NUTRITION AND RETROSPECTIVE MORTALITY SURVEY

HIGHLANDS AND LOWLANDS LIVELIHOOD ZONES OF ABYAN GOVERNORATE

FINAL SURVEY REPORT

YEMEN

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LIST OF ACRONYMS

ACF	Action Contre la Faim
ARI	Acute Respiratory Infection
CI	Confidence Interval
CMR	Crude Mortality Rate
CSI	Coping strategy index
DHO	District Health Office
DHS	Demographic Health Survey
ENA	Emergency Nutrition Assessment
FANTA	Food and Nutrition Technical Assistance
GAM	Global Acute Malnutrition
GHO	Government Health Office
HAZ	Height-for-age Z-score
HH	Household
IYCF	Infant and Young Children Feeding
MAM	Moderate Acute Malnutrition
MDD	Minimum Dietary Diversity
MPHP	Ministry of Public Health and Population
MUAC	Mid-Upper Arm Circumference
OTP	Out-patient Therapeutic Program
SAM	Sever Acute Malnutrition
SD	Standard Deviation
SMART	Standardized Monitoring and Assessment of Relief and Transitions
U5	Under-five
U5MR	Under Five Mortality Rate
UNICEF	United Nations Children's Fund
WAZ	Weight-for-age Z-scores
WHZ	Weight-for-height Z-scores
WHO	World Health Organization
WFP	World Food Program

EXECUTIVE SUMMARY

In February 2018, Action Contre la Faim (ACF), in collaboration with Ministry of Public Health and Population (MPHP) represented by Abyan Governmental Health Office (GHO), conducted two nutrition assessments in Lowlands and Highlands's ecological zone of 11 districts of Abyan governorate. This was in response to the need to determine the malnutrition levels and trends for the different ecological zones and to inform on the intervention response for the governorate.

The main objective was to assess the current nutrition situation in Highlands and Lowlands of Abyan governorate together with key determinants of Nutrition, Health and Food Security Situation and provide key recommendations.

A two-stage cluster sampling methodology, using a probability proportional to population size (PPS) sampling methodology, was followed to randomly select 35 clusters for Highlands and 35 clusters for Lowlands ecological zones for both anthropometry and mortality assessments. 14 households per each zone were randomly selected and assessed in each cluster. A total of 1077 children aged 0-59 months (513 from Lowlands and 564 children from Highlands zones) were assessed. Nutritional status for women of reproductive age 15–49 years was determined. A total of 1647 women were assessed (831 in Lowlands and 816 in Highlands) using Mid-Upper Arm Circumference (MUAC). Other indicators collected during the survey included household demographics, Health, Water, Sanitation and Hygiene (WASH) and Food security.

Data collection started on 27th January for one day only which had to be stopped due to the escalated armed clashes in the south at that period. The data collection was resumed from 7th to 21st of February 2018, in two phases: Lowlands zone in the 1st phase and Highlands's zone in the 2nd phase.

The survey results indicated a mean household size of 7.4 and 7.8 for Lowlands and Highlands livelihood zones respectively. Women illiteracy levels were notably high at 53 and 65 percent for Lowlands and Highlands respectively. The results also indicated that a larger proportion of caretakers were women with 97 and 99 percent for Lowlands and Highlands livelihood respectively.

The survey results for other key indicators are in table 1 below, the summary of recommendations generated from the findings are presented in table 2.

Table 1: Summary of Key Survey indicators

Indicator	Abyan Lowlands	Abyan Highlands
Nutrition		
Global Acute Malnutrition (<-2 z-score **and/or** oedema **and/or** < 125 mm)	11.1% (8.3-14.5 95% CI)	6.9% (4.8 - 9.5 95%CI)
Severe Acute Malnutrition (<-3 z-score **and/or** oedema **and/or** < 115 mm)	1.9% (0.8 -3.7 95% CI)	0.6% (0.1 - 1.8 95% CI)
Global Acute Malnutrition (WHZ<-2 and/or oedema)	10.0 % (7.4 - 13.2 95% C.I.)	5.3 %(3.1 - 8.8 95% C.I.)
Severe Acute Malnutrition (WHZ<-3 and/or oedema)	1.7 % (0.8 - 3.2 95% C.I.)	0.6 %(0.2 - 1.8 95% C.I.)
Moderate Acute Malnutrition (WHZ ≥-3 and <-2)	8.3 % (6.1 - 11.1 95% C.I.)	4.7 %(2.7 - 8.0 95% C.I.)
Chronic Malnutrition (Stunting) (HAZ<-2)	31.3 % (26.5 - 36.6 95% C.I.)	32.8 % (26.3 - 40.1 95% C.I.)
Underweight (WAZ<-2)	23.3 % (19.1 - 28.0 95% C.I.)	19.2 % (14.4 - 25.3 95% C.I.)
Mortality		
Crude Death Rate (CDR)	0.09 (0.03-0.28)	0.18 (0.08-0.45)
Under Five Death Rate (U5MR)	0.21 (0.03-1.68)	0.00 (0.00-0.00)
Infant and Young Child Feeding (IYCF)		
Exclusive breastfeeding (0-5 months)	10.2% (3.8 -20.8 95% CI) (n=6)	11.8% (4.4 -23.9 95% CI) (n=6)
Continued breastfeeding at one year (12-15 months)	86.7 % (69.3 – 96.2 95% CI) (n=26)	76.2 % (60.5 -87.9 95% CI) (n=32)
Continued breastfeeding at two years (20-23 months)	44.4 % (21.5 - 69.2 95% CI) (n=8)	47.1% (29.8 – 64.9 95% CI) (n= 16)
Introduction of solid, semi-solid or soft foods (6-8 months)	53.3% (26.6 – 78.7 95% CI) N=15,n=8	47.1% (29.8 -64.9 95% CI) N=34, n=16
Minimum dietary diversity (6-23 months)	55.7% (46.8 – 64.4 95% CI)) N=131, n= 73	48.4% (40.9 – 55.9 95% CI) N=182, n=88
Minimum meal frequency (6-23 months)	32.8 % (24.9 – 41.6 95% CI) N= 131,n=43	25.3% (19.1 -32.2 CI) (N=182, n=47,)
Minimum acceptable diet (6-23 months)	22.9% (16.0 -31.1 95% CI) (n=30, N=131)	10.4% (6.4 -15.8 95% CI) (N=182, n=19,)
Water Hygiene and Sanitation		
House connected piped water	35% (n=156)	13%(71)
Defecation in open (in fields, etc.)	1%(n=5)	4% (18)
Food Security		
Mean Food Consumption Score	77.2	66.1
Mean Coping strategy index	17.0	12.0

Table 2: Survey key findings and recommendations

No	Indicator Result	Recommendation	Responsible Organization/ Person	Timeline
1	Acute Malnutrition Lowlands: 11.1% (8.3-14.5 95% CI) - Classified as Serious Highlands: 6.9% (4.8 - 9.5 95%CI) - Classified as poor	Strengthen the community-based management of acute malnutrition (CMAM) through existing programme by empowering CHVs to play effective role in screening, referral	MoPHP and Implementing Partners	Immediate
2.	**High chronic malnutrition** Lowlands: 31.3% (26.5 - 36.6 95% C.I.) Highlands: 32.8 % (26.3-40.1 95% C.I.)	Implement mobilization campaigns on IYCF and care practices through behavior change communication interventions CHVS as well as community midwives should be heavily involved to improve the levels of exclusive breastfeeding	MoPHP and Implementing Partners	immediate
3	**High morbidity prevalence,** **Diarrhea:** Lowlands: 39.9% Highlands:41.2% **ARI/Cough:** Lowland: 58.1% Highland:55.1% **Fever:** Lowlands: 54.7% Highlands: 57.0%	Sensitize the community about signs and symptoms of common childhood illnesses Promote health seeking behavior by promoted the intervention covered CHVs amongst the households in their community Distribution of Mosquito nets to prevent malaria	MoPHP and Implementing Partners	Immediate
4.	Low Vaccination and supplementation in Highlands livelihood zone Vitamin A: 64.1% PPT: 60.8% Measles: 56.9%	Have routine vaccination in all the health facilities by repairing all the destroyed cold chain There is need to have vaccination campaigns to improve the coverage. Also need to enhance proper documentation of immunization	MoPHP and Implementing Partners	Ongoing
5	**Poor IYCF Indicators** a) Exclusive breastfeeding			Immediate

	Lowlands: 10.2% (3.8 -20.8 95% CI) **Highlands:** 11.8% (4.4 -23.9 95% CI)	Health education campaigns targeting, women groups and other community platforms on importance of appropriate child feeding practices. Education of communities on using local available foods for feeding infant and young children. Conduct Knowledge attitude and practice survey (KAP) to have more information on IYCF to facilitate appropriate response	MoPHP and Implementing Partners	
	b) Continued breastfeeding at 2 years (20-23 months) **Lowlands:** 44.4%(21.5 - 69.2 95% CI) **Highlands:** 47.1%(29.8 – 64.9 95% CI)			
	c). Minimum acceptable diet (6-23 months) **Lowlands** :22.9% (16.0 -31.1 95% CI) **Highlands** : 10.4% (6.4 -15.8 95% CI)			

1. INTRODUCTION

1.1. Location and Demography

Figure 1: Map of Abyan Governorate

Abyan governorate is one of the 22 governorates in the Republic of Yemen. The Governorate is located in the Southern part of the country, with an area of 16,442 square kilometers and a total population of 566,812[1]. It is about 427 km to the South Eastern of the Capital Sanaa and surrounded by Shabwah and Albyda Governorates from North, Arabic sea from South, Shabwah from East, and Aden and Lahj from West. Abyan governorate consists of 11 districts that are divided into coastal districts (Khanfir , Zingibar and Ahwar) and mountainous districts (Sara, Rasad , Sibah , Lawdar , Mudiyah , Al Wadea , Jayshan and Al Mahfad). Zingibar is the administration center for Abyan governorate.

