



Nutrition Anthropometric and Mortality Survey

PROVINCE OF GHOR

Conducted by ACF
in partnership with ACTD



Funded by SIDA



Date : August 30th – Sept. 9th 2014



ACKNOWLEDGEMENTS

This Anthropometric Nutrition Survey, Mortality, Infant and Young Child Feeding Practices, WASH Practices and Food Security Indicator survey was supported by Ms. Julia Wight, ACF Nutrition Strengthening Senior PM, Dr. Noor Rahman, ACF Nutrition/Health PM and Dr. Baidar Bakht, ACTD Afghanistan Centre for Training and Development program focal point.

This work would not have been possible without the dedicated efforts of the nutrition community in Afghanistan. These partners included:

- The Ministry of Public Health (MoPH) and particularly the Public Nutrition Department, for their collaboration in this project;
- The Nutrition Cluster body for their support;
- The community leaders and representatives of the surveyed villages who have supported the nutrition survey teams during the field data collection;
- The community members in the surveyed villages for welcoming and supporting the nutrition survey teams during the field work;
- The numerous Non-Governmental Organizations and United Nations agencies for sharing information on the general context in Ghor province and particularly in the selected districts;
- The entire ACF and ACTD Teams for their great work for this project.

LIST OF ACRONYMS

ACF	Action Contre la Faim
ACTD	Afghanistan Center for Training and Development
ARI	Acute Respiratory Infection
BHC	Basic Health Center
BPHS	Basic Package of Health Services
CDR	Crude Death Rate
CHC	Comprehensive Health Center
CRS	Catholic Relief Services
CSO	Central Statistics Office
EPI	Expanded Program for Immunization
FS	Food Security
GAM	Global Acute Malnutrition
HHS	Household Hunger Score
IMAM	Integrated Management of Acute Malnutrition
INGO	International Non-Governmental Organization
IYCF	Infant and Young Child Feeding
MAHFP	Months of Adequate Household Food Provision
MAM	Moderate Acute Malnutrition
MoPH	Ministry of Public Health
MUAC	Mid-Upper Arm Circumference
NRVA	National Risk and Vulnerability Assessment
OTP	Out patient Therapeutic Program
PND	Public Nutrition Department
SAM	Severe Acute Malnutrition
SC	Sub-Health Centre
TFU	Therapeutic Feeding Unit
U5DR	Under-Five Death Rate
UNICEF	United Nation Children's Fund
WASH	Water and Sanitation Hygiene
WFP	World Food Program
WHO	World Health Organization
WVA	World Vision Afghanistan

EXECUTIVE SUMMARY

Between August 30th and September 9th, the SMART¹ two-stage cluster sampling method was applied using ENA² software, version 2011 (November 2013 update). A total of 524 households corresponding to 35 clusters, each of 16 households, were surveyed covering 807 children from 0 to 59 months in four districts in Ghor province. Due to insecurity in the region, only 4 districts were included in the present survey: Shahrak, Dulaina, Chaghcharan and Lal wa Sargangal districts. All 4 districts represent a rural population.

This final report contains analysis of nutrition anthropometric indicators assessed among children 0-59 months and Mortality data for households surveyed; as well as measles vaccination rates and 2-week illness recall for diarrhoea and acute respiratory infection. Following the selection of households for the anthropometric nutrition survey, all children from 0 to 23 months old, included in the anthropometric nutrition survey were included in the IYCF study, using 4 key indicators.

Mortality and WASH indicators were collected in each household included in the survey, regardless of the availability of children or their ages in each household. The SMART survey was conducted by ACF in partnership with ACTD, BPHS implementers of Ghor province, supported by the funding of SIDA.

Key anthropometric findings: (total of 807 children aged 0-59 months were assessed)

Children 6-59 months

- GAM was **9.2%** (95% C.I: 6.8 - 12.2%) and SAM **0.7%** (95% C.I: 0.3 - 1.7%) based on Weight-for-Height and the presence of bilateral oedema
- GAM based on MUAC was of **11.9 %** (8.6 - 16.2 95% C.I.)
- **0** cases of oedema were identified
- Total stunting was **55.2%** (95% CI: 50.0-60.2) and severe stunting was **29.1%** (95% C.I: 24.9 - 34.1%)
- Total underweight was **35.7%** (95% C.I: 30.9 - 40.9%) and severe underweight was **12.7%** (95% C.I: 10.0 - 16.0%)

Children 0-59 months

- GAM was **9.8%** (95% CI: 7.3-13.0%) and SAM **0.8%** (95% CI: 0.4-1.7%) based on WHZ and/or oedema
- Stunting: **54.6%** (95% CI: 49.3 - 59.9%); severe stunting **29.1%** (95% CI: 24.8 - 33.9%)
- Underweight: **36.4%** (95% CI: 31.5 - 41.6%); severe underweight **13.2%** (95% CI: 10.3 - 16.7%)

Summary findings have excluded extreme values using SMART Flags: +/- 3SD from the observed mean.

¹ Standardized Method for Assessment in Relief and Transition

² Emergency Nutrition Assessment

Key mortality indicators: (total of 524 households were assessed)

- Mortality rates (CMR and U5MR and 95% confidence intervals)
 - CMR: **0.53** (95% CI: 0.34-0.81)
 - U5MR: **0.84** (95% CI: 0.41-1.69)

Key measles vaccination and 2-week recall morbidity results:

- A total of 693 children aged 9-59 months were assessed for measles vaccination
 - Measles vaccination confirmed verbally: **56.0%**
 - Measles vaccination confirmed with vaccination card: **18.0%**
 - No measles vaccination: **20.6%** (did not know vaccination status: **5.3%**)
- A total of 807 children aged 0-59 months were assessed in the 2-week recalls
 - Total indicating illness in past 2-weeks: **34.9%**
 - Suffered from both ARI and diarrhoea: **27.7%**

Key IYCF Indicators: (total of 318 children aged 0-23 months were assessed)

- Timely initiation of breastfeeding: **42.1%**
- Provision of colostrum in first 3 days: **38.0%**
- Exclusive breastfeeding under 6 months: **65.7%**
- Continued breastfeeding at 1 year: **98.6%**
- Introduction of solid, semi-solid or soft foods between 6-8 months: **74.4%**

Key Household WASH indicators: (total of 524 households were assessed at the household level, and 318 mothers/caretakers were assessed at the individual level)

- Type of water point: River - **40%**; Open well with bucket - **22%**; Well with hand-pump - **19%**; Tap stand - **17%**; Borehole with hand-pump - **3%**
- Presence of latrines: YES - **58.4%**; NO - **41.6%**
- Hand washing practices: **47.5%** at 4, 5 or 6 out of 6 key times; **80%** with only water

Average household size of surveyed villages: **8.6**

Recommendations:

No emergency interventions are required, as GAM rates remain below alarming rates, but support to the BPHS health implementers in order to increase capacity on diagnosis and treatment is recommendable due to the high food insecurity in the area and the very limited access to public services, through the following recommendations:

- Continue the reinforcement of the integrated CMAM programming, CMAM and IYCF, throughout the province through capacity building of referral and treatment sites
- Enhance community mobilization component of the CMAM/IMAM programming through capacity building activities and increased BPHS implementer ownership
- Prioritize activities addressing chronic malnutrition, high stunting rates, at the community level, through food security/agricultural, nutrition cooking demonstrations, IYCF, appropriate supplementation, growth monitoring, and improving maternal health and nutrition
- Ensure access to safe drinking water through WASH interventions that are sustainable and easy to maintain to address minimum water access rates
- Advocate for an integrated approach within the health system to ensure monitoring of chronic malnutrition, growth monitoring and promotion, at the health facility and primarily community level
- Advocate and support measles vaccination campaign, particularly in zones that are less accessible due to security issues
- Increase monitoring and surveillance of nutrition activities through improved and more timely reporting structure and conducting a nutrition survey using the SMART methodology on an annual basis
- Conduct regular monitoring HHS questionnaires, combined with detailed IDDS, to ensure trend analysis and inform subsequent food security interventions
- Advocate at the national level for acceptance of a standardized SMART methodology as regular monitoring tool for under nutrition levels;
- To survey districts not included in this survey, 6 districts were excluded due to security issues, and should be assessed at a later date depending on security access



Figure 1: Ghor Province, SMART Survey, 2014

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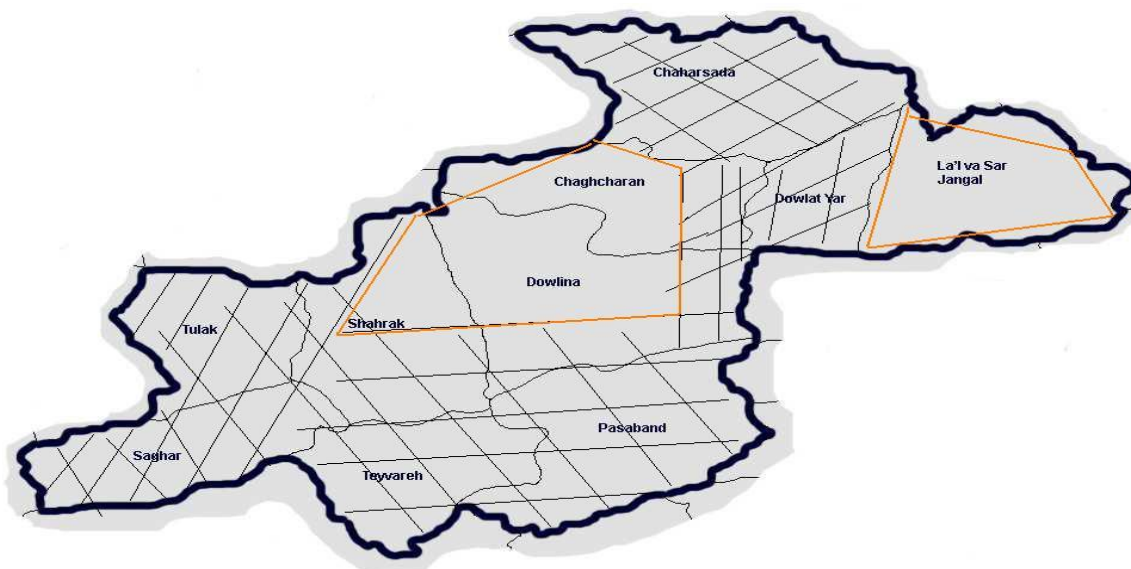
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1. INTRODUCTION

1.1. Presentation of the area

Climate and geography

Ghor is one of the 34 provinces of Afghanistan situated in the western part of the country. The province is composed of 10 districts (see the map below).



