AFGHANISTAN

Integrated Nutrition, Mortality, IYCF, FSL and WASH SMART Survey Final Report

Nangarhar Province, Afghanistan

30th March to 07th April 2020

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Funded by: EUROPEAN COMMISSION Humanitarian Aid

Action Against Hunger | Action Contre La Faim
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Acknowledgments

Action Against Hunger would like to thanks all the stakeholders and partners who provided support to the SMART Assessment teams in all districts of Nangarhar province:

- This survey would not have been possible without the financial support provided by ECHO.
- Ministry of Public Health (MoPH), especially the M&EHIS Directorate, Public Nutrition Directorate (PND), AIM-Working Group, Afghanistan Nutrition Cluster, and the Nutrition Small Scale Surveys Steering Committee for their support, review, and validation of the survey protocol.
- Nangarhar Provincial Public Health Directorate (PPHD) for their support and authorization; special thanks go to Dr. Nasir Ahmad Durani and Dr.Muqeem shah Miakheel Nangarhar public health directorate and PNO for all the facilitation and assistance they have provided for leading this assessment to the maximum success.
- Afghanistan Research Development and Health Organization (ARDHO) special thanks to Dr. Nasratullah Safari, Mr. Abdul Salam Baryal, and his team in Kabul for their contribution to the smooth implementation of the assessments throughout the Nangarhar province.
- All community members for welcoming and supporting the survey teams during the data collection process.
- Special appreciation to the survey teams for making the survey a reality.
- Action Against Hunger team at Kabul and Paris for technical, logistics, and administrative support.
- Bijoy Sarker, SMART Regional Advisor - Asia, Action Against Hunger Canada for technical support, review and validation of the report.

Abbreviation

ACF/AAH	Action Contre la Faim / Action Against Hunger
ARDHO	Afghanistan Research Development and Health Organization
AADA	Agency for Assistance and Development of Afghanistan
AIM-TWG	Assessment and Information Management Technical Working Group
AOGs	Armed Opposition Groups
BHC	Basic Health Center
BPHS	Basic Package of Health Services
BSU	Basic Sampling Unit
CBA	Child-Bearing Age
CDR	Crude Death Rate
CHC	Comprehensive Health Center
CI	Confidence Interval
DEFF	Design Effect
DH	District Hospital
ECHO	European Commission for Humanitarian Aid
EBF	Exclusive Breast Feeding
ENA	Emergency Nutrition Assessment
EPHS	Essential Public Health Services
EPI	Expanded Program on Immunization
FCS	Food Consumption Score
GAM	Global Acute Malnutrition
HHs	Households
HAZ	Height for Age Z-score
IDPs	Internally Displaced People
IPC	Integrated Food Insecurity Phase Classification
IPD-SAM	Inpatient Department for Severe Acute Malnutrition
IYCF	Infant and Young Child Feeding
M&EHIS	Monitoring and Evaluation - Health Information System
MM	Millimetres
MoPH	Ministry of Public Health
MUAC	Mid-Upper Arm Circumference
MW	Mean Weight
NGO	Non-Governmental Organization
NNS	National Nutrition Survey

NSIA	National Statistics and Information Authorities
NSSSSC	Nutrition Small Scale Surveys Steering Committee
OPD-MAM	Outpatient Department for Moderate Acute Malnutrition
OPD-SAM	Outpatient Department for Severe Acute Malnutrition
OW	Observed Weight
PLW	Pregnant and Lactating Women
PND	Public Nutrition Directorate
PNO	Public Nutrition Officer
PPHD	Provincial Public Health Directorate
PPS	Probability Proportional to Size
PSU	Primary Sampling Unit
RC	Reserve Cluster
rCSI	Reduced Coping Strategy Index
RH	Regional hospital
RUTF	Ready to Use Therapeutic Food
RUSF	Ready to Use Supplementary Food
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SHC	Sub Health Center
SMART	Standardized Monitoring and Assessment of Relief and Transitions
TSFP	Targeted Supplementary Feeding Program
U5DR	Under-five Death Rate
UN-OCHA	United Nations Office for the Coordination of Humanitarian Assistance
UNICEF	United Nations Children's Fund
W/H	Weight for Height
WASH	Water Sanitation and Hygiene
WAZ	Weight for Age Z-Score
WFP	World Food Program
WHO	World Health Organization
WHZ	Weight for Height Z-score

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1. EXECUTIVE SUMMARY

Nangarhar is one of the 34 provinces of Afghanistan, located in the eastern part of the country. It is divided into twenty-two districts and has a population of about 1,668,481[1]. The city of Jalalabad is the capital of Nangarhar province. The survey design was a cross-sectional population-representative survey following the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology. The survey applied two-stage cluster sampling using the SMART methodology based on probability proportional to size (PPS). Stage one sampling involved the sampling of the Villages/clusters to be included in the survey while the second stage sampling involved the random selection of the households within the sampled clusters. The smallest geographical unit in Nangarhar defined as a cluster is basically a village. A total of 783 children aged 0-59 months were assessed, among them, 712 were 6-59 months old. The data collection took place from 30th March to 07th April 2020, at the spring season in Afghanistan. Out of 475 households planned, 466 were successfully assessed.

The survey results indicated a Global Acute Malnutrition (GAM) rate for children 6-59 months old based on WHZ is 9.6% (7.5-12.2 95% CI). The results also indicated a very high level of chronic malnutrition of 33. % (29.6-38.0 95% CI) exceeding the 30% critical threshold[2]. The result for malnourished pregnant & lactating women based on MUAC (<230 mm) was at 10.6%.

The final report presents the analysis and interpretation of the nutritional status of children under five, the nutritional status of women 15-49 years old, pregnant, and lactating women (PLW). Infant and young child feeding (IYCF) practices, measles' immunization coverage, water, sanitation, and hygiene (WASH) situation and retrospective mortality rates. The summary of the key findings is presented in table 1 below.

Table 1: Summary of Findings

Malnutrition prevalence – Children U5	
Indicator	Prevalence
GAM prevalence among children 6-59 months per WHZ <-2SD	9.6% (7.5-12.2 95% CI)
SAM prevalence among children 6-59 months per WHZ <-3SD	1.8% (1.0- 3.3 95% CI)
GAM prevalence among children 0-59 months per WHZ <-2SD	10.3% (8.2-12.9 95% CI)
SAM prevalence among children 0-59 months per WHZ <-3SD	2.5% (1.5- 3.9 95% CI)
GAM prevalence among children 6-59 months per MUAC <125 mm	10.1% (7.9-12.9 95% CI)
SAM prevalence among children 6-59 months per MUAC <115 mm	2.4%

[1] NSIA update population for 1398 (2019 - 2020)

[2] Prevalence thresholds for wasting, overweight and stunting in children under 5 years, August 2018.

	(1.5- 3.9 95% CI)
Combined GAM prevalence among children 6-59 months per WHZ <-2SD and/or MUAC <125mm and/or Oedema	15.7 % (13.1 - 18.8 95% C.I.)
Combined SAM prevalence among children 6-59 months per WHZ <-3SD and/or MUAC <115 mm and/or Oedema	3.5% (2.3 - 5.2 95% C.I.)
Stunting among children 6-59 months per HAZ <-2SD	33.7% (29.6-38.0 95% CI)
Severe Stunting among children 6-59 months per HAZ <-3SD	5.4% (4.0- 7.2 95% CI)
Underweight among children 6-59 months per WAZ <-2SD	22.2% (18.7-26.2 95% CI)
Severe Underweight among children 6-59 months per WAZ <-3SD	4.6% (3.2- 6.7 95% CI)
Overweight among children 6-59 months per WHZ >2SD	0.4% (0.1 - 1.3 95% C.I.)

*GAM and SAM prevalence by any indicator include cases of nutritional oedema

Nutritional status of Women 15-49 years old Women and PLW	
Indicator	Result
Malnutrition among all (CBA) women 15-49 years including PLW and Not PLW per MUAC <230mm	12.0%
Malnutrition among pregnant and lactating women (PLW) per MUAC <230 mm	10.6%

Crude and Under Five Death Rate (Death/10,000/Day)	
Indicator	Result
Crude Death Rate (CDR)	0.46 (0.26-0.81)
Under five Death Rate (U5DR)	0.52 (0.20-1.35)

Infant and Young Children Feeding (IYCF) Practices	
Indicator	Result
Initiation of breastfeeding within 1 hour of birth among children 0-23 months	81.0%

Exclusive breastfeeding among infants 0-5 months	62.5%
Continued breastfeeding at 1 year among children 12-15 months	88.2%
Continued breastfeeding at 2 years among children 20-23 months	77.6%
Introduction of solid, semi-solid, or soft foods (6-8 months)	74.3%

Child Immunization		
Indicator	First Dose (9-59 months)	Second Dose (18-59 months)
Measles vaccination among children confirmed by vaccination card	49.0%	40.4%
Measles vaccination among children confirmed by caregiver recall	48.5%	51.9%
Overall Measles vaccination among children confirmed by either vaccination card or caregiver recall	**97.5%**	**92.3%**

2. INTRODUCTION

Nangarhar is one of the 34 provinces of Afghanistan, located in the eastern part of the country. It is divided into twenty-two districts and has a population of about 1,668,4813. The city of Jalalabad is the capital of Nangarhar province. The province is known for its history, water, weather, fruits, and historical landscapes, in the north, it borders with eastern Kunar and Laghman and in the west with capital Kabul and Logar provinces, and the Spinghar mountains are located in its south, the mountains separate

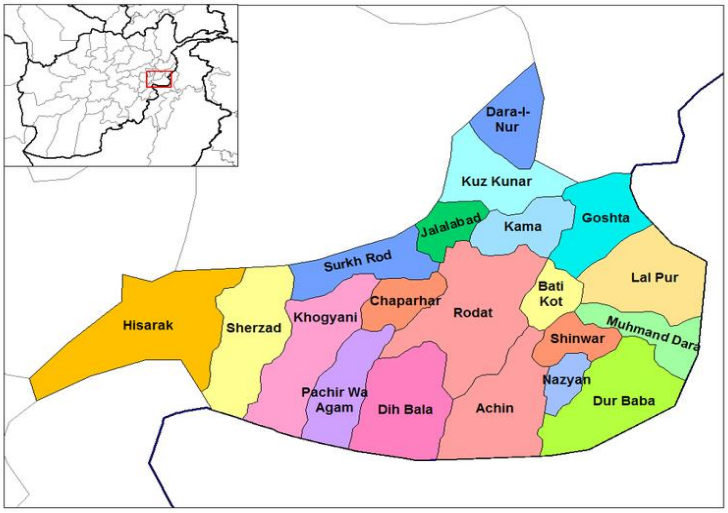


Figure 1: Nangarhar Map (Wikipedia)

[3] NSIA update population for 1398 (2019 - 2020)

Nangarhar from southern. East and south-eastern parts of Nangarhar share borders with Pakistan through the Durand fictional Line. Nangarhar' s average temperature reaches 45. And According to the Naval Postgraduate School, the ethnic groups of the province are as follows: 91.1% Pashtun; 3.6% Pashai; 2.6% Arab; 1.6% Tajik; and 2.1% other.
Nangarhar is among the provinces which experience frequent demographic movements and forced displacements, according to the latest UN-OCHA report, currently 377, 55[4] people are internally displaced in the Nangarhar province.

Based on the 2016 SMART survey in the province, the combined GAM rate (MUAC + WHZ score + Oedema) was 17.0% (14.5-19.5 95% CI) and combined SAM rate was 4.9% (3.4-6.3 95% CI) respectively. Chronic malnutrition in the province was at 39.5% (34.6-44.7 95% CI)[5] exceeding the critical threshold for stunting (30%). Meanwhile, 8.5% (6.3-10.6 95% CI.) women of reproductive age were malnourished based on low MUAC (<230mm).

Based on 2016 SMART survey, Prevalence of morbidity among children was also found very high, 83.1% of children under five were sick based on two weeks recall method, diarrhea (34.0%), fever (59.3%), and acute respiratory infection (47.7%) were the leading illness reported. Measles vaccination coverage both by the caregiver's recall and by card confirmation was 84.7% which was far below the 95% target threshold; the proportion of children aged 24-59 months dewormed in the last 6 months before the survey was 82.0%; the proportion of all children aged 6-59 months who had received vitamin A in the last 6 months before the survey was 91.2% which was above the 80% WHO recommended threshold.

However, the Crude Death Rate (0.19 death/10,000/Day) and under-five death rate (0.18 death/10,000/Day) were well below the WHO emergency threshold for CDR (1/10,000/Day) and U5DR (2/10,000/Day), perhaps an indication of effectiveness and efficiency of humanitarian interventions cushioning the most vulnerable from effects of emergencies.

WASH situation was much better with 58.3% of the households having access to improved water sources as well as majority meeting the over 15 Liters per day per person water usage. The majority of the household (92%) were food secure based on the confluence of the Food Security Score (FSC) and reduced coping strategy index (rCSI) indicators.

2.1. Agriculture and Industry

[4] Conflict Induced IDP Report – UNOCHA
[5] SMART survey December-2016

Nangarhar is considered the food basket of Afghanistan as most of the crops produced here are consumed in different parts of the country. The main summer crops grown in the province are rice, maize, cotton, sunflower, beans, potato while the winter crops are wheat, barley, sugarcane, potato, and mustard. Although Opium is still considered the predominant crop in 12 southern districts of the province, there is a growing trend of vegetables growing in the province due to its demand and better price.

The vegetables normally grown in summer are okra, tomato, eggplant, pepper, pumpkins, cucumbers, lettuce, and others. The winter vegetables are onion, cauliflower, turnip, spinach, radish, carrot, cabbage, etc. Rodat district is well known for potato and onion production. Most of the vegetables and crops produced are supplied to Kabul and other parts of Afghanistan. Some of the crops and vegetables are also sold locally.

Nangarhar is one of the provinces which are recently classified in IPC phase 3[6]. Between November 2019 and March 2020, an estimated 11.3 million people (37% of the total population) experienced severe acute food insecurity throughout the country. During the mentioned period about 500, 544 (30 %) people Nangarhar province were supposed to suffer severe food insecurity.

2.2. Description of the survey area

This SMART survey was conducted in all 22 districts of Nangarhar province, the sampling frame was all the villages in the Twenty-two districts of Jalalabad city (capital) Darah–e–Noor Kot, Goshta, Achin, Shinwari, Mohmand Darah, Lalpora, Sherzad, Nazyan, Hesarak, Durbaba, Behsud, Surkhrod, Chaperhar, Kuzkonar (Khewa), Rodat, Khugyani, Batikote, Deh Bala, Pacher-w-Agam. Twenty-one districts of the Nangarhar province are considered as rural areas (except the Jala Abad City) and were accessible for the survey teams, except 141 out of the total of 2,022 villages (6.97 % of the total target area). These 141 inaccessible clusters/villages were mainly in Hesarak, Pacher-w- Agam, Sherzad, and Khugyanin districts due to the recent peak of the insecurity and presence of Armed Opposition Groups (AOGs) with continued fighting in the areas. From the cultural, ethnic, and linguistic perspective, the inhabitants of the excluded villages are homogenous with the residence of the surveyed parts of the Nangarhar province.

A full SMART Data collection was conducted in Nangarhar province from 30th March to 07th April 2020 [The Month of Hamal 1399 in Solar Calendar] at the beginning of the spring season by ARDHO with technical support of Action Against Hunger. The survey covered the entire province, including partially secure and completely secure villages throughout the province. The survey was conducted in close coordination of MoPH (M&EHIS Directorate) and the local public health authorities.

[6] Afghanistan IPC Food Insecurity Analysis – Projections for Nov 2019 to Mar 2020

2.3. Demography and Economy

Nangarhar is well known for its demographic diversity, the population is overwhelmingly Pashtun (91.1%), but it still hosts the only minorities in the country, 3.6% Pashai; 2.6% Arab; 1.6% Tajik; and 2.1% other.

Nangarhar province has always been in the focus of the government because of its high economic importance, the province is located along the Kabul-Peshawar major transit route, which has 92 kilometers length from Daronta pass into Torkham border. This transit route facilitates good employment opportunities in Nangarhar province, which plays an important role in boosting the economy of the country, especially eastern provinces.

Business is a good means of revenue in Nangarhar, where some traders are busy in international commerce, in addition to domestic business. International traders import goods through their companies from various countries of the world like China, Japan, Uzbekistan, Turkmenistan, India, and Pakistan. But the number of such traders is less, while domestic traders bring cereals, livestock, firewood, and other goods from villages to cities and sell them in Jalalabad, Kabul, Balkh, and other provinces.

2.4. Health, Nutrition and Food Security

In response to years of insecurity in Nangarhar province and the long occupation of most Nangarhar districts by Taliban and ISIS militants.

A big mass of the local people fled their houses in the districts and settled around the city. That massive demographic movement and distressed public health and the humanitarian situation lead to deterioration of nutrition as well as food security situations resulting in many families suffering hunger, difficulties in access to drinking water resulting in a high prevalence of water-borne diseases. A SMART assessment carried out in Nangarhar province in Dec 2016 revealed a GAM rate of 12.6% (10.1-15.5 95% CI) by WHZ which is classified as a High level according to the new UNICEF-WHO threshold. The GAM based on MUAC was 7.4% (4.9-11.1 95% CI). Currently, 8 national and international humanitarian organizations are providing health and nutrition services in the province. A local NGO Agency for Assistance and Development of Afghanistan (AADA) is implementing the EPHS and BPHS SEHATMANDI project. The BPHS covers a total of 156 health facilities providing health services (1 RH, 4 DH, 4 CHC+, 18 CHC, 80 BHC, 33 SHC, and a total of 16 mobile health teams. A total of 89 of the health facilities provides OPD SAM, 6 provides IPD SAM; and 52 OPD MAM in the province.

As stated in the latest (November 2019) IPC report, currently 37% of the population are in phase 3 of the food insecurity phase classification and require urgent humanitarian action. The overall 8.6 million people are estimated to be in phase 4 as per IPC classification, Nangarhar is also among those provinces and has the highest amount of conflict-related insecurity as well.

2.5. Survey Justification

Nangarhar is one of the provinces affected by frequent armed conflicts from last year (2019) resulting in high internal displacements, both have increased the food insecurity and disrupted livelihoods of the rural population whose main source of income is crop productions.

Since nutritional status frequently deteriorates due to several factors including poor food access and availability, poor water and sanitation as well as high morbidity among the affected populations, this SMART survey will, therefore, be carried out to have a better understanding of the current nutrition status of the community and monitor the nutrition and mortality situation in the province.

Besides, the last SMART assessment in Nangarhar province was done three years ago in December 2016 hence there is a need to get updated information to better address & monitor humanitarian needs. Besides, the province is affected by the ongoing conflict between Arms Opposition Groups (AOG) and Governments. Therefore, there is a need for updated data on the levels of malnutrition in the area to plan for appropriate responses; update results are also needed to monitor and mitigate the possible on-going worsening situation.

The survey will inform and guide specific responses on some of the humanitarian needs and areas to focus on improving the on-going and planned interventions.

Given that Action Against Hunger has considerable years of expertise in conducting nutrition surveys in Afghanistan and is an active member of the AIM-TWG, Small Scale Nutrition survey steering committee as well as a co-lead of the National Nutrition Cluster, Action Against Hunger has taken the lead to carry out the assessment in Nangarhar province with financial support from ECHO.

3. SURVEY OBJECTIVES

3.1 Primary objective

- The overall objective of the survey is to assess the nutrition situation of under-five children and women of reproductive age, crude and under-five retrospective death rates in Nangarhar province.

3.2. Specific objectives

- To estimate the prevalence of undernutrition (Stunting, Wasting, and Underweight) among children aged 0-59 months.
- To estimate the Crude Death Rate (CDR) and under-five Death Rate (U5DR).
- To determine core Infant and Young Child Feeding (IYCF) practices among children aged <24 months.
- To estimate both doses of measles vaccination coverage among children 9-59 months.

- To determine the nutritional status of pregnant and lactating women (PLW) as well as women of reproductive age (15-49 years) based on MUAC assessment.
- To assess Water, Sanitation, and Hygiene (WASH) proxy indicators: households level main drinking water sources and caregiver handwashing practices.
- To assess the food security situation through the Food Consumption Score (FCS) and the Reduced Coping Strategy Index (rCSI).

4. METHODOLOGY

4.1. Geographic target area and population group

A full SMART assessment targeted the whole of Nangarhar province. Household was the basic sampling unit (BSI). The surveyed population were children from the age of 0-59 months and Pregnant and Lactating Women (PLW) and Women from 15-49 years in addition to the households for WASH and Food security indicators.