1.2. Topography and Climate

The topography of Abyan varies from high mountains reaching 2,350 m above sea level in Rasad and Sibah districts, to long costal line from the West to the East with cities such as Shoqra. The climate varies according to the topography of the terrain. In the coastal plains the climate is hot during all seasons and temperature can rise in the summer to 40°C, where the mean temperature in the winter comes down to 20°C. The coastal plains also witness very low frequencies of rainfall in the winter and autumn. However, in the mountainous Highlands, the weather is warm with moderate degrees in summer and cold at winter with occasional rainfall witnessed in the spring and summer seasons.

1.3. Fishing and Agriculture

Fishing and agriculture are considered the main activities for the local people in Abyan, it produces 4.7[2]% of the total country agriculture products. The most popular wadis being Wadi Bana, Wadi Hassan, Wadi Wadi Alsaila Albaidaa, Wadi Lema and Wadi Ahwar. The costal line which extend for about 300 km is very famous with its fishing productivity with a lot of fishermen villages scattered in it.

[1] 2017 population figures (based off of projections from the Yemen Central Statistical Organization 2004 Census)
[2] Yemen national information center

1.4. Health and Nutrition

Emergency Food Security and Nutrition Assessment (EFSNA) conducted in 2016 shows that the nutrition condition in Abyan exceeding the WHO "emergency" threshold, with a Global Acute Malnutrition (GAM) prevalence of 16%. The CMAM programme is run by the GHO and some NGOs in only 90 health facility from a total of 140 health facilities with a coverage percentage of 64%[3]. However, response does not match the needs due to unavailable of proper health service and lack of drugs supply in the functional health facilities.

1.5. Conflict and Internal Displaced

More than two years of relentless conflict in Yemen have impacted the lives of millions of people. An alarming 22.2 million people in Yemen need some kind of humanitarian or protection support, with some 11.3 million in acute need of assistance[4].

Yemen is a protracted crisis characterized by widespread poverty, conflict, poor governance and weak rule of law, including widely reported human rights violations. In Abyan the total number of IDPs is 2633[5] households originating mainly from Al Hudaydah, Lahj and Taiz governorate due to the active armed clashes in these governorates.

2. SURVEY RATIONALE

ACF with the funding from UNICEF carried out a SMART Survey in Abyan governorate, which data collection took place on 27th January for one day and from 7th to 21st February, 2018. The purpose of conducting the survey was to provide up to date information on the nutrition and mortality situation in the governorate. This information will be used to inform the humanitarian response plan. The survey was conducted in coordination with Governorate Health Office (GHO) of Abyan.

2.1. Survey Objectives

Overall Objective

The **overall objective** of the survey was to assess the current nutrition situation in Highlands and Lowlands of Abyan together with key determinants of Nutrition, Health and Food Security Situation and provide key recommendations.

Specific Objectives

The **specific objectives** of the survey were:

- To measure the prevalence of acute malnutrition among children aged 6 to 59 months.
- To measure the prevalence of chronic malnutrition among children age from 6 to 59 months.
- To measure the prevalence of underweight children age from 0 to 59 months.

[3] Abyan GHO
[4] OCHA Humanitarian Needs Overview 2018, November 2017
[5] Task Force on Population Movement 16th report, October 2017

- To estimate the proportion of children age 9-59 months against Measles.
- To estimate the proportion of children age 6-59 months who have received Vitamin A supplementation within the 6 months' time period prior to the survey.
- To estimate the proportion of coverage children against penta vaccination.
- To gain a better understanding of infant and Young Children Feeding Practices including the minimum meal frequency for children 0-23 months.
- To determine the prevalence of Diarrhea, Fever and Acute Respiratory Infection (ARI) and suspected measles in the 14 days prior to the survey among children aged 6-59 months.
- To understand the coping strategies of households at times of acute food shortage.
- To determine the populations access to storage and use of drinking water and hand washing practices.
- To assess the level of acute malnutrition among women at child bearing age (15-49 years) in highlands and coastal zone of Abyan
- To recommend appropriate short term and long term interventions based on the findings.

3. SURVEY METHODOLOGY

3.1. Survey Area

The survey was conducted in Abyan Governorate. The survey fully covered the 11 districts of Abyan governorate. The security situation was unstable for a long time in Abyan as some armed military groups were taking control of some districts there. However, in October 2018 a huge military campaign led by the state force has targeted all these groups and announced all the districts as being cleared from any non-state armed groups. ACF and Abyan GHO conducted an in-depth access assessment for the whole districts of Abyan which resulted in inclusion of all villages and Hara within the sampling frame without any exclusion.

This survey was carried out in the two ecological zones, representing also two different livelihood zones, namely Highlands (mountainous) and Lowlands (costal) areas of 11 districts of Abyan governorate. Each livelihood zone was an independent survey stratum.

3.2. Survey design

A two-stage cluster sampling methodology was used following SMART methodology. The first stage was involving random selection of the clusters using ENA for SMART software, the villages and Hara were considered as the smallest geographical unit for the second stage, household is the basic sampling unit for all clusters. Simple random sampling was used to select the households; an exhaustive list of households was made with help of residents and community guides. For large and scattered clusters a geographic segmentation was done with the help of the resident and PPS method was used to select which segment to survey after which the second-stage sampling method was done using simple random sampling. The number of clusters which segmentation was conducted is shown in Annex 3.

3.3. Survey population

The survey was conducted among children aged 0-59 months and women in reproductive age (15-49 years), 6-59 months children were considered for the anthropometric measurement (weight, oedema and height/length), 0-6 month's children for weight only, 0 to 23 months for IYCF and women 15-49 for MUAC. The entire population were targeted for Crude Mortality Rate (CMR) and under five mortality rate.

3.4. Sample size

The sample size was determined using ENA for SMART software, July 9th 2015 version, for both anthropometry and mortality survey. Before implementing the survey, relevant secondary information were collected to determine the expected malnutrition prevalence of under-five year old (U5) children and the CMR of the population. Three parameters were taking into account to calculate sample size for anthropometry: (1) Anticipated malnutrition prevalence, (2) The design effect and (3) the precision. The SMART software has automatically calculated the number of houses to be visited during the survey and by the number of children surveyed. The parameters used to calculate sample size are shown in table 3. The number of households to be surveyed was taken from the higher sample between anthropometry and mortality thus 480 and 479 households were taken in Lowlands and Highlands respectively.

Table 3: Sample size calculation for anthropometric and retrospective mortality survey for Lowlands and Highland Livelihood zones

	Lowlands		Highland	
Parameters/values	Anthropometric (6-59 months)	Mortality (HH members)	Anthropometric (6-59 months)	Mortality (HH members)
Estimated prevalence	16 %[6] (GAM prevalence)	0.4 (Death Rate /10,000/day)	16 %[7] (GAM prevalence)	0.4 (Death Rate /10,000/day)
±desired precision	4 %	0.3	4 %	0.3
± design effect	1.5	1.5	1.5	1.5
Recall period in days		90		90
% of U5 children	18%[8]		17.99%[6]	
Average household size	6.99 [6]	6.99	7[6]	7
%of non-responsive household	3 %[9]	3%	3 %[10]	3%
Sample	527(480 HH)	3098(457 HH)	527 (479 HH)	3098 (456 HH)

The number of clusters to be surveyed per livelihood zone was derived from dividing the number of households the team could comfortably complete per cluster per day (based on experience and the distribution of households) by the calculated household sample size as illustrated in table 4.

[6] EFSNA (Emergency Food Security and Nutrition Assessment) 2016
[7] EFSNA (Emergency Food Security and Nutrition Assessment) 2016
[8] Abyan GHO
[9] Abyan SMART 2012
[10] Abyan SMART 2012

Table 4: Determining the number of clusters to be visited.

