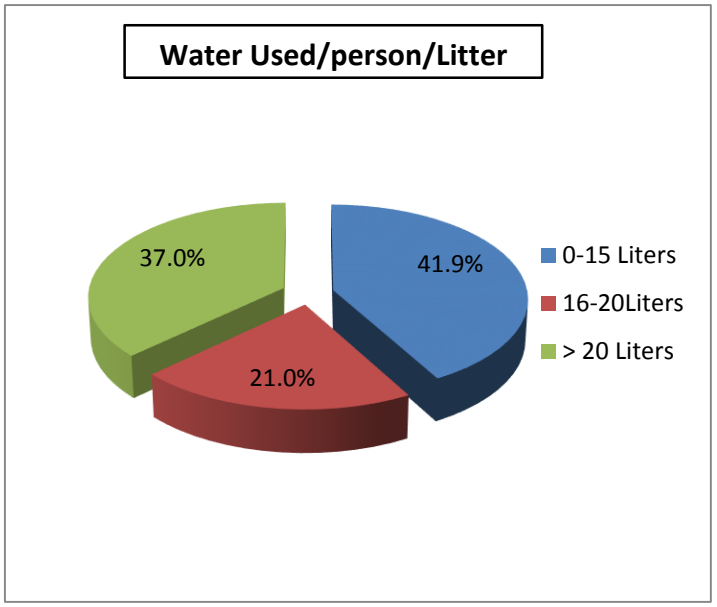


Figure 6: Percentage of access to water daily used in Liter/person/day, (n=613), Jawzjan SMART, April 2017

Table 26: Percentage of households with access to water treatment (n=544), Jawzjan SMART, and April 2017

Water treatment	Frequency	%
Boil	451	82.9%,
Chlorine	2	0.4%
Strain into the cloths	27	5.0%
Water filter	0	0.0%
Stand and settle	64	11.8%

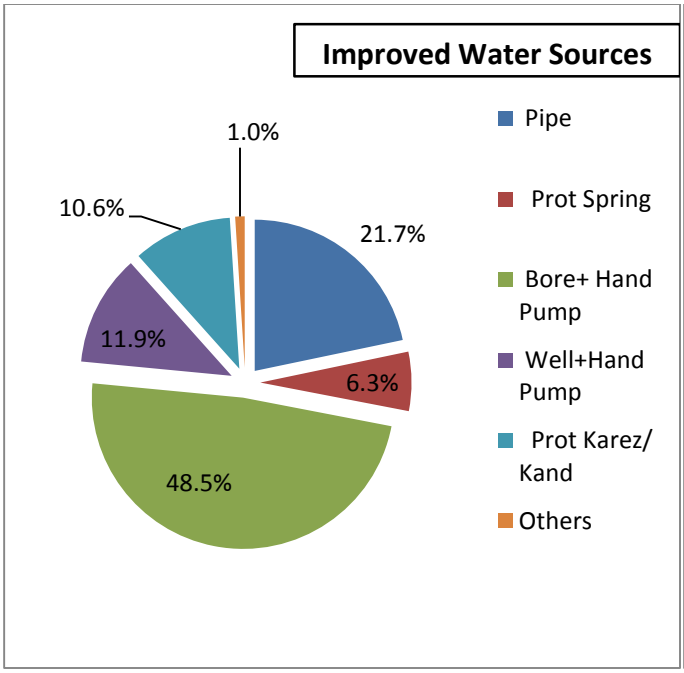


Figure 7: Household level daily improved water sources (n=396), Jawzjan SMART, April 2017

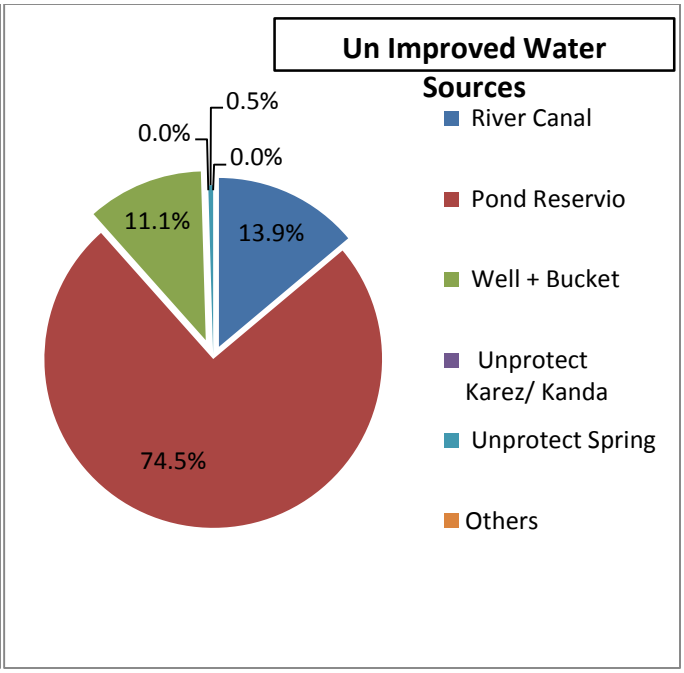


Figure 8: Households level daily unimproved water source (n =216), Jawzjan SMART, April 2017

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

Table 27: Hand washing practice, Jawzjan SMART, April 2017

Hand Washing care takers (n=611)	Frequency	%
Only water	399	65.3%
Soap/ASH with water	210	34.4%
Wash both hands	567	92.8%
Rubs hands together at least three times	465	76.1%
Dries hands hygienically by air-drying or using a clean cloth	307	50.2%

Table 28: Hand washing practice at 5 critical moments, (n=611), Jawzjan SMART, and April 2017

Response	Frequency	%
Wash hands at all 5 critical moments	371	60.7%
After Toilet/latrines	596	97.5%
After cleaning baby	485	79.4%
Before food preparation	550	90.0%
After eating	575	94.1%
Before feed child	401	65.6%

***:** This was a multiple response question; percentages don't add up to 100.
NB: As this information was largely knowledge/recall based, there is no practical verification process to know if mothers/caretakers actually practiced hand washing at all 5 critical points or if they were largely recalling times to which they were previously informed.

5.7. Food Security and Livelihood

a. Food consumption Score 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***.

[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).

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].

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

b. 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 5% of households have severely food insecurity and 11 % of households were moderately food insecurity see figure below for more details.

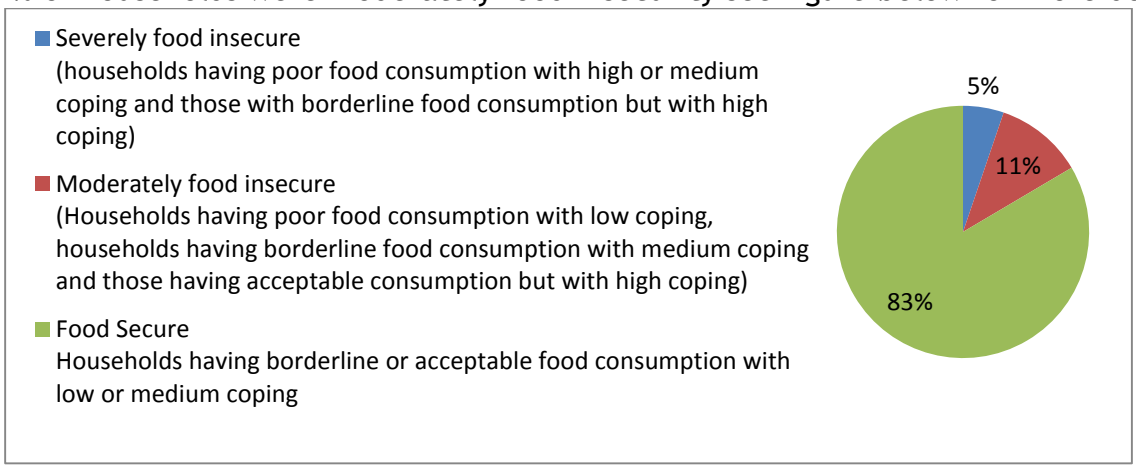


Figure 9: Food Security Situation (Based on FCS & rSCI)

c. 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 weighted as per its severity with borrowing food and altering the distribution of

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

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

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).