4.2. Survey period

A seven days long training was organized from 22nd March to 29th March 2020 and the data collection took place from 30th March to 07th April 2020 in all 22 districts of the Nangarhar province.

4.3. Survey design

The survey design was cross-sectional using the SMART methodology, following two stages cluster sampling method.

4.4. 4.6. Sample Size

The household sample size for this survey was determined by using ENA for SMART software version 2020 (updated 11th Jan, 2020). The sample size used was 475 households and 564 children 6-59 months. Below Table 2 and Table 3 highlights the parameters used for sample size calculation for anthropometric and mortality surveys;

Table 2: Parameters for sample size calculation for anthropometry

Parameters for Anthropometry	Value	Assumptions Based on Context
The estimated prevalence of GAM (%)	12.6%	Based on Nangarhar SMART survey results, December 2016 the GAM by WHZ prevalence was 12.6 (10.1-

		15.5 95% CI). The point prevalence of 12.6% has been used here for the planning purpose.
Desired precision	±3.5	Based on SMART recommendation and consistent with survey objectives to estimate the prevalence.
Design Effect	1.5	According to 2016 SMART, DEFF was 1.35 for GAM by WHZ in Nangarhar province. But considering the current humanitarian situation as well as some internal displacements, a slightly higher DEFF (1.5) is assumed here for planning purposes.
Children to be included	**564**	**Minimum sample size-children aged 6-59 months.**
Average HH Size	7.0	Based on the Nangarhar SMART Survey Dec 2016
% Children under five	20.7%	Based on the Nangarhar SMART survey Dec 2016
%Non-response Households	9%	Based on the Nangarhar SMART survey Dec 2016
Households to be included	**475**	**Minimum sample size-Households (BSU) to be surveyed**

Table 3: Sample size calculation for mortality surveys

Parameters for Mortality	Value	Assumptions based on context
Estimated Death Rate /10,000/day	0.19	Based on the Nangarhar SMART survey Dec 2016 mortality rate 0.19 (0.07-0.41 95% CI)].
Desired precision /10,000/day	±0.25	A bit higher precision is assumed here for the planning purpose based on the low CDR observed during the last survey in 2016.
Design Effect	1.64	Based on Nangarhar SMART Survey in December 2016.
Recall Period in days	100	The starting point of the recall period is 26th Dec 2019 (6th Jaddee 1398) (Soviet invasion on Afghanistan) to the mid-point of data collection estimated to be the 3rd April 2020).
Population to be included	**2,085**	**Population**
Average HH Size	7.0	Based on the Nangarhar SMART survey Dec 2016
% Non-response Households	9.0%	Based on the Nangarhar SMART survey Dec 2016

Households to be included	327	Households (BSU) to be included

Based on the SMART methodology, between the calculated anthropometry and mortality sample sizes, the largest sample size was used for the survey. In this case, the largest sample size was 475 households.

The number of households to be completed per day was determined according to the time the team could spend in the field excluding transportation, other procedures, and break times. The details in table 4 below are taken into consideration when performing this calculation based on the given context:

Table 4: Household selection per the day time table

Total working time	8:00 AM to 4:00 PM (8 Hours (480 minutes)
Time for transportation (round trip)	480 -120 = 360 minutes
Coordination with village elder and preparation of HH list - 30 min	360 – 30 = 330 minutes
Time for a break and pray – 60 Min	330 – 60 = 270 minutes
The average duration of the HH interview	20 minutes
Distance from one HH to another HH	7 minutes
Average HH per day per cluster by one team	270 ÷ 27 = 10 HHs

The above gives an average of 270 min of working time in each cluster. If on average, teams spend 20 min in each HH and 7.0 min traveling from one HH to another, each team can comfortably reach 10 HH per day, (270/27=10 HHs).

The total number of households in the sample divided by the number of households to be completed in one day to determine the number of clusters to be included in the survey. (475HHs)/ (10HHs per cluster) =47.5 Clusters (rounded up to 48 clusters). Therefore the survey team attempt to survey 480 HHs

4.5. Sampling Methodology

A two-stage cluster sampling methodology was adopted based on probability proportional to size (PPS); the villages with a large population had a higher chance of being selected than villages with a small population and vice versa. The village was the Primary Sampling Unit (PSU) while the household was the Basic Sampling Unit (BSU). The first stage involved the selection of clusters/villages from a total list of villages. A list of all updated villages was uploaded into the ENA for SMART software where PPS was applied. The list of villages/cluster was gathered from the Basic Package of Health Services (BPHS) providers in consultation with PPHD to finalize the sampling frame. Based on the latest EPI micro-plan, all insecure or inaccessible villages were

identified and systematically excluded from the final sampling frame; the final list consisted of 1881 out of 2022 villages (141 inaccessible villages were excluded). The clusters generated using the ENA software version included 5 Reserve Clusters (RCs). Reserve clusters were planned to be surveyed only if 10% or more clusters were not possible to be surveyed.

Based on the estimated time to travel to the survey area, select and survey the households, it was estimated that each team could effectively survey 10 HHs per day. (475/10=47.5 clusters, rounded up to 48 Clusters). In each selected village, one or more community member(s) was asked to help the survey teams to conduct the survey by providing information about the village with regard to the geographical organization or the number of households. In cases of large villages or semi-urban zones/small cities in a cluster, the village/zones were divided into smaller segments and a segment selected randomly (if similar in size) or using PPS to represent the cluster. This division was done based on existing administrative units e.g. neighborhoods, streets, or natural landmarks like a river, road, mountains, or public places like schools, and masjid.

The second stage involved in the random selection of households from a complete and updated list of households. This was conducted at the field level. The **Household definition** adopted was; a group of people living under the same roof and sharing food from the same pot. In households with multiple wives, those living and eating in different houses were considered as separate HHs.

4.5.1. Field Procedures

Stage 2 selection of households:

The survey covered/achieved a total of 466 households from 47 total clusters) surveyed, unfortunately, one cluster was inaccessible (out of total 48 planned) due to security issues in Nangarhar province and the village/cluster name was Larang Khel in Hisarak district. Each team was responsible for cover effectively 10 households per day. Households were chosen within each cluster using systematic random sampling as described below. A total of 6 teams were engaged during the assessments, while data collection was conducted in 8 days.

On arrival at the Chief/Malik:

The survey team introduced themselves and the objective of the survey to the Chief/Malik leader.

- In collaboration with the Chief/Malik leader, the team prepared a list of all households in the cluster. Abandoned absent households were not listed/excluded.
- The required number of households were selected using systematic random sampling.
- The sampling interval was determined by:

$$\text{Sampling interval} = \frac{\text{Total number of sampling units in the population}}{\text{Number of sampling units in the sample (10)}}$$

Equation 1 Sampling Interval

Every household was asked for voluntary consent to take part in the survey process before any data was collected. All children 0 to 59 months living in the selected house was included for anthropometric measurements, including twins and orphans or unrelated children living with the sampled household. Children were aged <24 months were included for the IYCF assessment. If a child of a surveyed household was absent due to enrolment in an IPD treatment center at the time the household was surveyed, teams were not visited any treatment centre to measure the child. Households without children were still assessed for household-level questions (PLW nutritional status, WASH, food security, mortality).

Any absent households with missing or absent women or children were revisited at the end of the day before leaving the cluster. The missing or absent child that was not found after multiple visits were not included in the survey. A cluster control form was used to record all household visits and note any missed and absent households.

4.6. Indicators: Definition, Calculation, and Interpretation

4.6.1. Overview of Indicators

The anthropometric indicators assessed by this survey and the corresponding target population are presented in Table 5 below.

Table 5: Standardized Integrated SMART Indicators

Indicator	Target Population
Anthropometry	
Acute Malnutrition by WHZ and/or Oedema	Children 0-59 and 6-59 months
Acute Malnutrition by MUAC and/or Oedema	Children 6-59 months
Acute Malnutrition by Combined Criteria (WHZ and/or MUAC and/or Oedema)	
Chronic Malnutrition by HAZ	
Underweight by WAZ	
Overweight by WHZ	
Mortality	
Crude Mortality Rate (CDR)	Entire population
Under Five Death Rate (U5DR)	Children under five
IYCF	
Early Initiation of Breastfeeding	Children <24 months
Exclusive Breastfeeding (EBF)	Infants 0-5 months
Continued Breastfeeding at 1 Year	Children 12-15 months

Continued Breastfeeding at 2 Years	Children 20-23 months
Health	
Measles Vaccination (First and Second Doses)	Children 9-59 months
Women of Reproductive Age & PLW	
Nutritional Status of PLW by MUAC	Women (15-49 years) and PLW

4.6.2. Anthropometric, Immunization and IYCF Indicators

Age

Age was recorded among children 0-59 months as of the date of birth (Year/Month/Day) according to the Solar Calendar in the field, and later on, was converted to the Gregorian calendar for analysis. The exact date of birth was recorded only if the information was confirmed by supportive documents, such as vaccination card or birth certificate. Where the above-mentioned documents were unavailable or questionable, age was estimated using a local calendar of events and recorded in months. In this assessment, the survey teams equally relied on the utilization of the event calendar and deriving the birth date from vaccination cards.

Weight

Weight was recorded among children 0-59 months in Kg to the nearest 0.1 kg using an electronic SECA scale with the 2-in-1 (mother/child) weighing function. Children who could easily stand up were weighed on their own. When children could not stand independently, the 2-in-1 weighing method was applied with the help of a caregiver. Two team members worked in unison to take the measurements of each child.

Height

Height was recorded among children 0-59 months in cm to the nearest 0.1 cm. A height board was used to measure bareheaded and barefoot children. Children less than two years old were measured lying down and those more than two years old were measured standing up. Two team members worked in unison to take the measurements of each child.

MUAC

MUAC was recorded among children 6-59 months[7] and women 15-49 years to the nearest mm. All subjects were measured on the left arm using standard MUAC tapes.

Oedema

The presence of oedema among children 0-59 months was recorded as “yes” or “no”. All children were checked for the presence of oedema by applying pressure with thumbs for three

[7] MUAC is not standardised for infants <6 months

continuous seconds on the tops of both feet. Any suspected cases required confirmation by multiple team members, a supervisor if present, and photo-documented when possible.

4.6.3. Acute malnutrition

Acute malnutrition in children 6-59 months is expressed by using three indicators.

Weight for Height (W/H) and MUAC are described below. Nutritional oedema is the third indicator of severe acute malnutrition. Additionally, the prevalence of GAM amongst 0-59 was reported.

WHZ

A child's nutritional status is estimated by comparing it to the weight-for-height distribution curves of the 2006 WHO growth standards reference population. 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 data collection, the weight-for-height index in Z-score was calculated in the field for each child to refer malnourished cases to the appropriate center if needed. Moreover, the results were presented in Z-score using WHO reference in the final report. The classification of acute malnutrition based on WHZ is well illustrated in Table 6.

Table 6: Definition of Acute Malnutrition, Chronic Malnutrition, Underweight and Overweight according to WHO Reference 2006

Severity	ACUTE MALNUTRITION (WHZ)	CHRONIC MALNUTRITION (HAZ)	UNDERWEIGHT (WAZ)	Overweight (WHZ)
GLOBAL	<-2 z-score and/or oedema	<-2 z-score	<-2 z-score	>2 z-score
MODERATE	<-2 z-score and ≥ -3 z-score	<-2 z-score and ≥ -3 z-score	<-2 z-score and ≥ -3 z-score	>2 z-score and <3 z-score
SEVERE	<-3 z-score and/or oedema	<-3 z-score	<-3 z-score	>3 z-score

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

Table 7: WHO Definition of Acute Malnutrition According to Cut-off Values for MUAC

Severity	MUAC (mm)
GLOBAL	<125 (and/or oedema)
MODERATE	≥ 115 and < 125
SEVERE	<115 (and/or oedema)

4.6.4. 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.

4.6.5. Combined GAM

In Afghanistan, but also at a worldwide level, it has been demonstrated that there is a large discrepancy between the prevalence of GAM by WHZ and GAM by MUAC. Therefore, Action Against Hunger routinely reports the prevalence of GAM by WHZ or MUAC as "Combined GAM" among children 6-59 months. Combined GAM considers the cut-offs of both WHZ<-2 SD score and/or MUAC<125 mm and/or Presence of bilateral pitting Oedema.

4.6.6. Chronic malnutrition

Chronic malnutrition is the physical manifestation of longer-term malnutrition which retards growth. Also known as stunting, it reflects the failure to achieve one's optimal height. In children 6-59 months, chronic malnutrition is estimated using the Height-for-Age z-score (HAZ).

HAZ is calculated using ENA Software for SMART by comparing the observed height of a selected child to the mean height of children from the reference population for a given age. When using HAZ, the distribution of the sample is compared against the 2006 WHO reference population. Global chronic malnutrition is the sum of moderate and severe chronic malnutrition.

4.6.7. 5.4. Underweight

Underweight is the physical manifestation of both acute malnutrition and chronic malnutrition. In children 6-59 months, underweight is estimated using Weight-for-Age (WAZ) z-score. WAZ is calculated using ENA Software for SMART by comparing the observed weight of a selected child to the mean weight of children from the reference population for a given age. When using WAZ, the distribution of the sample is compared against the 2006 WHO reference population. Global underweight is the sum of moderate and severe underweight. WAZ cut-offs are presented in Table 8 below.

The prevalence of malnutrition as identified by WHZ, HAZ and WAZ have also been classified by the WHO in terms of severity of public health significance. The thresholds are presented in table 8 below.

Table 8: Classification for Severity of Malnutrition by Prevalence among Children Under-Five

LABELS	PREVALENCE THRESHOLDS (%)			
	WASTING	OVERWEIGHT	STUNTING	UNDERWEIGHT[8]
Very low	<2.5	<2.5	<2.5	
Low	2.5-<5	2.5-<5	2.5-<10	<10
Medium	5-<10	5-<10	10-<20	10-19.9
High	10-<15	10-<15	20-<30	20-29.9
Very high	≥15	≥15	≥30	≥30

4.6.8. The proportion of acutely malnourished children enrolled in or referred to a Program

All children 6-59 months identified as severely acutely malnourished by MUAC and WHZ during the data collection were assessed for current enrolment status. All malnourished children not enrolled in a treatment program were referred to the nearest nutrition program if possible.

4.7. Malnutrition prevalence among women 15-49 years based on MUAC criterion

All women 15-49 years, including PLW, were assessed for nutritional status based on MUAC measurement. Low MUAC was defined as MUAC <230mm.

4.8. Retrospective mortality

Demography and mortality were assessed for all households, regardless of the presence of children. All members of the household were counted according to the household definition.

CDR refers to the number of persons in the total population that died over the mortality recall period (100 days). It is calculated by ENA Software for SMART using the following formula:

Equation 2: Crude Mortality Rate

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

U5DR refers to the number of children under five years that die over the same mortality recall period.

Equation 3: Under-five Death Rate

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

[8] WHO threshold

4.9. IYCF indicators

4.9.1. Timely initiation of breastfeeding

Calculated as the proportion of children born in the last 24 months who were put to the breast within one hour of birth. Based on caregiver recall.

4.9.2. Exclusive Breastfeeding

Calculated as the proportion of infants 0-5 months who were fed exclusively with breast milk in the last day or night. This indicator aims to identify if breastmilk is being displaced by other liquids or foods before the infant reaches six months of age. Based on caregiver recall.

4.9.3. Continued Breastfeeding at 1 Year

Calculated as the proportion of children 12–15 months who were fed with breast milk in the past day or night. Based on caregiver recall.

4.9.4. Continued Breastfeeding at 2 Years

Calculated as the proportion of children 20–23 months who were fed with breast milk in the past day or night. Based on caregiver recall.

4.10. Measles Both Doses Coverage

Calculated as the proportion of children 9-59 months who received two doses of the measles vaccine. Assessed based on vaccination card or caregiver recall. As part of the Expanded Program on Immunization (EPI), the first dose of measles immunization is given to infants aged between 9 to 18 months, with the second given at 18 months. Second dose the last vaccination dose given to a child under five as per the recommended immunization schedule, the second dose measles coverage indicator can also be used as a proxy for overall immunization status and access to healthcare.

5. ORGANIZATION OF THE SURVEY

5.1. SURVEY COORDINATION AND COLLABORATION

Survey methodology was shared with the AIM-TWG, Research and Evaluation Directorate for validation and presenting in the small-scale steering committee for their comments before deploying the SMART technical team to the province. Meetings were held with the respective administrative authorities on arrival by the survey team to brief them on the survey objective, methodology and procedures as well as get relevant updated information on security, access, and village level population.

5.2. SURVEY TEAMS

Six teams each comprising of four members collected data in all the selected clusters in the province. Each team was composed of one team leader, two measures, and one interviewer. Each team will have one female surveyor to ensure acceptance of the team amongst the surveyed households, particularly for IYCF questionnaires. Each female member of the survey team was accompanied by a mahram to facilitate the work of the female data collectors at the community level. In each selected village, one or more community member (s) was asked to lead and guide the survey team within the village in locating the selected households.

5.3. TRAINING OF THE SURVEY TEAMS AND SUPERVISION

One out of four members of each survey team was a female surveyor to ensure acceptance of the team amongst the surveyed households, particularly for IYCF questionnaires and measuring the nutrition status of CBA women. Each female member of the survey team was accompanied by a mahram to facilitate the work of the female data collectors at the community level. The majority of the population speaks Pashto, Dari, and Pashaee, languages. But all the people were well familiar with Pashto as share value for the local community. Therefore, the survey manager used Pashto to conduct training. The Pashto version of the questionnaires was also used. Action Against Hunger technical team conducted monitoring and supportive supervision of the survey teams in some targeted villages in Nangarhar city, and most of all districts. Action Against Hunger technical staff remotely controlled and monitored survey teams in the field and shared productive feedbacks with teams via phone conversation.

The training took place in Nangarhar province (Center of the Nangarhar province), all the survey team including supervisors and enumerators received a 7-days training (22nd to 29th March 2020) on the survey methodology and all its practical aspects; Two Action Against Hunger technical staffs facilitated the training session. A standardization test was also conducted over 1 day, 10 children were measured by each enumerator to evaluate the accuracy and the precision of the team members in taking the anthropometric measurements.

Additionally, the teams had conducted a one-day field test to evaluate their work in real field conditions, the field test was piloted in Zaren Abad village of Jalalabad city. Feedback was provided to the team regarding the results of the field test; particularly concerning digit preferences and data collection. Refresher training on anthropometric measurements and the filling of the questionnaires and the household's selection was organized on the last day of the training by Action Against Hunger to ensure overall comprehension before going to the field.

A field guidelines document with instructions including household definition and selection was provided to each team member. All documents, such as local event calendar, questionnaires, and informed consent letters were translated into Pashto languages, for better understanding and to

avoid direct translation during the data collection.

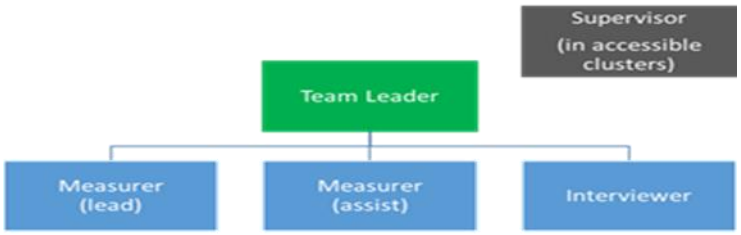


Figure 2: Survey Team Composition

6. DATA ANALYSIS

The anthropometric and mortality data were analyzed using update ENA for SMART software 2020 version (11th Jan 2020). Survey results were interpreted referencing to the WHO standards 2006; Analysis of other indicators to include IYCF and demographics was done using Microsoft Excel version 2016. Contextual information in the field and from routine monitoring was used in complementing survey findings and strengthening the analysis. Interpretation of each result was done based on the existing thresholds for different indicators as well as comparing with other available data sources at the national and provincial levels.

7. SURVEY FINDINGS

7.1. SURVEY SAMPLE & DEMOGRAPHICS

Overall, the survey assessed 47 clusters out of 48 planned clusters, one cluster was inaccessible due to security. A total of 466 households, 3,517 individuals, 649 women 15-49 years old, 783 children under five (0-59m), and 712 children 6-59 months were assessed in the 47 clusters. Among the 466 households the survey teams surveyed, 4 Households were absent and/or refused to participate in the survey, resulting in a non-response rate of 2.1%. This rate is lower than the estimate done at the planning stage (9.0%) Overall, 97.9% of the planned households and 26.2% more children 6-59 months were assessed which are presented in Table 9 below.