Livelihood zone	Number of households from sample size (table 3)	Number of households per cluster	Calculation	Number of clusters	Number of Households planned to be visited
Lowlands	480	14	480/14=34.3	35	490(35*14)
Highlands	479	14	479/14=34.2	35	490(35*14)

3.5. Training and data collection.

The survey training was conducted in Aden from 13th to 18th January 2018. This included four days of classroom data collection, one day standardization test and field pilot. There were other two days of refresher training afterwards due to the delay caused by insecurity in the Governorate.

Data collection started on 27th January for one day only which had to be stopped due to the escalated armed clashes in the south at that period. The data collection was resumed from 7th to 21st of February 2018, in two phases: Lowlands zone in the 1st phase and Highlands's zone in the 2nd phase.

3.6. Case Definitions and inclusion Criteria

Anthropometry

Acute malnutrition (Weight-for-height Z score (WHZ))

Acute malnutrition in children 6-59 months can be expressed by using two indicators: Weight-for Height (WHZ) or Mid-Upper Arm Circumference (MUAC) as described below. A child's nutritional status is estimated by comparing it to the WHZ curves of a reference population (WHO standards data[11]). 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) (**table 5**). During the field data collection, the WHZ was calculated for each child using z-score chart in order to refer malnourished cases to appropriate center for management.

Table 5: Weight-for-height (WHZ), children 6-59 months (WHO 2006)

	Weight-for-height index (W/H)	Nutritional status
Children 6-59 months	≥ -2 z-score	Adequate nutrition status
	-3 z-score ≤ H/A < -2 z-score	Moderate acute malnutrition
	< -3 z-score . ≥ -2 z-score and/or oedema -3 z-score ≤ H/A < -2 z-score and/or oedema	Severe acute malnutrition

Chronic malnutrition (Height-for-age Z score (HAZ))

The HAZ measure indicates if a child of a given age is chronically malnourished (stunted). This index reflects the nutritional history of a child rather than his/her current nutritional status. The same principle is used as for WHZ; except that a child's chronic nutritional status is estimated by comparing its height

[11] WHO: World Health Organization, WHO growth curves for children, 2006

with WHO standards height-for-age curves, as opposed to weight-for-height curves. The height-for-age index of a child from the studied population is expressed in Z-score (HAZ). The HAZ cut-off points are presented in table 6

Underweight (weight-for-age Z score (WAZ))

Underweight indicates the weight of the child compared to his age. It is expressed by the Weight-for-Age index and in Z-scores of WHO Standards (2006). The **table 6** below show underweight classes with their cut-off points.

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

	Stunting (Height for Age -HAZ)	Underweight (Weight for Age-WAZ)
Normal	≥ -2 z-score	≥ -2 z-score
Moderate	-3 z-score ≤ H/A < -2 z-score	-3 z-score ≤ W/A < -2 z-score
Severe	< -3 z-score	< -3 z-score

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. In the field the criterion below was used to determine the status of children and appropriate referrals done based on the respective cut-offs (**table 7**).

Numerous studies have shown that mid-upper arm circumference (MUAC) correlates well with body mass index (BMI) in adult populations. However, globally applicable MUAC cutoffs have not been established to classify undernutrition among adults. Increasingly, MUAC is being used to assess nutritional status and to determine eligibility for services among adults, especially in people living with HIV and/or tuberculosis. Many countries and programs have established their own MUAC cutoffs to determine eligibility for program services, but there is limited evidence supporting these cutoffs and it is not known whether the cutoffs are optimal[12].

Table 7: Cut offs points of MUAC, children 6-59 months (WHO 2006) and Women of reproductive age 15-49 Years (FANTA 2017)

Target group	MUAC (mm)	Nutritional status

[12] FANTA, 2016, Determining a Global Mid-Upper Arm Circumference Cutoff to Assess Underweight in Adults (Men and non- pregnant Women)

Children 6-59 months	> or = 125	Adequate nutrition status
	< 125 and > or = 115	Moderate acute malnutrition
	< 115	Severe acute malnutrition
Women of child bearing age 15-49 years	>210	Adequate nutrition status
	>180<210	Moderate acute malnutrition
	< 180	Severe acute malnutrition

Nutritional bilateral pitting oedema

Nutritional bilateral pitting oedema is one of the most severe clinical forms of severe acute malnutrition. In the field children with bilateral oedema was automatically categorized as being severely malnourished, regardless of their WHZ.

Mortality

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.

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

Under-5 death rate (U5DR)

The probability for those children aged 0-5 years to die during a specific time interval. Calculated as:

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

Health

Immunization status, deworming and vitamin A supplementation

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

Morbidity

Mothers/caregivers of children were asked if children had experienced an illness in the past 14 days prior the day of the survey. ARI, fever (elevated body temperature) and diarrhoea (any episode of more than 3 stools in 24 hours (bloody or not) was recorded when symptoms according to the case definition are described by the caregiver.

Water Sanitation and Hygiene (WASH)

Drinking water access

The respondents were asked about the source of drinking water and distance taken to reach the source. The distance to water, or time to collect water, is often the main constraint of access to water, and associated with the quantity of water used

Water storage

The respondents were asked what type of container they use for storing drinking water and inspect the cleanness of the container.

Hand washing practices and availability of toilet Facilities

The mothers were asked on what occasions they wash their hands and also what they use to wash their hands to determine the hand washing practices and check the availability and types of toilet facilities used in the surveyed area.

IYCF

The IYCF indicators used in the measurement of IYCF practices asked to the mothers/caregivers of children aged 0-23 months are as follows:

- **Child ever breastfed:** Proportion of children who have ever received breast milk.
- **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 (11-12) months of age who are fed with breast milk.
- **Minimum Dietary Diversity Score:** Proportion of 6-23 months children consumed minimum 4 food groups in the last 24 hours.
- **Continued breastfeeding at 2 years:** Proportion of children (20–23) months of age who are fed breast milk.

Food Security

Household dietary diversity: defined as the number of unique foods consumed by household members over a given period, has been validated to be a useful approach for measuring household food access. There was noted difference in the tool capturing the food groups eaten by the household with the standard quid line. There is need to harmonize the tool further to avoid confusion.

Food consumption score (FCS): The FCS is a composite score based on dietary diversity, food frequency, and relative nutritional importance

Coping strategy index (CSI): CSI is a tool is commonly used as a proxy indicator for access to food. It is a weighted score that allows one to measure the frequency and severity of coping strategies.

The tool used to collect data on coping strategy missed one form of coping mechanism thus 11 coping mechanisms were collected unlike the standard 12 coping mechanism. There is need to harmonize the tool to capture the require indicators.

3.7. Data Analysis

Before analysis data was checked for: completeness, consistency and range before by the SMART Survey focal person. Data verification and cleaning process were conducted, whereby data capture and errors have be corrected or not included for analysis. Anthropometric analysis was performed using ENA for

SMART, Cross tabulations were done and the results were presented in a tabular format in terms of gender and age groups.

4. SURVEY RESULTS

4.1. Survey population characteristics

All selected clusters for both Highlands and Lowlands were surveyed, except for one cluster in Al Mahfad district (Highlands) that had some active armed clashes. At the end of the data collection period, the survey team managed to collect data from 486 and 469 households in Lowlands and Highlands livelihood respectively with the number of children and women measured as summarized in table 8.

Table 8: Summary of survey outputs

	Lowlands livelihood zone	Highlands Livelihood zone
Households surveyed	486	469
Children 6-59 months all	451	513
Children 6-59 months measured	432	504
Children 0-5 months all	62	51
Children 0-5 months measured	53	50
Women 15-49 years	831	820
Number of Households mortality was taken	485	505

The survey collected, mortality data from 941 households (471 in lowlands and 466 in Highlands) with an objective to determine the crude and under-five mortality rates. The population proportions by sex and age is shown in figure 2. Indicating a high birth rates and short life expectancy.