Administrative map of Ghor districts (Source: www.nps.edu).

NB: Orange zones were included in the SMART survey for random selection of clusters.

The area occupies the end of the Hindu Kush Mountains, therefore characterized by desert in the south and increasing mountainous ranges moving north. Ghor is 2,500 m above sea level and heavy snowfalls often block many of its rugged passes from November to April making the area difficult to access. In many districts, including Shahrak, Dulaina and Lal wa Sargangal, some of the villages may remain cut off for up to four months during the winter. However, many villages have no road access and the local population uses animal transport to access surroundings. The Hari-Rod River crosses the province from east to west. Though the river debit is high, the water is rarely used for irrigation due to lack of resources and means. Ghor is also a drought-prone area in the summer, with a drought affecting the region in 2013.

Chaghcharān (Persian: چنچران), in historical literature as Chakhcherān, formerly known as Ahangaran, is a town and district in central Afghanistan, which serves as the capital of Ghor Province. It is located on the southern side of the Hari-Rod River, at an altitude of 2,280 meters above sea level. Chaghcharan is linked by a 380-kilometre-long highway with Herat to the west and about the same distance with Kabul to the east. Due to severe weather conditions in winter, the road is often closed and in summer it can take three full days of drive from Chaghcharan to Kabul.

Ghor province is also highly insecure with many opposition group movements occurring during the spring and summer offenses. In the last few years, tensions between two local commanders are constantly deteriorating the overall security situation of the province. In the past year, opposition group movements have increased, traversing from the South to North. People are less willing to expand their business in such a volatile security situation. The insecurity limits people's movements as well as compromises aid and humanitarian activities in the zone due to limited access of aid agencies, both local and international.

The SMART methodology survey was conducted in late August to early September, during the first wheat harvest. August is also classified as the month with the lowest market prices³. The winter in Ghor lasts 6 months, from November to March with severe conditions; cold and snow.

Description of the population

The predominant ethnic in the surveyed area is Sunni Muslim Aimak⁴ and Shia Muslim Hazara⁵ (Bacha Ghulam and Dai Zangi) populations in the East. The area is mainly rural (99%), with the majority involved in agriculture, crops and farming, and animal husbandry, except for the town of Chaghcharan. Almost each family has at least one male member going for intermittence work to Iran, Pakistan or neighboring provinces in Afghanistan.

Due to insecurity, only 4 districts were included in the present survey: Shahrak, Dulaina, Lal wa Sargangal and Chaghcharan districts. The four districts represent 54% of the total population of Ghor (522 614 out of 970 320 inhabitants)⁶.

The province has one of the lowest male (35.2%) and female (5.1%) literacy rates in Afghanistan⁷. Down from rates indicated in the NRVA report of 2007/2008 with literacy rates of 45% and 7% consequently⁸. Employment opportunities are scarce in Ghor province, with own account work providing 46% of opportunities and day laborer providing 29% of opportunities⁹.

Services/activities and humanitarian services

Food security & Livelihoods

The majority of Ghor residents are involved in agriculture and animal husbandry. Agriculture is the major source of revenue for more than a half (66%) of households in Ghor province, including 70% of rural households¹⁰.

Water & Sanitation

According to NRVA of 2013, 20% of Ghor population has access to safe drinking water (up from 14% in 2005). Under SIDA and UNICEF grants, ACF has been implementing WASH activities in Chaghcharan, Lal, and Dulayna districts, and conducting assessments and surveys in the field of WASH. Results can be made available on request.

³ National Risk and Vulnerability Assessment (NRVA), 2013

⁴ The Aimak are a Persian-speaking nomadic or semi-nomadic tribe of mixed Iranian and Mongolian descent who inhabit the north and north-west highlands of Afghanistan and the Khorasan Province of Iran.

⁵ The Hazara are a Persian-speaking tribe of central Afghanistan of Eurasian descent.

⁶ Source: Extended Program for Immunization (EPI) village data, 2013

⁷ National Risk and Vulnerability Assessment (NRVA), 2013

⁸ NRVA 2007/08

⁹ National Risk and Vulnerability Assessment (NRVA), 2013

¹⁰ National Risk and Vulnerability Assessment (NRVA), 2013

Health & Nutrition

The health and nutrition services are provided through the Essential Package of Health Services (EPHS) and Basic Package of Health Services (BPHS) programs. EPHS is implemented by the Ministry of Public Health (MOPH) at regional and provincial hospitals' level and BPHS is meant to provide health care services at community level (Maternal & New-born care, Child health & Immunisation, Communicable diseases, Mental Health, Disability & Physical Rehabilitation, Nutrition and Regular supply of Essential Drugs). Since 2010, the Public Nutrition mandate has been included as an integral part of the BPHS and it comprises four groups of activities: assessments, prevention & treatment of malnutrition and surveillance and referral (following the national IMAM protocol).

As of January 2014, the SEHAT financing mechanism ensures that INGO or non BPHS implementers support the BPHS implementers in the implementation of nutrition programming including IMAM, which replaced CMAM programming in early 2014. Through ACTD, currently the IMAM is implemented in all 10 districts of Ghor province with 13 Outpatient Therapeutic Programs (OTPs) and 2 Therapeutic Feeding Units (TFUs) implemented in two district hospitals in Lal and Taywara districts. There are also Supplementary Feeding Program (SFP) Centres run through the WFP in 6 districts. In addition, one TFU is available in the MoPH provincial hospital in Chaghcharan, run through the EPHS program. A comprehensive map of Ghor Province active health facilities with OTP and TFUs can be found in Annex 5

Table 1.1: Functioning Community Health & Nutrition Facilities in 4 districts, June 2013 (Source: Nutrition Cluster)

No	Health facility name	Type of Health Facility	Population	Health Implementer
Lal wa Sargangel district Health facilities				
1	Lal	District hospital - TFU	44245	ACTD
2	Karman	BHC	9066	ACTD
3	Garmab	BHC	11551	ACTD
4	Talkhak	BHC	8592	ACTD
5	Khamshor	BHC	10298	ACTD
6	Qala-i-Pechi	BHC	8529	ACTD
7	Safidab	BHC	10176	ACTD
8	Qaiqanak	SC	4643	ACTD
Sub Total			107100	
Dulaina district Health facilities				
1	Dulaina	CHC - OTP	18102	ACTD
2	Khwajagan	SC	6460	ACTD
3	Sia Chob	SC	3378	ACTD
4	Farahrood	SC	6560	ACTD
Sub Total			34500	
Chaghcharan district Health facilities				
1	Chaghcharan	Provincial Hospital	23367	MoPH
2	Barakhana	BHC - OTP	15178	ACTD
3	Morghab	BHC	14895	ACTD

4	Ghorqand	BHC - OTP	15097	ACTD
5	Shewige	CHC - OTP	26431	ACTD
6	Ghalmin	BHC	15619	ACTD
7	Asperh	SC	4780	ACTD
8	Raghaskan	SC	3718	ACTD
9	Zartali	SC	5523	ACTD
10	Dahoor	SC	4992	ACTD
11	Maidanak	SC	3200	ACTD
Sub Total			132800	
Shahrak district Health facilities				
1	Kaminj	BHC	8621	ACTD
2	Shahrak	CHC + - OTP	28527	ACTD
3	Sartadia	SC	5486	ACTD
4	Jilgamazar	BHC	8621	ACTD
5	Gari Allayar	SC	6728	ACTD
6	Khowaja Bor	SC	4523	ACTD
7	Pyhasar	SC	6479	ACTD
8	Jam	BHC	7866	ACTD
Sub Total			76851	

In Ghor province, since 2012, ACF has been involved in capacity building for the CMAM/IMAM programming; including training on quality and management of CMAM programming and arrangements with UNICEF to ensure the provision of RUTF and other necessary CMAM equipment. ACF programming changed in January 2014 with the change in financing mechanisms, with BPHS implementation in Ghor province acting on the SEHAT mechanism. The MoPH, and consequently the Public Nutrition Department, is responsible for the management of IMAM results and programming, as well as with the overall supervision of the BPHS programming. The change in the funding mechanism no longer permitted ACF to work exclusively on CMAM, but to expand to support ACTD in the overall implementation of nutrition activities within the existing health system; a more horizontal approach.

To develop the programming, in January 2014, ACF initiated a health system strengthening (HSS) process, based on ACF HSS approach, to understand nutrition activities within the health system. As such, since April 2014, ACF is working on a long term nutrition programming with ACTD to focus on key nutrition messages and actions for women and children at the right time, a component of key contact points. The purpose of the program as a whole is to reduce the burden of malnutrition in Ghor province through capacity building activities; including nutrition and health training for health facility and community health worker staff of ACTD. Included in this approach are WASH activities, construction of water points and latrines and sensitization activities, at the health facility levels to increase accessibility. A multi-sector approach is also incorporated in the programming, including FS home gardens, community WASH activities and CHW nutrition sensitization activities to address chronic malnutrition causes.

Other health and nutrition actors in Ghor province include World Vision Afghanistan (WVA), who are currently working in nutrition support and training in Chaghcharan district, through ACTD. Activities of WVA include training for health facility staff at the health facility level for the province of Ghor on nutrition topics, including Infant and

Young Child Feeding Practices (mainly breastfeeding practices) and nutrition and health.

Humanitarian situation

The remoteness and the harsh climate conditions combined with insecurity makes Ghor population extremely vulnerable and decrease their capacity to cope with natural and manmade hazards. The province has been affected in 2013 by a drought. An Emergency Response Mechanism program is currently underway, since 2011, through various INGOs and National NGOs to respond to the continuing security and contextual vulnerabilities.

Humanitarian aid organizations such as Afghan Aid, ACF, World Vision, and CRS have interventions to increase the resilience and population's coping mechanisms.