Table 9: Proportion of household and child sample achieved

No. of Cluster planned	No. of Cluster surveyed	% of cluster surveyed	No. of households planned	No. of households surveyed	No. of children 6-59 months planned	No. of children 6-59 months surveyed	% of children surveyed
48	47	97.9%	475	466	564	712	126.2%

The mortality questionnaire was designed to gather demographic data and capture in- and out-migration. Household demographics and movement are presented in Table 10 below. The survey findings indicate that the average household size was 7.5 persons per household (compared to 7 used at the planning stage); 47.4% of the population were female, 52.6% were male; the proportion of children under five was 23.0%. The observed rate of in-migration (0.06) and the out-migration (0.43) during the recall period may have been influenced by the 100 recall period days.

Table 10: Demographic data summary

Indicator	Values
Total number of clusters	47
Total number of HHs	466
Total number of HHs with children under five	439
Average household size	7.5
Female % of the population	47.4%
Male % of the population	52.6%
Children under five % of the population	23.0%
Birth Rate	1.21
In-migration Rate (Joined)	0.06
Out-migration Rate (Left)	0.43

Households were also assessed for residential status. Among the 466 surveyed households, 90.3% were residents of the area, 9.7% were internally displaced of the population and there were No nomadic (Kunchi[9]) residents found in the province.

Table 11: Household residential status by the proportion

[9] Kuchi is a local term refers to Nomad

Residential Status of Households N= 466	Resident	421	90.3%
	IDP	45	9.7%
	Refugee	0	0.0%
	Returnee	0	0.0%
	Nomad	0	0.0%

As the age and sex of all household members were assessed, it was possible to disaggregate the population by sex and five year age interval, as presented in Figure 3 below. The pyramid is wide at the base and narrows towards the apex, indicating a generally youthful population.

The surveyed sample of children 6-59 months was 712. The distribution as disaggregated by age and sex are presented in Table 12 below. The overall sex ratio (male/female) 1.15, indicating a sample with almost equal representation of boys and girls with a slight access of boys. The exact birth date was not possible to determine (through proper documents) for 49% of the children; only 51.0% of the surveyed children had documentation of evidence of their exact date of birth. This may have compromised the quality of the age determination to some extent, and therefore may have impacted the estimation of the stunting and underweight prevalence as well.

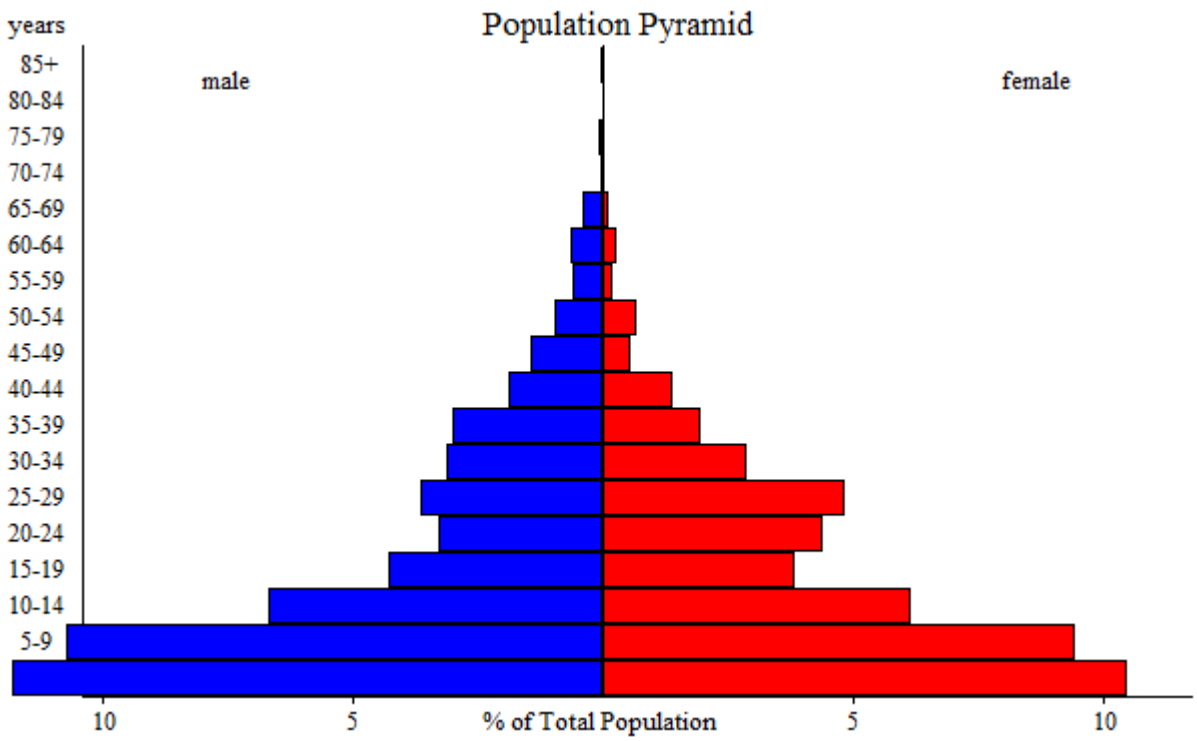


Figure 3: Nangarhar Province Population Pyramid.

Table 12: Distribution of Age and Sex among Children 6-59 months

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl
6-17	88	48.6	93	51.4	181	25.4	0.9
18-29	102	54.8	84	45.2	186	26.1	1.2
30-41	85	53.5	74	46.5	159	22.3	1.1
42-53	70	56.5	54	43.5	124	17.4	1.3
54-59	37	59.7	25	40.3	62	8.7	1.5
Total	382	53.7	330	46.3	712	100.0	1.2

7.2. DATA QUALITY

Five children were excluded as outliers from WHZ analysis per SMART flags[10], resulting in an overall percentage of flagged data of 0.7and categorized as excellent by the ENA Plausibility Check.

The standard deviation, design effect, missing values, and flagged values are listed for WHZ, HAZ, and WAZ in Table 13 below. The SD of WHZ was 1.00, the SD of HAZ was 0.90, and the SD of WAZ was 0.84. All WHZ, HAZ, and WAZ met the normal range (0.80 and 1.20) indicating an adequate distribution of data around the mean and data of excellent quality.

The overall ENA Plausibility Check score was 8%, which is considered a survey of excellent quality. However, there was an excess of younger children (6-29m) compared to the older children aged 30-59 months with a ratio of 1.06 (p-value = 0.003). In most nutrition surveys, the younger children are over-represented compared to the older age group; this could be among other things the older children being in school or running errands outside homes. In Nangarhar provinces this over-representation could be linked with the caregivers' attention to the younger children's health and willingness, plus a high absence rate of older children in home. Some digit preference also observed for children age data, especially whose exact date of births were not available. A summary of the Nangarhar ENA Plausibility Check report is presented in Annex5. The full plausibility report can be generated from the ENA dataset.

Table 13: Mean Z-scores, Design Effects, Missing and Out-of-Range Data of Anthropometric Indicators among Children 6-59 Months

Indicator	N	Mean z-scores ± SD	Design effect (z-score < -2)	Z-scores not available*	Z-scores out of range
Weight-for-Height*	707	-0.65±1.00	1.08	0	5
Weight-for-Age*	711	-1.38±0.84	1.45	0	1
Height-for-Age	704	-1.65±0.90	1.37	0	8

*no oedema case found in the survey

7.3. Prevalence of Acute Malnutrition

7.3.1 Acute Malnutrition by WHZ

The prevalence of GAM per WHZ among children 6-59 months in Nangarhar was 9.6% (7.5-12.2 95% CI) as presented in Table 14 below and was categorized as medium. This prevalence seems slightly higher in girls than boys but it is not statistically significant (P-value = 0.9274).

The prevalence of SAM per WHZ among children 6-59 months was 1.8% (1.0- 3.3 95% CI) According to the national prioritization cut-off points, the prevalence was less than the threshold of 3%.

Table 14: Prevalence of Acute Malnutrition by WHZ (and/or oedema) by Severity and Sex among Children 6-59 months, WHO 2006 Reference

Indicators	All n = 707	Boys n = 378	Girls n = 329
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	(68) 9.6 % (7.5 - 12.2 95% C.I.)	(36) 9.5 % (6.7 - 13.3 95% C.I.)	(32) 9.7 % (7.0 - 13.3 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 to ≥-3 z-score)	(55) 7.8 % (6.1 - 9.9 95% C.I.)	(28) 7.4 % (5.0 - 10.8 95% C.I.)	(27) 8.2 % (5.9 - 11.4 95% C.I.)
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	(13) 1.8 % (1.0 - 3.3 95% C.I.)	(8) 2.1 % (1.0 - 4.4 95% C.I.)	(5) 1.5 % (0.6 - 4.1 95% C.I.)

*There were 0.0% oedema cases in the sample

The prevalence of acute malnutrition by WHZ was also assessed among children 0-59 months. The GAM per WHZ was 10.3% (8.2-12.9 95% CI), as presented in Table 15 below. The prevalence of SAM per WHZ among children 0-59 months was 2.5% (1.5- 3.9 95% CI).

Table 15: Prevalence of Acute Malnutrition by WHZ (and/or oedema) by Severity and Sex among Children 0-59 months, WHO 2006 Reference

Indicators	All n = 774	Boys n = 409	Girls n = 365
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	(80) 10.3 % (8.2 - 12.9 95% C.I.)	(42) 10.3 % (7.5 - 13.9 95% C.I.)	(38) 10.4 % (7.4 - 14.4 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 to ≥-3 z-score)	(61) 7.9 % (6.2 - 10.0 95% C.I.)	(30) 7.3 % (5.1 - 10.4 95% C.I.)	(31) 8.5 % (6.1 - 11.8 95% C.I.)
Prevalence of severe acute malnutrition (<-3 z-score and/or oedema)	(19) 2.5 % (1.5 - 3.9 95% C.I.)	(12) 2.9 % (1.5 - 5.6 95% C.I.)	(7) 1.9 % (0.9 - 4.1 95% C.I.)

When disaggregated by age group, the group with the highest MAM and SAM was 6-17 months, as presented in Table 16 below. The age group with the lowest MAM was 42-53 and 54-59 months and there was no SAM case in the age group of 30-41, 42-53 and 54-59 months. Results of this disaggregation suggest that the younger age groups (6-29) were more vulnerable to acute malnutrition than older groups (30-59) according to the WHZ criterion (p-value <0.05).

Table 16: Prevalence of Acute Malnutrition per WHZ Severity and Age Group of 6-59 months

Age (months)	N	Severe wasting* (WHZ <-3)		Moderate wasting (WHZ ≥-3 to <-2)		Normal (WHZ ≥-2)		Oedema	
		n	%	N	%	N	%	n	%
6-17	176	8	4.5	25	14.2	143	81.3	0	0.0
18-29	186	5	2.7	18	9.7	163	87.6	0	0.0
30-41	159	0	0.0	10	6.3	149	93.7	0	0.0
42-53	124	0	0.0	1	0.8	123	99.2	0	0.0

54-59	62	0	0.0	1	1.6	61	98.4	0	0.0
Total	707	13	1.8	55	7.8	639	90.4	0	0.0

*There were 0 oedema cases in the sample

However, according to Poisson distribution, there were no pockets of malnutrition observed based on the Index of Dispersion for WHZ <-2 (ID=1.08; p=0.335). and all the cases were informally distributed among the clusters.

The WHZ distribution curve (in red) as compared to the WHO 2006 reference WHZ distribution curve (in green) and as presented in Figure 4 below demonstrates a shift to the left, suggesting a malnourished population. Figure 5 illustrates the mean WHZ for age categories and more affected children were 6-17 months.

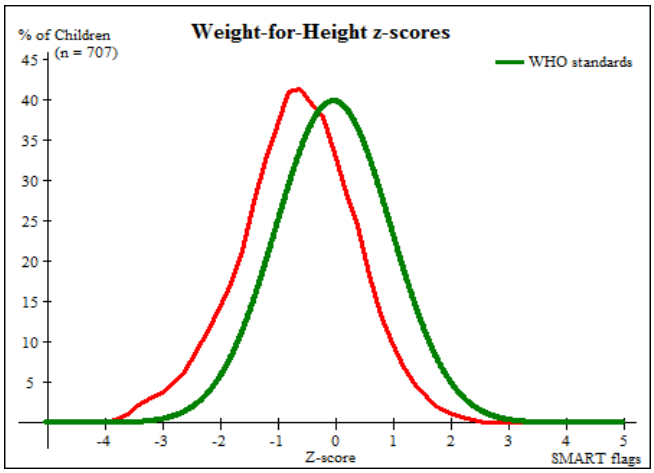


Figure 4: Distribution of WHZ Sample Compared to the WHO 2006 WHZ Reference Curve

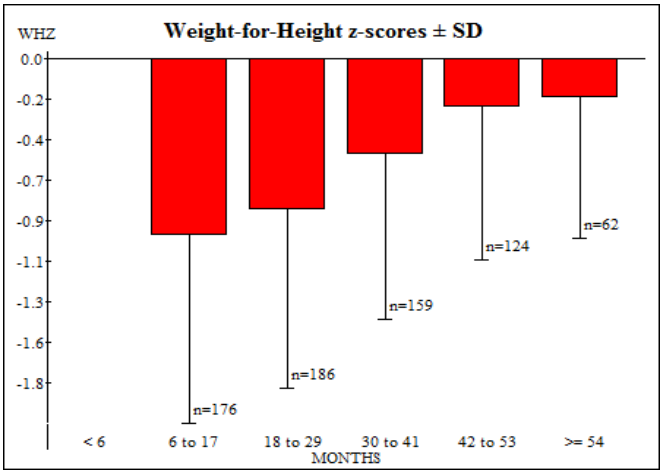
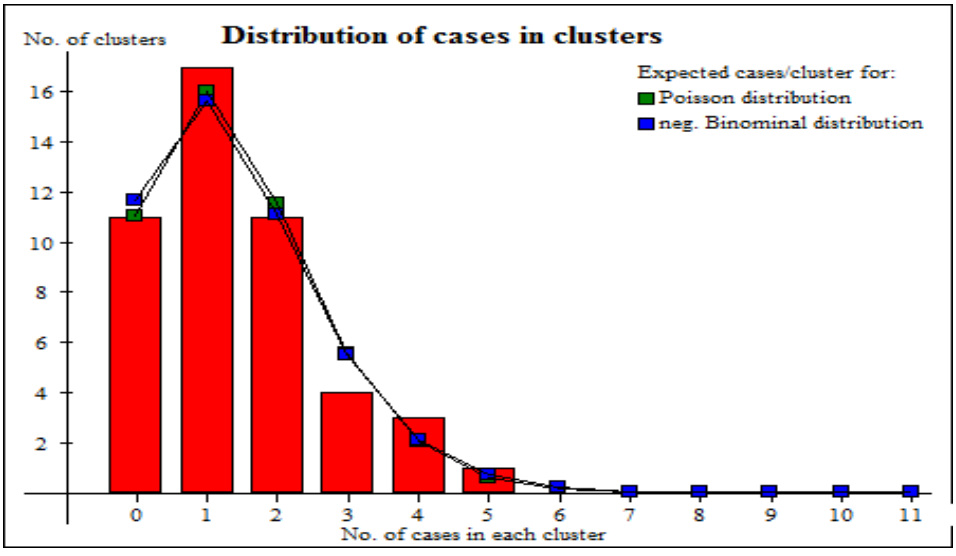


Figure 5: Means WHZ by age groups



7.3.2 Acute malnutrition by MUAC

The prevalence of GAM per MUAC among children 6-59 months in Nangarhar was 10.1% (7.9-12.9 95% CI). The prevalence of SAM per MUAC among children 6-59 months was 2.4% (1.5-3.9 95% CI). As presented in Table 17 below.

Table 17: Prevalence of Acute Malnutrition by MUAC (and/or oedema) by Severity and Sex among children 6-59 months

Indicators	All n = 712	Boys n = 382	Girls n = 330
Prevalence of global malnutrition (<125 mm and/or Oedema)[11]	(72) 10.1 % (7.9 - 12.9 95% C.I.)	(35) 9.2 % (6.3 - 13.2 95% C.I.)	(37) 11.2 % (7.9 - 15.7 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm to ≥115 mm, no Oedema)	(55) 7.7 % (6.0 - 9.8 95% C.I.)	(29) 7.6 % (5.1 - 11.1 95% C.I.)	(26) 7.9 % (5.7 - 10.8 95% C.I.)
Prevalence of severe malnutrition(< 115 mm and/or Oedema)	(17) 2.4 % (1.5 - 3.9 95% C.I.)	(6) 1.6 % (0.6 - 3.8 95% C.I.)	(11) 3.3 % (1.7 - 6.3 95% C.I.)

When disaggregated by age group, 6-17 months had the highest MAM and SAM, Table 18 shows the older age groups 42-53 and 54-59 months had no SAM cases. The younger age groups (6-29) were statistically more vulnerable to acute malnutrition compared to older groups (30-59) as per the MUAC criteria (p-value < 0.05).

Table 18: Prevalence of Acute Malnutrition per MUAC and/or Oedema by Severity and Age Group.

Age (months)	N	Severe wasting* (MUAC<115 mm)		Moderate wasting (MUAC ≥115 mm and <125 mm)		Normal (MUAC ≥125 mm)		Oedema	
		N	%	N	%	N	%	n	%
6-17	181	10	5.5	26	14.4	145	80.1	0	0.0
18-29	186	6	3.2	24	12.9	156	83.9	0	0.0
30-41	159	1	0.6	4	2.5	154	96.9	0	0.0
42-53	124	0	0.0	1	0.8	123	99.2	0	0.0

54-59	62	0	0.0	0	0.0	62	100.0	0	0.0
Total	712	17	2.4	55	7.7	640	89.9	0	0.0

7.3.3 Acute Malnutrition by Oedema

No Oedema case was observed in the sample. Table 19 below illustrates data for the presence and absence of oedema cases.

Table 19: Distribution of Severe Acute Malnutrition per Oedema among Children 6-59 Months

	WHZ <-3	WHZ>=-3
Presence of Oedema*	Marasmic kwashiorkor. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Absence of Oedema	Marasmic No. 18 (2.5%)	Not severely malnourished No. 693 (97.5 %)

*There were not oedema cases in the sample

7.3.4 Combined Acute Malnutrition by WHZ and/or MUAC and/or Oedema

The prevalence of Combined GAM & SAM among children 6-59 months in Nangarhar was 15.7% and 3.5% respectively. Although there is not globally established threshold for Combined GAM, the GAM and SAM prevalence was slightly higher than for WHZ or MUAC separately, confirming that MUAC and WHZ are independent indicators for malnutrition. Table 20, below illustrates the results for combine GAM.

Table 20: Prevalence of combine Acute Malnutrition by WHZ + MUAC by Severity and Sex among Children 6-59 months

Indicators	All n = 712	Boys n = 382	Girls n =330
Prevalence of Global Acute Malnutrition (MUAC<125 mm and/or WHZ<-2SD and/or Oedema)	(112) 15.7 % (13.1 - 18.8 95% C.I.)	(60) 15.7 % (11.9 - 20.4 95% C.I.)	(52) 15.8 % (12.2 - 20.2 95% C.I.)
Prevalence of Severe Acute Malnutrition (MUAC<115 mm+ and/or WHZ<-3SD and/or Oedema)	(25) 3.5 % (2.3 - 5.2 95% C.I.)	(13) 3.4 % (1.8 - 6.4 95% C.I.)	(12) 3.6 % (2.0 - 6.5 95% C.I.)

* There were not oedema cases in the sample

The combined rate informs the estimated SAM and MAM caseload in the province for better programming. All the children in the sample detected as acutely malnourished (either by MUAC or WHZ or Oedema) are reflected in this calculation according to combined criteria. To detect all acutely malnourished children eligible for treatment, the MUAC only detection at community level for screening an referral is not enough according to Afghanistan IMAM Guidelines. This should be further investigated.