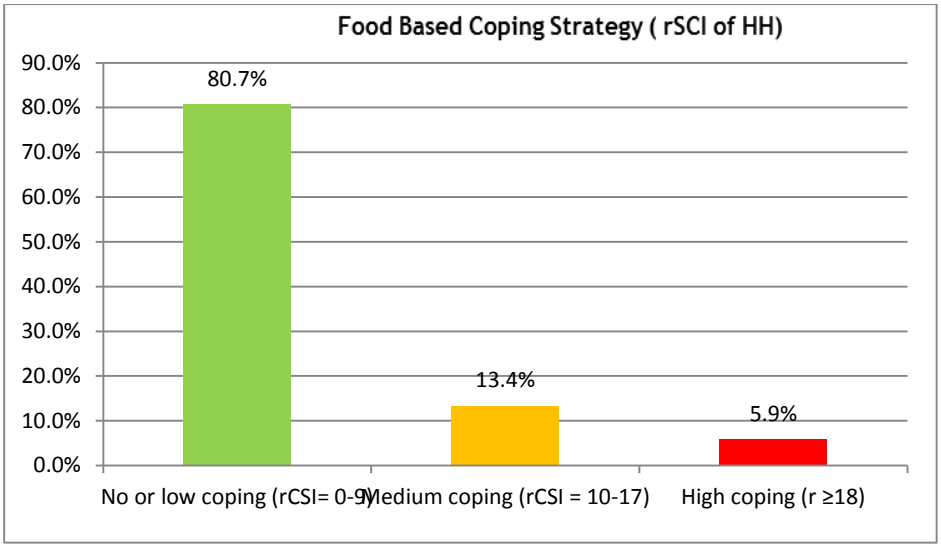
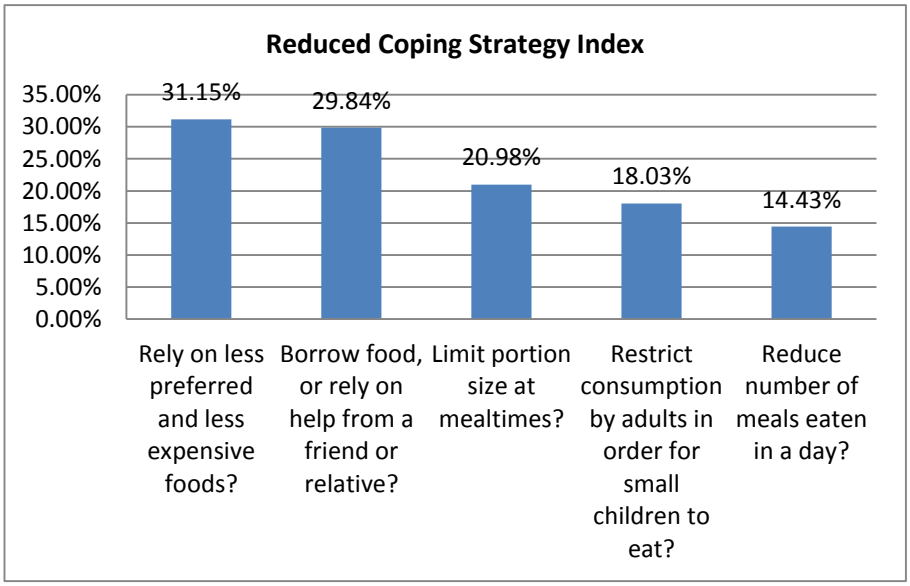


Figure 10: Reduced Coping Strategy Index, Jawzjan SMART, April 2017

6.0% of HHs with a high level of coping (rCSI ≥18 score).
13.4% of HHs with a medium level of coping (rCSI= 10-17 score).
80.6% of HHs with No or Low level coping (rCSI=0-9 score).

d. 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.

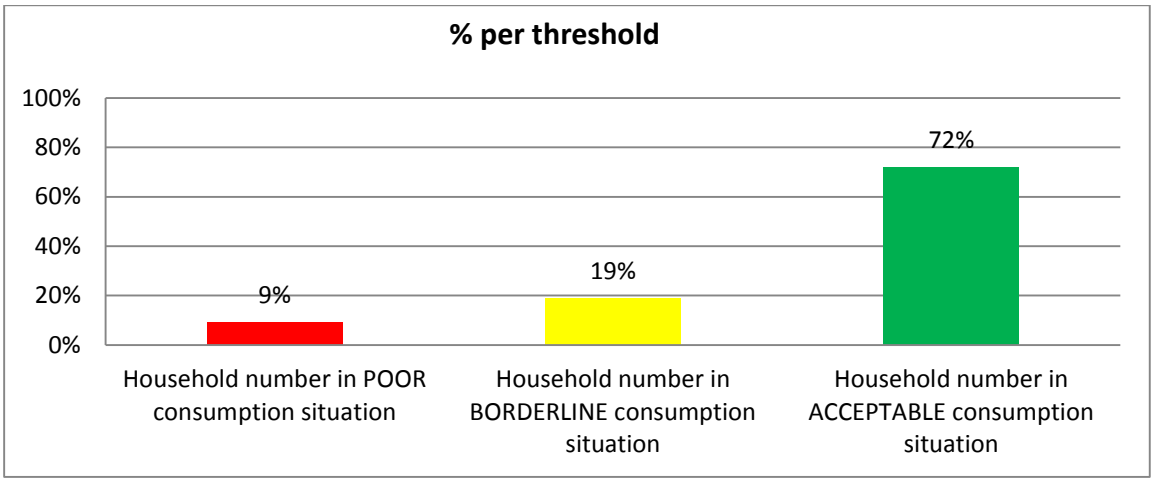


Figure 11: Food Consumption scores per HH, Jawzjan SMART, and April 2017

9.0% households surveyed have Poor consumption scores (FCS = 1.0 to 28).
19.0% households surveyed have Border line consumption scores (FCS = 28.1 to 42).
72.0% households surveyed have acceptable food consumption scores (FCS = >42.0).

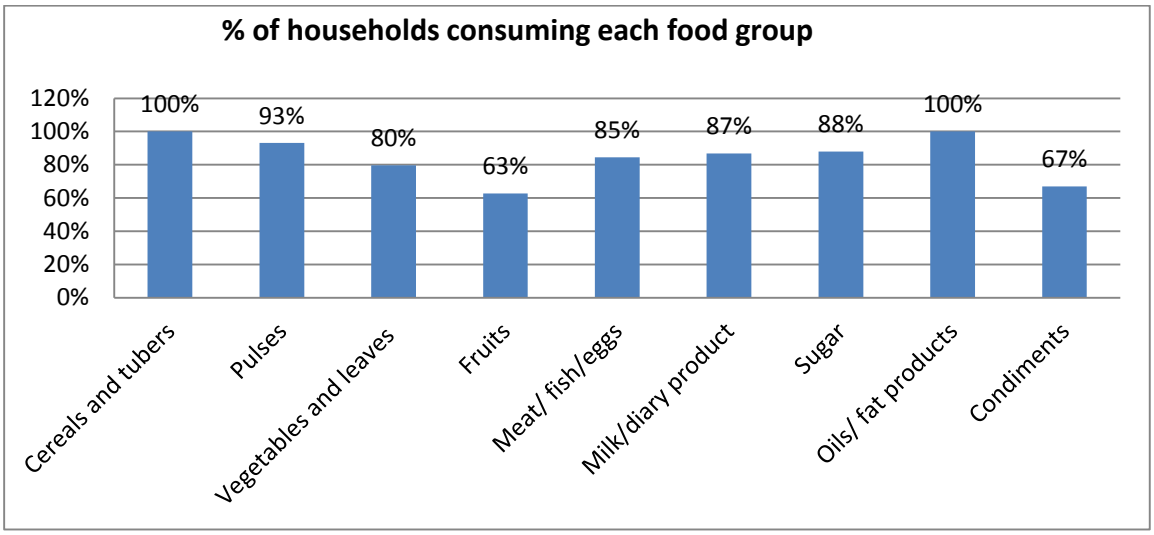


Figure 12 : Households consuming each food group, Jawzjan SMART, and April 2017

e. Food stock

Out of 641 households 613 households responded for the food stock, for more detail refer to table below;

Table 29: food stock in households level, (n=613), **Jawzjan SMART, and April 2017**

	N	%
No food stock in the households	**295**	**48.1%**
Less than a week stock in the HH	**95**	**15.5%**
Food stock in HHs from 1 to 3 weeks	**160**	**26.1%**
Food stock in HHS up to 3 months	**36**	**5.9%**
Food stock in HHs more than 3 months	**27**	**4.4%**

f. 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 30: Food main sources, Jawzjan SMART, and April 2017

	Own production	Cash	credit	Battering	Gift/ charity	Wild food	Food Aid	Total
Cereals and tubers	213	376	4	0	0	0	20	**613**
Pulses/ Nuts	22	546	6	1	0	0	0	**575**
Vegetables and leaves	115	404	0	0	0	0	0	**519**
Fruits	9	432	1	0	0	0	0	**442**
Meat/ fish/eggs	20	502	0	0	2	0	0	**524**
Milk/diary product	295	253	1	1	2	0	2	**554**
Sugar / Honey	9	544	2	2	0	0	0	**557**
Oils/ fat products	6	586	4	4	0	0	11	**611**
Condiments	5	451	1	0	0	0	0	**457**

5.8. Demography

The mortality questionnaires in SMART are designed in a way that some additional useful demography data can be withdrawn. Summery is highlighted in tables below. A total of 4308 individuals and 1490 School age children (6-18) years) were presented in the surveyed households.