1.2. Survey Objectives

- To estimate the prevalence of acute and chronic malnutrition among children from 6 to 59 months of age
- To estimate the prevalence of acute and chronic malnutrition among children from 0 to 59 months of age
- To estimate the measles vaccination coverage in children aged from 9 to 59 months of age
- To estimate the prevalence of acute diarrhoea among children from 0 to 59 months of age
- To estimate the prevalence of acute respiratory infections among children from 0 to 59 months of age
- To obtain data on Infant and Young Child Feeding (IYCF) indicators among children from 0 to 23 months of age using UNHCR SENS methodology
- To obtain data on household level WASH indicators: estimates on type of water points, quantity of water used, type of latrine and latrine usage
- To obtain data on individual hand washing indicators of women with children from 0 to 23 months of age

2. METHODOLOGY

2.1. Sample size

The sample size of households to survey was determined by using the ENA Delta software April 2011 version (Nov 2013 update) according to a 6% global acute malnutrition prevalence estimation with a desired precision estimated of 3% and a design effect equal to 2. The table below summarizes all parameters used for sample size calculation.

Table 2.1: Parameters for sample size calculation for anthropometry, SMART-Ghor, 2014

Parameters for Anthropometry	Value	Assumptions based on context
Estimated Prevalence of GAM (%)	6%	According to the MoPH National Nutrition Survey-2013 ¹¹ , the Global Acute Malnutrition prevalence is estimated at 5,3%. Moreover, according to the Ghor SMART survey of 2011, the GAM rate resulted in 7,3%. Based on these two estimates and no significant context changes, the GAM was expected to be similar to both and was averaged at 6%.
± Desired precision	3%	Since the expected GAM prevalence is low, a precision of ± 3% was chosen.
Design Effect	2	The population living in the 4 targeted districts are considered as having similar living conditions and the same access to food and social conditions. Nevertheless, access to health facilities cannot be estimated as similar within the targeted population as some remote areas are not well served by health facilities. The 4 districts are located quite far away from each other and have different geographical size, with Chaghcharan district clearly more densely populated, and potentially large differences in security access with Lal district having much better security access than the rest of Ghor districts. Hence the design effect was estimated at 2 (same as the Ghor SMART Survey 2011 ¹²).
Children to be included	524	Children 6-59 months old
Average HH Size	7	According to CSO population data 2010-2011, the average household size is 5.5 ¹³ . According to the National Nutrition Survey 2013, the average household size is 7.7 - most recent result. According to the National Mortality Survey of 2010, the average household size is 5.5. According to the national vulnerability assessment of Afghanistan 2014, the average HH size is 7.3 ¹⁴ . Therefore, based on these 4 sources, an average household size of 7 is used based on 2 more recent results.
% Children under-5	15.6%	The proportion of children under five was estimated at 20% according to the national nutrition policy and CSO estimates ¹⁵ . However, the estimated U5 population according to the Afghanistan Mortality survey 2010 is at 15.6% providing a more conservative and accurate percentage ¹⁶ . Therefore, 15.6% is used and considered the more conservative and accurate estimate.
% Non-response Households	6%	The percentage of non-respondent households was estimated at 6%. Using the same percentage as that of 2011 and similar to the

¹¹ National Nutrition Survey of Afghanistan, UNICEF, 2013

¹² SMART survey sample size calculation, Ghor province, Afghanistan, September 2011

¹³ CSO: Central Statistics Office of Afghanistan, 2010-2011

¹⁴ National vulnerability assessment of Afghanistan, 2014

¹⁵ CSO: Central Statistics Office of Afghanistan, 2010-2011

¹⁶ Afghanistan Mortality survey, 2010

		non-response rate of the national nutrition survey for Afghanistan (2013) ¹⁷ of 6%.
Households included	567	Households

The sample size for the determination of the chronic malnutrition prevalence was estimated at minimum of 208 children and 225 households as presented in the table 3. According to the preliminary results of the National Nutrition survey conducted by the MoPH in 2013, the stunting is estimated at 53.5% for Ghor province. The desired precision was estimated at 10%.

Table 2.2: Population expected to be surveyed for anthropometric nutrition survey and the estimation of chronic malnutrition, Shahrak, Dulaina, Lal wa Sargangal and Chaghcharan districts, Ghor province, Afghanistan, August 2014

Survey	Estimated prevalence of chronic malnutrition	Desired precision	Design effect	Avg HH size	% of non-Response HHs	% Children under five	Children 6-59 to be included	HH to be included
Shahrak, Dulaina, Lal and Chaghcharan districts	53.5%	10%	2	7	6%	15.6%	208	225

The sample size for mortality was based on ENA software, using a 168 day recall period to ensure a common start date of the Afghan New Year (Nawroz), March 21st, 2014, to the mid-point of the survey, 4th August, 2014. A total of 373 people and 57 households were to be included, according to the sample size calculation of ENA. Each sample household, regardless of having children 0-59 months of age, was asked to enumerate total numbers of current household members, total members present at the time of the survey and at the beginning of the recall period, total people joined or left during the recall period, and the total of any births or deaths in the recall period.

Following the selection of households for the anthropometric nutrition survey, all households, regardless of presence of children aged 0-59 months, will be included in the mortality, WASH, and food security indicator questionnaires for household level information.

The sample size for measles vaccination was calculated using the selected households of for the anthropometric nutrition survey. All children from 9 to 59 months old, included in the anthropometric nutrition survey were expected to be included in the measles immunization coverage. The measles vaccine will also be used as a proxy indicator for all vaccination coverage.

Following the selection of households for the anthropometric nutrition survey, all children from 0 to 23 months old, included in the anthropometric nutrition survey were then included in the IYCF questionnaire. The sample size depended on the number of children 0-23 months old found at household level while conducting the anthropometric nutrition survey; totaling 318 children.

The sample size for anthropometric measures was used as the overall sample size, to ensure a representative sample of children for anthropometric measures.

¹⁷ National Nutrition Survey of Afghanistan, UNICEF, 2013

2.2. Sampling procedure: selecting clusters

The four districts represent 54% of the total population of Ghor (522,614 out of 970,320 inhabitants)¹⁸. The first stage of sample cluster selection was based on the smallest administrative unit, villages. A total of 657 villages were included in the survey, corresponding to a total population of 522,614 inhabitants, including: 174 in Chaghcharan, 53 in Shahrak, 34 in Dulaina, and 396 in Lal. A number of villages were excluded within these districts for security reasons in each of the four districts.

Table 2.3: Population figures, Pasaband, Shahrak, Daw Latyar, Lal and Chaghcharan districts, Ghor province, Afghanistan, 2013-2014

District	Total Number of Villages (EPI)	Total Pop (EPI)	Pop U5 (15.6%)
Chaghcharan	1,073	265,840	41,471
Shahrak	278	85,412	13,324
Lal Wa	682	126,029	19,661
Dulaina	137	45,333	7,562
Total	2,170	522,614	82,018

(Source: EPI program village data 2013-2014)

According to the most recent National Nutrition Survey (2013), the average household size in the area is 7.3 members. The Afghanistan Mortality survey (2010) that children under-five years old represent 15.6% of the total population.

Clusters selection and data analysis were done using ENA Delta software 2011 (November 2013 version). Clusters were selected using the Probability Proportional to Size (PPS) method. The procedure was done automatically in ENA software.

Out of 657 villages, 35 villages, corresponding to 35 clusters were included in the survey; 3 Reserve Clusters (RCs) were selected by ENA Delta software. Reserve clusters would have only been used if 10% or more clusters were impossible to reach during the survey. In this SMART survey, no reserve clusters were used, but a total of 3 villages were not reachable due to security concerns; therefore were not included in the results and were not replaced by RC.

It was estimated that one team could cover 16 households per day.

By targeting 16 households per cluster per day, a total number of 35 clusters were realized over the duration of this survey ($567\text{HH}/16\text{HH/day} = 35$ clusters), to reach the required 567 households (table 2 below). This allowed to reach the maximum sample required which was of 524 children for the anthropometric sample - Children 6-59 months.

The sampling methodology at the cluster level was simple random sampling, where teams prepared

Only 4 districts out of 10 districts in Ghor province could be surveyed due to security issues and inaccessibility of far areas. According to SMART methodology, the results cannot be extrapolated to the whole province but only representative of the surveyed areas. This leads to a limited picture of the nutritional status of children under five year and pregnant/lactating in the Ghor province.

¹⁸ Source: Extended Program for Immunization (EPI) village data, 2013

Three clusters out of 35 had to be cancelled due to insecurity. The missed clusters were representing 8.6% of missing data. It was not replaced because SMART methodology allows 10% of missing data. Moreover, the minimum required sample for the anthropometry was reached by far.

2.3. Sampling procedure: selecting households and children

Simple random sampling method was used where an up-to-date list of the households in each village was created to select the households at random, with enough information to allow them to be located. All houses are enumerated and given numbers by the survey team. The 16 households are then chosen by random from these numerated houses, by using random drawing from a hat.

All the children living in the selected house in the correct age range (children from 0 to 59 months old were measured, without regard to height due to the high rates of stunting) were included in the sample and measured. If more than one eligible child was found in a household, both were included, even if they were twins.

In each selected village, one or more community member(s) helped the survey teams to conduct their work by providing information about the village as the geographical organization or the number of households.

Any empty households, or households with missing or absent children were revisited at the end of the sampling day in each cluster; any missing or absent children that were not subsequently found were not included in the survey. All eligible children aged 0-59 months in each of the randomly selected households was included in the survey.

Special cases

- If a child lives in a house but is not present at the time of the survey, he/she is recorded on the data sheet. The team returns at the end of the day to take the child's measurement. If the child is still absent, he/she is not replaced, meaning that in the cluster one data will be missing.
- If a house is empty, the team returns at the end of the day. If it is not possible to return for any reason, the house is evaluated, and it appears on the questionnaire. A house is never substituted by another one. In all cases, neighbors are asked about the household, on who lived in this house and if the residents are absent for a short period or indefinitely.
- In case of refusal from the parents to include their child in the survey, he/she is not replaced, meaning that in the cluster one data will be missing.
- Orphan children taken in charge by a family are considered as part of the family and are included in the survey. It is similar for children who are under care (living permanently) of their grandparents or relatives.
- Disable children are eligible and are included whenever possible. If it is not possible to measure their height, weight or MUAC due to deformity or other abnormality, they are given an ID number and data recorded is missing (and not taken unless they have oedema). For people with left arm handicapped, the MUAC is done on the right arm.
- If a polygamous family contains different HH, each HH should be included separately in the list for household's selection.

- If several families are part of the same HH¹⁹, all children included in these families are targeted by the survey.