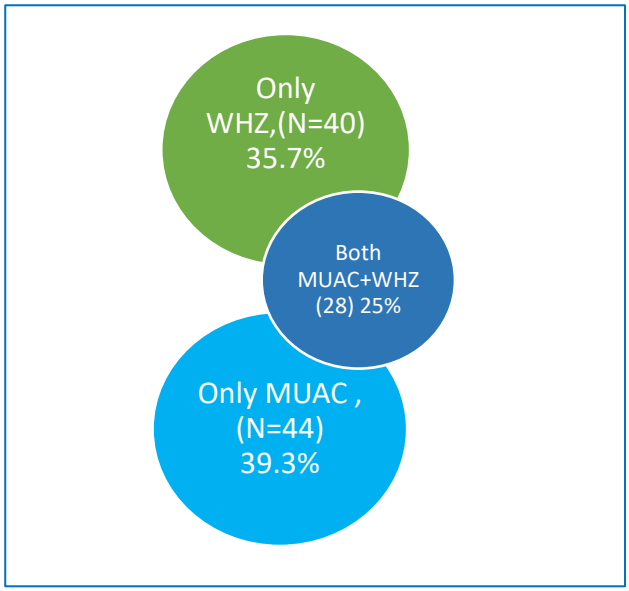


Figure 6: Overlapping WHZ and MUAC data

See figure 6 in the actual acute malnutrition comparing WHZ <-2 Z-score with MUAC <125 mm and there is slight difference respectively.

7.3.5 Enrolment in nutrition program: OPD/IPD for SAM/MAM cases

The proportion of children identified as acutely malnourished and their corresponding treatment enrolment status are presented in Table 21 below.

Overall, out of 72 children 6-59 months old identified as acutely malnourished by MUAC and WHZ by the teams in the field, 44 were MAM cases and 28 were SAM cases. The proxy program coverage for all malnourished cases was 38.9%. Majority 44 (61.1%) out of 84 children identified as malnourished were not in any program and were referred to the nearby appropriate program in the respective area.

Table 21: Proportion of Acutely Malnourished Children 6-59 Months enrolled in a Treatment Program

Sample	Enrolled in an OPD SAM	Enrolled in an OPD MAM	Enrolled in an IPD SAM	Not Enrolled/ Referred
Acutely malnourished children 6-59 months by MUAC and WHZ, or oedema (N=72)	5	23	0	44

7.7. Prevalence of Chronic Malnutrition

The prevalence of stunting per HAZ among children 6-59 months in Nangarhar province was 33.7%, as presented in Table 22 below. According to UNICEF-WHO thresholds 2018[12], this prevalence was categorized as very serious. There was no significant difference based on gender.

Table 22: Prevalence of Chronic Malnutrition by HAZ by Severity and Sex among Children 6-59 months, WHO 2006 Reference.

Indicators	All n = 704	Boys n = 378	Girls n = 326
Prevalence of chronic malnutrition (HAZ <-2 SD)	(237) 33.7 % (29.6 – 38.0 95% C.I.)	(139) 36.8 % (31.7 - 42.2 95% C.I.)	(98) 30.1 % (24.2 - 36.6 95% C.I.)
Prevalence of moderate chronic malnutrition (HAZ <-2 to ≥-3 SD)	(199) 28.3 % (24.8 - 32.0 95% C.I.)	(114) 30.2 % (25.7 - 35.0 95% C.I.)	(85) 26.1 % (20.5 - 32.5 95% C.I.)
Prevalence of severe chronic malnutrition (HAZ <-3 SD)	(38) 5.4 % (4.0 - 7.2 95% C.I.)	(25) 6.6 % (4.6 - 9.4 95% C.I.)	(13) 4.0 % (2.4 - 6.6 95% C.I.)

When disaggregated by age group, the age group 18-29 months had the highest severe chronic malnutrition, Table 23, while the age group 54-59months had the lowest chronic malnutrition.

Table 23: Prevalence of Chronic Malnutrition per HAZ by Severity and Age Group

Age (months)	N	Severe stunting (HAZ <-3)		Moderate stunting (HAZ >= -3 to <-2)		Normal (HAZ>= -2)	
		N	%	N	%	n	%
6-17	177	5	2.8	38	21.5	134	75.7
18-29	182	22	12.1	66	36.3	94	51.6
30-41	159	6	3.8	52	32.7	101	63.5
42-53	124	4	3.2	31	25.0	89	71.8
54-59	62	1	1.6	12	19.4	49	79.0
Total	704	38	5.4	199	28.3	467	66.3

[12] UNICEF-WHO thresholds 2018

The HAZ distribution curve (in red) as compared to the WHO 2006 reference HAZ distribution curve (in green) as presented in Figure 8 below demonstrates a shift to the left, suggesting a very stunted population in comparison to the normal population. Further analysis suggests that linear severe growth retardation is at its highest in the group of children aged 18-29 months asshown

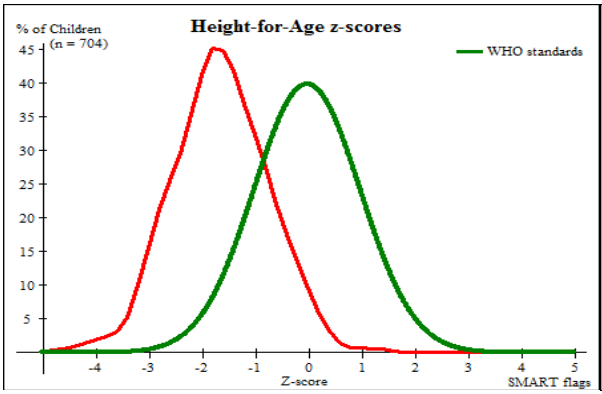


Figure 8: Distribution of HAZ Sample Compared to the WHO 2006 WHZ Reference Curve

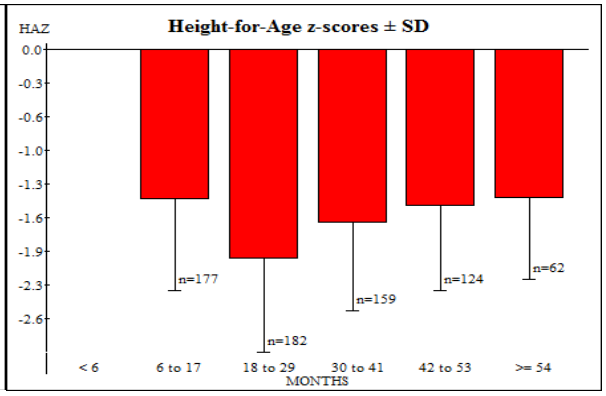


Figure 7: Mean HAZ by Age Group

7.8. Prevalence of Underweight

The prevalence of underweight per WAZ among children 6-59 months in Nangarhar was 22.2%, as presented in Table 24 below. The prevalence of severe underweight per WAZ among children 6-59months was 4.6%. According to WHO severity thresholds[13], prevalence highest categorization.

Table 24: Prevalence of Underweight by WAZ by Severity and Sex among Children 6-59 months, WHO 2006 Reference

[13] <10 low, 10-<20 medium, 20-<30 high and ≥Very high

Indicators	All n = 711	Boys n = 381	Girls n = 330
Prevalence of underweight (WAZ <-2 SD)	(158) 22.2 % (18.7 - 26.2 95% C.I.)	(95) 24.9 % (19.9 - 30.8 95% C.I.)	(63) 19.1 % (14.5 - 24.7 95% C.I.)
Prevalence of moderate underweight (WAZ <-2 and >=-3 SD)	(125) 17.6 % (14.6 - 21.0 95% C.I.)	(72) 18.9 % (14.9 - 23.7 95% C.I.)	(53) 16.1 % (12.1 - 21.0 95% C.I.)
Prevalence of severe underweight (WAZ <-3SD)	(33) 4.6 % (3.2 - 6.7 95% C.I.)	(23) 6.0 % (4.0 - 9.1 95% C.I.)	(10) 3.0 % (1.6 - 5.8 95% C.I.)

When disaggregated by age group, the age group with the highest severe underweight was 18-29 months, as presented in Table 25 below. The age groups with the lowest severe underweight were in 30-41, 42-53 and 54-59 months.

Table 25: Prevalence of Underweight per WAZ by Severity and Age Group

Age (months)	N	Severe underweight (WAZ <-3)		Moderate underweight (WAZ ≥-3 to <-2)		Normal (WHZ ≥-2)	
		n	%	n	%	n	%
6-17	181	15	8.3	36	19.9	130	71.8
18-29	185	16	8.6	47	25.4	122	65.9
30-41	159	2	1.3	28	17.6	129	81.1
42-53	124	0	0.0	10	8.1	114	91.9
54-59	62	0	0.0	4	6.5	58	93.5
Total	711	33	4.6	125	17.6	553	77.8

The WAZ distribution curve (in red) as compared to the WHO 2006 reference WAZ distribution curve (in green) as presented in figure 9 below demonstrates a large shift to the left, suggesting a very underweighted population in comparison to the normal population. Further analysis suggests that linear underweight is at its highest in the group of children aged 18-29 months as shown in figure 10.

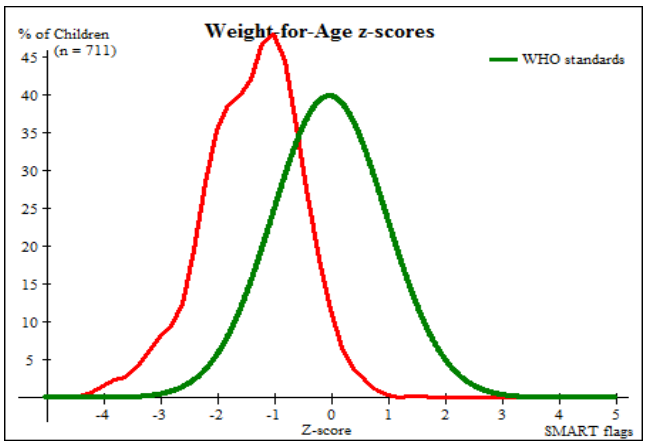


Figure 9: Distribution of WAZ Sample Compared to the WHO 2006 with Refrence Curve.

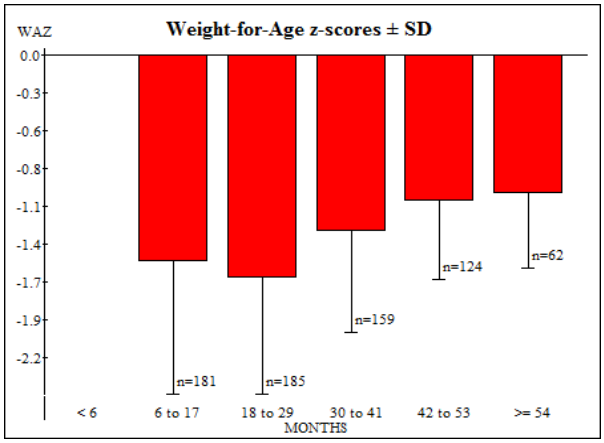


Figure 10: Mean WAZ by Age Group

7.9. Prevalence of Overweight

Table 26: Prevalence of overweight based on weight for height cut off's and by sex (no oedema) among children age 6- 59 months.

Indicators	All n = 707	Boys n = 378	Girls n = 329
Prevalence of overweight (WHZ > 2)	(3) 0.4 % (0.1 - 1.3 95% C.I.)	(1) 0.3 % (0.0 - 2.0 95% C.I.)	(2) 0.6 % (0.1 - 2.5 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

Table 27: Prevalence of overweight by age, based on weight for height (no oedema)

		Overweight (WHZ > 2)		Severe Overweight (WHZ > 3)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**
6-17	176	0	0.0	0	0.0
18-29	186	1	0.5	0	0.0
30-41	159	1	0.6	0	0.0
42-53	124	1	0.8	0	0.0
54-59	62	0	0.0	0	0.0
Total	707	3	0.4	0	0.0

7.9 Malnutrition prevalence among Women 15-49 years old based on MUAC criterion

All women of child-bearing age (15-49 years) were included in the survey. A total of 649 women were assessed for nutrition status by MUAC. The analysis further disaggregating the sample by physiological status (pregnant, lactating, both); the prevalence of wasting was 12.0%; more details are presented in Table 28 below.

Table 28: Prevalence of Acute Malnutrition among Women per MUAC

Indicators	N	MUAC <230 mm	
		n	%
All women 15-49 years <230 mm	649	78	12.0%
Pregnant women <230 mm	81	8	9.9%
Lactating women <230 mm	249	27	10.8%
Both pregnant and lactating women (at the same time) <230 mm[14]	18	2	11.1%
Non-pregnant and non-lactating women <230 mm	301	41	13.6%
All PLWs <230 mm	348	37	10.6%

7.10. Retrospective Mortality

The overall death rate for the surveyed population was 0.46 (0.26-0.81 95% CI) which is below the WHO emergency thresholds of 1.0/10,000/day. The death rate was slightly higher for males compared to females in the population. The age group with the highest death rate was 65-120 years, followed by the age group 0-4 years. Deaths rate was 0.52 (0.20-1.35 95% CI) recorded during the 100 days recall period in Nangarhar province.

Table 29: Death Rate by Age and Sex with Reported Design Effect

Population	**Death Rate (/10,000/Day)**	**Design Effect**
Overall	0.46 (0.26-0.81)	1.28
Male	0.55 (0.29-1.02)	1.00
Female	0.36 (0.17-0.79)	1.00

[14] **Women that were simultaneously pregnant and lactating*

'0-4	0.52 (0.20-1.35)	1.00
'5-11	0.11 (0.01-0.85)	1.01
'12-17	0.00 (0.00-0.00)	1.00
'18-49	0.08 (0.01-0.60)	1.00
'50-64	4.27 (1.80-9.82)	1.00
'65-120	18.18 (6.19-42.82)	1.36

Information collected about apparent causes of death showed most of the deaths attributed to illness (87.5%). Figure 11 below summaries the causes of deaths.

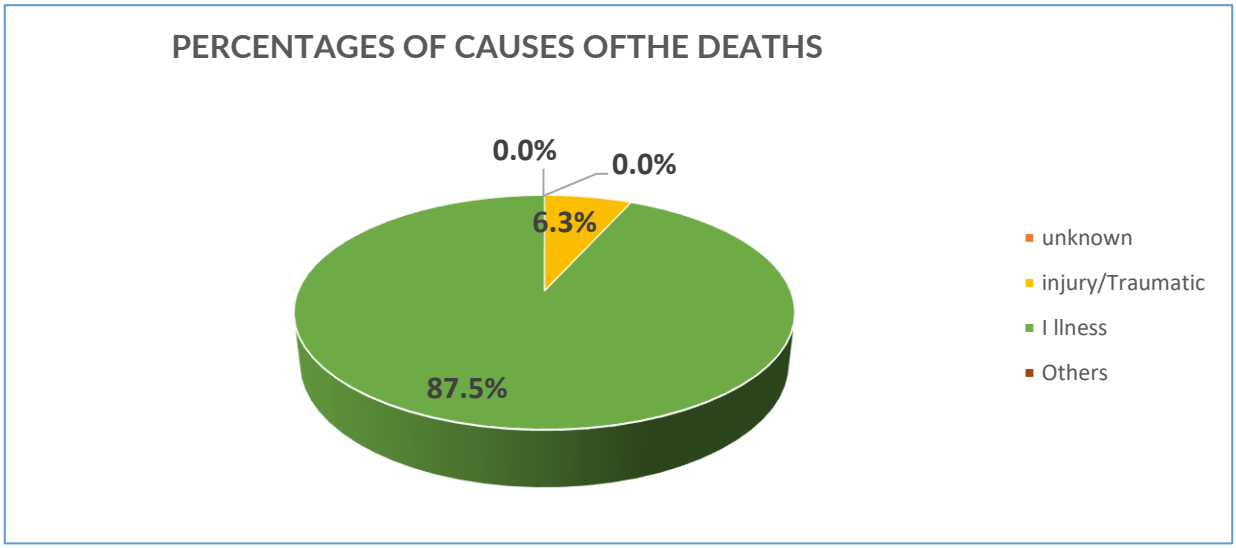


Figure 11: Percentages of causes of the deaths

7.11. Infant and Young Child Feeding (IYCF) Practices

Indicators for IYCF practices were collected from all caregivers with children less than 24 months. A total of 342 children under two years were included in the sample, with the core IYCF indicators assessed presented in Table 30 below.

The proportion of infant's breastfed within one hour of birth was 81.0% suggesting that they likely received colostrum. The proportion of infants 0-5 months exclusively breastfed was 62.5%, suggesting slightly more than two-thirds of the infants are fed replacements of breastmilk or other liquids or foods this critical stage when an infant should be receiving the protective benefits of exclusive breastfeeding. The proportion of children with continued breastfeeding at one year was 88.2% and at two years 77.6%.

Table 30: Infant and Young Child Feeding Practices

IYCF Indicator	Sample	N	n	%
Timely initiation of breastfeeding	Children 0-23 months	342	277	81.0%
Exclusive breastfeeding	Infants 0-5 months	72	45	62.5%
Continued breastfeeding at one year	Children 12–15 months	76	67	88.2%
Continued breastfeeding at two years	Children 20-23 months	58	45	77.6%

While asking questions about breastfeeding practices, caregivers of infants 0-5 months were also asked the kind of liquids or soft, semi-soft, or solid foods consumed by the infant in the past day. Figure 12 below presents the liquids most frequently displacing breastmilk. Water and foodstuffs were among the highly consumed food among the infants; this will guide the design of key messaging to guide adoption, promotion, and support of the recommended IYCF practices

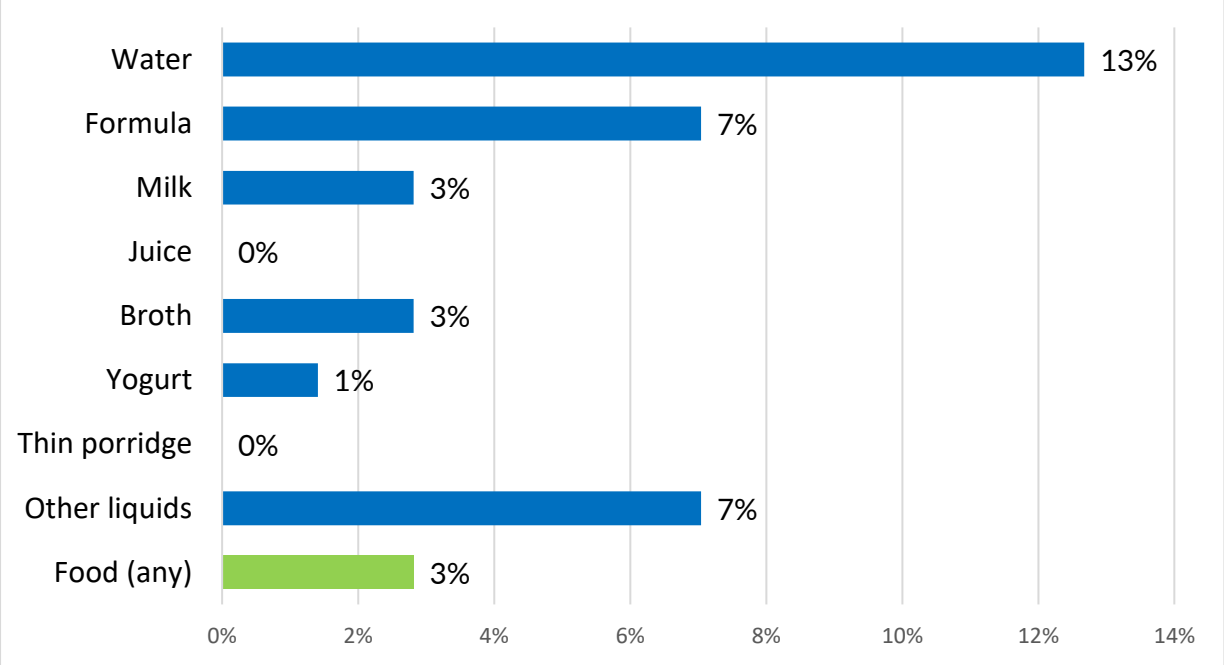


Figure 12: Liquids or Food Consumed by Infants 0-5 Months

7.12. Child Immunization Status

In Nangarhar, the survey results indicated that 97.5% of children age 9-59 months and 92.3% of children 18-59 months had received the first and second doses of measles immunization, as confirmed either by vaccination card or caregiver recall. Table 31 below illustrates the data on both dose of measles immunization coverage.

Table 31: Measles Immunization Coverages among Children 9-59 Months

Indicator	Response	First Dose 9-59m (N=676)		Second Dose 18-59m (N=530)	
		n	%	n	%
Both Doses Measles Immunization	Yes by card	331	49.0 %	214	40.4%
	Yes by recall	328	48.5 %	275	51.9 %
	Yes by card or recall	659	97.5 %	**489**	**92.3%**
	No	17	2.5 %	41	7.7%
	Don't know	0	0.0 %	0	0.0%
	Total	676	100 %	530	100%

7.12 Water, Sanitation, and Hygiene

Households were asked to identify their main source of drinking water, which was then categorized as improved or unimproved during analysis. Among all (466) households surveyed, 341 (73.2%) relied mainly on an improved water source, mostly a Borehole/well with hand pump water source, andPiped household; the remaining proportion of the households 125 (26.8%) relied mainly on an unimproved water source, most commonly well with a bucket. For more details refer to table 32 below.