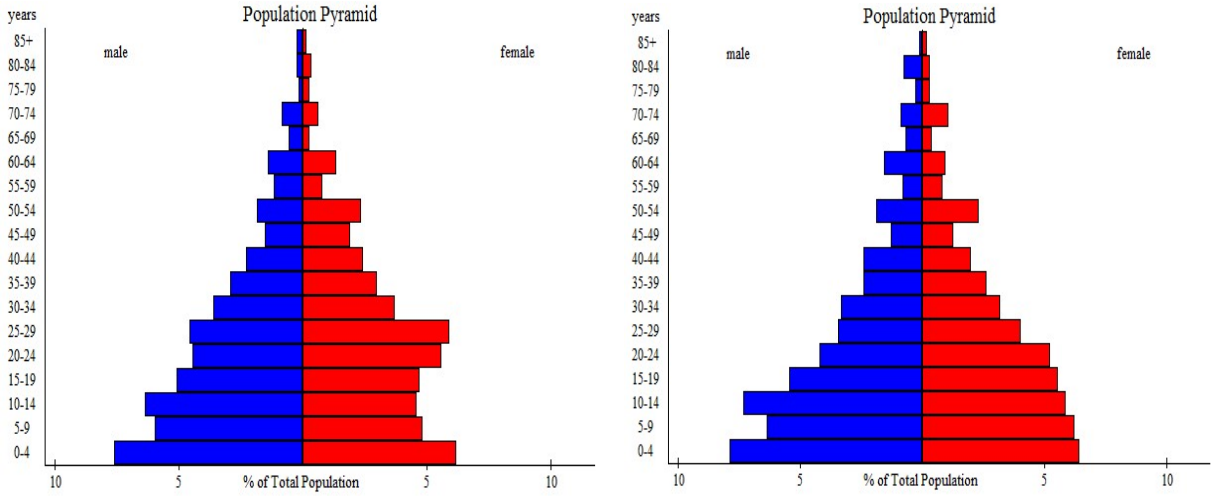

Figure 2: Population Distribution for Abyan Lowlands (L) and Highlands (R)

Household characteristics

The results also shows a high level of illiteracy with 53 % and 65% for lowland and highlands respectively. The survey results further indicated a mean household size of 7.4 and 7.8 for Lowlands and Highlands Livelihood zone respectively. A larger proportion of caretakers were women with 97 and 99 percent for Lowlands and Highlands livelihood respectively.

Other demographic characteristics are shown in table 9.

Table 9 : Household demographic characteristics for lowland and Highland livelihood zone.

	Lowland Livelihood Zone		Highlands Livelihood Zone	
Head of Households	N	%	N	%
Husband	462	95%	459	98%
Mother	24	5%	10	2%
Marital Status of Caregiver				
Married	430	88%	433	92%
Widowed	39	8%	29	6%
Divorced	8	2%	4	1%
Single	8	2%	3	1%
Education level of Caregiver				
Illiterate	258	53%	307	65%
Read and Write	68	14%	78	17%
Basic education	57	12%	57	12%
Secondary Education	66	14%	24	5%
Higher Education	37	8%	3	1%

4.2. Anthropometric results

The number of children 6-59 months included in the sample 432 children aged 6-59 months and of 504 in Lowlands and Highlands livelihood zones respectively. (Table 10 and 11). Sex ratio is within the accepted limits 1.1 in lowlands and 1.18 in highland. The age ratio in Highlands is 0.81 and in Lowlands 0.76.

Table 10: age and sex distribution Lowland zone: age and sex distribution

	Boys		Girls		Total		Ratio
Age (months)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: Girl**
6-17	51	53.7	44	46.3	95	22.0	1.2
18-29	44	48.4	47	51.6	91	21.1	0.9
30-41	60	55.0	49	45.0	109	25.2	1.2
42-53	56	58.3	40	41.7	96	22.2	1.4
54-59	15	36.6	26	63.4	41	9.5	0.6
Total	226	52.3	206	47.7	432	100.0	1.1

Table 11: Highland Livelihood zone age and sex distribution

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:Girl**
6-17	73	57.5	54	42.5	127	25.2	1.4
18-29	52	53.1	46	46.9	98	19.4	1.1
30-41	76	56.7	58	43.3	134	26.6	1.3
42-53	49	50.0	49	50.0	98	19.4	1.0
54-59	23	48.9	24	51.1	47	9.3	1.0
Total	273	54.2	231	45.8	504	100.0	1.2

4.2.1. Acute malnutrition rates based on WHO standards (2006)

The GAM is defined as <-2 z scores weight-for-height and/or oedema, Severe Acute Malnutrition (SAM) is defined as <-3z scores weight-for-height and/or oedema).

The results are presented with exclusion of z-scores from observed mean (SMART flags): WHZ -3 to 3; HAZ -3 to 3; WAZ -3 to 3. For the purposes of this report, the prevalence of malnutrition is presented according to WHO 2006 Growth Standards. There was no cases of oedema in both strata. Thus, the rates of acute malnutrition were of only made of wasted children. Wasting can be assessed by comparing a child's weight with the weight that would be expected from a healthy child of the same height. The analysis of acute malnutrition includes data from 432 child 6-59 month in Lowlands and 504 child 6-59 months in Highlands's zones.

The Combined GAM and SAM among children 6-59 months based on WHZ and or MUAC (mm) is shown in table 12.

Table 12 : Prevalecne of combined Acute Malnutrtion based on WHZ and MUAC

Combine Indicator	Prevalence Lowlands	Prevalence Highlands
Global Acute Malnutrition (<-2 z-score **and/or** oedema **and/or** < 125 mm)	11.1% (8.3-14.5 95% CI)	6.9% (4.8 - 9.5 95%CI)
Moderate Acute Malnutrition (WHZ ≥-3 and <-2)**and/or** < 115 mm)	9.2% (6.7-12.4 95% CI)	6.3% (4.3 -8.8 95%CI)
Severe Acute Malnutrition (<-3 z-score **and/or** oedema **and/or** < 115 mm)	1.9% (0.8 -3.7 95% CI)	0.6% (0.1 - 1.8 95% CI)

The malnutrition rate by global acute malnutrition (GAM) and Severe acute Malnutrition (SAM) based on WHZ in Lowlands and Highlands livelihood zones was 10.0 % (7.4 - 13.2 95% C.I.) and 1.7 % (0.8 - 3.2 95% C.I) for lowlands while in the Highlands was 5.3 % (3.1 - 8.7 95% C.I.) and 0.6 % (0.2 - 1.8 95% C.I) as shown in tables 13 and 14. The distribution of measurements is shown in figure 3.

Table 13: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in Lowlands livelihood zone

	All n = 422	Boys n = 221	Girls n = 201
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(42) 10.0 % (7.4 - 13.2 95% C.I.)	(24) 10.9 % (7.9 - 14.7 95% C.I.)	(18) 9.0 % (5.8 - 13.6 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(35) 8.3 % (6.1 - 11.1 95% C.I.)	(17) 7.7 % (5.0 - 11.6 95% C.I.)	(18) 9.0 % (5.8 - 13.6 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(7) 1.7 % (0.8 - 3.2 95% C.I.)	(7) 3.2 % (1.6 - 6.3 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

The prevalence of oedema is 0.0 %

Table 14: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in Highlands livelihood zone.

	All n = 494	**Boys** n = 267	**Girls** n = 227
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(26) 5.3 % (3.1 - 8.7 95% C.I.)	(17) 6.4 % (3.1 - 12.8 95% C.I.)	(9) 4.0 % (2.0 - 7.8 95% C.I.)
Prevalence of moderate malnutrition(<-2 z-score and >=-3 z-score, no oedema)	(23) 4.7 % (2.7 - 7.9 95% C.I.)	(16) 6.0 % (2.8 - 12.3 95% C.I.)	(7) 3.1 % (1.5 - 6.2 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(3) 0.6 % (0.2 - 1.8 95% C.I.)	(1) 0.4 % (0.0 - 2.8 95% C.I.)	(2) 0.9 % (0.2 - 3.6 95% C.I.)

The prevalence of oedema is 0.0 %

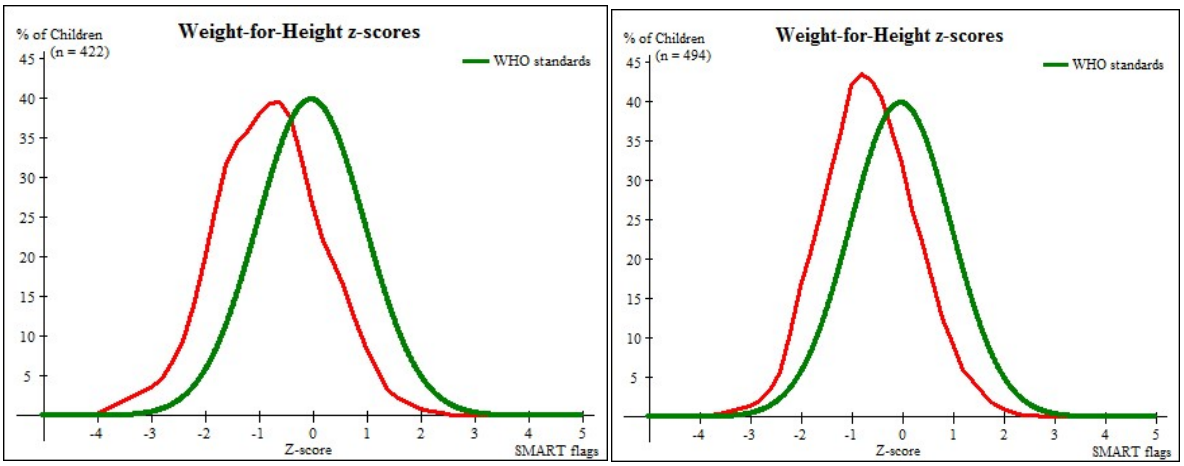

Figure 3: Observed distribution (WHZ) for Lowlands (Left) and Highlands (Right)

4.2.2. Acute malnutrition based on MUAC cut-offs and/or oedema

Acute malnutrition based on MUAC cut-offs and/or oedema in both strata is shown in (tables 15 and 16) with results indicating, Lowlands more affected than highlands.