Table 31: Short Summery of demography, Jawzjan SMART, and April 2017

Indicators	Value
Average households size	7
Children under five	16.6
People have Tazkera	46.3%

Table 32: school age children (6-18 years) (N=1490), Jawzjan SMART, and April 2017

Indicators		%
Attendant school in the last 4 consecutive days		78.5%
Not attendant school in the last 4 consecutive days		21.5%
Main reasons of not attendant school	**Distance**	2.1%
	Security issues	2.5%
	Parents cannot effort	1.7%
	Lack of female teachers/female friends facilities	1.9%
	Harassment	0.2%
	Others but not specified	0.5 %

5.9. Returnees

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

Table 33: percentage of Returnees and IDPs, (N=613), Jawzjan SMART, and April 2017

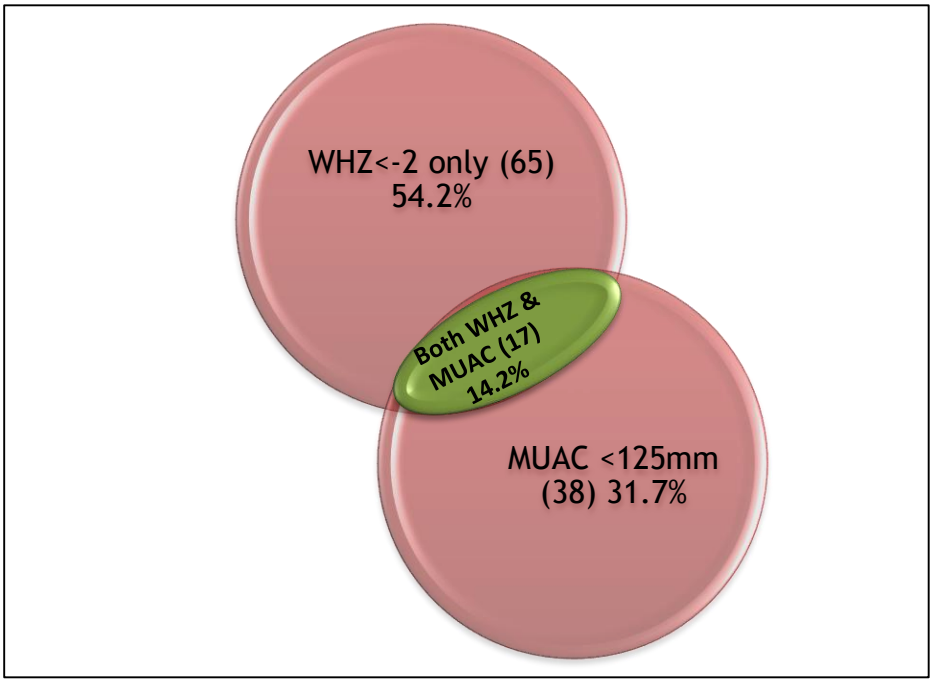
	Returnees	N	%
Residential status of Households	Permanent residential	576	94.1%
	Internal Displacement	34	5.5%
	Returnees	2	0.4%

6. DISCUSSION

6.1. Nutrition status

The survey finding show that the prevalence of Global Acute Malnutrition (GAM) based on weight for height z score (WHZ) was at 10.5% (8.0 - 13.5 95% C.I.) indicating a serious8 nutrition situation based on WHO severity classification, and the prevalence of GAM based on MUAC cut-off was 7.0 % (4.7 - 10.4 95% C.I.), SAM prevalence by WHZ and MUAC were at 2.0% (1.1 - 3.7 95% C.I.) and 1.3% (0.7 - 2.4 95% C.I.) respectively. For further analysis of the data indicated that these WHZ and MUAC rates do not refer to the same children. Figure 13 schematically proves this difference.

Figure 13: overlapping WHZ <-2 and MUAC< 125mm, Jawzjan SMART, April 2017



Only 14.2% children in the sample were detected as actually malnourished according both criteria (WHZ & MUAC & Oedema), children classified as wasted by WHZ only were 54.2% and those wasted by MUAC only were 31.7% therefore, it is likely that MUAC based community screenings are not enough to detected all actually malnourished children eligible for treatment according to the criteria specified in the Afghanistan National IMAM guidelines. In that regards, exploring innovation methods of active case findings is must.

The use of only MUAC or only WHZ based rate might lead to under estimation of case load when come to programing. Data were analyzed to get the combined WHZ/MUAC GAM and SAM rates to inform better programing in the province. Combined GAM was at 15.3% (95% CI 12.8-17.8) and combined SAM was at 3.2% (95% CI, 2.0-4.4). These rates directly classified the situation in the province as serious and need to strength the IMAM.

Chronic malnutrition trends in Jawzjan province remain worrying. The results of the present survey clearly showed that, based on WHO classification of severity of malnutrition, the overall prevalence of stunting was very high 43.6% (39.8 - 47.5 95% C.I.). Almost 1 in every 2 children included in the survey were found to be stunted, while 1 in every 5 children was underweight.

The very high stunting rates can probably chronically high prevalence of diseases (in this survey 1 in every 3 children reported ill in 2 weeks prior to survey), lack of vitamins and/or minerals in the diet (in this survey vitamin A supplementation was low (72.6%), poor deworming (in this survey deworming was found to be 60.1%), the very young age group 6-29 months already suffers by lower linear growth and can be linked with eventual premature or low birth weight babies and low maternal nutrition status. Increasing trends of stunting with the age were observed

[8] WHO severity classification for wasting : Normal <5% , Poor 5-9.9%, Serious 10-14.9% , critical >=15%

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.

7.6. Maternal nutrition status

There are no commonly accepted global standards/thresholds yet for maternal nutritional status classification using MUAC, especially in Afghanistan; the MUAC cutoff of 230 mm is used to approximately identify their status. In this survey shows 20.1% of the pregnant and lactating women suffering from malnutrition based on MUAC<230, which is high percent in the province.
The main concern was iron supplementation among pregnant women which the survey found slightly low (62.1%). The Iron supplementation prevent anemia during pregnancy and eventual life-threatening complications during pregnancy and delivery. Therefore it decreases maternal mortality, prenatal and perinatal infant loss and prematurity (that can be directly related to child stunting in the first 2 years of life).
The Iron- Folate supplementation coverages for pregnant and lactating women have to increase by usual deferent channels for that especially ANC visits in the community and health facilities levels in the BPHS and EPHS program.

7.7. Death rates

The survey showed that the Crude Mortality Rate (CMR) and under five mortality rate (U5MR) were 0.21 (0.11-0.41 95% CI) and 0.85 (0.34-2.10 95% CI) respectively. Both CMR and U5MR rates were below the WHO's emergency thresholds of 2/10,000/day and 4/10,000/day respectively.

7.8. Risk factors

Morbidity, immunization, Supplementation and deworming

Children with lack of micronutrient intake and mal-absorption can surfer serous lifelong repercussion. The cases of vitamins and minerals deficiency are multiple and interconnected. The basic deficiency is related to diet, where poor people are highly affected as they do not consumption of the reach foods. Varied diets would resolve most vitamins and minerals deficiency which is complex and achieved in long –term as it goes with development and practice changes. However, many lives can be saved and improved through a range of cost effective intervention, among which supplementation is one method to take this problems. Improving the Vitamin A status of deficient children through supplementation enhances their resistance to disease and can significantly reduce mortality, therefore it can be considered as a central element of the child survival program.

The proportion of all children aged 6-59 months who had received vitamin A in the last 6 months of prior was 72.6 % which is lower than recommended WHO SPHERE and compared to the WHO target of 80%.

Worm infection in children caused of mal- absorption which can aggravate malnutrition and anemia rates and contribute to retarded growth, child morbidity and mortality. Deworming is

recommended for children from 24 to 59 months of age as children in this age group are considered as a potential risk of acquiring the disease. As deworming also helps to enhance the iron status of children which eventually helps children to exercise their intellectual ability to the fullest. The proportion of all children aged 24-59 months who had received deworming in the last 6 month of prior was 60.1 % and need to >90 % of deworming coverages.