Table 32: Household Main Drinking Water Source

Main Drinking Water Source N=466	Frequency	%
Improved Water Source	341	73.2%
Unimproved Water Source	125	26.8%

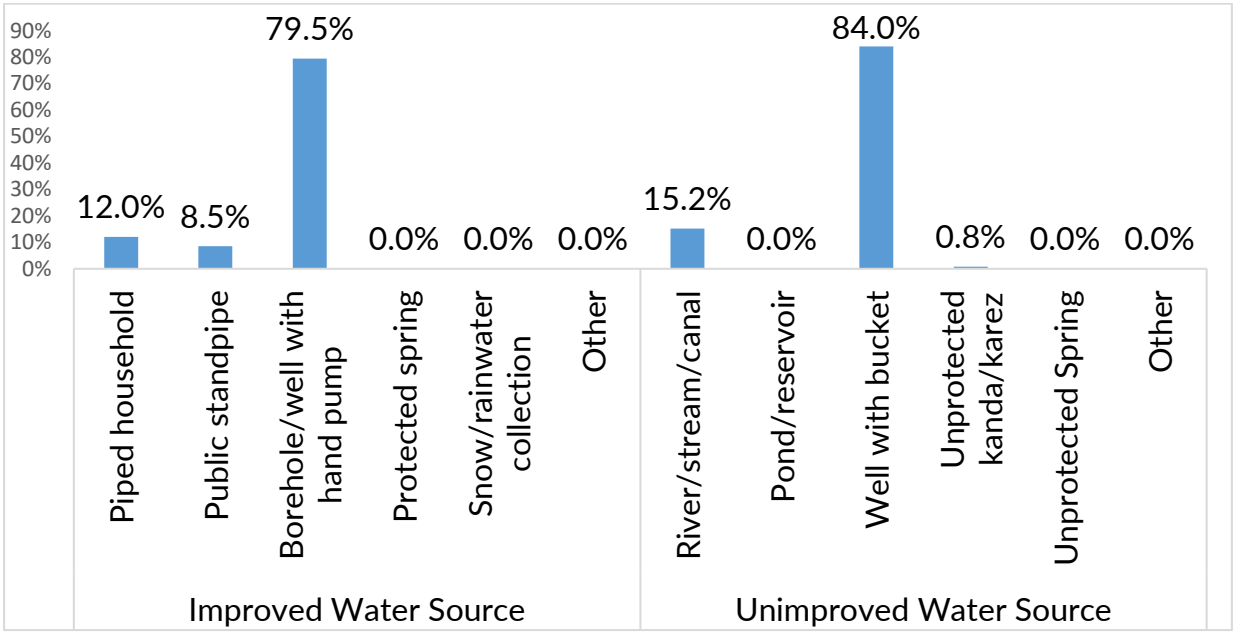


Figure 13: Household Use of Improved and Unimproved Drinking Water Sources

7.12.1 Hand Washing Practices (Use of Soap or Ash) among Caregivers

Caregivers demonstrated how they washed their hands for the interviewer. Overall, 53.6% of caregivers demonstrated washing their hands with soap/ash and water. For more details refer to table 33.

Table 33: Hand Washing Practices (Use of Soap or Ash) among Caregivers

Hand washing practices by caregivers N= 507	Frequency	%
Uses soap or ash with water	272	53.6%
Uses only water	235	46.4%
Nothing	0	0%
Other	0	0%

7.12.2 Hand Washing During Critical Moments among Caregivers

Caregiver responses about when they routinely wash their hands were assessed at five critical moments and further grouped into two categories: Hand washing after coming into contact with feces, and hand washing before coming into contact with food. Overall, only 23.9% of caregivers reported washing their hands during the five critical moments that fell into these two categories, suggesting a low understanding of the importance of handwashing at these moments.

Table 34: Hand Washing Practices by Caregivers at Critical Moments

Hand washing during Five Critical Moments	N	n	Results	Critical Moments in Two Categories[15]	N	n	Results
After defecation	507	494	97.4%	Washes hands after contact with faeces	507	278	54.8%
After cleaning baby's bottom	507	285	56.2%				
Before food preparation	507	201	39.6%	Washes hands before contact with food	507	128	25.2%
Before eating	507	353	69.6%				
Before feeding or breastfeeding children	507	199	39.3%				
Reported washing hands during all five critical moments	507	121	23.9%	Reported washing hands during critical moments in both categories.	507	121	23.9%

7.13 Food Security

7.13.1 Food Consumption Score

In Nangarhar province, 2.4% of households reported consuming the frequency and quality of food groups suggesting a poor consumption score, 24.2% a borderline consumption score, and 73.4% an acceptable food consumption score, as presented in Figure 14 below.

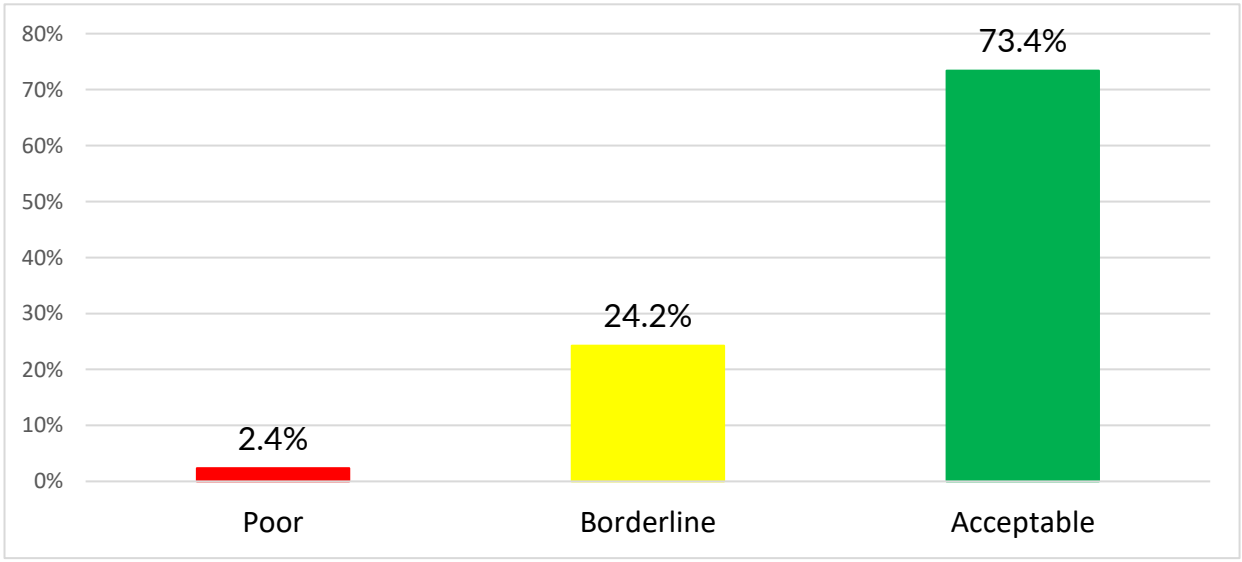


Figure 14: Household Food Consumption Score

[15] The Sphere Handbook 2018

Among surveyed households, the most frequently consumed food group was cereals (100.0%), Oil (100.0%), followed by meat, fish or egg (67.0%) The least frequently consumed food groups were fruits and dairy (63.3% and 86.5% respectively), as presented in Figure 15 below.

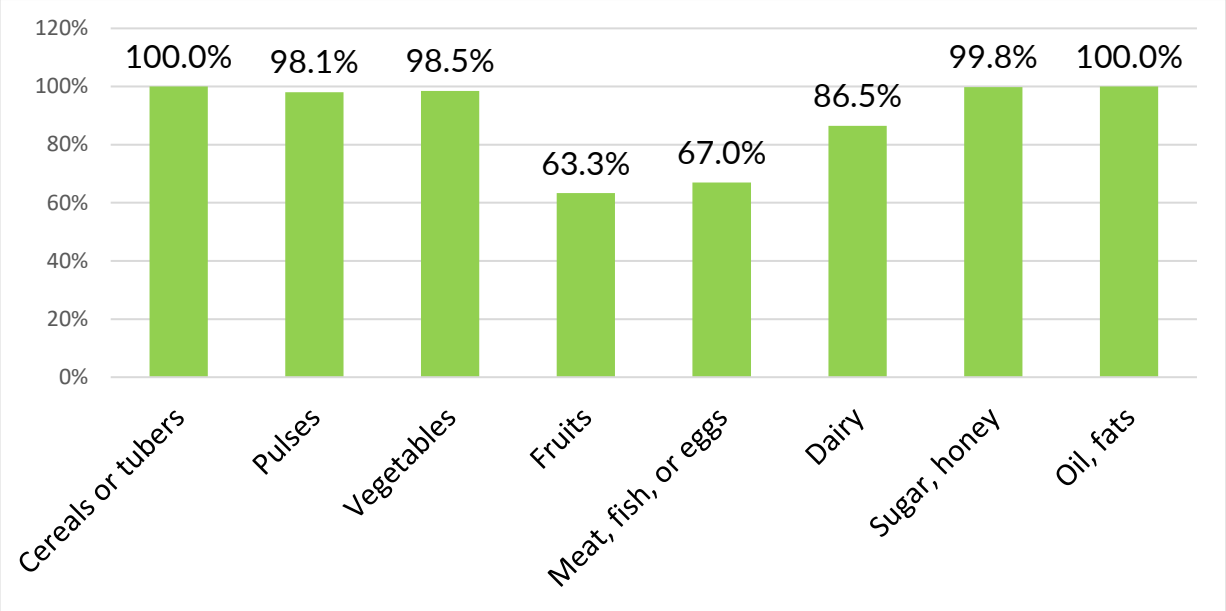


Figure 15: Frequency of Food Groups Consumed by Households

7.13.2 Reduced Coping Strategies Index

Among surveyed households, 48.7% reported not having sufficient food or money to buy food in the week prior to the survey. The most commonly reported food-related coping strategy was resorting to less preferred food 44.8%, followed by borrowing food 42.3% or rely on restricted food for adults 19.5 %, and a reduced number of meals is 15.4% as presented in Table 35 below.

Table 35: Reduce Coping Strategy Index Categories

Household Coping Strategies N=466	Frequency	%
Reported insufficient food or money to buy food per 7-day recall	277	48.7%
Relying on less preferred and less expensive foods	209	44.8%
Borrowing food, or rely on help from a friend or relative	197	42.3%
Limiting portion size at mealtimes	102	21.9%
Restricting consumption by adults for small children to eat	91	19.5%
Reducing the number of meals eaten in a day	72	15.5%

Calculated and weighted as per the rCSI, it was estimated that 57.5% of households relied on none or low coping strategies, 24.5% relied on medium coping strategies, and 18.0% relied on high coping strategies, as presented in Figure 16 below.

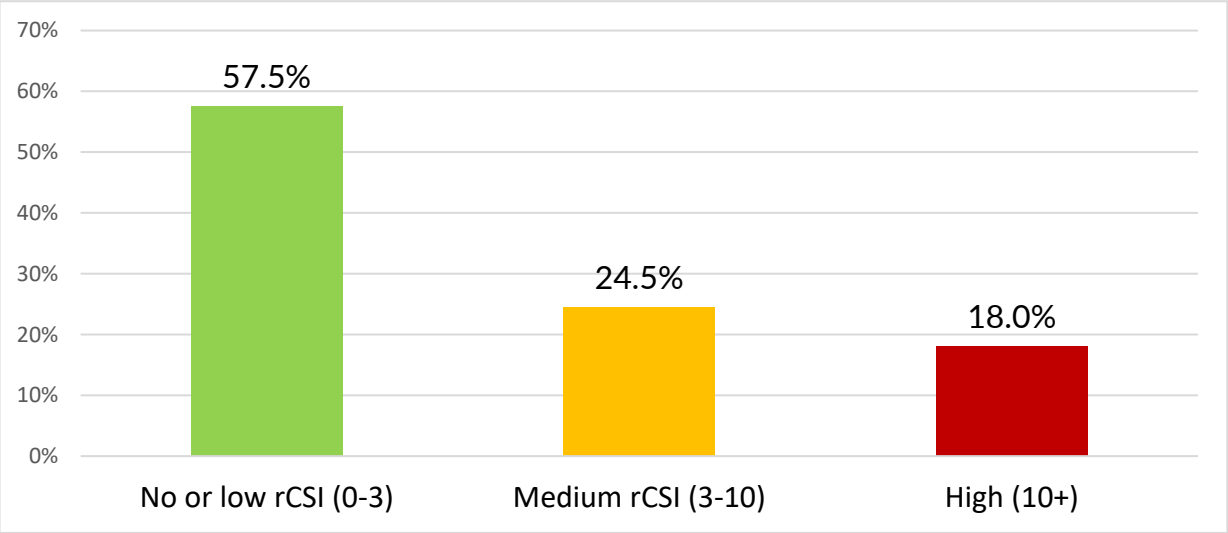


Figure 16: Household Reduced Coping Strategies Index

7.13.2 Food Security Classification

The triangulation of FCS and rCSI attempts to capture the interaction between household food consumption and coping strategies required to more appropriately reflect the food security situation in Nangarhar province. Based on this triangulation, 10.1% of households were classified as severely food insecure, 19.7% of households were moderately food insecure, and 70.2% of households were considered food secure, as presented in Figure 17.

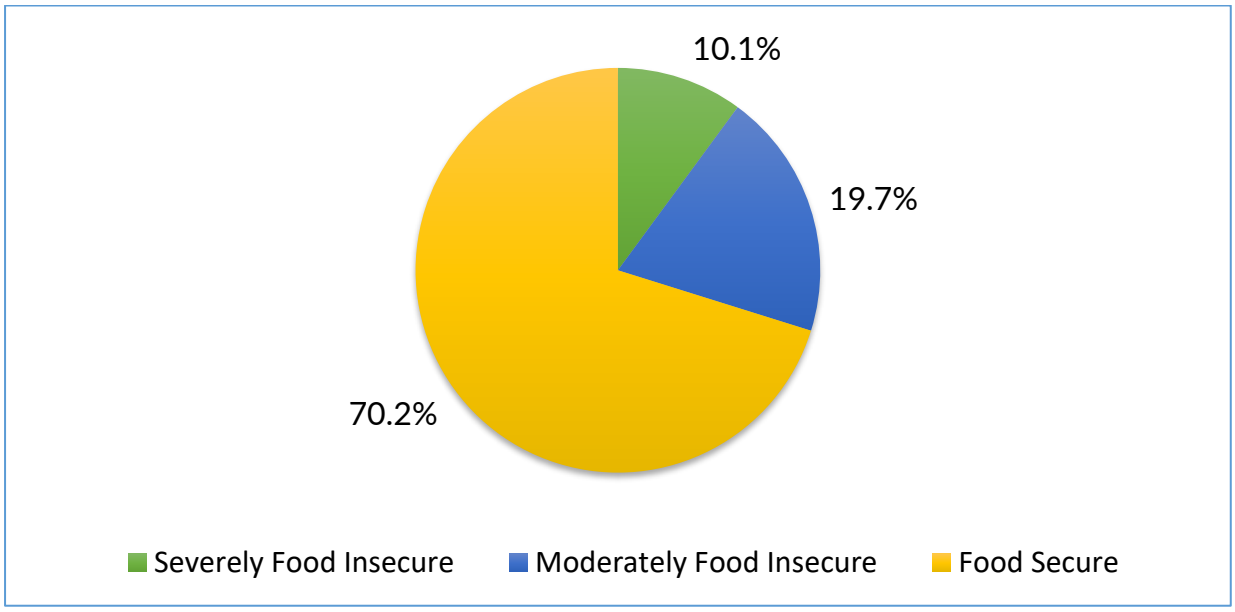


Figure 17: Food Security Classification Assessed by FCS & rSCI

8. DISCUSSION

8.1. Nutritional Status of children

The results of this survey are not a reflection of the national nutrition situation but they are the only representative of the population living in all Twenty Two districts of the Nangarhar province. The results of this survey showed a GAM and SAM prevalence of 9.6% (7.5-12.2 95% CI) and a 1.8% (1.0- 3.3 95% CI) respectively; based on MUAC, the prevalence is at 10.1% (7.9-12.9 95% CI) and 2.4% (1.5- 3.9 95% CI) GAM and SAM respectively. The prevalence falls under the medium category of emergency-threshold classification as per the latest update WHO/UNICEF 2018 threshold. However, considering the upper limit of the WHZ CI (12.2%), it's in the high category of public health significance. The SAM rate by WHZ is however below the 3.0% threshold established by the MOPH, Nutrition Cluster, and the AIM-WG for the response prioritization in the Afghanistan context as contrary to the international emergency threshold of SAM above 2.0%. The WHZ GAM rate observed in the current survey indicates a decline in the prevalence of acute malnutrition over the last three years. . The expectation was also an improvement in the malnutrition situation over the past three years due to expanded nutritional

services into new Heath Facilities, and Mobile Teams, and newly established OPD SAM, OPD MAM sites, and hired more than 60 Nutrition consular in the province. Currently, there are 89 OPD-SAM, 6 IPD-SAM, and 52 OPD MAM.

Estimation of the prevalence of malnutrition based on Combined GAM continues to add impetus to the importance of the independence diagnosis criteria of GAM by WHZ and MUAC in the identification of malnutrition hence ensuring greater coverage of children in need of treatment as demonstrated by the 15.7% (13.1-18.8 95% CI) combined GAM rate as opposed to 9.6% (7.5 –12.2) based on WHZ alone. This translates to a significant difference of caseload of acutely malnourished children.

Chronic malnutrition in Nangarhar province remains of public health concern. The prevalence of chronic malnutrition among children 6-59 months was 33.7% (29.6-38.0 95% CI), which is classified as very high according to the UNICEF-WHO 2018 thresholds. In other words, about 1 in 3 children in Nangarhar province are not reaching optimal growth and development. Statistically, significant deterioration was observed in the chronic malnutrition; the prevalence of total stunting increased to 39.5% (34.6-44.7 95% CI) in December 2016 compared to 33.7% (29.6-38.0 95% CI) in March 2020.

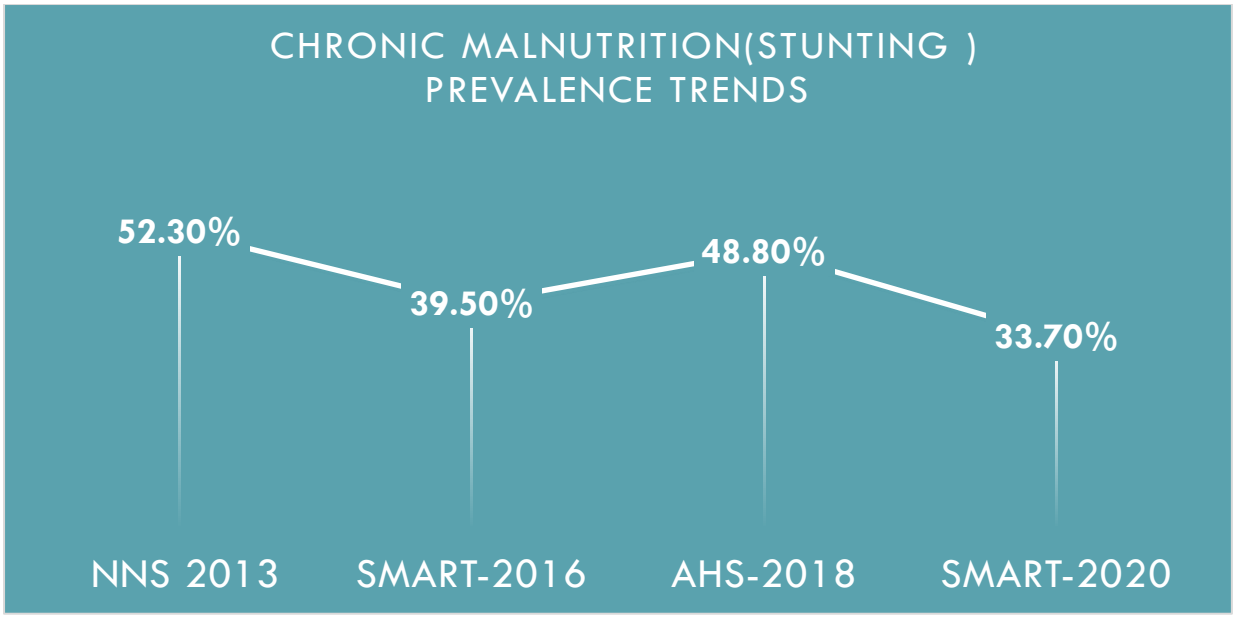


Figure 18: Stunting over time

The high prevalence is compounded further by the simultaneous presence of acute malnutrition resulting in a double burden of malnutrition. Recent research has concluded that children who are both stunted and wasted are at a heightened risk of mortality[16], further suggesting that this should be a priority group for treatment interventions. In Nangarhar province, it was found that among the 237 stunted children, 47 of them (19.6%) were also wasted by both criteria (WHZ<-2SD + MUAC<125 mm) and 11 of them (4.6%) were severely wasted.