Table 15: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex in Lowlands

	All n = 432	Boys n = 226	Girls n = 206
Prevalence of global malnutrition (< 125 mm and/or oedema)	(13) 3.0 % (1.8 - 5.1 95% C.I.)	(7) 3.1 % (1.4 - 6.7 95% C.I.)	(6) 2.9 % (1.2 - 7.1 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(10) 2.3 % (1.2 - 4.4 95% C.I.)	(4) 1.8 % (0.5 - 5.6 95% C.I.)	(6) 2.9 % (1.2 - 7.1 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(3) 0.7 % (0.2 - 2.2 95% C.I.)	(3) 1.3 % (0.4 - 4.1 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

Table 16 : Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex in Highlands

	All n = 497	Boys n = 269	Girls n = 228
Prevalence of global malnutrition (< 125 mm and/or oedema)	(14) 2.8 % (1.6 - 4.8 95% C.I.)	(8) 3.0 % (1.4 - 6.1 95% C.I.)	(6) 2.6 % (1.2 - 5.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(13) 2.6 % (1.5 - 4.6 95% C.I.)	(7) 2.6 % (1.2 - 5.8 95% C.I.)	(6) 2.6 % (1.2 - 5.8 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(1) 0.2 % (0.0 - 1.5 95% C.I.)	(1) 0.4 % (0.0 - 2.7 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

4.2.3. Chronic malnutrition expressed in Height-for-Age z-scores (WHO 2006)

Chronic malnutrition is a manifestation of long term effect of malnutrition where children affected are shorter for their age. The survey results indicated a high chronic malnutrition rates both coastal 31.3 % (26.5 - 36.6 95% C.I.) and Highlands, 32.8 % (26.3 - 40.1 95% C.I.) respectively as indicated in table 17 and 18. The results further shows no significant difference in stunting between boys and girls. The distribution of chronic malnutrition among children in both livelihood zones is shown in figure 4 below

Table 17 : Prevalence of stunting based on height-for-age z-scores and by sex in Lowlands

	All n = 415	Boys n = 219	Girls n = 196
Prevalence of stunting (<-2 z-score)	(130) 31.3 % (26.5 - 36.6 95% C.I.)	(67) 30.6 % (25.2 - 36.6 95% C.I.)	(63) 32.1 % (24.0 - 41.5 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(104) 25.1 % (20.6 - 30.1 95% C.I.)	(53) 24.2 % (19.3 - 29.9 95% C.I.)	(51) 26.0 % (19.2 - 34.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(26) 6.3 % (4.4 - 8.9 95% C.I.)	(14) 6.4 % (3.7 - 10.9 95% C.I.)	(12) 6.1 % (3.5 - 10.6 95% C.I.)

Table 18: Prevalence of stunting based on height-for-age z-scores and by sex in Highlands

	All n = 491	Boys n = 266	Girls n = 225
Prevalence of stunting (<-2 z-score)	(161) 32.8 % (26.3 - 40.1 95% C.I.)	(95) 35.7 % (27.7 - 44.6 95% C.I.)	(66) 29.3 % (22.5 - 37.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(120) 24.4 % (19.9 - 29.6 95% C.I.)	(71) 26.7 % (21.0 - 33.3 95% C.I.)	(49) 21.8 % (16.9 - 27.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(41) 8.4 % (5.6 - 12.2 95% C.I.)	(24) 9.0 % (5.8 - 13.8 95% C.I.)	(17) 7.6 % (4.3 - 12.9 95% C.I.)

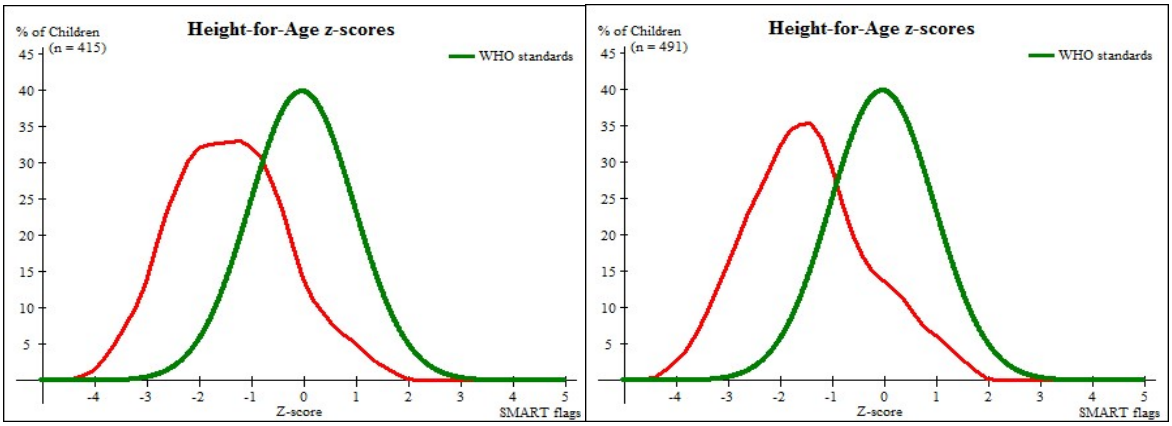

Figure 4 : Observed distribution (HAZ) for Lowlands (Left) and Highlands (Right)

4.2.4. Underweight malnutrition expressed in Weight-for-Age z-scores (WHO 2006)

Underweight means low weight for age. The survey results indicated that underweight rates in lowland livelihood zone were of 23.3 % (19.1 - 28.0 95% C.I.), with severe underweight being 5.1 %(3.4 - 7.6 95% C.I.). In Highlands, the prevalence was 19.2 % (14.4 - 25.3 95% C.I.) with severe underweight 2.2 % (1.2 - 4.2 95% C.I.) as shown in table 19 and 20. The distribution of underweight among children in the two livelihood zones is shown in figure 5.

Table 19: Prevalence of underweight based on weight-for-age z-scores by sex in Lowlands

	All (n = 430)	Boys (n = 226)	Girls (n = 204)
Prevalence of underweight (<-2 z-score)	(100) 23.3 % (19.1 - 28.0 95% C.I.)	(53) 23.5 % (18.7 - 29.0 95% C.I.)	(47) 23.0 % (17.5 - 29.7 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(78) 18.1 % (14.1 - 23.1 95% C.I.)	(39) 17.3 % (12.5 - 23.3 95% C.I.)	(39) 19.1 % (14.3 - 25.0 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(22) 5.1 % (3.4 - 7.6 95% C.I.)	(14) 6.2 % (3.6 - 10.5 95% C.I.)	(8) 3.9 % (1.9 - 8.0 95% C.I.)

Table 20: Prevalence of underweight based on weight-for-age z-scores by sex in Highlands

	All n = 494	**Boys** n = 267	**Girls** n = 227
Prevalence of underweight (<-2 z-score)	(95) 19.2 % (14.4 - 25.3 95% C.I.)	(59) 22.1 % (16.1 - 29.6 95% C.I.)	(36) 15.9 % (10.9 - 22.6 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(84) 17.0 % (12.5 - 22.6 95% C.I.)	(53) 19.9 % (13.8 - 27.7 95% C.I.)	(31) 13.7 % (9.5 - 19.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(11) 2.2 % (1.2 - 4.2 95% C.I.)	(6) 2.2 % (1.0 - 4.8 95% C.I.)	(5) 2.2 % (0.8 - 6.1 95% C.I.)