It important to note the child immunization system also contributes malnutrition rate, morbidity and mortality rates. The survey shows the immunization coverage of BCG was 83.1%, measles immunization coverages both by recall and card confirmation was 85.3, polio immunization coverages both by card and recall was 89.1% and PENTA 3 immunization coverages was 63.3% and compared to national target 90 % was low coverages of immunization also contributed to increase morbidity and mortality rates.

7. CONCLUSION

The Nutrition and SMART was conducted in Jawzjan province between 28th March to 16th April 2017. The prevalence of global acute malnutrition (GAM) based on weight-for-height z-score was at 10.5% (8.0-13.5 95% CI) indicating serious nutrition sistaution based on WHO classification, prevalnce of GAM based on MUAC was a 7.0% (.7-10.4 95% CI) considered. SAM prevalence by WHZ and MUAC cutt of were 2.0% (1.1- 3.7 95% CI) and 1.3% (0.7- 2.4 95% CI).

This is notable that cased of child morbidity is high in the Jawzjan province ; in each 3 children one was repoted ill and has one episoid of diarrhea, Aacute respiratory infection of fever.

For programing and caseload it imprtant to have overall combined by both cretira (WHZ and MUAC) rate of children likely to be eligible for MAM and SAM mangement increases to 15.3% (95% CI 12.8-17.8) and 3.2% (95% CI, 2.0-4.4) respectvely. It is recomended ot use combine rate for estimation of GAM and SAM in the province.

Stunting prevalence in Jawzjan province can be considered to very high with high udnerwright. Although poor micronutirint supplementation and dewarming, low matenral nutrition status, low safe drinkign water espicially in the summer season , most of the poeple do not have access to the water sanitation and hyegeins as observed in the province that need to be addressed if not can contribute to increase the level of chronic malnutrition. The fact that chronic malnutrition isn not given the attention in the healt facilities could be agravate the sitaution in the provice. Curnetly there is no guilines in the country on how to address chronic malnutrition and need to involve the multi sectors(agiculture, WASH, food secuirty and etc..) for reducing chronic malnutrition.

In the Afghanisan for maternal nutrition status useing MUAC cutoff for pregnant and lactating women of 230 mm to proximately identify their nutrition status. This nutrtion and mortality SMART survey showed for PLWs nutrition status was at 20.1 % (16.2-24.0 95 % CI) while SAM was 3, which suggest that considerable for PLWs the province are likely to have low nutrition status. The main conern was iron folate supplementaion to prevent the anemia during pregnancy can contribute life-threating complication during the dilevery if not addressed. It decrease maternal

mortality,prenatal infant loss and premaurity which can be direclty realted to child stunting in teh first 2 years of life.

Nutrition and mortality SMART survey showed that teh crude Death Rate (CDR) and Underfive Death Rates were at 0.21/10,000/day and 0.85 /10,000/ day. Both rates were below as WHO emergency thershould of 2/10,000/day and 4/10,000/day respecectively.

In the cunclusion, the Jawzjan nutrtion and mortality SMART survey findgs shows there is seriuos situation of malnutrition in the province and need to strenght the curent IMAM program.

8. LIMITATION OF THE SURVEY

- Security problem in the province especially in Durzab and Qushtap districts could not have direct supervisions from the teams.
- Harsh geographical situation in Durzab and Qushta pa Districts and the team could not carried the daily data to the sub office for daily feedbacks only anthropometric data was received by phone for daily feedbacks.

9. RECOMMENDATION

9.1. Under nutrition

- Strengthen of implementing integrated management of acute malnutrition (IMAM) program.
- To strengthen of community case findings and referral system through community health workers
- Increasing health education and awareness on malnutrition at community and health facilities level.
- Provision of TSFP services in the health facilities level (BHCs, CHCs and DH level through prevention of MAM program can reduced SAM cases.
- To strengthen of IYCF and food demonstration through health facilities and community level.

9.2. Health and immunization

- Strengthen of outreach and mobile serveries to increase access of community to EPI.
- To promote health education on Health seeking behaviour and hand washing practice.
- Reduce infections by educating households on proper care and hygiene practices and improving health seeking behavior for management of children's infections.

9.3. Maternal nutrition status

- Promotion of health education on food diversity in household's level.
- Increase awareness regarding utilization micronutrients rich food through community health workers in the community.
- Strengthen of iron folate supplementation at health facilities level.

9.4. WASH

- Education of community on water treatment and linked to safe water. This will have wave effect at the community.
- Support of improvement of unsafe water sources to provide safe water.
- Exploration of ways to increase water access and availability in communities.
- Ensure access to safe drinking water through WASH interventions that are sustainable and easy to maintain to address low water access rates in rural areas
- Intervention programmers for improving water, sanitation and hygiene practices including health education to educate the community on domestic treatment of drinking water
- Integrate key hygiene actions (safe drinking water, hand-washing practice with soap, safe disposal of excreta, and food hygiene) as essential components in all targeted nutrition programs.

10. ANNEXES

Annex 1: Plausibility check for: Jawzjan SMART, April 2017

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

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.497)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**2** (p=0.051)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (6)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (9)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (9)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.				and	and	and	or
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**5** (1.15)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (-0.21)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (-0.24)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**1** (p=0.031)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**14** %

The overall score of this survey is 14 %, this is good.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 7 %

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=8/ID=1: HAZ (1.483), Age may be incorrect
Line=10/ID=1: HAZ (2.042), Age may be incorrect
Line=145/ID=3: HAZ (1.478), Age may be incorrect
Line=151/ID=1: HAZ (1.616), Age may be incorrect
Line=155/ID=2: HAZ (1.485), Age may be incorrect
Line=157/ID=1: HAZ (2.872), Age may be incorrect
Line=158/ID=1: HAZ (2.883), Age may be incorrect
Line=159/ID=3: HAZ (1.945), Height may be incorrect
Line=160/ID=2: HAZ (1.789), Age may be incorrect
Line=170/ID=1: HAZ (2.001), Age may be incorrect
Line=171/ID=1: HAZ (2.681), Age may be incorrect
Line=204/ID=1: HAZ (1.441), Height may be incorrect
Line=205/ID=4: WAZ (1.844), Weight may be incorrect
Line=269/ID=1: HAZ (1.512), Age may be incorrect
Line=278/ID=2: HAZ (1.430), Age may be incorrect
Line=346/ID=1: HAZ (1.638), Age may be incorrect
Line=347/ID=1: HAZ (-5.350), Age may be incorrect
Line=378/ID=1: HAZ (1.519), Height may be incorrect
Line=416/ID=3: HAZ (1.555), Height may be incorrect
Line=424/ID=3: HAZ (-5.460), Height may be incorrect
Line=431/ID=2: HAZ (-5.567), Age may be incorrect
Line=463/ID=3: HAZ (3.201), Age may be incorrect
Line=485/ID=1: HAZ (1.424), Height may be incorrect
Line=682/ID=1: HAZ (-4.897), Age may be incorrect
Line=689/ID=2: HAZ (1.644), Age may be incorrect
Line=721/ID=1: HAZ (1.456), Age may be incorrect

Percentage of values flagged with SMART flags:WHZ: 0.0 %, HAZ: 3.2 %, WAZ: 0.1 %

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: 0.98 (The value should be around 0.85).:
p-value = 0.051 (as expected)

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

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	97/93.0 (1.0)	95/88.6 (1.1)	192/181.7 (1.1)	1.02
18 to 29	12	107/90.7 (1.2)	88/86.4 (1.0)	195/177.1 (1.1)	1.22
30 to 41	12	81/87.9 (0.9)	86/83.8 (1.0)	167/171.7 (1.0)	0.94
42 to 53	12	65/86.5 (0.8)	72/82.4 (0.9)	137/169.0 (0.8)	0.90

54 to 59 6 51/42.8 (1.2) 41/40.8 (1.0) 92/83.6 (1.1) 1.24
---
6 to 59 54 401/391.5 (1.0) 382/391.5 (1.0) 1.05

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

Overall sex ratio: p-value = 0.497 (boys and girls equally represented)
Overall age distribution: p-value = 0.052 (as expected)
Overall age distribution for boys: p-value = 0.032 (significant difference)
Overall age distribution for girls: p-value = 0.760 (as expected)
Overall sex/age distribution: p-value = 0.011 (significant difference)

Digit preference Weight:

Digit .0 : ##################################
Digit .1 : ##
Digit .2 : ##
Digit .3 : ######################################
Digit .4 : ################################
Digit .5 : ################################
Digit .6 : ##
Digit .7 : ######################################
Digit .8 : ##############################
Digit .9 : ##

Digit preference score: **6** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.007 (significant difference)

Digit preference Height:

Digit .0 : ##
Digit .1 : ################################
Digit .2 : ##
Digit .3 : ##
Digit .4 : ##############################
Digit .5 : ##
Digit .6 : ##########################
Digit .7 : ################################
Digit .8 : ##############################
Digit .9 : ##############################

Digit preference score: **9** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.000 (significant difference)

Digit preference MUAC:

Digit .0 : ##
Digit .1 : ######################################
Digit .2 : ##

Digit .3 : ##
Digit .4 : ##
Digit .5 : ##
Digit .6 : ##############################
Digit .7 : ##############################
Digit .8 : ########################
Digit .9 : ########################

Digit preference score: **9** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.000 (significant difference)

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

.	**no exclusion**	**exclusion from reference mean (WHO flags)**	**exclusion from observed mean (SMART flags)**
WHZ			
Standard Deviation SD:	1.15	1.15	1.15
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	10.5%	10.5%	10.5%
calculated with current SD:	8.8%	8.8%	8.8%
calculated with a SD of 1:	5.9%	5.9%	5.9%
HAZ			
Standard Deviation SD:	1.37	1.37	1.24
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	42.8%	42.8%	43.7%
calculated with current SD:	37.9%	37.9%	39.0%
calculated with a SD of 1:	33.6%	33.6%	36.4%
WAZ			
Standard Deviation SD:	1.02	1.02	1.01
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	20.7%	20.7%	20.7%
calculated with current SD:	21.4%	21.4%	21.4%
calculated with a SD of 1:	21.0%	21.0%	21.1%

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

WHZ	p= 0.000	p= 0.000	p= 0.000
HAZ	p= 0.000	p= 0.000	p= 0.000
WAZ	p= 0.116	p= 0.116	p= 0.115

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

distributed)

Skewness

WHZ	-0.21	-0.21	-0.21
HAZ	0.40	0.40	0.26
WAZ	0.03	0.03	0.01

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

Kurtosis

WHZ	-0.24	-0.24	-0.24
HAZ	0.11	0.11	-0.50
WAZ	-0.08	-0.08	-0.12

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=1.42 (p=0.031)
WHZ < -3: ID=1.32 (p=0.070)
GAM: ID=1.42 (p=0.031)
SAM: ID=1.32 (p=0.070)
HAZ < -2: ID=1.22 (p=0.140)
HAZ < -3: ID=1.07 (p=0.349)
WAZ < -2: ID=1.13 (p=0.250)
WAZ < -3: ID=1.25 (p=0.119)

Subjects with SMART flags are excluded from this analysis.

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

in GAM and SAM estimates.

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

```
Time                                    SD for WHZ
point            0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.93 (n=48, f=0)  ######
02: 1.26 (n=47, f=0)  ##################
03: 1.01 (n=45, f=0)  #########
04: 0.97 (n=45, f=0)  #######
05: 1.05 (n=47, f=0)  ##########
06: 1.07 (n=44, f=0)  ###########
07: 1.16 (n=44, f=0)  ###############
08: 1.38 (n=45, f=0)  ########################
09: 1.33 (n=44, f=0)  ######################
10: 1.24 (n=40, f=0)  ################
11: 1.24 (n=42, f=0)  ################
12: 1.27 (n=38, f=0)  ##################
13: 1.13 (n=34, f=0)  ##############
14: 1.27 (n=31, f=0)  ##################
15: 1.11 (n=30, f=0)  #############
16: 1.32 (n=30, f=0)  ######################
17: 0.89 (n=23, f=0)  ####
18: 1.00 (n=22, f=0)  #########
19: 1.20 (n=16, f=0)  OOOOOOOOOOOOOOOO
20: 0.76 (n=15, f=0)
21: 0.97 (n=15, f=0)  OOOOOOO
22: 1.23 (n=09, f=0)  ~~~~~~~~~~~~~~~~~~
23: 1.27 (n=09, f=0)  ~~~~~~~~~~~~~~~~~~~
24: 1.40 (n=06, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~
25: 1.13 (n=04, f=0)  ~~~~~~~~~~~~~~
26: 1.33 (n=04, f=0)  ~~~~~~~~~~~~~~~~~~~~~~
27: 0.48 (n=02, f=0)
28: 0.70 (n=02, f=0)
29: 0.87 (n=02, f=0)  ~~~
```

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

different time points)

Analysis by Team

Team	**1**	**2**	**3**	**4**	**5**	**6**
n =	123	135	133	127	196	69
Percentage of values flagged with SMART flags:						
WHZ:	0.0	0.0	0.0	0.0	0.0	0.0
HAZ:	7.3	1.5	3.0	5.5	1.5	0.0
WAZ:	0.0	0.0	0.0	0.8	0.0	0.0
Age ratio of 6-29 months to 30-59 months:						
	1.20	0.65	1.18	0.92	0.87	1.65
Sex ratio (male/female):						
	1.28	0.90	1.02	0.98	1.13	0.97
Digit preference Weight (%):						
.0 :	11	13	5	3	13	7
.1 :	15	10	12	26	10	14
.2 :	11	4	19	15	7	17
.3 :	7	13	5	8	11	17
.4 :	11	7	9	3	12	9
.5 :	11	8	10	9	7	9
.6 :	9	9	13	14	10	4
.7 :	12	13	10	7	10	6
.8 :	4	10	10	5	9	6
.9 :	8	14	8	10	11	10
DPS:	10	10	13	22	6	15
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Digit preference Height (%):						
.0 :	16	18	10	6	27	6
.1 :	4	7	14	12	9	4
.2 :	16	13	12	15	11	19
.3 :	10	15	5	11	11	17
.4 :	8	9	7	6	10	4
.5 :	11	16	10	11	8	17
.6 :	6	4	10	7	9	4
.7 :	14	5	9	13	5	6
.8 :	11	6	13	8	5	9
.9 :	4	8	11	11	5	13
DPS:	14	15	8	9	20	19
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Digit preference MUAC (%):						
.0 :	43	14	4	1	16	3
.1 :	9	10	11	18	6	9
.2 :	10	8	12	15	12	41
.3 :	4	8	8	13	16	13
.4 :	5	13	11	12	11	12
.5 :	18	15	14	11	10	3
.6 :	4	10	8	6	11	1
.7 :	4	5	4	16	12	3
.8 :	2	3	20	2	3	9

.9 :	1	14	8	7	3	7
DPS:	40	13	15	19	15	36

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

Standard deviation of WHZ:

SD	1.12	1.14	1.15	1.13	1.04	1.54

Prevalence (< -2) observed:

%	13.0	11.1	10.5	6.3	8.2	18.8

Prevalence (< -2) calculated with current SD:

%	9.0	8.6	9.8	5.7	6.7	17.5

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

%	6.7	6.0	6.8	3.7	6.0	7.5

Standard deviation of HAZ:

SD	1.54	1.25	1.41	1.51	1.24	1.24

observed:

%	40.7	44.4	40.6	40.9	41.8	53.6

calculated with current SD:

%	31.9	43.2	36.2	39.0	37.4	43.5

calculated with a SD of 1:

%	23.5	41.6	30.8	33.6	34.4	41.9

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	16/16.0 (1.0)	9/12.5 (0.7)	25/28.5 (0.9)	1.78
18 to 29	12	22/15.6 (1.4)	20/12.2 (1.6)	42/27.8 (1.5)	1.10
30 to 41	12	16/15.1 (1.1)	14/11.8 (1.2)	30/27.0 (1.1)	1.14
42 to 53	12	12/14.9 (0.8)	9/11.7 (0.8)	21/26.5 (0.8)	1.33
54 to 59	6	3/7.4 (0.4)	2/5.8 (0.3)	5/13.1 (0.4)	1.50
6 to 59	54	69/61.5 (1.1)	54/61.5 (0.9)		1.28

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

Overall sex ratio: p-value = 0.176 (boys and girls equally represented)
Overall age distribution: p-value = 0.007 (significant difference)
Overall age distribution for boys: p-value = 0.213 (as expected)
Overall age distribution for girls: p-value = 0.052 (as expected)
Overall sex/age distribution: p-value = 0.002 (significant difference)

Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	12/14.8 (0.8)	17/16.5 (1.0)	29/31.3 (0.9)	0.71
18 to 29	12	13/14.5 (0.9)	11/16.1 (0.7)	24/30.5 (0.8)	1.18
30 to 41	12	11/14.0 (0.8)	11/15.6 (0.7)	22/29.6 (0.7)	1.00
42 to 53	12	14/13.8 (1.0)	16/15.3 (1.0)	30/29.1 (1.0)	0.88
54 to 59	6	14/6.8 (2.0)	16/7.6 (2.1)	30/14.4 (2.1)	0.88

6 to 59	54	64/67.5 (0.9)	71/67.5 (1.1)	0.90

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

Overall sex ratio: p-value = 0.547 (boys and girls equally represented)
Overall age distribution: p-value = 0.000 (significant difference)
Overall age distribution for boys: p-value = 0.064 (as expected)
Overall age distribution for girls: p-value = 0.015 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Team 3:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	22/15.5 (1.4)	19/15.3 (1.2)	41/30.9 (1.3)	1.16
18 to 29	12	17/15.2 (1.1)	14/14.9 (0.9)	31/30.1 (1.0)	1.21
30 to 41	12	10/14.7 (0.7)	17/14.5 (1.2)	27/29.2 (0.9)	0.59
42 to 53	12	13/14.5 (0.9)	13/14.2 (0.9)	26/28.7 (0.9)	1.00
54 to 59	6	5/7.2 (0.7)	3/7.0 (0.4)	8/14.2 (0.6)	1.67
6 to 59	54	67/66.5 (1.0)	66/66.5 (1.0)		1.02

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

Overall sex ratio: p-value = 0.931 (boys and girls equally represented)
Overall age distribution: p-value = 0.166 (as expected)
Overall age distribution for boys: p-value = 0.268 (as expected)
Overall age distribution for girls: p-value = 0.431 (as expected)
Overall sex/age distribution: p-value = 0.060 (as expected)

Team 4:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	17/14.6 (1.2)	15/14.8 (1.0)	32/29.5 (1.1)	1.13
18 to 29	12	14/14.3 (1.0)	15/14.5 (1.0)	29/28.7 (1.0)	0.93
30 to 41	12	20/13.8 (1.4)	19/14.0 (1.4)	39/27.8 (1.4)	1.05
42 to 53	12	10/13.6 (0.7)	14/13.8 (1.0)	24/27.4 (0.9)	0.71
54 to 59	6	2/6.7 (0.3)	1/6.8 (0.1)	3/13.6 (0.2)	2.00
6 to 59	54	63/63.5 (1.0)	64/63.5 (1.0)		0.98

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

Overall sex ratio: p-value = 0.929 (boys and girls equally represented)
Overall age distribution: p-value = 0.010 (significant difference)
Overall age distribution for boys: p-value = 0.115 (as expected)
Overall age distribution for girls: p-value = 0.149 (as expected)
Overall sex/age distribution: p-value = 0.007 (significant difference)

Team 5:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	23/24.1 (1.0)	22/21.3 (1.0)	45/45.5 (1.0)	1.05
18 to 29	12	26/23.5 (1.1)	20/20.8 (1.0)	46/44.3 (1.0)	1.30
30 to 41	12	17/22.8 (0.7)	18/20.2 (0.9)	35/43.0 (0.8)	0.94
42 to 53	12	11/22.4 (0.5)	15/19.9 (0.8)	26/42.3 (0.6)	0.73
54 to 59	6	27/11.1 (2.4)	17/9.8 (1.7)	44/20.9 (2.1)	1.59
6 to 59	54	104/98.0 (1.1)	92/98.0 (0.9)		1.13

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

Overall sex ratio: p-value = 0.391 (boys and girls equally represented)
Overall age distribution: p-value = 0.000 (significant difference)
Overall age distribution for boys: p-value = 0.000 (significant difference)
Overall age distribution for girls: p-value = 0.151 (as expected)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Team 6:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	7/7.9 (0.9)	13/8.1 (1.6)	20/16.0 (1.2)	0.54
18 to 29	12	15/7.7 (2.0)	8/7.9 (1.0)	23/15.6 (1.5)	1.88
30 to 41	12	7/7.5 (0.9)	7/7.7 (0.9)	14/15.1 (0.9)	1.00
42 to 53	12	5/7.3 (0.7)	5/7.6 (0.7)	10/14.9 (0.7)	1.00
54 to 59	6	0/3.6 (0.0)	2/3.7 (0.5)	2/7.4 (0.3)	0.00
6 to 59	54	34/34.5 (1.0)	35/34.5 (1.0)		0.97

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

Overall sex ratio: p-value = 0.904 (boys and girls equally represented)
Overall age distribution: p-value = 0.039 (significant difference)
Overall age distribution for boys: p-value = 0.022 (significant difference)
Overall age distribution for girls: p-value = 0.324 (as expected)
Overall sex/age distribution: p-value = 0.003 (significant difference)

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

measurement is made).

Team: 1

Time SD for WHZ
point 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.79 (n=08, f=0)
02: 1.07 (n=08, f=0) ##########
03: 0.97 (n=08, f=0) #######
04: 0.54 (n=08, f=0)
05: 0.62 (n=08, f=0)
06: 0.98 (n=08, f=0) #######
07: 1.31 (n=08, f=0) ####################
08: 0.70 (n=08, f=0)
09: 1.12 (n=08, f=0) ##############
10: 1.19 (n=08, f=0) ################
11: 1.33 (n=08, f=0) ######################
12: 0.95 (n=08, f=0) ######
13: 1.36 (n=06, f=0) ########################
14: 0.90 (n=04, f=0) ####
15: 1.30 (n=04, f=0) ####################
16: 0.08 (n=03, f=0)

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

different time points)

Team: 2

```
Time                                    SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.75 (n=09, f=0)
02: 1.35 (n=08, f=0)  ########################
03: 0.81 (n=08, f=0)
04: 1.42 (n=08, f=0)  ############################
05: 0.73 (n=08, f=0)
06: 1.17 (n=07, f=0)  ###############
07: 1.25 (n=08, f=0)  ##################
08: 1.55 (n=08, f=0)  ##############################
09: 1.30 (n=08, f=0)  ####################
10: 0.77 (n=07, f=0)
11: 1.05 (n=08, f=0)  ##########
12: 1.66 (n=08, f=0)  ####################################
13: 1.45 (n=06, f=0)  ############################
14: 1.15 (n=06, f=0)  ###############
15: 0.74 (n=06, f=0)
16: 1.12 (n=06, f=0)  #############
17: 0.66 (n=05, f=0)
18: 0.61 (n=05, f=0)
19: 2.03 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
20: 0.42 (n=02, f=0)
21: 1.33 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~
```

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

different time points)

Team: 3

```
Time                                    SD for WHZ
point          0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.79 (n=08, f=0)
02: 1.32 (n=08, f=0)  ######################
03: 1.01 (n=07, f=0)  #########
04: 1.18 (n=07, f=0)  ################
05: 0.86 (n=07, f=0)  ##
06: 1.27 (n=08, f=0)  ###################
07: 1.04 (n=06, f=0)  ##########
08: 1.37 (n=08, f=0)  ########################
09: 1.35 (n=08, f=0)  ########################
10: 1.19 (n=07, f=0)  ################
11: 1.41 (n=08, f=0)  ##########################
12: 0.93 (n=06, f=0)  #####
13: 1.03 (n=08, f=0)  ##########
14: 0.89 (n=08, f=0)  ####
15: 1.23 (n=08, f=0)  ##################
16: 1.55 (n=08, f=0)  ################################
17: 1.35 (n=04, f=0)  OOOOOOOOOOOOOOOOOOOOO
18: 0.58 (n=03, f=0)
19: 1.83 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
20: 0.20 (n=02, f=0)
21: 0.01 (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: 1.02 (n=08, f=0)  #########
02: 0.61 (n=08, f=0)
03: 0.70 (n=07, f=0)
04: 1.01 (n=08, f=0) #########
05: 0.85 (n=08, f=0) ##
06: 0.61 (n=07, f=0)
07: 1.18 (n=07, f=0)  ################
08: 1.52 (n=07, f=0)  ##############################
09: 1.26 (n=08, f=0)  ###################
10: 0.94 (n=07, f=0)  ######
11: 0.96 (n=07, f=0)  #######
12: 1.22 (n=06, f=0)  ##################
13: 1.15 (n=05, f=0)  ###############
14: 1.15 (n=04, f=0)  OOOOOOOOOOOOOO
15: 1.42 (n=05, f=0)  ##########################
16: 1.52 (n=05, f=0)  ##############################
17: 1.35 (n=05, f=0)  ######################
18: 1.20 (n=05, f=0)  #################
19: 1.00 (n=03, f=0)  OOOOOOOOO
20: 0.47 (n=02, f=0)
21: 0.55 (n=02, f=0)
23: 1.04 (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: 0.65 (n=08, f=0)
02: 1.29 (n=08, f=0)  ####################
03: 1.24 (n=08, f=0)  ###################
04: 0.57 (n=08, f=0)
05: 1.12 (n=08, f=0)  ############
06: 0.83 (n=08, f=0)  #
07: 1.26 (n=08, f=0)  ##################
08: 1.45 (n=08, f=0)  ##########################
09: 1.32 (n=07, f=0)  ######################
10: 0.86 (n=08, f=0)  ##
11: 1.22 (n=08, f=0)  ##################
12: 1.01 (n=08, f=0)  #########
13: 1.07 (n=08, f=0)  ##########
14: 1.35 (n=08, f=0)  ########################
15: 0.72 (n=07, f=0)
16: 1.03 (n=08, f=0)  ##########
17: 0.52 (n=08, f=0)
18: 1.14 (n=08, f=0)  ##############
19: 0.80 (n=08, f=0)
20: 0.53 (n=08, f=0)
21: 0.79 (n=08, f=0)
22: 1.31 (n=08, f=0)  ######################
23: 1.27 (n=06, f=0)  ####################
24: 0.94 (n=04, f=0)  OOOOOO
25: 1.32 (n=03, f=0)  OOOOOOOOOOOOOOOOOOOOO
26: 1.17 (n=03, f=0)  OOOOOOOOOOOOOO
27: 0.48 (n=02, f=0)
28: 0.70 (n=02, f=0)
29: 0.87 (n=02, f=0)  ~~~
```