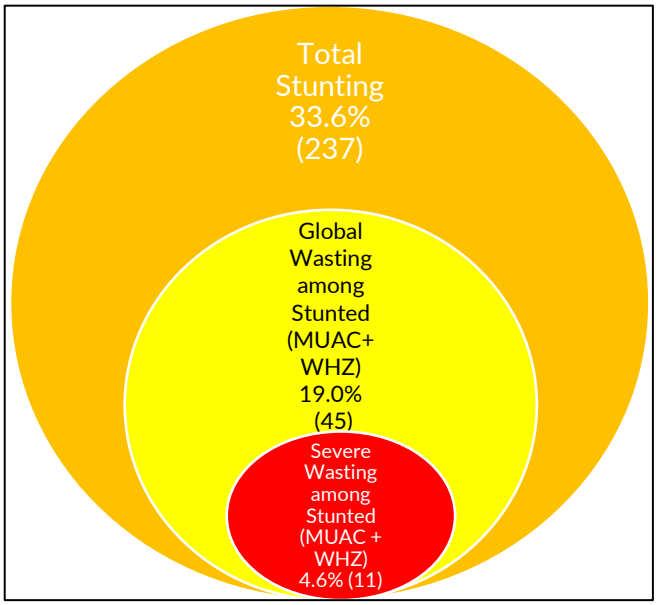


Figure 19: Among Stunted Children 6-59 Months, those Simultaneous Wasted (WHZ)

8.2. Maternal nutrition status

Acute malnutrition among women in Nangarhar province is always of concern, although there is no globally defined cut-off for acute malnutrition among women by MUAC. The results indicated 10.6% of pregnant and lactating women (PLW) were suffering from acute malnutrition. However, this shows increment compared to 8.5% in 2016; however, the increment is not statistically significant at P-Value is 0.5992.

Comparing the current SMART finding with the previous one suggests highlighted improvement in the IYCF indicators, indicating effective implementation of the nutrition and health program over the last couple of years. IYCF practices in Nangarhar province based on the findings of the current SMART survey shows improvement compared to the result of 2016 SMART survey. This survey estimates that only 62.5% of the children were exclusively breastfed before six months of age; a good excess in the exclusive breast-feeding rate compared to 2016 SMART (36.5%). The proportion of children breastfed within 1 hour after birth was 88.2 %.

Immunization is an important public health intervention that protects children from illness and disability. Based on this survey, 97.5% of children age 9-59 months, and 92.3% of the surveyed children between 18 to 59 months were immunized against measles. This shows relatively satisfactory coverage, but still high than the national target of 90.0%, thanks to a well-functioning Expanded Program on Immunization "EPI" at the national and provincial levels. Figure 20 illustrates the changes in measles second dose vaccination over the past three years.

[16] Myatt, M. et al (2018) Children who are both wasted and stunted are also underweight and have a high risk of death: a descriptive epidemiology of multiple anthropometric deficits using data from 51 countries

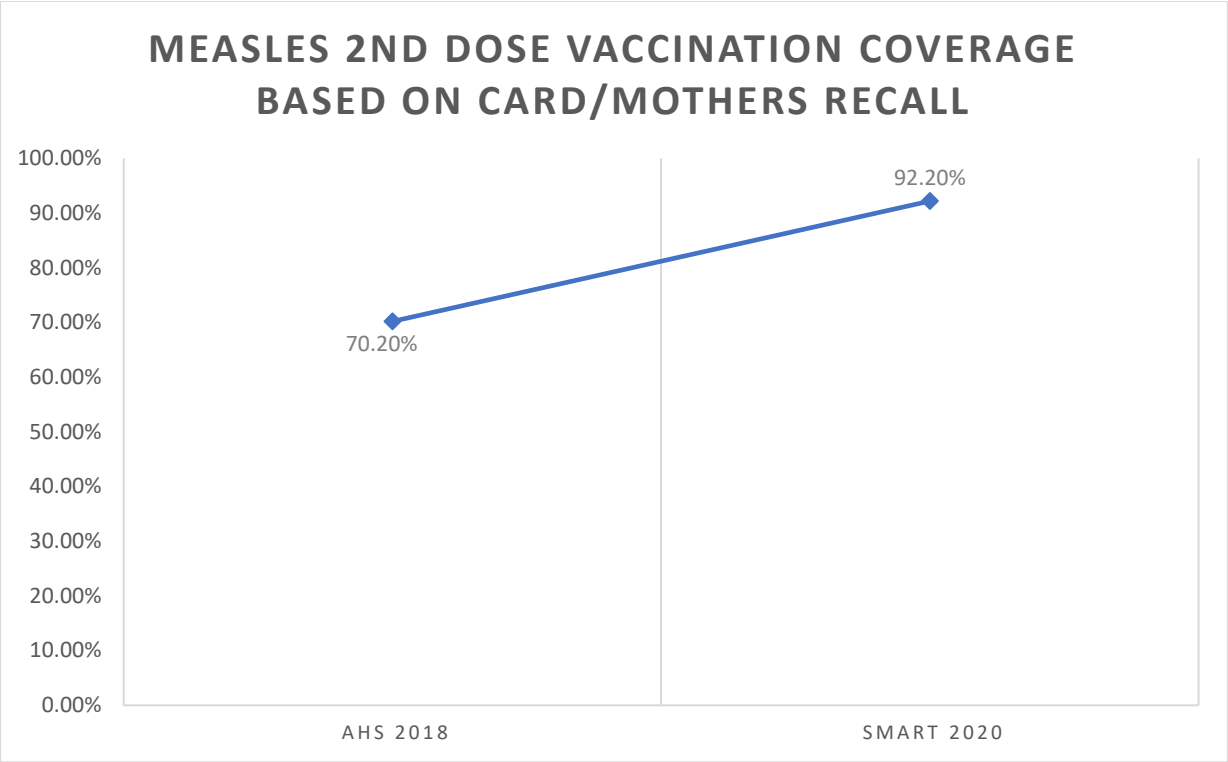


Figure 20: Measles 2nd dose vaccination coverage since 2018 – Nangarhar province

8.4. Mortality rate

The CDR and U5DR were below the WHO emergency threshold, with CDR of 0.46 death/10,000/Day and U5DR 0.52 death/10,000/Day.

9. RECOMMENDATIONS

Indicators	Recommendation	Actor	Timeline (Start date)
Nutrition	• Exclusive breastfeeding 6 months, timely introduction of complementary feeding and continuation of age-appropriate complementary feeding. • Expand Nutrition services along with IMCI and MCH services by using mobile health teams in the uncovered areas for SAM and MAM children and PLWs. • Screening of all U5 children attend HF sought care for their health to identify malnourished cases for the treatment • Increase of community awareness regarding nutrition. • Increase of the community screening and referral pathway from the community to HFs, active case-finding campaign through capacity building of community health workers (on job/formal training, and provision of MUAC tape and referral slips). through training of community health workers, FHAG (Family Health Action Groups) and Mother (Mother MUAC) on MUAC screening, identification of malnutrition and referrals. • Regular monitoring and supervision from the HFs. During the supervision, to give on the job training for all HFs staff.	AADA with support from relevant stakeholders PPHD/MoPH and WFP	Quarter 2-3, 2020
Health	• Improve the content and quality of counselling provided by health workers in the health system and community, in particular regarding early initiation of breastfeeding, exclusive. • Expand mobile health and nutrition services to the remote and hard-to-reach areas in the districts of Nangarhar province.	AADA	Quarter 1-2, 2021

	• Increasing the awareness and health education season through HFs, MHTS, CHWS, and FHAG		
WASH	• Celebration of Global Hand Washing days at community schools • Organize Community's hygiene campaigns • Conduct Refresher Hygiene Training for existing FHAGs and CHWs • Hygiene kit distribution (WASH cluster recognized one) during hygiene promotion sessions • Conduct community-based handwashing demonstrations • Construction of Water Supply Networks – Gravity Fed (Public or House to House connection) • Construction of Water Supply Networks – Solar-Powered (Public or House to House connection) • Distribution of Aqutab tablets for (chlorine table) drinking water purification in every emergency cases.	AADA with support from relevant stakeholders PPHD/MoPH and WFP	2021
Food Security	• Food security information and awareness required to let the community people mainly pregnant and lactation women on uses of the available productions through nutrition consolers, CHS, CHWs and FHAGs. • **Distribution of full package of agriculture:** Distribution of full package (50 kg wheat seed, 50 kg DAP and 50 kg Urea) since most of the population and farmers in Nangarhar province have agriculture occupation; this will strengthen their livelihood situation and build resilience to handle the crisis in future.	Directorate of Agriculture, Irrigation, and livestock) with support from relevant stakeholders (e.g. FAO and WFP	2020

Annex1: Standardization test report

	Weight	Height	MUAC
Supervisor	TEM good	TEM good	TEM good
Enumerator 1	TEM acceptable	TEM good	TEM good
Enumerator 2	TEM good	TEM good	TEM acceptable
Enumerator 3	TEM acceptable	TEM good	TEM good
Enumerator 4	TEM good	TEM acceptable	TEM good
Enumerator 5	TEM acceptable	TEM good	TEM good
Enumerator 6	TEM acceptable	TEM good	TEM good
Enumerator 7	TEM good	TEM good	TEM good
Enumerator 8	TEM acceptable	TEM good	TEM poor
Enumerator 9	TEM poor	TEM good	TEM good
Enumerator 10	TEM acceptable	TEM good	TEM good
Enumerator 11	TEM good	TEM good	TEM good
Enumerator 12	TEM acceptable	TEM acceptable	TEM good
Enumerator 13	TEM acceptable	TEM good	TEM good
Enumerator 14	TEM poor	TEM good	TEM poor
Enumerator 15	TEM poor	TEM good	TEM good
Enumerator 16	TEM good	TEM acceptable	TEM good
Enumerator 17	TEM good	TEM acceptable	TEM acceptable
Enumerator 18	TEM good	TEM acceptable	TEM good
Enumerator 19	TEM acceptable	TEM good	TEM poor
Enumerator 20	TEM good	TEM good	TEM poor

Annex 2: Standard Integrated SMART Survey Questionnaire (English)

Date (dd/mm/year)			**Cluster Name**		
Cluster Number		**Team Number**		**HH Number**	

Household Questionnaire

Start date/event of recall period: 100 days [Soviet invasion of Afghanistan **1398]**							
1	2	3	4	5	6	7	8
No.	Name	Sex (m/f)	Age (years)	Joined on or after	Left on or after	Born on or after	Died on or after
List all current household members*							
1	Head of household						
2							
3							
4							
5							
6							
7							
8							

9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
List all household members which left since the start of the recall period							
1					Y		
2					Y		
3					Y		
4					Y		
5					Y		
List all household members who died since the start of the recall period							
1							Y
2							Y
3							Y

*Household defined as all people eating from the same pot and living together (WFP definition)

Date (dd/mm/year)			**Cluster Name**		
Cluster Number		**Team Number**		**HH Number**	

Household Questionnaire

Q1. What is the household resident status?

1=Resident of this area
2=Internally displaced
3=Refugee
4=Nomadic

Date (dd/mm/year)			**Cluster Name**		
Cluster Number		**Team Number**		**HH Number**	

Child Questionnaire 0-59 months

1	2	3	4	5	6	7	8	9	10
Child ID	**Sex** (f/m)	**Birthday** (dd/mm/yyyy)	**Age** (months)	**Weight** (00.0 kg)	**Height or length** (00.0 cm)	**Measure** (l/h)*	**Bilateral edema**	**MUAC** (000 mm) *Left-arm*	**With clothes** (y/n)
1									

2									
3									
4									
5									
6									
7									
8									

**Note* <u>only</u> *if the length is measured for a child who is older than 2 years or height is measured for a child who is younger than 2 years, due to unavoidable circumstances in the field*

Child (6-59 months) ID Number					
For any child that is identified as acutely malnourished (WHZ, MUAC, or oedema) **Q5. Is the child currently receiving any malnutrition treatment services?** *Probe, ask for enrollment card and observe the treatment food (RUTF / RUSF) to identify the type of treatment service* 1=OPD SAM 2=OPD MAM 3=IPD SAM 4=No treatment 98=Don't know					
If the child is <u>not</u> enrolled in a treatment program, refer to a nearest appropriate treatment center **Q6. Did you refer the child?** 1=yes 0=no					

Date (dd/mm/year)		**Cluster Name**			
Cluster Number		**Team Number**		**HH Number**	

Child Questionnaire

Child (18-59 months) ID Number					
Q7. Has the child received <u>two doses</u> of measles vaccination? (on the upper right arm) *Ask for vaccination card to verify if available* 1=Received two doses as confirmed by vaccination card 2=Received two doses as confirmed by caregiver recall 3=Has did not receive two doses					

98=don't know						

Child (<24 months) ID Number						
Q8. How long after birth was the child first put to the breast? 1=Within one hour 2=In the first day within 24 hours 3=After the first day (>24 hours) 98=don't know						
Q9. Was the child breastfed yesterday during the day or night? *This includes if the child was fed expressed breastmilk by the cup, bottle, or by another woman (these are also considered "yes")* 1=Yes 0=No 98=don't know						
Q10. Did the child have any liquid drink other than breastmilk yesterday during the day or night? *Do not read options, a probe by asking open questions and record all that apply. Vitamin drops, ORS, or medicine as drops are not counted* 1=Yes 0=No						
A. Plain water						
B. Infant formula						
C. Powdered or fresh animal milk						
D. Juice or soft drinks						
E. Clear broth						
F. Yogurt						
G. Thin porridge						
H. Any other liquids (tea, coffee, etc.)						
Q11. Did the child have any solid, semi-solid, or soft foods yesterday during the day or night? 1=Yes 0=No 98=don't know						

Date (dd/mm/year)			**Cluster Name**		
Cluster Number		**Team Number**		**HH Number**	

Woman (15-49 years) HH Member ID Number					
Q14. Status of woman 1=Pregnant 2=Lactating 3=Pregnant and lactating 4=None					
MUAC measurement (mm)					

Annex 3: Geographical Units surveyed in Nangarhar province.

Selected Area For Nangarhar SMART						
Province_Pname	**Organization**	**HFs Name**	**Distract Name**	**Geographical unit**	**Population size**	**Cluster**
Nangarhar	AADA	CHC لعلپو ره	لعلپو ره	نظیر اباد	910	1
Nangarhar	AADA	BHC دوه خولی نازیان	نا زیان	شرقی لاندی لنډی	2100	2
Nangarhar	AADA	CHC بتی کوت	بتی کوت	علی خیل	1500	3
Nangarhar	AADA	BHC انبار خانه	بتی کوت	تکیه دوره لره برخه	1400	4
Nangarhar	AADA	DH (مبایل-۱ غنی خیل)	غنی خیل	دوا جان فارم 26 ویاله	1500	5
Nangarhar	AADA	DH غنی خیل مبایل-محمدطاهر	غنی خیل	قاری سید رازق 27 افرید	1800	RC
Nangarhar	AADA	SHC کا تیلی	غنی خیل	انار باغ فقیر گل کلی	700	6
Nangarhar	AADA	BHC پیښه	اجین	پاخیل	710	7
Nangarhar	AADA	BHC پیښه	اجین	میاگان	700	8
Nangarhar	AADA	CHC مو مندره	مو مندره	غټ کتیزی	2370	RC
Nangarhar	AADA	BHC گردی غوث	مو مندره	ملک طلا کلی	2750	9
Nangarhar	AADA	BHC دکه	مو مندره	کوز داګ کلی	1700	10
Nangarhar	HN-TPO	CHC نجم القرا	بهسود	کابلی غونډی	1456	11
Nangarhar	AADA	BHC نهرشاهی	بهسود	قلعه شاهی نواباد	1351	12
Nangarhar	AADA	BHC ثمرخیل	بهسود	ملک زلمی کلی	1820	13
Nangarhar	AADA	BHC وچ تنګی	بهسود	اول کمپ	4340	14
Nangarhar	AADA	CHC بلنذغر	بهسود	بیله تنګی، عظیم اباد	4382	RC
Nangarhar	AADA	BHC قلعه ملخ	بهسود	ملا لونګ	2730	15
Nangarhar	AADA	BHC اتاور	کوزکنر	اودیا خیل	1800	RC
Nangarhar	AADA	BHC ګمبیری	کوزکنر	ګهمبیری	2025	16
Nangarhar	AADA	CHC برکوت	دره نور	سرور	1500	17
Nangarhar	AADA	DH کامه	کامه	متفرقه	10000	18
Nangarhar	AADA	BHC لنده بوج	کامه	اغامحمد اوګوشته وال	1340	19
Nangarhar	AADA	CHC سنګرسرای	کامه	ده طاهر پتنک خان	3000	20
Nangarhar	AADA	CHC+ ګوشته	ګوشته	یعقوب خیل	2464	21
Nangarhar	AADA	CHC ماماخیل	شیرزاد	سره قلعه ، بره غاړه، ډاګ	2100	22
Nangarhar	AADA	DH خوګیانی	خوګیانی	شهرنو، عبدالرزاق باڼده	58000	23
Nangarhar	AADA	DH خوګیانی	خوګیانی	زور بازار	4000	24
Nangarhar	AADA	وزیر احمد خیل BHC	خوګیانی	اخون بابا او راغه تاخیل	1300	25
Nangarhar	AADA	BHC چمتله-۲	خوګیانی	معین شاه بلاک	2087	26
Nangarhar	AADA	BHC میمله	خوګیانی	لوی کلی،کوزه قلع ، بر ملاخیل	1550	27
Nangarhar	AADA	BHC فتح اباد	سره رود	فتح اباد	4200	28
Nangarhar	AADA	BHC هجرت کلی	سره رود	هجرت کلی	3010	29

Nangarhar	AADA	BHC هجرت کلی	سره رود	تټنګ بازیدخیل	2800	RC
Nangarhar	HN-TPO	BHC بختان	سره رود	الفت مینه	3400	30
Nangarhar	AADA	کوزشیخ مصری BHC	سره رود	ملک درخان	1000	31
Nangarhar	AADA	BHC گیره خیل	پچیر اګام	میردود او میر ا خان کلی	812	32
Nangarhar	AADA	CHC اخندذادګان	چپرهار	حافظان کلی	1900	33
Nangarhar	AADA	BHC تریلی	چپرهار	للمه منځ کلی	1414	34
Nangarhar	AADA	BHC سنکینه	چپرهار	حاجی باقی کلی او فتو کلی	1204	35
Nangarhar	AADA	BHC شپوله	هسکه مینه	شیخ میدان او چهار وازی	1500	36
Nangarhar	AADA	BHC قلعه میرجی	رودات	اخندذاد ګاناو اسمیل پاچا کلی	1640	37
Nangarhar	AADA	حصار شاهی کمپ BHC	رودات	نهم بلاک	875	38
Nangarhar	AADA	CHC راغه	حصارک	لنګرخیل	2839	39
Nangarhar	HN-TPO	BHC زرین اباد	جلال اباد	لسمه ویاله ملک ابوبکر	1498	40
Nangarhar	HN-TPO	BHCریګ شامر	جلال اباد	اتم بلاک	1001	41
Nangarhar	HN-TPO	BHC جوی هفت	جلال اباد	کابل هډه کوزه فامیلی	1500	42
Nangarhar	UMCA	BHC	جلال اباد	فضل حق مجاهد کوڅه او الفلاح پوهنتون	1764	43
Nangarhar	Private	اریانا روغتون BHC	جلال اباد	توحید اباد	1470	44
Nangarhar	MOPH	پوهنتون شفاخانه PH	جلال اباد	عرباان سره صلیب	9000	45
Nangarhar	HN-TPO	پولی کلینیک NRH RH -	جلال اباد	بګرامی پا یان	8000	46
Nangarhar	HN-TPO	پولی کلینیک NRH RH -	جلال اباد	علی خیل (ټرانسپورت)	4500	47
Nangarhar	MOPH	فاطمه الزهرا PH	جلال اباد	افغان مینه	6300	48

Annex 4: Geographical units excluded for the overall survey sampling frame.