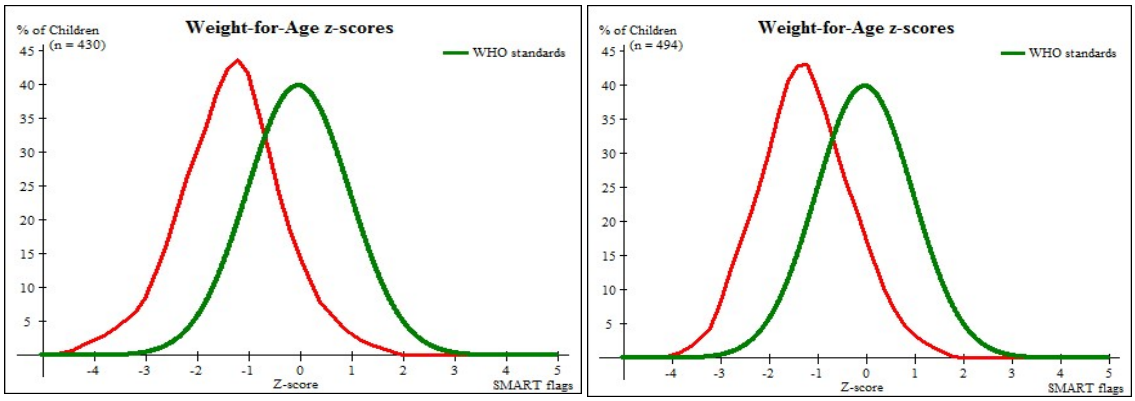

Figure 5 : Observed distribution (WAZ) for Lowlands (Left) and Highlands (Right)

4.2.5. Underweight for children 0-5 months.

Weight for children less than six months was taken by the survey team. This was analyzed to determine their underweight status. The results indicated an underweight prevalence of 20.4 % (11.1 - 34.5 95% C.I.) and 10.0 % (3.8 - 23.9 95% C.I.) for Lowlands and Highlands livelihood zones respectively. The details can be found in table 21 and 22.

Table 21: Prevalence of underweight for children 0-5 months in Lowlands Livelihood zone

	All n = 49	Boys n = 24	Girls n = 25
Prevalence of underweight (<-2 z-score)	(10) 20.4 % (11.1 - 34.5 95% C.I.)	(5) 20.8 % (9.2 - 40.6 95% C.I.)	(5) 20.0 % (7.5 - 43.6 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(8) 16.3 % (8.1 - 30.2 95% C.I.)	(5) 20.8 % (9.2 - 40.6 95% C.I.)	(3) 12.0 % (3.4 - 34.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(2) 4.1 % (0.9 - 16.1 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(2) 8.0 % (1.6 - 31.2 95% C.I.)

Table 22: Prevalence of underweight for children 0-5 months Highlands Livelihood zone

	All n = 50	Boys n = 24	Girls n = 26
Prevalence of underweight (<-2 z-score)	(5) 10.0 % (3.8 - 23.9 95% C.I.)	(2) 8.3 % (1.7 - 32.4 95% C.I.)	(3) 11.5 % (3.2 - 34.2 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(5) 10.0 % (3.8 - 23.9 95% C.I.)	(2) 8.3 % (1.7 - 32.4 95% C.I.)	(3) 11.5 % (3.2 - 34.2 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(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.)

4.2.6. Nutrition Status for women of reproductive age 15-49 years

The survey team measured the nutrition status of women of reproductive age 15-49 years by use of MUAC tapes. A total of 831 and 820 women were assessed in the Lowlands and Highlands Livelihood zone respectively with results shown in table 23.

Table 23 : Malnutrtion prevalence of women of reproductive age 15-49 years and PLW

	Lowland Livelihood zone	Highland Livelihood Zone
Prevalence of acute malnutrition All Women (< 210 mm)	6.6 % (5.0 - 8.5 95% C.I.) (n=55)	3.7 % (2.5 –5.2 95% C.I.) (n=30)
Prevalence of acute malnutrition PLW(< 210 mm)	7% (4.1 – 11 95% C.I.) (n=17)	2.1 % (0.8- 4.5 95% C.I.) (n=6)

4.3. Retrospective Mortality Results

The results of mortality analysis shows Crude Mortality Rate (CMR) of 0.10 % (0.03 – 0.29 95% CI) and 0.21% (0.1- 0.47) for Lowlands and Highland Livelihood zone respectively. The Under-five Mortality Rate (U5MR) was estimated at 0.22% (0.03 – 1.69 95% CI) and 0.00% (0.00-0.00 95%CI :) for Lowlands and Highlands respectively (Table 24). In Lowlands there were three (3) death reported in the last 90 days before the survey. Out of this one (1) was less than five years old and two (2) above five years old. In Highlands's zone there were six (6) deaths above five years with no under five deaths. Both CMR and U5MR were below the emergency threshold of above 1 person/10,000/day and 2 children/10,000/day for CMR and U5MR respectively.

Table 24 : Retrospective Mortality Results

	Lowlands	Highlands
Total Number of Households	475	466
Total Number of HHs with children U5	308	321
Average household size	7.4	7.8
Mid interval Population Size	3501	3650.5
Percentage of children under five	14.9	16.1
Birth Rate	0.73	0.82

In-migration Rate (Joined)	9.2	11.69
Out-Migration Rate (Left)	8.12	10.96
Crude Death Rate (95% CI)	0.10 (0.03-0.29)	0.21 (0.1-0.47)
Under Five Death Rate (95% CI)	0.22 (0.03-1.69)	0.00 (0.00-0.00)

4.4. Child Morbidity

Illness data were collected from children 0-59 months of age for a recall period of 14 days prior the survey. Analysis of morbidity in the two livelihood zones showed 53.1 % and 53.2% of assessed children had more than one cause of morbidity out of the three in the highland respectively. The prevalence of specific diseases is shown in table 25 below.

Table 25: Child morbidity (period recall 14 days)

Illness/Symptom	Lowlands (N=506)	Highlands (N= 554)
Fever	54.7%	57.0%
ARI/Cough	58.1%	55.1%
Diarrhea	39.9%	41.2%

4.5. Supplementation and vaccination coverage

The survey results indicated a high vitamin A supplementation, Pentavalent and measles vaccination coverage in lowland compared to highlands. It's worth noting that coverage was below 80 percent threshold except Pentavalent in lowlands which had a 84.5 percent as shown in figure 6.

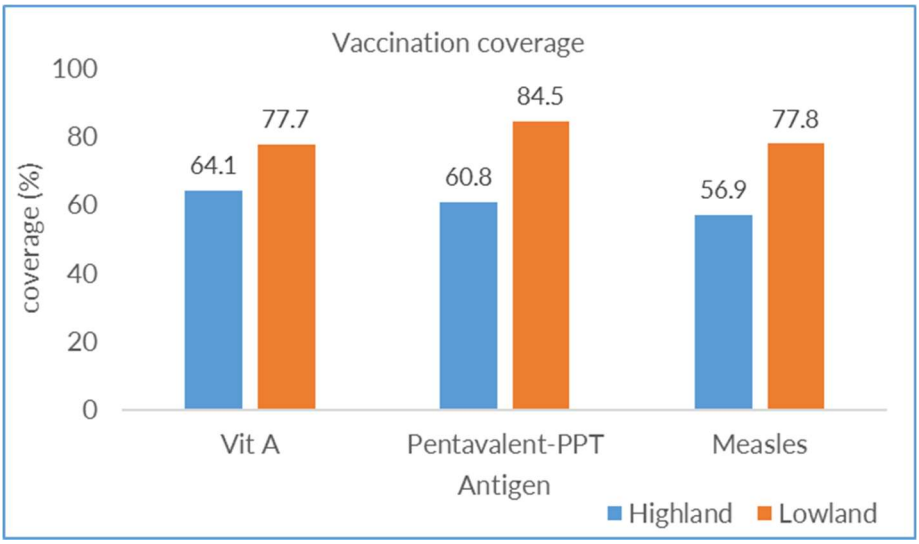

Figure 6: Vaccination Coverage

4.6. Infant and Young Child Feeding

Undernutrition is estimated to be associated with 2.7 million child deaths annually or 45% of all child deaths. Infant and young child feeding is a key area to improve child survival and promote healthy growth and development. The first 2 years of a child's life are particularly important, as optimal nutrition during this period lowers morbidity and mortality, reduces the risk of chronic disease, and fosters better development overall.

4.6.1. Breastfeeding Practices

The survey analyzed exclusive breastfeeding, Continued breastfeeding at 1 and 2 years and complementary feeding indicators. The survey findings showed exclusive breastfeeding rate of 10.2% (3.8 -20.8 95% CI) and 11.8 %(4.4 -23.9 95% CI) in Lowlands and Highlands livelihood zones respectively. The results further indicated a high prevalence of continued breastfeeding at one year, but decrease to less than 50% of children being breasted at two year, as shown in table 26.

Table 26 : Breastfeeding indicators

Indicator	Lowlands (%)	Highlands (%)
Exclusive breastfeeding (0-5 months)	10.2% (3.8 -20.8 95% CI) (n=6)	11.8% (4.4 -23.9 95% CI) (n=6)
Continued breastfeeding at one year (12-15 months)	86.7 % (69.3 – 96.2 95% CI) (n=26)	76.2 % (60.5 -87.9 95% CI) (n=32)
Continued breastfeeding at 2 years (20-23 months)	44.4 % (21.5 - 69.2 95% CI) (n=8)	47.1% (29.8 – 64.9 95% CI) (n= 16)

4.6.2. Complementary Feeding

Complementary feeding is defined as the process starting solid and semi solid foods when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk. The transition from exclusive breastfeeding to family foods is a critical period of growth during which nutrient deficiencies and illnesses contribute globally to higher rates of undernutrition among children under five years of age.