Table 2.4: Final Sampling Outcome

Number of HH planned	Number of HH surveyed	% surveyed /planned	Number of children 6-59 months planned	Number of children 6-59 months surveyed	% surveyed /planned
567	524	92.4%	524	739	141%

2.4. Case definitions and inclusion criteria

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

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

For each selected child, the following information was collected:

Age (in months): Only children between 0 and 59 months old or if the age were included. Height was not considered as a valid criterion in absence of age due to the high stunting rates in Ghor province. Age was confirmed by showing a vaccination card or a birth certificate, if available. If these documents were not available, the use of a local event calendar built for Ghor province helped to determine the age. The age was recorded into the questionnaire in months. This measure was taken in order to determine the prevalence of acute malnutrition but also to have maximum reliable results regarding chronic malnutrition prevalence (height-for-age in z-score <-2).

Sex: male or female

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

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

Mid-Upper Arm Circumference (in mm): MUAC was used as an indicator of mortality risk by malnutrition and was measured to the nearest 1mm for all children with an indicated age of greater than 6 months, using the UNICEF MUAC strips.

¹⁹ WFP definition

Oedema: Only children with bilateral pitting nutrition oedema were recorded as having nutritional oedema.

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

Acute malnutrition

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

Weight-for-height index (W/H)

A child's nutritional status is estimated by comparing it to the weight-for-height curves of a reference population (NCHS references and WHO standards data²⁰). These curves have a normal shape and are characterized by the median weight (value separating the population into two groups of the same size) and its standard deviation (SD).

The weight-for-height index of a child from the studied population can be expressed either as a percentage of the median or as a Z-score according to NCHS reference and only as a Z-score according to WHO standards. WHO recommends the use of Z-scores as it is considered to be more reliable in terms of statistical theory.

The expression of the weight-for-height index as a Z-score (WHZ) compares the observed weight (OW) of the surveyed child to the mean weight (MW) of the reference population, for a child of the same height. The Z-score represents the number of standard deviations (SD) separating the observed weight from the mean weight of the reference population: $WHZ = (OW - MW) / SD$.

During the field data collection, the weight-for-height index in Z-score was calculated on the field for each child in order to refer malnourished cases to appropriate centre if needed. Moreover, the results are presented in Z-score using WHO reference in this report.

Mid Upper Arm Circumference (MUAC)

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

Table 2.5: Cut offs points of MUAC, children 6-59 months, WHO Recommendations

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

Nutritional bilateral pitting oedema

Nutritional bilateral pitting oedema is a sign of Kwashiorkor, one of the major clinical forms of severe acute malnutrition. When associated with Marasmus (severe wasting), it is called Marasmic-Kwashiorkor. Children with bilateral oedema are automatically

²⁰ NCHS: National Centre for Health Statistics (1977) NCHS growth curves for children birth-18 years. United States. Vital Health Statistics. 165, 11-74.

WHO: World Health Organization, WHO growth curves for children, 2006

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categorized as being severely malnourished, regardless of their weight-for-height index.

The table below defines the acute malnutrition according to W/H index, MUAC criterion and oedema.

Table 2.6: Definition of acute malnutrition²¹ according to weight-for-height index (W/H), expressed as a Z-score according to WHO standards

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

Chronic malnutrition: The height-for-age index (H/A)

The height-for-age measure indicates if a child of a given age is stunted and so if he is chronically malnourished. This index reflects the nutritional history of a child rather than his/her current nutritional status. This is mainly used to identify chronic malnutrition. The same principle is used as for weight-for-height, except that a child's chronic nutritional status is estimated by comparing its height with NCHS reference or WHO standards height-for-age curves, as opposed to weight-for-height curves. The height-for-age index of a child from the studied population is expressed in Z-score (HAZ). The HAZ cut-off points are presented in table 8.

Table 2.7: Cut offs points of the Height for Age index (HAZ) expressed in Z-score, WHO standards

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

Mortality Indicator Calculation

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

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

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

Under-5 death rate (U5DR): the probability for those children aged 0-5 years to die

²¹ WHO, use and interpretation of anthropometric indicators of nutritional status, Bulletin of the WHO, 64 (6) : 929-941 (1986)
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during a specific time interval. Calculated as:

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

Additional Indicators - Health and WASH

Beside anthropometric data, additional information was collected as follows:

Measles immunization status: mothers/caretakers of all children aged 9-59 months were asked if children received the measles vaccination, which was subsequently verified by reviewing the vaccination card, if available. If the vaccination card was not available, then the yes or no of the mother/caretaker was recorded.

2-week recall: mothers/caretakers of children aged 0-59 months were asked if children had experienced an illness in the past 2 weeks. Subsequently, they were asked if the illness was diarrhoea, defined as more than 3 stools in one day, or a respiratory infection, defined by cough with fever.

At the household level, in addition to mortality questions, there were WASH and food security indicators asked to the head of the household or present adult, regardless if children of any age were present (questionnaires are found in Annex 6), including:

Type of water point used: the type of water point, including river, open well with bucket, well with hand-pump, tap stand, and borehole with hand-pump, was identified as the main point of water used for the household.

Presence of latrines, and subsequent type of latrine: does the household have a latrine available for daily use, and if yes, what is the type of latrine out of vault latrine, flush toilet, regular pit latrine, ventilated pit latrine, or if there is no latrine it was considered as open defecation.

People of the household using latrines: if the household had a latrine at its disposal, the question was asked as to who are the primary daily users, the entire household, only the males or only the females.

At the individual level, hand-washing questions were asked of mothers/caretakers of children included in the IYCF questionnaire, children aged 0-23 months. These included:

When hands are washed: this indicator identifies if and when mothers/caretakers wash their hands throughout the day as part of the measure of care practices for infants and young children, with the options of before eating, after using latrine, before cooking, after eating, after cleaning baby, before feeding children.

How hands are washed: this indicator identifies that if mothers/caretakers wash their hands, what are they using for this care practice, including, only water, water and soap, water and ashes, or other means.

Infant and Young Child Feeding Practices Indicators (IYCF)

The IYCF indicators used in the measurement of infant and young child feeding practices asked to the mothers/caretakers of children aged 0-23 months are described as follows.

Child ever breastfed: Proportion of children who have ever received breastmilk.

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

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

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

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

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

2.5. Questionnaire, training and supervision

Five teams of three members conducted the field data collection. Each team was composed of one ACTD team leader and two ACTD data collector. Each team had at least one female data collector to ensure acceptance of the team amongst the surveyed households; particularly for IYCF questionnaires. Three of the surveyor teams were couples, one male and one female, with two marhams²² joined the remaining teams to facilitate the work of the female data collectors at the community level. The teams were supervised by ACF and ACTD nutrition program manager/nutrition focal point.

The entire teams received a 5-days training on the survey methodology and all its practical aspects; conducted by ACF Health and Nutrition Program Manager. A standardization test was conducted over the course of 2 days, each day measuring 10 children, in order to evaluate the accuracy and the precision of the team members in taking the anthropometrics measurements. A one-day field test was conducted by the team in order to evaluate their work in real field conditions. Feedback was provided to the team in regard to the results of the field test; particularly in relation to digit preferences and data collection. Refresher training on the anthropometric measurement and on the filling of the questionnaires and the household's selection was organized on the last day by ACF to ensure overall comprehension before going to the field.

One field guidelines document with instructions and household definition and selection document was provided to each team member (see Annex 7). All documents, such as local event calendar (see Annex 8), questionnaires (see Annex 6) or consent forms (see Annex 9) were translated in Dari, local language, for better understanding and for avoiding direct translation during the data field collection. The questionnaires were back translated using a different translator and were pre-tested during the field test. No alterations were necessary at that stage as quality of the questionnaires was ensured.

Due to limited time of the supervisory staff and the dispersed distances of the 5 data collection teams, only 3 teams were able to be directly supervised during the data collection. However, analysis of the data collected was done on daily basis using ENA

²² Women are not allowed to go outside without being accompanied by one male relative called locally a 'marham'.

plausibility check and other evaluation tools over the phone (due to the dispersed nature of the villages), and feedback was provided again over the phone to the data entry officer who then entered the data into the ENA software. Data entry was completed through an excel spreadsheet, which was then copied into the ENA software to try to adjust for any necessary data collection improvements.

2.6. Data analysis

The anthropometric and mortality data are analyzed using ENA Delta software 2011 version, with November 2013 update. Survey results are presented in reference to WHO standards for overall final analysis.

Other indicators like the measles vaccination coverage, two-week recall, WASH S indicators were analyzed using Excel version 2005 and are expressed in percentage out of the sample surveyed.

3. RESULTS

3.1. Age and sex demographics of sample

A total of 524 households corresponding to 35 clusters, each of 16 households, were surveyed covering 4548 individuals.

In the sample, a total of 807 children were surveyed, ages 0-59 months. Out of this number, a total of 735 children aged 6-59 months were surveyed. The average household size was determined to be 8.6 individuals, with 18.1% children under 5.

There were a total of 386 boys and 349 girls included in the sample. The sex ratio was 1.1 which is within the acceptable range²³.

Table 3.1: Distribution of age and sex of 6-59 months children

AGE (mo)	Boys		Girls		Total		Ratio Boy:girl
	no.	%	no.	%	no.	%	
6-17	85	53.8	73	46.2	158	21.5	1.2
18-29	105	53.0	93	47.0	198	26.9	1.1
30-41	101	57.7	74	42.3	175	23.8	1.4
42-53	66	46.5	76	53.5	142	19.3	0.9
54-59	29	46.8	33	53.2	62	8.4	0.9
Total	386	52.5	349	47.5	735	100.0	1.1

48.2% of the sample (356) was of children from 6-29 months of age. The age ratio is of 0.94 which is qualified as acceptable (refer to Annex 1: Plausibility check).

3.2. Anthropometric results (based on WHO standards 2006)

Data were analysed with ENA for SMART, using the version of ENA Delta software 2011 (November 2013).

The results are presented with SMART flags of z-scores from observed mean; with a percentage value of SMART flags of:

- WHZ: 3.5 %
- HAZ: 9.0 %
- WAZ: 1.8 %

Table 3.13: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	710	-0.50 \pm 1.05	1.62	1	24
Weight-for-Age	722	-1.54 \pm 1.16	1.86	0	13
Height-for-Age	669	-2.19 \pm 1.33	1.74	0	66

* contains for WHZ and WAZ the children with oedema.

The results generated automatically are presented in the tables below.