Province Name	HF/Name	District Name	Villag Name	Total Pop
Nangarhar	CHC راغه	حصارک	حسن کڅ	600
Nangarhar	CHC راغه	حصارک	ظریف خیل	900
Nangarhar	CHC راغه	حصارک	لاورخیل , توره خواه	600
Nangarhar	CHC راغه	حصارک	توره خیل او میز غوندې	700
Nangarhar	CHC راغه	حصارک	انارګی مومندره	500
Nangarhar	CHC راغه	حصارک	میاصیب کلی ، پښی توری	600
Nangarhar	CHC راغه	حصارک	لنګرخیل	600
Nangarhar	CHC راغه	حصارک	ګلوخیل	1100
Nangarhar	CHC راغه	حصارک	اعتباری پټو قلعه	500
Nangarhar	CHC راغه	حصارک	ملکان علیم خیل	500
Nangarhar	CHC راغه	حصارک	قاضیان	500
Nangarhar	CHC راغه	حصارک	علی خیل	600

600	کډي	حصارک	راغه CHC	Nangarhar
1100	یاغی بند ، منی	حصارک	راغه CHC	Nangarhar
1000	منصورچینه ، عالم کڅ	حصارک	راغه CHC	Nangarhar
1100	بره کولاله او کوزه کولاله	حصارک	راغه CHC	Nangarhar
1200	بهاوی او توده چینه	حصارک	راغه CHC	Nangarhar
1000	کزک تری	حصارک	راغه CHC	Nangarhar
900	تومنی	حصارک	راغه CHC	Nangarhar
500	سرکاړی	حصارک	راغه CHC	Nangarhar
1000	دواب کنځره او کوکدره	حصارک	دواب SHC	Nangarhar
1000	میا خیل ځپلی زور سردار خیل	حصارک	دواب SHC	Nangarhar
500	قنداریان او کریم خیل	حصارک	دواب SHC	Nangarhar
1000	علی شیر،انجابت خیل او درګیان	حصارک	دواب SHC	Nangarhar
500	ادم خیل او کبلوک کڅ	حصارک	دواب SHC	Nangarhar
700	نینکی اوبرخګی	حصارک	دواب SHC	Nangarhar
500	لاور خیل	حصارک	دواب SHC	Nangarhar
800	ګلاب خیل او شریف خیل	حصارک	دواب SHC	Nangarhar
500	وټی	حصارک	دواب SHC	Nangarhar
700	جمال خیل او کتاره	حصارک	دواب SHC	Nangarhar
500	سفری	حصارک	دواب SHC	Nangarhar
600	مینه خیل	حصارک	دواب SHC	Nangarhar
800	سیده	حصارک	دواب SHC	Nangarhar
903	ثمرخیل	شیرزاد	ماماخیل CHC	Nangarhar
763	شورلآ خیل ، مانو	شیرزاد	ماماخیل CHC	Nangarhar
644	سرکوټ	شیرزاد	ماماخیل CHC	Nangarhar
504	بوری لوړاو لور	شیرزاد	ماماخیل CHC	Nangarhar
875	بهزآدخیل ،	شیرزاد	ماماخیل CHC	Nangarhar
336	قلعه ګي	شیرزاد	ماماخیل CHC	Nangarhar
350	سلطان قلعه	شیرزاد	ماماخیل CHC	Nangarhar
700	کلی خیل	شیرزاد	ماماخیل CHC	Nangarhar
483	مرګټ خیل	شیرزاد	ماماخیل CHC	Nangarhar
420	کوزه څمکنی	شیرزاد	ماماخیل CHC	Nangarhar
560	بره څمکنی	شیرزاد	ماماخیل CHC	Nangarhar

210	زیارت تنگی او وچه لکډ	شیرزاد	ماماخیل CHC	Nangarhar
196	شینکی	شیرزاد	ماماخیل CHC	Nangarhar
175	پاپیان	شیرزاد	ماماخیل CHC	Nangarhar
259	مزدوکی،کورم،	شیرزاد	ماماخیل CHC	Nangarhar
217	لده باغ	شیرزاد	ماماخیل CHC	Nangarhar
938	خټه شین خور	شیرزاد	توتو BHC	Nangarhar
1148	کنډئ	شیرزاد	توتو BHC	Nangarhar
1001	میلوی جمال کلی	شیرزاد	توتو BHC	Nangarhar
903	رحمان خیل غونډی کلی	شیرزاد	توتو BHC	Nangarhar
1092	ملانظرخیل ، یقوب او چنار	شیرزاد	توتو BHC	Nangarhar
805	پیټله ډاګ قلعه ګانی	شیرزاد	توتو BHC	Nangarhar
903	ډاګ کورونو او میر باش کورونه	شیرزاد	توتو BHC	Nangarhar
1092	ځاځی کلی او سلیمانی کلی	شیرزاد	توتو BHC	Nangarhar
805	حاجی کورونه قاسم داګ	شیرزاد	توتو BHC	Nangarhar
805	کوک خیل اوبوش خیل	شیرزاد	توتو BHC	Nangarhar
938	ملکانو قلعه او کټه خیل	شیرزاد	توتو BHC	Nangarhar
2205	کوټه ګي، ملاخیل، پنګزی	شیرزاد	توتو BHC	Nangarhar
903	سرخاب	شیرزاد	توتو BHC	Nangarhar
406	غامچی هدیره ، سره مورګی	شیرزاد	توتو BHC	Nangarhar
504	خانه	شیرزاد	توتو BHC	Nangarhar
608	څیله	شیرزاد	شنډ ی توت BHC	Nangarhar
1281	دیوال	شیرزاد	شنډ ی توت BHC	Nangarhar
1848	لیشکه	شیرزاد	شنډ ی توت BHC	Nangarhar
1246	شناوز	شیرزاد	شنډ ی توت BHC	Nangarhar
1225	وربشګره	شیرزاد	شنډ ی توت BHC	Nangarhar
2051	ساده کڅ	شیرزاد	شنډ ی توت BHC	Nangarhar
1001	ګردی میله	شیرزاد	شنډ ی توت BHC	Nangarhar
126	زیارت کلی ،جانه تیګه	شیرزاد	شنډ ی توت BHC	Nangarhar

1400	څپری	شیرزاد	شنډ ی توت BHC	Nangarhar
224	مصری دار کورونه ، لګډ	شیرزاد	شنډ ی توت BHC	Nangarhar
651	جندله الوڅپری	شیرزاد	شنډ ی توت BHC	Nangarhar
651	مرغه ، ړوندکی ، تره	شیرزاد	شنډ ی توت BHC	Nangarhar
800	مشندره	خوګیانی	وزیر احمد خیل BHC	Nangarhar
700	لالوکی	خوګیانی	وزیر احمد خیل BHC	Nangarhar
700	لاندی څپری	خوګیانی	وزیر احمد خیل BHC	Nangarhar
600	پاس څپری	خوګیانی	وزیر احمد خیل BHC	Nangarhar
700	خړ متین	خوګیانی	وزیر احمد خیل BHC	Nangarhar
700	ګوماغه	خوګیانی	وزیر احمد خیل BHC	Nangarhar
1120	سره غونډی،سورراغه	خوګیانی	زاوه BHC	Nangarhar
1000	چکاو،پایان کلی،ادوړکی	خوګیانی	زاوه BHC	Nangarhar
1100	بره قلع،اسمان کلی	خوګیانی	زاوه BHC	Nangarhar
980	موګی،زړه قلع	خوګیانی	زاوه BHC	Nangarhar
1100	وډیسار	خوګیانی	زاوه BHC	Nangarhar
1050	الف خیل،,چنارګی	خوګیانی	زاوه BHC	Nangarhar
820	قلعه ګانی،	خوګیانی	زاوه BHC	Nangarhar
1110	شوره خیل،	خوګیانی	زاوه BHC	Nangarhar
1100	کوزه سنګانی	خوګیانی	زاوه BHC	Nangarhar
1150	بره سنګانی	خوګیانی	زاوه BHC	Nangarhar
800	کمه زاوه نوزک جوره	خوګیانی	زاوه BHC	Nangarhar
1050	ابدی	خوګیانی	زاوه BHC	Nangarhar
1120	درګه	خوګیانی	زاوه BHC	Nangarhar
1080	کډالی	خوګیانی	زاوه BHC	Nangarhar
1100	منکی،دیګان،توده مینه	خوګیانی	زاوه BHC	Nangarhar
987	هاشم خیل،رحیم کورونه اکرم خیل	خوګیانی	نکړخیل BHC	Nangarhar
952	قلعه نظرمحمد،خازه خیل	خوګیانی	نکړخیل BHC	Nangarhar
805	ملاله غونډی	خوګیانی	نکړخیل BHC	Nangarhar
700	حبیب الرحمان،ګنګاخیل	خوګیانی	نکړخیل BHC	Nangarhar
1456	لویه ترمی	خوګیانی	نکړخیل BHC	Nangarhar

1246	کمه ترمی	خوگیانی	نکړخیل BHC	Nangarhar
735	شیخان،درانی اوصحراب قلعه	خوگیانی	نکړخیل BHC	Nangarhar
280	کچړه او چانړ	خوگیانی	نکړخیل BHC	Nangarhar
2500	کنډو ، ټانګی ، مرخنی	پچیر اګام	سلیمان خیل BHC	Nangarhar
900	موریدی ، خښی ، ټینډی	پچیر اګام	سلیمان خیل BHC	Nangarhar
250	الف خیل	پچیر اګام	سلیمان خیل BHC	Nangarhar
200	کومنکی	پچیر اګام	سلیمان خیل BHC	Nangarhar
150	فرمان	پچیر اګام	سلیمان خیل BHC	Nangarhar
250	خوالکی	پچیر اګام	سلیمان خیل BHC	Nangarhar
400	برټانګی ، کړه مینه	پچیر اګام	سلیمان خیل BHC	Nangarhar
100	نښترو ټینډی	پچیر اګام	سلیمان خیل BHC	Nangarhar
100	ماران ، پایکی	پچیر اګام	سلیمان خیل BHC	Nangarhar
500	ګوهر دره	پچیر اګام	سلیمان خیل BHC	Nangarhar
190	وچه الګډه	پچیر اګام	سلیمان خیل BHC	Nangarhar
100	اینځری	پچیر اګام	سلیمان خیل BHC	Nangarhar
150	توره بوړه	پچیر اګام	سلیمان خیل BHC	Nangarhar
105	اغا جان	پچیر اګام	سلیمان خیل BHC	Nangarhar
210	پرانګدره	پچیر اګام	سلیمان خیل BHC	Nangarhar
300	صالح ګل بابا	پچیر اګام	سلیمان خیل BHC	Nangarhar
1775	بنګزار کلی	پچیر اګام	پچیر CHC	Nangarhar
1560	لوړه مینه	پچیر اګام	پچیر CHC	Nangarhar
250	ښارکی او دودیاری	پچیر اګام	پچیر CHC	Nangarhar
230	انځیر، مرخانی او پونکو	پچیر اګام	پچیر CHC	Nangarhar
270	شرکی مرغه	پچیر اګام	پچیر CHC	Nangarhar
180	غربی مرغه	پچیر اګام	پچیر CHC	Nangarhar
630	ګورګوری	هسکه مینه	پاپین BHC	Nangarhar
315	چنارو مسجد	هسکه مینه	پاپین BHC	Nangarhar
273	بنګین او دوکانچه	هسکه مینه	پاپین BHC	Nangarhar
800	شابی	هسکه مینه	پاپین BHC	Nangarhar
420	منډه خیل	هسکه مینه	پاپین BHC	Nangarhar

550	مانوګی او سنکوټه او جنده خیل	هسکه مینه	پاپین BHC	Nangarhar
900	تنګی	هسکه مینه	اوغز BHC	Nangarhar
660	مامند لمسی	هسکه مینه	اوغز BHC	Nangarhar
300	لمر خانه محمد لمسی	هسکه مینه	اوغز BHC	Nangarhar
950	بر لختی	هسکه مینه	اوغز BHC	Nangarhar
870	کڅی	هسکه مینه	اوغز BHC	Nangarhar
717	اکا خیل	هسکه مینه	اوغز BHC	Nangarhar
150	شیخا	هسکه مینه	اوغز BHC	Nangarhar
973	څیرو کڅ	هسکه مینه	اوغز BHC	Nangarhar

Plausibility check for: AFG_Nangrahar_SMART_08042020.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.7 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**2** (p=0.051)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**4** (p=0.003)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (5)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**2** (8)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (5)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (1.00)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.18)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.12)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.335)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**8** %

The overall score of this survey is 8 %, this is excellent.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 49 %

Anthropometric Indices likely to be in error (-3 to 3 for WHZ, -3 to 3 for HAZ, -3 to 3 for WAZ, from observed mean - chosen in Options panel - these values will be flagged and should be excluded from analysis for a nutrition survey in emergencies. For other surveys this might not be the best procedure e.g. when the percentage of overweight children has to be calculated):

Line=106/ID=1: HAZ (-4.836), Age may be incorrect

Line=171/ID=1: HAZ (-4.742), Age may be incorrect
Line=303/ID=1: HAZ (-9.831), WAZ (-6.481), Age may be incorrect
Line=319/ID=2: HAZ (3.894), Age may be incorrect
Line=400/ID=1: HAZ (-5.512), Age may be incorrect
Line=416/ID=1: **WHZ (-3.903)**, Weight may be incorrect
Line=420/ID=1: **WHZ (-4.023)**, Weight may be incorrect
Line=490/ID=1: **WHZ (-4.929)**, Weight may be incorrect
Line=491/ID=1: HAZ (1.378), Height may be incorrect
Line=715/ID=2: **WHZ (-3.811)**, Weight may be incorrect
Line=747/ID=2: **WHZ (-4.114)**, Weight may be incorrect
Line=753/ID=1: HAZ (-4.676), Age may be incorrect
Line=767/ID=3: HAZ (1.344), Age may be incorrect

Percentage of values flagged with SMART flags:WHZ: 0.7 %, HAZ: 1.1 %, 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 : #################

Age ratio of 6-29 months to 30-59 months: 1.06 (The value should be around 0.85).: p-value = 0.003 (significant difference)

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

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	88/88.8 (1.0)	93/76.7 (1.2)	181/165.6 (1.1)	0.95
18 to 29	12	102/85.7 (1.2)	84/74.1 (1.1)	186/159.8 (1.2)	1.21
30 to 41	12	85/84.0 (1.0)	74/72.5 (1.0)	159/156.5 (1.0)	1.15
42 to 53	12	70/82.6 (0.8)	54/71.4 (0.8)	124/154.0 (0.8)	1.30
54 to 59	6	37/40.9 (0.9)	25/35.3 (0.7)	62/76.2 (0.8)	1.48
6 to 59	54	382/356.0 (1.1)	330/356.0 (0.9)		1.16

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

Overall sex ratio: p-value = 0.051 (boys and girls equally represented)
Overall age distribution: p-value = 0.007 (significant difference)
Overall age distribution for boys: p-value = 0.248 (as expected)
Overall age distribution for girls: p-value = 0.017 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Distribution of month of birth

Jan: ############################
Feb: ############################
Mar: ##
Apr: ##########################
May: ################################
Jun: ########################

Jul: ####################################
Aug: ##############################
Sep: ########################
Oct: ##############################
Nov: ########################
Dec: ########################

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: **5** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.150

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

Digit preference MUAC:

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

Digit .7 : ##################################
Digit .8 : ############################
Digit .9 : ##

Digit preference score: **5** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.059

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:	1.04	1.04	1.00
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	10.3%	10.3%	
calculated with current SD:	10.0%	10.0%	
calculated with a SD of 1:	9.3%	9.3%	
HAZ			
Standard Deviation SD:	1.01	0.96	0.90
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	34.0%		
calculated with current SD:	37.0%		
calculated with a SD of 1:	36.8%		
WAZ			
Standard Deviation SD:	0.86	0.84	0.84
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:			
calculated with current SD:			
calculated with a SD of 1:			

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

WHZ	p= 0.000	p= 0.000	p= 0.058
HAZ	p= 0.000	p= 0.000	p= 0.545
WAZ	p= 0.000	p= 0.000	p= 0.000

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

Skewness

WHZ	-0.38	-0.38	-0.18
HAZ	-0.61	0.12	-0.02
WAZ	-0.59	-0.35	-0.35

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	0.62	0.62	0.12
HAZ	7.21	2.04	0.21
WAZ	1.70	0.31	0.31

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=1.08 (p=0.335)
WHZ < -3: ID=1.05 (p=0.374)
GAM:      ID=1.08 (p=0.335)
SAM:      ID=1.05 (p=0.374)
HAZ < -2: ID=0.97 (p=0.539)
HAZ < -3: ID=0.84 (p=0.769)
WAZ < -2: ID=1.13 (p=0.251)
WAZ < -3: ID=1.17 (p=0.198)
```

Subjects with SMART flags are excluded from this analysis.

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

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