The survey results indicated a low percentage of children have started complementary food on time. The i**ntroduction of solid, semi-solid or soft foods** only reached 32.8% (24.9 – 41.6 95% CI) and 25.3% (19.1 – 32.3 95% CI) for Lowlands and Highlands respectively.

The survey assessed the **minimum dietary diversity** for children aged 6-23 months. The finding indicated that 55.7 % (46.8 – 64.4 95% CI) and 48.4 % (40.9 – 55.9 95% CI) children 6–23 months of age received foods from 4 or more food groups during the previous day for Lowlands and Highlands respectively.

A further analysis of age specific minimum dietary diversity is shown in table 27.

Table 27: Age specific minimum dietary diversity among children 6-23 months

Age (months)	Lowlands (%)	Highlands (%)

6-11	44.4% (27.9 – 61.9 95% CI) (n=16)	39.7% (27.0 – 53.4 95% CI) (n=23)
12-17	60.7 % (47.3 – 72.9 95% CI) (n=37)	51.5% (39.0 – 63.8 95% CI) (n=35)
18-23	58.8 % (40.7 – 75.4 95% CI) (n=20)	53.6 % (39.7 – 67.0 95% CI)(n=30)

The survey also assessed the **minimum meal frequency** for children who consumed solid, semi-solid or soft food. This is an age-specific indicator and its recommended that breastfed children aged 6-8 should be fed with solid, semi-solid or soft food twice a day while those aged 9-23 months should be fed three times. The guideline further recommends, non-breastfed children be given solid, semi-solid or soft food four times a day including milk feeds. The finding indicated that 32.8 % (24.9 – 41.6 95% CI) and 25.3 % (19.1 -32.2 95% CI) children 6–23 months of age consumed solid, semi-solid or soft food the recommended times the previous day according to their age, in Lowlands and Highlands respectively. The results further indicated a higher minimum meal frequency for the non-breastfed children compared to the breastfed on both lowland and highland livelihood zones as in table 28.

Table 28: Minimum meal frequency of children 6-23 months

	Lowlands	Highlands
All (children 6-23 months)	32.8 % (24.9 – 41.6 95% CI) (N=131, n=43)	25.3 % (19.1 -32.2 95% CI) (N=182, n=46)
Breastfed children 6-23 months	21.4%(13.9 – 30.5 95% CI) (N=103,n=22)	16.5%(10.7 – 24.0 95% CI) (N=133,n=22)
Non-breastfed children 6-23 months	75.0% (55.1 – 89.3 95% CI) (N=28,n=21)	49% (34.4 – 63.7 95% CI) (N=49,n=24)

The result of the 24-hour dietary recall for children 6-23 months shows that the main food group eaten by this age group is staple; the details for other groups are shown in **figure 7**.

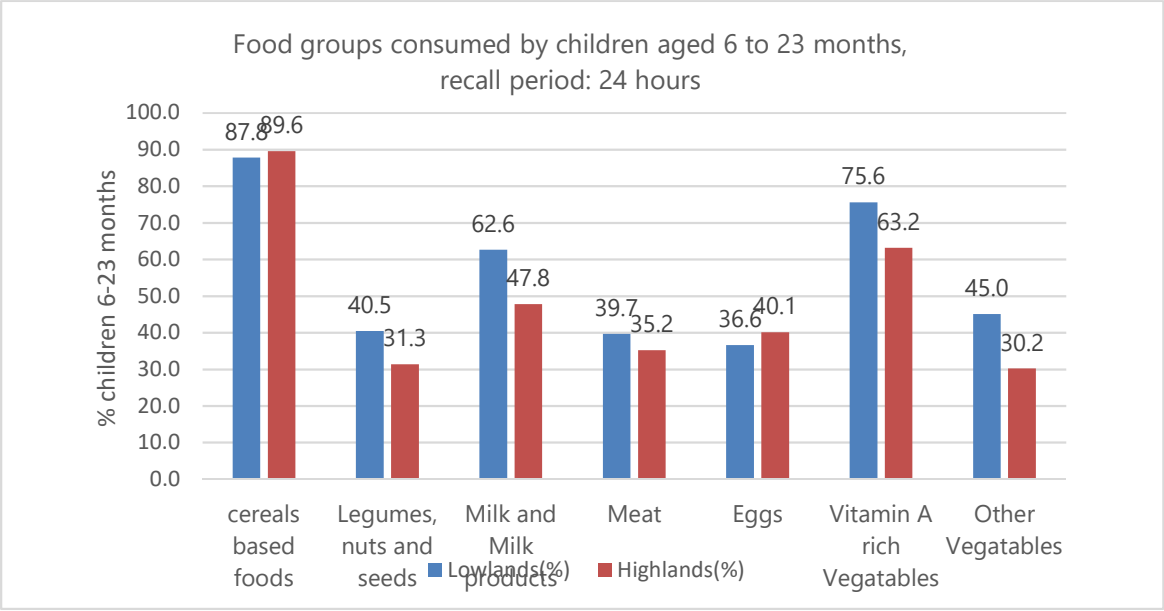

Figure 7 : Food Groups eaten within 24hrs prior to survey among children 6-23 months

The **minimum acceptable diet** among children 6-23 months was determined. This is an age specific indicator and combines both minimum dietary diversity and minimum meal frequency. This is an indicator to assess the diet quality and quantity dimensions of children. The finding indicated that only 22.9% (16.0 -31.1 95% CI) and 10.4% (6.4 -15.8 95% CI) of children 6–23 months of age consumed an acceptable diet in Lowlands and Highlands respectively. A further analysis of breastfed and the non-breastfed children aged 6-23 shows a higher acceptable diet amongst non-breastfed group as in table 29.

Table 29: Minimum acceptable diet for breastfed and non-breastfed children 6-23 months

	Lowlands	Highlands
All (children 6-23 months)	22.9% (16.0 -31.1 95% CI) (n=30, N=131)	10.4% (6.4 -15.8 95% CI) (N=182, n=19,)
Breastfed children 6-23 months	16.5% (9.9 – 25.1 95% CI) N=103, n=17	6.8% (3.1 – 12.5 95% CI) N=133, n=9
Non-Breastfed children 6-23 months	46.4% (27.5 – 66.1 95% CI) N=28, n= 13	20.4% (10.2 – 34.3 95% CI) N=49, n=10

The summary of Infant and Young Child (IYCF) indicators is presented in **table 30.**

Table 30: Prevalence for complementary feeding practices

Indicator	Lowlands	Highlands
Introduction of solid, semi-solid or soft foods (6-8 months)	53.3% (26.6 – 78.7 95% CI) N=15,n=8	47.1% (29.8 -64.9 95% CI) N=34, n=16
Minimum dietary diversity (6-23 months)	55.7% (46.8 – 64.4 95% CI)) N=131, n= 73	48.4% (40.9 – 55.9 95% CI) N=182, n=88
Minimum meal frequency (6-23 months)	32.8 % (24.9 – 41.6 95% CI) N= 131,n=43	25.3% (19.1 -32.2 CI) (N=182, n=47,)
Minimum acceptable diet (6-23 months)	22.9% (16.0 -31.1 95% CI) (n=30, N=131)	10.4% (6.4 -15.8 95% CI) (N=182, n=19,)

4.6.3. Water Sanitation and Hygiene (WASH)

Household's main source of drinking water

The main source of drinking water in Lowlands livelihood zone was "house connected piped water", 60% (n=291) and the second main source is bottled water 11% (n=54). In highland the main source of drinking water is water tanker 48% (n=224) and the second is unprotected well 17% (n=80).Households in both livelihood zones also mentioned using water from other sources as in figure 8 below.