²³ Accepted range for sex ratio is included from 0.8 to 1.2.

3.2.1 Acute malnutrition

a) Expressed in Weight-for-height in z-score

Out of a total of 735 children aged 6-59 months, 24 children were excluded being detected by ENA as being out of range and 1 child was not included as information was not available (see Table 3.1 above). A weight of 58 grams of clothing was included in the results. As such, a total of 710 children were included in the weight-for-height results, as presented below.

Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex, children 6-59 months of age

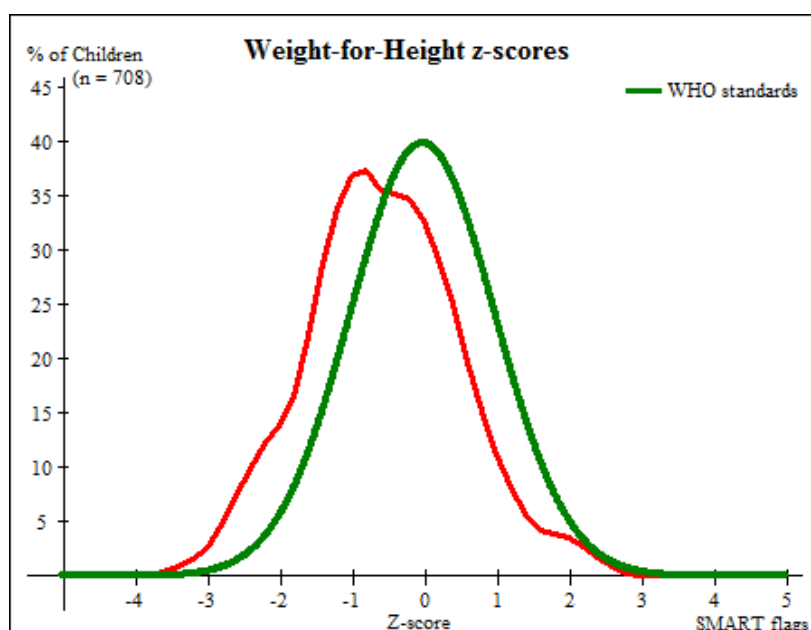
	All n = 708	Boys n = 369	Girls n = 339
Prevalence of global malnutrition (<-2 z-score and/or oedema)	9,2 % (6,8 - 12,2 95% C.I.)	9,8 % (7,0 - 13,4 95% C.I.)	8,6 % (5,5 - 13,1 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	8,5 % (6,1 - 11,6 95% C.I.)	8,4 % (5,7 - 12,2 95% C.I.)	8,6 % (5,5 - 13,1 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	0,7 % (0,3 - 1,7 95% C.I.)	1,4 % (0,6 - 3,1 95% C.I.)	0,0 % (0,0 - 0,0 95% C.I.)

The prevalence of oedema is 0.0 %

The prevalence of global acute malnutrition is equally represented between boys and girls in the sample.

The observed mean of the z-score was -0.50 (± 1.05). The design effect of 1.62 is reflecting heterogeneity of the surveyed population.

Graph 3.1: Distribution curve of weight-for-height in z-scores versus reference. WHO 2006.



The weight-for-height distribution curve is shifted slightly to the left meaning that the observed population is slightly deviated from the reference mean (see graph 3.2), indicating a suggested trend in deficient nutritional status. The skewness and the

kurtosis of the curve were within the normal range²⁴. The index of dispersion and the collected data does not suggest that there are any pockets of under nutrition within the sample areas.

Table 3.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	151	2	1,3	20	13,2	129	85,4	0	0,0
18-29	191	3	1,6	23	12,0	165	86,4	0	0,0
30-41	170	0	0,0	10	5,9	160	94,1	0	0,0
42-53	138	0	0,0	6	4,3	132	95,7	0	0,0
54-59	58	0	0,0	1	1,7	57	98,3	0	0,0
Total	708	5	0,7	60	8,5	643	90,8	0	0,0

The weight-for-height z-scores by age indicate a higher prevalence of younger children, ages 6-29 months , are significantly more affected by wasting than older children of 30-59 months²⁵. Overall, no children were detected with oedema.

b) Expressed by MUAC cut-offs

Table 3.4: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	All n = 732	Boys n = 385	Girls n = 347
Prevalence of global malnutrition (< 125 mm and/or oedema)	11.9 % (8.6 - 16.2 95% C.I.)	10.9 % (7.1 - 16.4 95% C.I.)	13.0 % (9.1 - 18.1 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	9.4 % (6.8 - 13.0 95% C.I.)	8.3 % (5.3 - 12.7 95% C.I.)	10.7 % (7.3 - 15.4 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	2.5 % (1.5 - 4.0 95% C.I.)	2.6 % (1.3 - 5.1 95% C.I.)	2.3 % (1.2 - 4.4 95% C.I.)

There is no significant difference between prevalence of malnutrition based on MUAC cut-offs between boys and girls, according to confidence interval comparison.

Table 3.5: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	155	14	9.0	40	25.8	101	65.2	0	0.0

²⁴ Skewness range is found between 0.2 and 0.4; and Kurtosis is found less than the absolute value of 0.2

18-29	198	4	2.0	21	10.6	173	87.4	0	0.0
30-41	175	0	0.0	3	1.7	172	98.3	0	0.0
42-53	142	0	0.0	4	2.8	138	97.2	0	0.0
54-59	62	0	0.0	1	1.6	61	98.4	0	0.0
Total	732	18	2.5	69	9.4	645	88.1	0	0.0

As with the weight-for-height z-scores, the MUAC results indicate that younger age groups, 6-29 months are significantly more affected by wasting according to MUAC scores, as compared to older children 30-59 months²⁶.

3.2.2 Acute malnutrition children 0-59 months

Children ages 0-5 months were included in the survey sample to insure that all children were covered for measurements and to avoid exclusion of some children due to mistakes if age identification of borderline children. The results are presented for a total of 768 children included in the 0-59 age group in Table 3.6. There is a slight increase in rates of under nutrition with the inclusion of children 0-59 months as compared to results of children 6-59 months, but this increase is not significant.

Table 3.6: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex, children 0-59 months of age

	All n = 768	Boys n = 396	Girls n = 372
Prevalence of global malnutrition (<-2 z-score and/or oedema)	9.8 % (7.3 - 13.0 95% C.I.)	10.1 % (7.3 - 13.7 95% C.I.)	9.4 % (6.1 - 14.2 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	9.0 % (6.6 - 12.1 95% C.I.)	8.8 % (6.2 - 12.5 95% C.I.)	9.1 % (6.1 - 13.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	0.8 % (0.4 - 1.7 95% C.I.)	1.3 % (0.5 - 2.9 95% C.I.)	0.3 % (0.0 - 2.0 95% C.I.)

3.2.3 Underweight children 6-59 months

A total of 794 children from 6-59 months were included in analysis of underweight out of the selected 735. Thirteen children were excluded by the ENA software. Results of the weight-for-age z-scores seem to indicate that boys are slightly more affected with higher prevalences of underweight as compared to girls, but the difference is not significant.

Table 3.7: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 722	Boys n = 377	Girls n = 345
Prevalence of underweight (<-2 z-score)	35,7 % (30,9 - 40,9 95% C.I.)	39,5 % (32,9 - 46,5 95% C.I.)	31,6 % (25,4 - 38,5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	23,0 % (19,2 - 27,3 95% C.I.)	25,5 % (19,8 - 32,1 95% C.I.)	20,3 % (15,8 - 25,6 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	12,7 % (10,0 - 16,0 95% C.I.)	14,1 % (10,5 - 18,6 95% C.I.)	11,3 % (8,2 - 15,5 95% C.I.)

There is no significant difference between the prevalence of underweight between boys and girls, based on confidence interval comparison.

Table 3.8: Prevalence of underweight by age, based on weight-for-age z-scores

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	154	22	14,3	52	33,8	80	51,9	0	0,0
18-29	194	48	24,7	46	23,7	100	51,5	0	0,0
30-41	171	13	7,6	33	19,3	125	73,1	0	0,0
42-53	142	8	5,6	26	18,3	108	76,1	0	0,0
54-59	61	1	1,6	9	14,8	51	83,6	0	0,0
Total	722	92	12,7	166	23,0	464	64,3	0	0,0

3.2.4 Stunting in children aged 6-59 months

A total of 669 children from 6-59 months were included in the chronic malnutrition analysis of stunting out of the selected 735. 66 children were excluded by the ENA software. Results from the plausibility report showed a height digit preference of 10, which is in the problematic range; as described in the data quality section below. In addition, age preference was strong for all teams throughout data collection. Overall, boys seem to be more affected by stunting as compared to girls but the difference is not significant.

Table 3.9: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 669	Boys n = 353	Girls n = 316
Prevalence of stunting (<-2 z-score)	55.2 % (50.0 - 60.2 95% C.I.)	59.5 % (51.8 - 66.7 95% C.I.)	50.3 % (45.3 - 55.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	25.9 % (22.5 - 29.5 95% C.I.)	26.3 % (20.6 - 33.0 95% C.I.)	25.3 % (21.8 - 29.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	29.3 % (24.9 - 34.1 95% C.I.)	33.1 % (26.6 - 40.4 95% C.I.)	25.0 % (19.7 - 31.2 95% C.I.)

There is no statistical significant difference between the prevalence rates of stunting based on height-for-age z-scores between boys and girls, based on confidence interval comparison.