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

different time points)

Team: 6

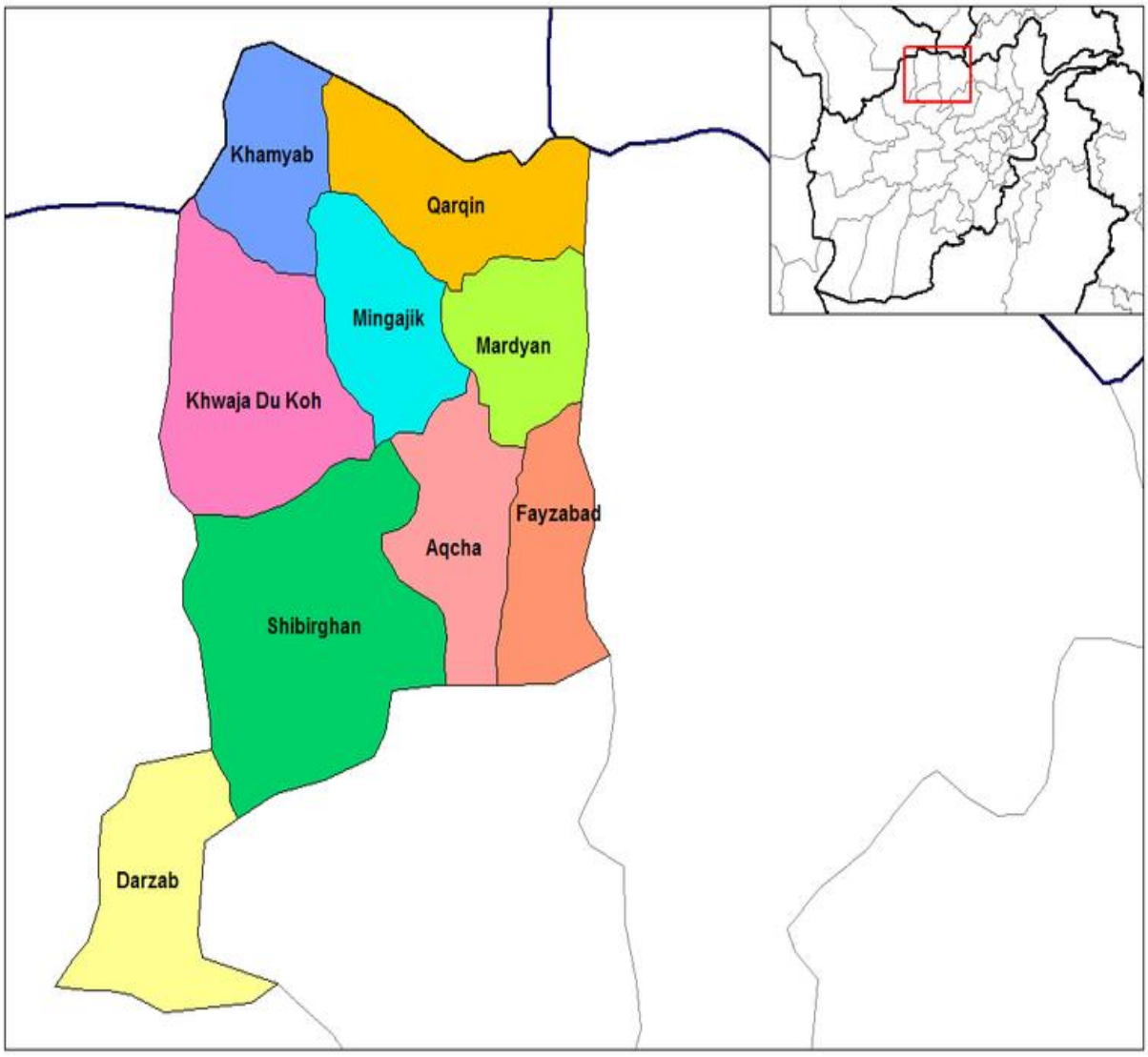
```
Time                                    SD for WHZ
point            0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.95 (n=08, f=0)  ######
02: 1.37 (n=07, f=0)  ########################
03: 1.29 (n=07, f=0)  ####################
04: 1.04 (n=06, f=0)  ##########
05: 1.29 (n=08, f=0)  ####################
06: 1.45 (n=06, f=0)  ############################
07: 1.26 (n=07, f=0)  ##################
08: 1.87 (n=06, f=0)  ##############################################
09: 1.77 (n=04, f=0)  ##########################################
10: 0.01 (n=03, f=0)
11: 0.82 (n=03, f=0)  O
12: 3.86 (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: Jawzjan Physical Map



Annex 3: Event calendar

نام ماه	ماه	1391	ماه	1392	ماه	1393	ماه	1394	ماه	1395	ماه	1396
حمل		نوروز . وقت شگوفه درختان . جشن دهقان . شروع مکاتب. قوزی قرن . میله گل سرخ . جندا بالا . سمارق . هفت میوه . ۹ و نیم روز. ۱۳ بدل .گل سنجت	49	نوروز . وقت شگوفه درختان . جشن دهقان . شروع مکاتب. قوزی قرن . میله گل سرخ . جندا بالا . سمارق . هفت میوه . ۹ و نیم روز. ۱۳ بدل .گل سنجت	37	نوروز . وقت شگوفه درختان . جشن دهقان . شروع مکاتب. قوزی قرن . میله گل سرخ . جندا بالا . سمارق . هفت میوه . ۹ و نیم روز. ۱۳ بدل .گل سنجت	25	نوروز . وقت شگوفه درختان . جشن دهقان . شروع مکاتب. قوزی قرن . میله گل سرخ . جندا بالا . سمارق . هفت میوه . ۹ و نیم روز. ۱۳ بدل .گل سنجت	13	نوروز . وقت شگوفه درختان . جشن دهقان . شروع مکاتب. قوزی قرن . میله گل سرخ . جندا بالا . سمارق . هفت میوه . ۹ و نیم روز. ۱۳ بدل .گل سنجت	1	نوروز . وقت شگوفه درختان . جشن دهقان . شروع مکاتب. قوزی قرن . میله گل سرخ . جندا بالا . سمارق . هفت میوه . ۹ و نیم روز. ۱۳ بدل .گل سنجت
ثور		جشن هشت ثور. وقت توت . وقت غوره شدن میوه . سرکشیدن گندم و جو . دشت پرگل میشود . سیلاب خیزی	48	جشن هشت ثور. وقت توت . وقت غوره شدن میوه . سرکشیدن گندم و جو . دشت پرگل میشود . سیلاب خیزی	36	جشن هشت ثور. وقت توت . وقت غوره شدن میوه . سرکشیدن گندم و جو . دشت پرگل میشود . سیلاب خیزی	24	جشن هشت ثور. وقت توت . وقت غوره شدن میوه . سرکشیدن گندم و جو . دشت پرگل میشود . سیلاب خیزی	12	جشن هشت ثور. وقت توت . وقت غوره شدن میوه . سرکشیدن گندم و جو . دشت پرگل میشود . سیلاب خیزی		جشن هشت ثور. وقت توت . وقت غوره شدن میوه . سرکشیدن گندم و جو . دشت پرگل میشود . سیلاب خیزی
جوزا	59	ماه رمضان . وقت زردالو . وقت پخته شدن چوکری . وقت ترکاری باب	47	ماه رمضان . وقت زردالو . وقت پخته شدن چوکری . وقت ترکاری باب	35	ماه رمضان . وقت زردالو . وقت پخته شدن چوکری . وقت ترکاری باب	23	ماه رمضان . وقت زردالو . وقت پخته شدن چوکری . وقت ترکاری باب	11	ماه رمضان . وقت زردالو . وقت پخته شدن چوکری . وقت ترکاری باب		ماه رمضان . وقت زردالو . وقت پخته شدن چوکری . وقت ترکاری باب
سرطان	58	عید رمضان . درو گندم و نخود . کوچ کردن سر پالیزها . رخصتی چهارنیم ماه مکتب	46	عید رمضان . درو گندم و نخود . کوچ کردن سر پالیزها . رخصتی چهارنیم ماه مکتب	34	عید رمضان . درو گندم و نخود . کوچ کردن سر پالیزها . رخصتی چهارنیم ماه مکتب	22	عید رمضان . درو گندم و نخود . کوچ کردن سر پالیزها . رخصتی چهارنیم ماه مکتب	10	عید رمضان . درو گندم و نخود . کوچ کردن سر پالیزها . رخصتی چهارنیم ماه مکتب		عید رمضان . درو گندم و نخود . کوچ کردن سر پالیزها . رخصتی چهارنیم ماه مکتب
اسد	57	بخته شدن خربوزه . وقت کشت جواری . وقت انگور . وقت میوه بوردن میوها برای نامزد . روز استقلال . یلدراغ	45	بخته شدن خربوزه . وقت کشت جواری . وقت انگور . وقت میوه بوردن میوها برای نامزد . روز ازادی . یلدراغ	33	بخته شدن خربوزه . وقت کشت جواری . وقت انگور . وقت میوه بوردن میوها برای نامزد . روز استقلال . یلدراغ	21	بخته شدن خربوزه . وقت کشت جواری . وقت انگور . وقت میوه بوردن میوها برای نامزد . روز استقلال . یلدراغ	9	بخته شدن خربوزه . وقت کشت جواری . وقت انگور . وقت میوه بوردن میوها برای نامزد . روز استقلال . یلدراغ		بخته شدن خربوزه . وقت کشت جواری . وقت انگور . وقت میوه بوردن میوها برای نامزد . روز استقلال . یلدراغ