```
Time                                          SD for WHZ
point                 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.05 (n=47, f=0)  ##########
02: 1.12 (n=44, f=0)  ##############
03: 1.00 (n=46, f=0)  ########
04: 1.15 (n=39, f=0)  ################
05: 1.10 (n=42, f=1)  #############
06: 0.89 (n=43, f=0)  ####
07: 1.20 (n=46, f=1)  ##################
08: 1.05 (n=44, f=1)  ###########
09: 1.06 (n=45, f=0)  ###########
10: 1.05 (n=36, f=0)  ###########
11: 1.15 (n=41, f=2)  ################
12: 0.85 (n=42, f=0)  ##
13: 1.12 (n=42, f=0)  #############
14: 1.11 (n=38, f=0)  #############
15: 1.01 (n=28, f=0)  #########
16: 0.87 (n=25, f=0)  ###
17: 0.76 (n=15, f=0)
18: 0.80 (n=13, f=0)
19: 0.54 (n=09, f=0)
20: 0.52 (n=07, f=0)
21: 1.40 (n=05, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~
22: 1.19 (n=05, f=0)  ~~~~~~~~~~~~~~~~~
23: 0.47 (n=04, f=0)
24: 1.01 (n=03, f=0)  ~~~~~~~~~
```

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

Analysis by Team

Team	**1**	**2**	**3**	**4**	**5**	**6**
n =	124	124	108	115	125	116
Percentage of values flagged with SMART flags:						
WHZ:	0.0	0.8	0.0	0.9	1.6	0.9
HAZ:	2.4	0.0	0.9	1.7	1.6	0.0
WAZ:	0.0	0.0	0.0	0.0	0.8	0.0
Age ratio of 6-29 months to 30-59 months:						
	1.25	0.88	1.16	0.92	1.12	1.11
Sex ratio (male/female):						
	1.25	1.58	0.89	1.17	1.08	1.04
Digit preference Weight (%):						
.0 :	4	12	7	7	13	13
.1 :	8	12	10	7	14	11
.2 :	11	10	12	10	9	9
.3 :	8	16	13	6	13	11
.4 :	13	9	10	13	4	7
.5 :	14	5	10	10	10	16
.6 :	11	8	11	5	9	3
.7 :	13	7	10	13	9	6
.8 :	12	14	9	14	13	16
.9 :	6	7	6	15	7	9
DPS:	11	11	6	11	10	13
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Digit preference Height (%):						
.0 :	6	3	9	11	14	9
.1 :	11	18	6	15	5	14
.2 :	15	13	18	14	14	12
.3 :	13	10	13	12	16	15
.4 :	9	7	8	7	11	16
.5 :	8	18	7	8	14	6
.6 :	7	8	8	10	9	5
.7 :	10	5	8	11	6	3
.8 :	8	2	10	4	6	6
.9 :	12	17	11	8	5	14
DPS:	9	19	10	10	14	15
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						
Digit preference MUAC (%):						
.0 :	3	2	14	7	10	14
.1 :	19	13	13	10	12	9
.2 :	11	7	8	10	10	6
.3 :	6	10	11	16	14	11
.4 :	6	15	10	8	14	8
.5 :	8	13	11	16	9	9
.6 :	10	7	8	10	8	13
.7 :	11	11	7	10	10	3
.8 :	9	5	6	4	8	14
.9 :	16	15	10	9	6	14
DPS:	15	14	8	11	8	12
Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)						

Standard deviation of WHZ:

SD	1.00	1.07	0.95	1.02	1.07	1.04
Prevalence (< -2) observed:						
%		12.9		7.8	16.0	7.8
Prevalence (< -2) calculated with current SD:						
%		12.3		11.8	15.1	8.5
Prevalence (< -2) calculated with a SD of 1:						
%		10.6		11.3	13.5	7.8

Standard deviation of HAZ:

SD	1.02	0.90	0.99	0.87	1.26	0.99
observed:						
%	33.9				34.4	
calculated with current SD:						
%	36.9				39.2	
calculated with a SD of 1:						
%	36.7				36.5	

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)	24/12.8 (1.9)	40/28.8 (1.4)	0.67
18 to 29	12	15/15.5 (1.0)	14/12.3 (1.1)	29/27.8 (1.0)	1.07
30 to 41	12	15/15.2 (1.0)	13/12.1 (1.1)	28/27.3 (1.0)	1.15
42 to 53	12	13/14.9 (0.9)	2/11.9 (0.2)	15/26.8 (0.6)	6.50
54 to 59	6	10/7.4 (1.4)	2/5.9 (0.3)	12/13.3 (0.9)	5.00
6 to 59	54	69/62.0 (1.1)	55/62.0 (0.9)		1.25

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

Overall sex ratio: p-value = 0.209 (boys and girls equally represented)
Overall age distribution: p-value = 0.045 (significant difference)
Overall age distribution for boys: p-value = 0.879 (as expected)
Overall age distribution for girls: p-value = 0.000 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	15/17.7 (0.8)	9/11.2 (0.8)	24/28.8 (0.8)	1.67
18 to 29	12	20/17.1 (1.2)	14/10.8 (1.3)	34/27.8 (1.2)	1.43
30 to 41	12	17/16.7 (1.0)	11/10.5 (1.0)	28/27.3 (1.0)	1.55
42 to 53	12	15/16.4 (0.9)	9/10.4 (0.9)	24/26.8 (0.9)	1.67
54 to 59	6	9/8.1 (1.1)	5/5.1 (1.0)	14/13.3 (1.1)	1.80
6 to 59	54	76/62.0 (1.2)	48/62.0 (0.8)		1.58

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

Overall sex ratio: p-value = 0.012 (significant excess of boys)
Overall age distribution: p-value = 0.638 (as expected)
Overall age distribution for boys: p-value = 0.888 (as expected)

Overall age distribution for girls: p-value = 0.810 (as expected)
Overall sex/age distribution: p-value = 0.062 (as expected)

Team 3:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	11/11.9 (0.9)	16/13.3 (1.2)	27/25.1 (1.1)	0.69
18 to 29	12	15/11.4 (1.3)	16/12.8 (1.3)	31/24.2 (1.3)	0.94
30 to 41	12	12/11.2 (1.1)	8/12.5 (0.6)	20/23.7 (0.8)	1.50
42 to 53	12	7/11.0 (0.6)	13/12.3 (1.1)	20/23.4 (0.9)	0.54
54 to 59	6	6/5.5 (1.1)	4/6.1 (0.7)	10/11.6 (0.9)	1.50
6 to 59	54	51/54.0 (0.9)	57/54.0 (1.1)		0.89

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

Overall sex ratio: p-value = 0.564 (boys and girls equally represented)
Overall age distribution: p-value = 0.508 (as expected)
Overall age distribution for boys: p-value = 0.601 (as expected)
Overall age distribution for girls: p-value = 0.438 (as expected)
Overall sex/age distribution: p-value = 0.141 (as expected)

Team 4:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	12/14.4 (0.8)	13/12.3 (1.1)	25/26.7 (0.9)	0.92
18 to 29	12	21/13.9 (1.5)	9/11.9 (0.8)	30/25.8 (1.2)	2.33
30 to 41	12	17/13.6 (1.2)	17/11.6 (1.5)	34/25.3 (1.3)	1.00
42 to 53	12	8/13.4 (0.6)	10/11.5 (0.9)	18/24.9 (0.7)	0.80
54 to 59	6	4/6.6 (0.6)	4/5.7 (0.7)	8/12.3 (0.7)	1.00
6 to 59	54	62/57.5 (1.1)	53/57.5 (0.9)		1.17

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

Overall sex ratio: p-value = 0.401 (boys and girls equally represented)
Overall age distribution: p-value = 0.125 (as expected)
Overall age distribution for boys: p-value = 0.089 (as expected)
Overall age distribution for girls: p-value = 0.423 (as expected)
Overall sex/age distribution: p-value = 0.011 (significant difference)

Team 5:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	20/15.1 (1.3)	19/14.0 (1.4)	39/29.1 (1.3)	1.05
18 to 29	12	13/14.6 (0.9)	14/13.5 (1.0)	27/28.1 (1.0)	0.93
30 to 41	12	15/14.3 (1.1)	9/13.2 (0.7)	24/27.5 (0.9)	1.67
42 to 53	12	13/14.1 (0.9)	12/13.0 (0.9)	25/27.0 (0.9)	1.08
54 to 59	6	4/7.0 (0.6)	6/6.4 (0.9)	10/13.4 (0.7)	0.67
6 to 59	54	65/62.5 (1.0)	60/62.5 (1.0)		1.08

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

Overall sex ratio: p-value = 0.655 (boys and girls equally represented)
Overall age distribution: p-value = 0.301 (as expected)
Overall age distribution for boys: p-value = 0.538 (as expected)

Overall age distribution for girls: p-value = 0.513 (as expected)
Overall sex/age distribution: p-value = 0.159 (as expected)

Team 6:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	14/13.7 (1.0)	12/13.3 (0.9)	26/27.0 (1.0)	1.17
18 to 29	12	18/13.2 (1.4)	17/12.8 (1.3)	35/26.0 (1.3)	1.06
30 to 41	12	9/13.0 (0.7)	16/12.5 (1.3)	25/25.5 (1.0)	0.56
42 to 53	12	14/12.8 (1.1)	8/12.3 (0.6)	22/25.1 (0.9)	1.75
54 to 59	6	4/6.3 (0.6)	4/6.1 (0.7)	8/12.4 (0.6)	1.00
6 to 59	54	59/58.0 (1.0)	57/58.0 (1.0)		1.04

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

Overall sex ratio: p-value = 0.853 (boys and girls equally represented)
Overall age distribution: p-value = 0.279 (as expected)
Overall age distribution for boys: p-value = 0.420 (as expected)
Overall age distribution for girls: p-value = 0.319 (as expected)
Overall sex/age distribution: p-value = 0.071 (as expected)

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

Team: 1

```
Time                                                SD for WHZ
point                 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.33 (n=08, f=0)  ######################
02: 1.50 (n=08, f=1)  ##############################
03: 1.06 (n=08, f=0)  ###########
04: 1.47 (n=06, f=0)  ############################
05: 0.84 (n=08, f=0)  ##
06: 0.78 (n=07, f=0)
07: 1.19 (n=08, f=0)  ################
08: 1.28 (n=08, f=0)  ####################
09: 0.84 (n=07, f=0)  ##
10: 1.15 (n=05, f=0)  ###############
11: 0.59 (n=08, f=0)
12: 0.69 (n=07, f=0)
13: 0.68 (n=08, f=0)
14: 0.87 (n=08, f=0)  ###
15: 0.93 (n=08, f=0)  #####
16: 0.54 (n=05, f=0)
17: 0.06 (n=02, f=0)
18: 0.17 (n=02, f=0)
19: 0.14 (n=02, f=0)

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

Team: 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: 0.89 (n=08, f=0)  ####
02: 1.15 (n=08, f=0)  ###############
03: 0.67 (n=08, f=0)
04: 1.05 (n=07, f=0)  ###########
05: 0.69 (n=08, f=0)
06: 0.95 (n=08, f=0)  ######
```

```
07: 0.98 (n=07, f=0)  #######
08: 1.26 (n=08, f=0)  ###################
09: 1.41 (n=08, f=0)  ########################
10: 1.19 (n=07, f=0)  ################
11: 1.76 (n=08, f=1)  ########################################
12: 0.86 (n=07, f=0)  ###
13: 0.89 (n=07, f=0)  ####
14: 0.99 (n=07, f=0)  ########
15: 1.51 (n=05, f=0)  ##############################
16: 0.98 (n=05, f=0)  ########
17: 0.77 (n=03, f=0)
18: 0.43 (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: 0.58 (n=08, f=0)
02: 1.01 (n=08, f=0)  #########
03: 1.06 (n=07, f=0)  ############
04: 0.79 (n=08, f=0)
05: 1.18 (n=07, f=0)  ################
06: 1.05 (n=07, f=0)  ##########
07: 0.89 (n=08, f=0)  ####
08: 0.56 (n=07, f=0)
09: 1.33 (n=08, f=0)  ######################
10: 0.97 (n=05, f=0)  #######
11: 0.75 (n=04, f=0)
12: 0.48 (n=06, f=0)
13: 1.31 (n=06, f=0)  ####################
14: 1.15 (n=04, f=0)  ################
15: 0.03 (n=02, f=0)
16: 1.44 (n=03, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOO
17: 0.70 (n=02, f=0)
18: 0.51 (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: 1.07 (n=08, f=0)  ##########
02: 1.20 (n=07, f=0)  ################
03: 1.06 (n=08, f=0)  ##########
04: 1.36 (n=06, f=0)  ########################
05: 1.28 (n=07, f=0)  ####################
06: 1.16 (n=07, f=0)  ###############
07: 1.63 (n=08, f=1)  ###################################
08: 0.64 (n=08, f=0)
09: 0.68 (n=07, f=0)
10: 0.88 (n=06, f=0)  ###
11: 0.86 (n=07, f=0)  ##
12: 0.83 (n=08, f=0)  #
13: 1.01 (n=07, f=0)  #########
14: 0.44 (n=06, f=0)
15: 0.85 (n=05, f=0)  ##
16: 0.49 (n=05, f=0)
17: 0.79 (n=02, f=0)
18: 0.50 (n=02, f=0)
```

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

Team: 5

```
Time                                          SD for WHZ
point               0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
```

```
01: 1.16 (n=07, f=0)  ###############
02: 1.19 (n=06, f=0)  ################
03: 1.32 (n=07, f=0)  ######################
04: 1.51 (n=05, f=0)  ############################
05: 1.75 (n=04, f=1)  ########################################
06: 0.84 (n=07, f=0)  ##
07: 0.80 (n=07, f=0)
08: 1.70 (n=05, f=1)  ####################################
09: 0.63 (n=07, f=0)
10: 1.09 (n=05, f=0)  ############
11: 0.94 (n=07, f=0)  ######
12: 0.49 (n=07, f=0)
13: 1.73 (n=07, f=0)  ########################################
14: 1.12 (n=07, f=0)  ############
15: 1.22 (n=05, f=0)  #################
16: 0.87 (n=05, f=0)  ###
17: 0.08 (n=04, f=0)
18: 0.63 (n=04, f=0)
19: 0.44 (n=04, f=0)
20: 0.60 (n=04, f=0)
21: 1.85 (n=02, f=0)  OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
22: 1.21 (n=02, f=0)  OOOOOOOOOOOOOOOO
23: 0.69 (n=02, f=0)
24: 0.56 (n=02, f=0)

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

Team: 6

```
Time                                          SD for WHZ
point                 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.98 (n=08, f=0)  ########
02: 0.47 (n=07, f=0)
03: 0.91 (n=08, f=0)  #####
04: 0.83 (n=07, f=0)  #
05: 0.92 (n=08, f=0)  #####
06: 0.53 (n=07, f=0)
07: 0.91 (n=08, f=0)  #####
08: 0.90 (n=08, f=0)  ####
09: 1.21 (n=08, f=0)  ##################
10: 0.97 (n=08, f=0)  #######
11: 1.21 (n=07, f=1)  ##################
12: 1.43 (n=07, f=0)  ############################
13: 1.04 (n=07, f=0)  ##########
14: 1.19 (n=06, f=0)  #################
15: 0.48 (n=03, f=0)
16: 0.14 (n=02, f=0)
17: 1.02 (n=02, f=0)  ~~~~~~~~~

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

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

Annex 6: Local Events Calendar developed and used in Nangarhar SMART 2020

1399	میاشتی	1398	میاشتی	1397	میاشتی	1396	میاشتی	1395	میاشتی	1394	میاشتی	میاشت
د نوروز ورځ ،دهقان ورځ، نارنج ګل مشاعره ،دمیوی ګل، بارانونه کیڑی، د کوکنار ګل سبزی جات کرل کڑی، ونی کرل کیڑی، دونو د ګلانو د غوړیدو وخت، د برات مراسم	1	د نوروز ورځ ،دهقان ورځ، نارنج ګل مشاعره ،دمیوی ګل، بارانونه کیڑی، د کوکنار ګل سبزی جات کرل کڑی، ونی کرل کیڑی، دونو د ګلانو د غوړیدو وخت، د برات مراسم	13	د نوروز ورځ ،دهقان ورځ، نارنج ګل مشاعره ،دمیوی ګل، بارانونه کیڑی، د کوکنار ګل سبزی جات کرل کڑی، ونی کرل کیڑی، دونو د ګلانو د غوړیدو وخت، د برات مراسم	25	د نوروز ورځ ،دهقان ورځ، نارنج ګل مشاعره ،دمیوی ګل، بارانونه کیڑی، د کوکنار ګل سبزی جات کرل کڑی، ونی کرل کیڑی، دونو د ګلانو د غوړیدو وخت، د برات مراسم	37	د نوروز ورځ ،دهقان ورځ، نارنج ګل مشاعره ،دمیوی ګل، بارانونه کیڑی، د کوکنار ګل سبزی جات کرل کڑی، ونی کرل کیڑی، دونو د ګلانو د غوړیدو وخت، د برات مراسم	49			حمل
		د ازادی ورخ ، غنم زیریدو وخت ، توت پخیڑی , د کوکنار وهل شروع کڑی ، توری ورخی ،د وربشی لو	12	د ازادی ورخ ، غنم زیریدو وخت ، توت پخیڑی , د کوکنار وهل شروع کڑی ، توری ورخی ،د وربشی لو	24	د ازادی ورخ ، غنم زیریدو وخت ، توت پخیڑی , د کوکنار وهل شروع کڑی ، توری ورخی ،د وربشی لو	36	د ازادی ورخ ، غنم زیریدو وخت ، توت پخیڑی , د کوکنار وهل شروع کڑی ، توری ورخی ،د وربشی لو	48			ثور
		د غنمو دلو او تریشل وخت ,امتحان شروع کیدل، ګرم بادونه د زردالو د پخیدو وخت	11	د غنمو دلو او تریشل وخت ,امتحان شروع کیدل، ګرم بادونه د زردالو د پخیدو وخت	23	د غنمو دلو او تریشل وخت ,امتحان شروع کیدل، ګرم بادونه د زردالو د پخیدو وخت	35	د غنمو دلو او تریشل وخت ,امتحان شروع کیدل، ګرم بادونه د زردالو د پخیدو وخت	47	د غنمو دلو او تریشل وخت ,امتحان شروع کیدل، ګرم بادونه د زردالو د پخیدو وخت	59	جوزا
		د جوارو د کرلو وخت ، ، د ګرمی میاشت او د انګورو د پخیدو وخت د هنداونو وخت ، دشولو کرل،	10	د جوارو د کرلو وخت ، ، د ګرمی میاشت او د انګورو د پخیدو وخت د هنداونو وخت ، دشولو کرل،	22	د جوارو د کرلو وخت ، ، د ګرمی میاشت او د انګورو د پخیدو وخت د هنداونو وخت ، دشولو کرل،	34	د جوارو د کرلو وخت ، ، د ګرمی میاشت او د انګورو د پخیدو وخت د هنداونو وخت ، دشولو کرل،	46	د جوارو د کرلو وخت ، ، د ګرمی میاشت او د انګورو د پخیدو وخت د هنداونو وخت ، دشولو کرل،	58	سرطان
		د جوارو خشاوه لوی اختر، د شولو د رنګ د توریدو وخت ، د ازادی ورځ	9	د جوارو خشاوه لوی اختر، د شولو د رنګ د توریدو وخت ، د ازادی ورځ	21	د جوارو خشاوه لوی اختر، د شولو د رنګ د توریدو وخت ، د ازادی ورځ	33	د جوارو خشاوه لوی اختر، د شولو د رنګ د توریدو وخت ، د ازادی ورځ	45	د جوارو خشاوه لوی اختر، د شولو د رنګ د توریدو وخت ، د ازادی ورځ	57	اسد
		د مکتبونو د شروع وخت ،د شهیدانو هفته، دپوهنتونونو شروع کیدل،د محرم ورځی	8	د مکتبونو د شروع وخت ،د شهیدانو هفته، دپوهنتونونو شروع کیدل،د محرم ورځی	20	د مکتبونو د شروع وخت ،د شهیدانو هفته، دپوهنتونونو شروع کیدل،د محرم ورځی	32	د مکتبونو د شروع وخت ،د شهیدانو هفته، دپوهنتونونو شروع کیدل،د محرم ورځی	44	د مکتبونو د شروع وخت ،د شهیدانو هفته، دپوهنتونونو شروع کیدل،د محرم ورځی	56	سنبله
		دشپی او ورځی برابری، د جوارو ریبل ، دهوا تغیر،د شولو لو، دکوچیانو کډه	7	دشپی او ورځی برابری، د جوارو ریبل ، دهوا تغیر،د شولو لو، دکوچیانو کډه	19	دشپی او ورځی برابری، د جوارو ریبل ، دهوا تغیر،د شولو لو، دکوچیانو کډه	31	دشپی او ورځی برابری، د جوارو ریبل ، دهوا تغیر،د شولو لو، دکوچیانو کډه	43	دشپی او ورځی برابری، د جوارو ریبل ، دهوا تغیر،د شولو لو، دکوچیانو کډه	55	میزان
		د غنمو د کرلو وخت ،د فصلونو پخیدل، دپانو د رنګ تغیر	6	د غنمو د کرلو وخت ،د فصلونو پخیدل، دپانو د رنګ تغیر	18	د غنمو د کرلو وخت ،د فصلونو پخیدل، دپانو د رنګ تغیر	30	د غنمو د کرلو وخت ،د فصلونو پخیدل، دپانو د رنګ تغیر	42	د غنمو د کرلو وخت ،د فصلونو پخیدل، دپانو د رنګ تغیر	54	عقرب
		دپانو رژیدل ، ,د نارنجانو د پخیدو وخت،دحاصلاتو راتولول،لکه شولی ،ګنی،جوار او نور، دمرغانو کډه ،شب یلدا	5	دپانو رژیدل ، ,د نارنجانو د پخیدو وخت،دحاصلاتو راتولول،لکه شولی ،ګنی،جوار او نور، دمرغانو کډه ،شب یلدا	17	دپانو رژیدل ، ,د نارنجانو د پخیدو وخت،دحاصلاتو راتولول،لکه شولی ،ګنی،جوار او نور، دمرغانو کډه ،شب یلدا	29	دپانو رژیدل ، ,د نارنجانو د پخیدو وخت،دحاصلاتو راتولول،لکه شولی ،ګنی،جوار او نور، دمرغانو کډه ،شب یلدا	41	دپانو رژیدل ، ,د نارنجانو د پخیدو وخت،دحاصلاتو راتولول،لکه شولی ،ګنی،جوار او نور، دمرغانو کډه ،شب یلدا	53	قوس
		وچه ځله،لاندی د مکتبونو د رخصت وخت ، د روسانو د راتګ وخت، دژمی پیل،	4	وچه ځله،لاندی د مکتبونو د رخصت وخت ، د روسانو د راتګ وخت، دژمی پیل،	16	وچه ځله،لاندی د مکتبونو د رخصت وخت ، د روسانو د راتګ وخت، دژمی پیل،	28	وچه ځله،لاندی د مکتبونو د رخصت وخت ، د روسانو د راتګ وخت، دژمی پیل،	40	وچه ځله،لاندی د مکتبونو د رخصت وخت ، د روسانو د راتګ وخت، دژمی پیل،	52	جدی
		توره ځله، د بادرنګو د کرلو وخت نیالګیو د کشینولو وخت، د ګلپی د کرلو وخت	3	توره ځله، د بادرنګو د کرلو وخت نیالګیو د کشینولو وخت، د ګلپی د کرلو وخت	15	توره ځله، د بادرنګو د کرلو وخت نیالګیو د کشینولو وخت، د ګلپی د کرلو وخت	27	توره ځله، د بادرنګو د کرلو وخت نیالګیو د کشینولو وخت، د ګلپی د کرلو وخت	39	توره ځله، د بادرنګو د کرلو وخت نیالګیو د کشینولو وخت، د ګلپی د کرلو وخت	51	دلوه
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