Table 3.10: Prevalence of stunting by age based on height-for-age z-scores

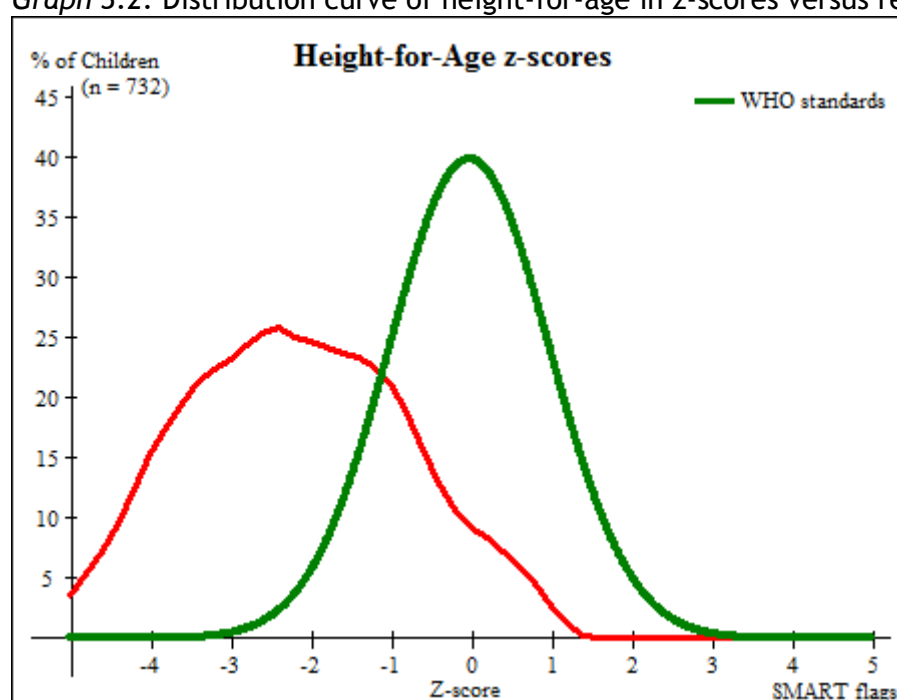
Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	142	41	28.9	39	27.5	62	43.7

18-29	178	80	44.9	50	28.1	48	27.0
30-41	161	46	28.6	42	26.1	73	45.3
42-53	137	25	18.2	33	24.1	79	57.7
54-59	51	4	7.8	9	17.6	38	74.5
Total	669	196	29.3	173	25.9	300	44.8

The height-for-age z-score results indicate that younger age groups, 6-29 months are significantly more affected by stunting according, as compared to older children 30-59 months²⁷.

The height-for-age distribution curve is considerably shifted to the left from the reference curve (Graph 3.2). However, the skewness and the kurtosis were within the normal range.

Graph 3.2: Distribution curve of height-for-age in z-scores versus reference. WHO 2006.



3.2.5 Overweight children 6-59 months

A total of 710 children ages 6-59 months are included in the sample of overweight, according to weight-for-height z-scores. No significant prevalences of overweight are observed, with no significant difference between boys and girls.

Table 3.11: Prevalence of overweight based on weight for height cut off's and by sex (no oedema)

	All n = 708	Boys n = 369	Girls n = 339
Prevalence of overweight (WHZ > 2)	(10) 1,4 % (0,8 - 2,4 95% C.I.)	(6) 1,6 % (0,8 - 3,5 95% C.I.)	(4) 1,2 % (0,5 - 3,0 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.)

There is no statistical significant difference between the prevalence of overweight between boys and girls.

Table 3.12: 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	151	2	1,3	0	0,0
18-29	191	3	1,6	0	0,0
30-41	170	4	2,4	0	0,0
42-53	138	0	0,0	0	0,0
54-59	58	1	1,7	0	0,0
Total	708	10	1,4	0	0,0

No children in the age group of 42-53 were found to be overweight, with similar prevalence's of overweight distributed amongst the other age groups.

3.3. Mortality Results (retrospective over 163 days prior to interview)

Mortality was included in the survey, with basic data collected at the household level, using the retrospective mortality methodology, with a 163 day recall period. Heads of household were the main responders, from all households included in the survey, a total of 524, regardless if the households had children or not. Crude Mortality Rates and Under Five Mortality rates are presented in Table 3.13.

Table 3.13: Crude mortality rates (CMR) and under-5 mortality rates (U5MR)

CMR (total deaths/10,000 people / day): 0.53 (0.34-0.81 95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.84 (0.41-1.69 95% CI)

Both CMR and U5MR are under 1 and 2 respectfully, therefore below the critical point of an emergency situation.

The main causes of death were not asked of community leaders nor by heads of household, therefore this information is not included in this report.

3.4. Children's Morbidity

Information on morbidity was collected through a two-week recall, if the child was sick and if the illness was either diarrhoea and/or acute respiratory illness. As part of the anthropometric questionnaire, the question was asked of all children included in the survey, for a total of 807 children aged 0-59 months. Out of them 282 children were reported of having experienced at one episode of diarrhoea, ARI or both.

Table 3.14: Prevalence of reported illness in children in the two weeks prior to interview (n=807)

	0-59 months
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Prevalence of reported illness	34.9%
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Table 3.15: Symptom breakdown in the children in the two weeks prior to interview (n=282)

Symptom	0-59 months
Diarrhoea	78.0%
Cough	49.6%
Both Diarrhoea and Cough	27.7%

Of the total 34.9% of children who were sick in the past two-weeks, a total of 27.7% of children suffered from both diarrhoea and ARI.

3.5. Vaccination Results

Measles vaccination results included a total of 693 children aged 9-59 months.

Table 3.16: Vaccination coverage: Measles for 9-59 months (n=693)

Measles Vaccination Result	n	%
Measles Vaccination (verification with card)	125	18.0
Measles Vaccination (verification with card or confirmation from mother)	513	74.0
No Vaccination	143	20.6
Does not know	37	5.3

A total of 74.0% of children aged 9-59 months in the sample population are vaccinated, with verification through vaccination card or verbal confirmation from the mother. This is slightly below the acceptable SPHERE standard of 80% vaccination rate, and can be used as a proxy indicator for all vaccines for children aged 9 months and older.

3.6. IYCF Indicators

The infant and young child feeding practices indicators included all children ages 0-23 months, for a total of 318 children included in the sample. The results are presented as a percentage of the total answers available, and as such will not be presented with a confidence interval.

Table 3.17: IYCF Core Indicators: for children 0-23 months (n=318)

CORE INDICATORS Children aged 0-23 months	DEFINITION	N	%
Child ever breastfed (n=318)	Proportion of children who have ever received breast-milk	316	99.4
Timely initiation of breastfeeding (n=311)	Proportion of children born in the last 23 months who were put to the breast within one hour of birth	131	42.1
Provision of colostrum within first 3 days (n=318)	Proportion of children who received colostrum (yellowish liquid) within the first 3 days after birth	120	38.0
Exclusive breastfeeding under 6 months (n=70)	Proportion of infants 0-5 months of age who are fed exclusively with breast milk	46	65.7

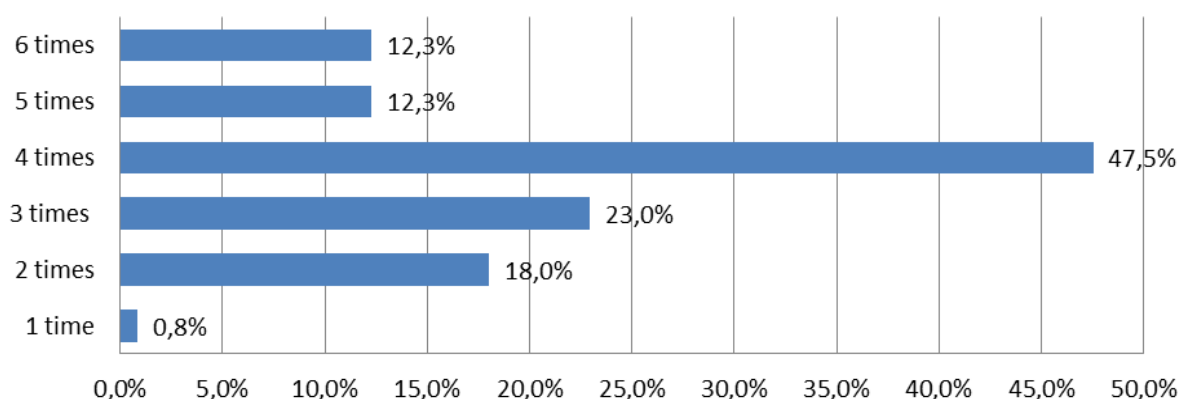
Continued breastfeeding at 1 year (n = 69)	Proportion of children 12 - 15 months of age who are fed with breast milk	68	98.6
Introduction of solid, semi-solid or soft foods (n =39)	Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods	38	74.4

Timely initiation of breastfeeding occurred for 42.1% of the sample population, with 38.0% receiving colostrum within the first 3 days of life. Of the core IYCF indicators, a total of 65.7% of children in the sample were exclusively breastfed for 6 months, with 98.6% continuing up to one year old. The timely introduction of foods occurred for 74.4% of the sample population aged 6-8 months.

3.7. Individual WASH Indicators

For the individual WASH indicators, mothers/caretakers of children aged 0-23 months, participated, for a total of 318 questionnaires being completed. There is the potential that some questionnaires were answered by the same women, if they had more than one child aged 0-23 months, however these are still included as part of the results, as it is a minimal number (likely <15) and not possible to take them out.

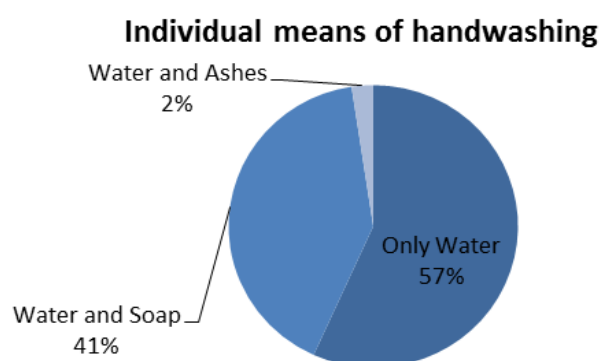
Graph 3.3: Individual hand washing practices of mothers/caretakers, number of critical moments hand washing is conducted (n=318)



Of the possible 1 to 6 critical times to wash hands, only 12.3% of mothers/caretakers indicated to have washed their hands at all 6 times; with the same percentage at 5 times. The largest percentage of times is at 4 times, with 47.5%; with 3 and 2 times less than that at 23.0% and 18.0% respectively. A negligible amount, 0.8%, of mothers/caretakers indicated to have washed their hands only at 1 critical time.

NB: as this information was largely knowledge/recall based, there is no practical verification process to know if mothers/caretakers actually conduct hand washing at all 6 critical times or if they were largely recalling times to which they were previously informed.

Graph 3.4: Individual hand washing means (n=318)



The majority of mothers/caretakers wash their hands with only water; whereas 41% indicated to wash their hands with water and soap. Again, these results are subject to recall/knowledge bias; where mothers/caretakers are able to indicate the correct hand washing practice, but may or may not implement this in reality.