سنبله	56	عید قربان . وقت انار. درو کندم در تیر ماه	44	عید قربان . وقت انار. درو کندم در تیر ماه	32	عید قربان . وقت انار. درو کندم در تیر ماه	20	عید قربان . وقت انار. درو کندم در تیر ماه	8	عید قربان . وقت انار. درو کندم در تیر ماه		عید قربان . وقت انار. درو کندم در تیر ماه
میزان	55		43		31		19		7			

ماه خزان . برگ خزان . خاک باد . خزان باد . روز معلم .		ماه خزان . برگ خزان . خاک باد . خزان باد . روز معلم .		ماه خزان . برگ خزان . خاک باد . خزان باد . روز معلم .		ماه خزان . برگ خزان . خاک باد . خزان باد . روز معلم .		ماه خزان . برگ خزان . خاک باد . خزان باد . روز معلم .				
کشت وقت پالیزها . کشت ترکاری باب . کشت گندم . کشت جو. جمع واری پنبه . گندم خوشکار .وقت انجیر و بهی		کشت وقت پالیزها . کشت ترکاری باب . کشت گندم . کشت جو. جمع واری پنبه . گندم خوشکار .وقت انجیر و بهی	6	کشت وقت پالیزها . کشت ترکاری باب . کشت گندم . کشت جو. جمع واری پنبه . گندم خوشکار .وقت انجیر و بهی	18	کشت وقت پالیزها . کشت ترکاری باب . کشت گندم . کشت جو. جمع واری پنبه . گندم خوشکار .وقت انجیر و بهی	30	کشت وقت پالیزها . کشت ترکاری باب . کشت گندم . کشت جو. جمع واری پنبه . گندم خوشکار .وقت انجیر و بهی	42	کشت وقت پالیزها . کشت ترکاری باب . کشت گندم . کشت جو. جمع واری پنبه . گندم خوشکار .وقت انجیر و بهی	54	عقارب
اب دادن اول به گندم . کشت کدوچه . کشت بادرنگ . شروع برف .مرغ جنگی . سگ جنگی . مرغ جنگی . بودینه جنگی . بز کشی . شورغ توقسن		اب دادن اول به گندم . کشت کدوچه . کشت بادرنگ . شروع برف .مرغ جنگی . سگ جنگی . مرغ جنگی . بودینه جنگی . بز کشی . شورغ توقسن	5	اب دادن اول به گندم . کشت کدوچه . کشت بادرنگ . شروع برف .مرغ جنگی . سگ جنگی . مرغ جنگی . بودینه جنگی . بز کشی . شورغ توقسن	17	اب دادن اول به گندم . کشت کدوچه . کشت بادرنگ . شروع برف .مرغ جنگی . سگ جنگی . مرغ جنگی . بودینه جنگی . بز کشی . شورغ توقسن	29	اب دادن اول به گندم . کشت کدوچه . کشت بادرنگ . شروع برف .مرغ جنگی . سگ جنگی . مرغ جنگی . بودینه جنگی . بز کشی . شورغ توقسن	41	اب دادن اول به گندم . کشت کدوچه . کشت بادرنگ . شروع برف .مرغ جنگی . سگ جنگی . مرغ جنگی . بودینه جنگی . بز کشی . شورغ توقسن	53	قوس
چله کلان . شروع فصل زمستان . وقت بخاری و صندلی . وقت برف باری . رخصتی زمستانی مکاتب		چله کلان . شروع فصل زمستان . وقت بخاری و صندلی . وقت برف باری . رخصتی زمستانی مکاتب	4	چله کلان . شروع فصل زمستان . وقت بخاری و صندلی . وقت برف باری . رخصتی زمستانی مکاتب	16	چله کلان . شروع فصل زمستان . وقت بخاری و صندلی . وقت برف باری . رخصتی زمستانی مکاتب	28	چله کلان . شروع فصل زمستان . وقت بخاری و صندلی . وقت برف باری . رخصتی زمستانی مکاتب	40	چله کلان . شروع فصل زمستان . وقت بخاری و صندلی . وقت برف باری . رخصتی زمستانی مکاتب	52	جدی
چله خورد . روز اسقلال از روسها . وقت بزکشی و سنگ جنگی در مناطق خشک .شروع فصل تاک بوری و نهال شانی		چله خورد . روز اسقلال از روسها . وقت بزکشی و سنگ جنگی در مناطق خشک .شروع فصل تاک بوری و نهال شانی	3	چله خورد . روز اسقلال از روسها . وقت بزکشی و سنگ جنگی در مناطق خشک .شروع فصل تاک بوری و نهال شانی	15	چله خورد . روز اسقلال از روسها . وقت بزکشی و سنگ جنگی در مناطق خشک .شروع فصل تاک بوری و نهال شانی	27	چله خورد . روز اسقلال از روسها . وقت بزکشی و سنگ جنگی در مناطق خشک .شروع فصل تاک بوری و نهال شانی	39	چله خورد . روز اسقلال از روسها . وقت بزکشی و سنگ جنگی در مناطق خشک .شروع فصل تاک بوری و نهال شانی	51	دلو
وقت جریغ یا قوزی بره . کشت تربوز و خربوزه . روز زن و فضل شکوفه . وقت ماندن سمنک		وقت جریغ یا قوزی بره . کشت تربوز و خربوزه . روز زن و فضل شکوفه . وقت ماندن سمنک	2	وقت جریغ یا قوزی بره . کشت تربوز و خربوزه . روز زن و فضل شکوفه . وقت ماندن سمنک	14	وقت جریغ یا قوزی بره . کشت تربوز و خربوزه . روز زن و فضل شکوفه . وقت ماندن سمنک	26	وقت جریغ یا قوزی بره . کشت تربوز و خربوزه . روز زن و فضل شکوفه . وقت ماندن سمنک	38	وقت جریغ یا قوزی بره . کشت تربوز و خربوزه . روز زن و فضل شکوفه . وقت ماندن سمنک	50	حوت

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