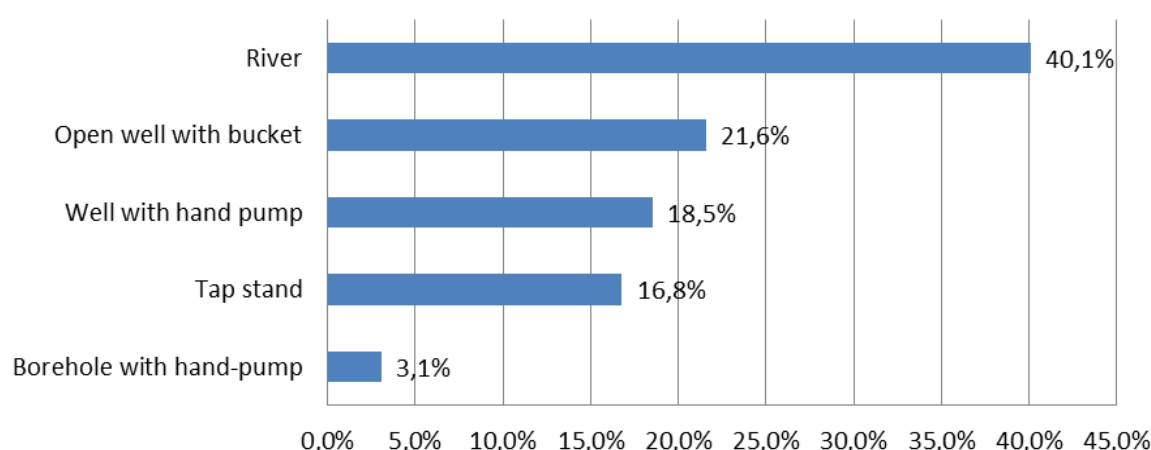
Because hand-washing practices were not crosschecked by direct observation from surveyors, results have to been analysed with caution, and actual practices (especially the use of soap) should be further inquired and confirmed through more in depth assessments on personal hygiene.

3.8. Household Level WASH Indicators

Household level types of water points

The household questionnaire for mortality was used to also answer questions on household WASH practices. Therefore, a total of 524 responders, representing 524 households, were included in the results. Responders included heads of household, either male or female.

Graph 3.5: Household level type of water point (n=524)

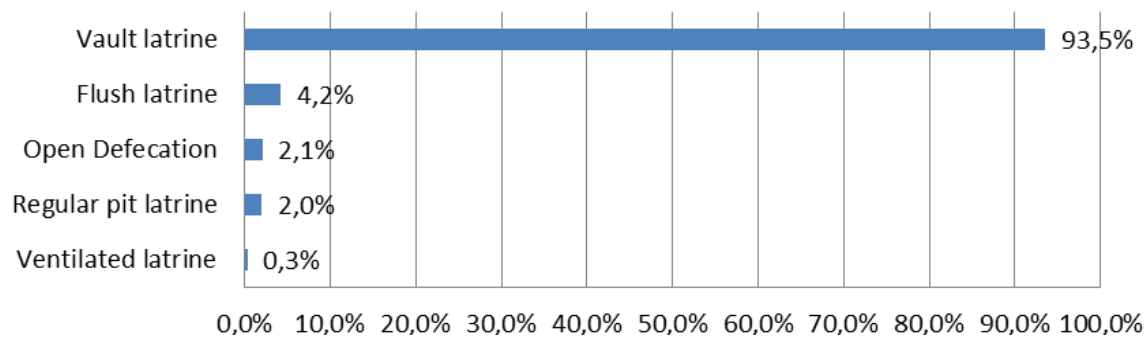


Household type of latrine available

A total of 60.5% of households surveyed indicated to have access to a latrine; responding 'yes' during the questionnaire. Of the households that indicates yes to having a latrine, graph 3.8 represents the type of latrine available to them; with open defecation still being an option in the questionnaire for those having indicated access

to a latrine.

Graph 3.8: Household type of latrine (n=524)



Out of the households indicating to have access to a latrine, the large majority have the vault latrine type, 93.5%.

A large majority of the available latrines are used by the entire household, 83.9%, with only males using 8.5% and only females using 4.1%.

4. DISCUSSION

4.1. Quality of Data

The overall standard deviation (SD) for acute malnutrition, weight for height z-scores, was calculated at 1.05, with SMART flags; a SD which is within the acceptable range of values for SD, between 0.8 and 1.2.

The SD for stunting, height for age z-scores, was calculated using a SD of 1, indicating that the most probable stunting rate could be 57.5% for the province of Ghor. This is related to a strong digit preference in the measurements of height of one team (Team 3) with no decimal points. In addition, all teams had some age digit preference for 12, 18, 24, 30, 36, *48 and 54 months.

The overall sex-ratio was 1.11 (with a p-score of 0.172) indicating a representation of equal number of boys and girls in the sample. However, an overall age distribution p-score of 0.010 indicating a significant difference.

Digit preference issues were found with age, MUAC, and height, however no issues were found with weight. A very strong digit preference for height, around 0.0 and 0.5 were found for the entire survey and MUAC at 0.0 and 0.5; with age preference indicated above.

4.2. Nutritional Status Discussion

Acute Malnutrition

The GAM rates of **9.2%** (95% C.I.: 6.8 - 12.2%) based on Weight-for-Height in Shahrak, Dulaina, Lal wa Sargangal and Chaghcharan districts are below the critical threshold of 15%. Following WHO Expert Committee classification, the nutritional situation can be defined as “poor”. Although, this interpretation has to be made with caution, taking into consideration also several factors that might contribute to eventually rapid worsening of the situation:

- Chronic insecurity hampering access and movements to the populations;
- Still very poor sanitation and access to safe drinking;
- Ghor province being a drought affected zone in 2013, with the potentially negative impact on vulnerable household's economy;
- Remoteness and lack of infrastructure chronically hampering economic life and activities.
- Overall, poor access and use of BPHS health services by the population. Limited implementation of SAM management services (IMAM).

GAM rates were then compared to both the National Nutrition Survey (NNS) of 2013 and the previous SMART in Ghor of 2011; at 5.3% (3.62-7.59 95% C.I.) and 7.3 % (4.9-10.7 95% C.I.) respectively. Comparing the GAM 2014 rates to the NNS of 2013, there is no significant difference, as confidence intervals overlap. Comparing the GAM 2014 rates with the 2011 SMART results, there is also no significant difference.

The sex ratio between boys and girls was of 1.1 which is within the accepted range²⁸. The data analysis, using confidence interval comparison, has shown that there is a

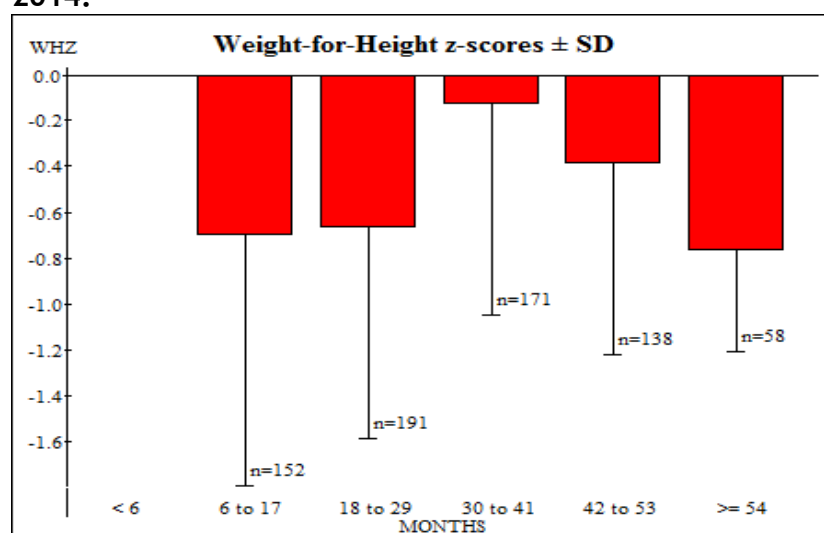
²⁸ Accepted range for sex ratio is included from 0.8 to 1.2.

higher prevalence of acute malnutrition within boys aged 6-29 months age group as compared to older boys aged 30-59 months. There was no statistical significant difference between the same age groups in girls. There is no statistical difference for wasting between boys and girls of any age category.

The results of wasting per age group (see graph 4.1) have shown that the age groups of 6-17 (mean W/H of -0.70 ± 1.08 (n=152)) and 18-29 (mean W/H of -0.66 ± 0.91 (n=191)) months are more affected compared to other age groups. It is very strong indication of extremely high vulnerability of children from 6-29 months of age. This might be due to insufficient care practices for children of that age as well as to their lesser developed immune function and risk of illness.

Upon age analysis of the two-week recall data, of age groups 0-29 and >30 months, there seems to be an increased number of older children, >30 months, with more incidence of suffering from both diarrhoea and ARI, 21.1% and 34.7% respectfully. In conducting a Chi-Squared test for morbidity compared to prevalence rates of malnutrition according to weight-for-height z-scores and MUAC, there was a significant correlation²⁹ between presence of diarrhoea and MUAC measurements of less than or equal to 125mm for children aged 6-59 months. No other significant correlation was found between morbidity results of the two-week recall of diarrhoea and ARI and wasting.

Graph 4.1: Mean Weight-for-height in z-score by age group, Ghor province, August 2014.



When MUAC criterion is taken into account, 11.9 % (8.6-16.2 95% C.I.) of the children 6-59 months were acutely malnourished and 2.5 % (1.5-4.0 95% C.I.) of them were severe. Once again younger children 6-17 and 18-29 months were most affected, respectively 25.8% and 10.6% had MUAC <125 mm. It is often observed phenomenon during nutrition surveys. Compared to the SMART conducted in 2011, with MUAC rates of 15.5% (12.0-19.8 95% C.I.) and 3.4% (2.1-5.7 95% C.I.) respectively, indicating a slight, but not significant reduction in under nutrition rates based on MUAC.

GAM rates based on MUAC are particularly worrying. Despite that MUAC is not still used to evaluate prevalence of child under-nutrition; it is an indicator of muscle loss and strong mortality predictor.

Chronic Malnutrition

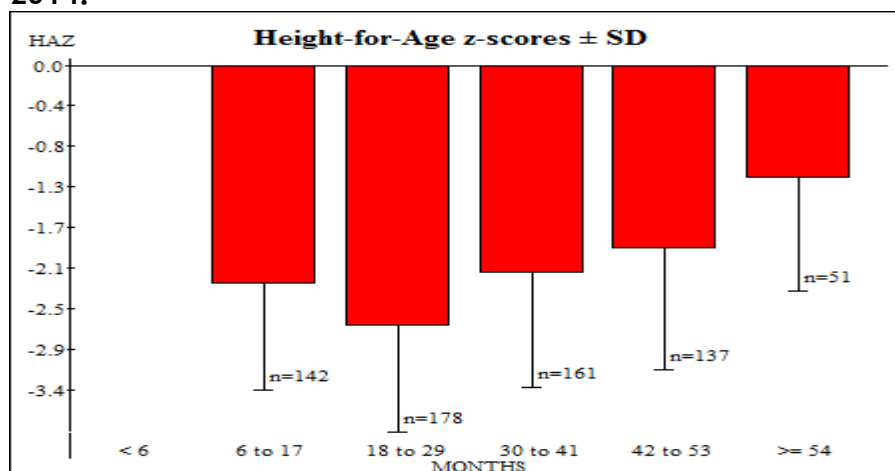
As mentioned above in “quality of the data” paragraph, the HAZ in z-score result had a standard deviation outside range (1,33). The calculated SD of 1 indicates that the most probable stunting rate could be **57.5%** for the province of Ghor.

There seems to be no significant improvement since the SMART survey in Ghor of 2011, with results at **56.9%** (50.5 - 63.2 95% C.I.), nor the NNS 2013, with results at **53.5%** (49.3-57.6 95% C.I.). The stunting rates in Ghor were similar to the rates found all over the country during NNS of 2013, with 24 out of the 34 provinces with chronic malnutrition rates greater than 40%; indicating a serious state. Since long date Afghanistan is ranked as most stunting-affected country in the world and the results from this surveillance project confirm that the situation has not improved over the years.

Considering age groups, the stunting prevalence reaches higher level within the group of 18-29 months, mean height-for-age of -2.69 ± 1.08 (n=178). It slightly decreases with the other age groups but still remain very high (see graph 4.2 below).

Statistical comparison of the confidence intervals of age groups indicate that children in age groups of 6--29 months of age, have significantly higher rates of stunting as compared to children of older age groups, >30 months of age. This remains true when comparing both girls with girls and boys with boys. There is no statistical difference in stunting rates between boys and girls of lower and higher age groups.

Graph 4.2: Mean Height-for-age in z-score by age group, Ghor province, August 2014.



Overall, stunting rates seem to decrease as of 30 months of age, as stunting levels seem to be higher in younger children. Linked to stunting rates are dietary inadequacy, inappropriate complementary feeding and infectious disease, which affects older and younger children, but with the introduction of complementary feeding at 6 months of age, the risk of under nutrition is higher.

The chronic malnutrition rates, demonstrated through stunting rates, can be addressed with integrated long-term action covering the multitude of factors: sufficient and diversified food, improved care practices, sufficient access to health care for the couple mother & child, women empowerment, safety nets, building of local capacities. Particularly in reinforcing actions for the youngest children such as growth monitoring, nutrition promotion, including IYCF practices support, and better access of women to reproductive health services; as well as support for care practices. In Afghanistan in general and in the surveyed zones in particular, those actions are difficult to

implement but joint efforts between local actors are still possible especially in zones with better access.

4.3. Morbidity and Vaccination Discussion

Based on the two-week recall results, a total of 34.9% of children participating in the survey have experienced an illness in the past two weeks; which is considered quite high. Indeed, of those children who were sick in the past two weeks, 78.0% of the children suffered from diarrhoea, and 49.6% with acute respiratory infection. These rates can also be considered high for the region. A total of 27.7% of children suffered from both diarrhoea and ARI during this time, which places an increased risk on their nutritional status.

Measles vaccination results, confirmed by the mother and with the card, represent 74.0% of children aged 9-59 months in the survey. This is lower than the 80% minimum standard rate, therefore actions for improvement should include EPI programming. Particularly as only 18% were confirmed using the card.

4.4. Mortality Discussion

Both the CDR and U5DR at **0.53** (0.34-0.81 95% CI) and **0.84** (0.41-1.69 95% CI) respectfully are below the critical limits for mortality. The mortality questionnaire was based on the basic units of who has entered and left households and who was born and died, for both adults and children. The mortality rate is as expected for this zone.

4.5. IYCF Indicator Discussion

The study reveals that only 42.1% of the new-born children were initiated to breastfeeding within one hour after the birth and only 65.7% were exclusively breastfed. Compared to the SMART survey of 2011, these indicators seem to have both decreased and increased respectfully, at 64.8% and 49.4% in 2011. Although these indicator trends are difficult to qualify, as the questions asked in the questionnaire were modified slightly, these rates are still much lower than ideal in any context. In addition, the provision of colostrum within the first three days of life seems quite low at 38.0%.

A total of 74.4% of responded positively to the introduction of solid, semi-solid or soft foods for children aged 6-8 months. However, these results need to consider the limitations of: not representative as the sample size is small, also without an IDDS, there is no indication that the foods introduced are the appropriate; finally, the indicator does not provide information on date of weaning, whether or not this is early or late - as both situations typically exist in Afghanistan.

Despite lower indicators for breastfeeding at an early age, the percentage of children benefiting of breastfeeding until their first year of age is very satisfying, at 98.6%. Compared to 93.4% in 2011; the trend seems to be continuing well.

4.6. WASH Indicator Discussion

Analysis of individual WASH questions on hand washing practices revealed that the majority of respondents washed their hands before eating (99.7%), with quite high results as well for after eating, before cooking, and after using latrine, at 81.1%, 75.8% and 79.2% respectfully. Hand washing care practices around the child, with hand

washing after cleaning the baby and before feeding the baby were much lower at 43.1% and 0%; indicating an increased risk of malnutrition for children if mothers/caretakers are not washing their hands at these critical points. Of these possible 1 to 6 critical times to wash hands, only 12.3% of mothers/caretakers indicated to have washed their hands at all 6 times; with the same percentage at 5 times. The largest percentage of times is at 4 times, with 47.5%; with 3 and 2 times less than that at 23.0% and 18.0% respectively. A negligible amount, 0.8%, of mothers/caretakers indicated to have washed their hands only at 1 critical time.

The means for washing hands are not widely available, with only 41% of individuals indicating they wash their hands with water and soap; with 2% using water and ashes. The remaining individuals use only water providing very little means to remove bacteria and other infectious agents, regardless if hands are washed or not.

At the household level, considering the rural nature of Ghor province, it is not surprising that the overwhelming majority of households use the river as the main source of drinking/usage water, at 40.1%. Wells with bucket or hand pump are also available in certain areas at 21.6% and 18.5% respectively; with tap stands used by 16.8% of households and boreholes available for 3.1% of households. The quality of the water available at these different water points was not tested for quality, however, it is clear that safe drinking water is not available for the large majority of the survey participants if coming from rivers and unprotected and untested water points.

The quantity of water used in the households was analyzed based on SPHERE³⁰ minimum standards of 15L/day per person. The minimum quantity of water per day should cover consumption, hygiene, and cooking needs for the household. Using the household size from the mortality survey questionnaire, it was determined that 80.1% of the surveyed individuals do not have the minimum requirement of water needs.

A total of 60.5% of households surveyed indicated to have access to a latrine, with 93.5% of those households having a vault latrine, a common latrine in Afghanistan. Other types of latrines are present at much lower rates of flush latrine, 4.2%, regular pit latrine, 2.0% and ventilated latrine, 0.3%. 2.1% of the respondents indicating to have access to latrines indicated that they practice open defecation. The majority of latrines are used by the whole family, 83.9%, with 8.5% used only by males and 4.1% used only by females.

³⁰ *Humanitarian Charter and Minimum Standards in Humanitarian Response*

5. CONCLUSIONS AND RECOMMENDATIONS

No emergency interventions are required, as GAM rates remain below alarming rates, but support to the BPHS health implementers in order to increase capacity on diagnosis and treatment is recommendable due to the high food insecurity in the area, through the recommendations presented in the next section. More alarmingly are what the food security indicators could represent in terms of vulnerabilities and food insecurity in the province. However, overall, there are not enough results to be conclusive for food security.

The following Nutrition and Health, WASH interventions are recommended, through BPHS implementers:

- Continue the reinforcement of the integrated CMAM programming, CMAM and IYCF, throughout the province through capacity building of referral and treatment sites
- Enhance community mobilization component of the CMAM/IMAM programming through capacity building activities and increased BPHS implementer ownership
- Prioritize activities addressing chronic malnutrition, high stunting rates, at the community level, through food security/agricultural, nutrition cooking demonstrations, IYCF, appropriate supplementation, growth monitoring, and improving maternal health and nutrition
- Ensure access to safe drinking water through WASH interventions that are sustainable and easy to maintain to address low water access rates in rural areas
- Advocate for an integrated approach within the health system to ensure monitoring of chronic malnutrition, growth monitoring and promotion, at the health facility and primarily community level
- Advocate and support measles vaccination campaign, particularly in zones that are less accessible due to security issues
- Increase monitoring and surveillance of nutrition activities through improved and more timely reporting structure and conducting a nutrition survey using the SMART methodology on an annual basis
- Conduct regular monitoring HHS questionnaires, combined with detailed IDDS, to ensure trend analysis and inform subsequent food security interventions
- Advocate at the national level for acceptance of a standardized SMART methodology as regular monitoring tool for under nutrition levels;
- To survey districts not included in this survey, 6 districts were excluded due to security issues, and should be assessed at a later date depending on security access

6. REFERENCES

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- National Nutrition Survey Afghanistan, UNICEF/MoPH, 2013
- National Mortality Survey Afghanistan, UNICEF/MoPH, 2010
- National Nutrition Cluster Website: www.humanitarianresponse.info/operations/Afghanistan/nutrition

8. List of Annexes

Annex 1 - Plausibility Check

Annex 2 - Assignment of Clusters

Annex 3 - Evaluation of Enumerators

Annex 4 - Results Tables for NCHS Growth references

Annex 5 - Map of Ghor

Annex 6 - Questionnaires

Annex 7 - Household Definition and Selection

Annex 8 - Local Events Calendar

Annex 9 - Consent Form



Figure 2: Ghor Province, Lal District, SMART Survey, 2014