Households were further asked whether they treat their water before drinking. The results indicated low water treatment with an 8.6% (6.1-11.6 95% CI) and 4.3% (2.6-6.5 95% CI) for Lowlands and Highlands Livelihood respectively. The results further indicated that the most preferred method of water treatment, in coastal livelihood was Ceramic /sand filters with 50% (32.9 -67.1 95% CI) of households utilizing, while filtering with clothe was the most preferred method in the Highland Livelihood zone with 85% (62.1 – 96.8 95% CI) of households utilizing this method**.**

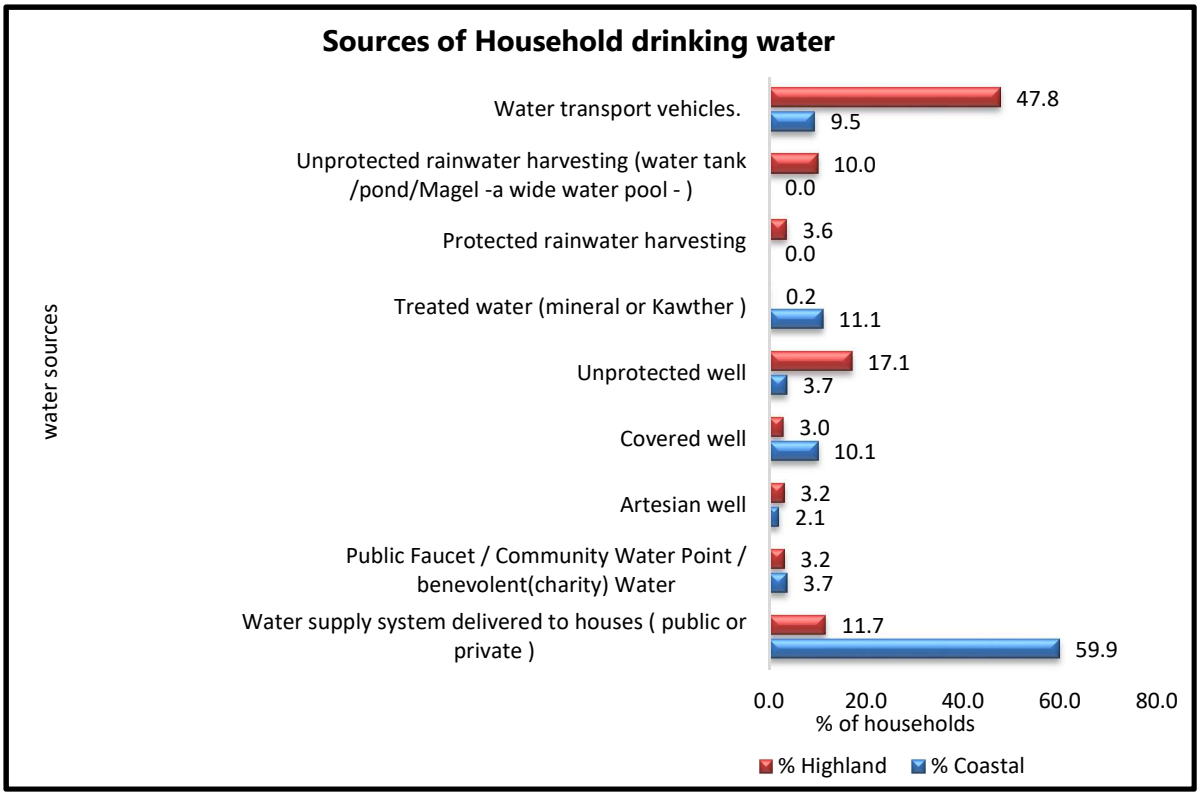

Figure 8 : Household water sourcces for lowland and highland livelihood zone.

The survey also collected information on where households defecate and handwashing practices. The mostly utilized type of toilets by households in both Lowland and Highland livelihood zones were: Flush to sceptic, flush to drain and flush to pipe sewer system among others as shown in table 31.

The prevalence of handwashing was not included in the analysis as the results shows that almost all households washed their hands after visiting toilet and before eating which might not be the real situation. This could have been due to the way the question was administered.

Table 31: Household Latrine

Household Latrine Type	Lowland		Highland	
	n	%	n	%
Flush to piped sewer system	129	27%	41	9%
Flush to septic tank	237	49%	251	54%
Flush to pit latrine	12	2%	10	2%
Flush to open drain	90	19%	88	19%
Ventilated improved pit latrine	0	0%	39	8%
Pit latrine with slab	2	0%	12	3%
Pit latrine without slab/ open pit	9	2%	7	1%
Hanging latrine	0	0%	0	0%
Defecation in open (in fields, etc.)	5	1%	18	4%

4.7. Food Security and Livelihood

The survey team sought from household changes in income in the past year and the average monthly expenditure. The results showed 71.6 % and 77.5% of households lost income in the Highlands and Lowlands Livelihood zones respectively. The mean monthly household expenditure for Highlands and Lowlands livelihood zones were 65,742 and 50,374 Yemeni Reyals. Analysis of expenditure quintiles indicate that 47.8% and 47.4% of household lie in the lowest and low-mid quantiles in the Highlands and Lowlands livelihood respectively as in figure 9.

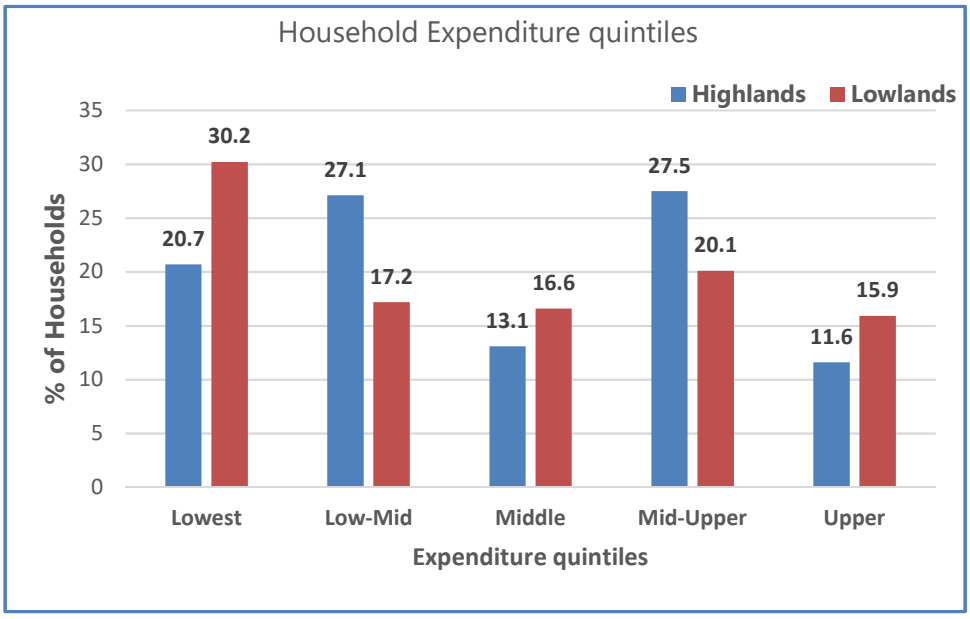

Figure 9 : Household Expenditure quintiles

Food consumption score of households in both livelihood zone was calculated and the findings indicated more than 90% of households in the two livelihood zones had acceptable food consumption score. The mean food consumption scores were 77.2 and 66.1 for Lowland and Highland livelihood zone indicating a favorable food consumption score of more than 35 as in table 32.

Table 32: Food consumption score for both lowland and Highland

	Poor Food consumption (FCS<21)	Borderline food consumption (FCS 21.5-35)	Acceptable food consumption (FCS>35)	Mean Food consumption score
Lowlands (% of households) N=486	0.4% (n=2)	2.7% (n=13)	96.9%(n=471)	77.2
Highlands (% of households) N=469	0.2% (n=1)	6.2% (n=29)	93.6% (n=439)	66.1

Coping strategy: Households in the study area were asked instances in the past seven days when they did not have enough food or money to buy food and how they coped with the situation. The data collection tool used miss one coping mechanism to make the required 12 mechanisms. The household coping mechanism was multiplied with the weighted coping strategy score to determine the household total coping strategy. The mean coping strategy was then calculated and the results indicate mean CSI of 17.0 and 12.0 for Lowlands and Highlands Livelihood zone respectively.

5. DISCUSSIONS

Malnutrition

The survey results in the Lowlands Abyan revealed a GAM rates of 11.1% (8.3-14.5 95% CI) and SAM 1.9% (0.8 -3.7 95% CI) with no significant difference in malnutrition between boys and girls. The results paint a serious nutrition situation in the coastal livelihood according to WHO threshold which classifies GAM rate of between 10 and 14 percent as serious. In the Highlands, the GAM rate was of 6.9% (4.8 - 9.5 95%CI)) and SAM was of 0.6% (0.1 - 1.8 95% CI) with no significant difference between boys and girls. The Highlands nutrition situation is classified as poor according to WHO thresholds of between 5 and 9 percent.

Stunting, identify as low height for age z-score, is caused by long-term insufficient nutrient intake and/or frequent infections. Stunting generally occurs before age two, and effects can be irreversible after the age of two. These include delayed motor development, impaired cognitive function and poor school performance. The stunting rates in both livelihood zones is categorized as high using the WHO thresholds of a prevalence between 30 and 39 percent: 31.3 % (26.5 - 36.6 95% C.I.) in Lowlands, and 32.8 % (26.3 - 40.1 95% C.I.) in Highlands. There is need to design programs to reverse the high prevalence of chronic malnutrition with all sectors involved.

The underweight prevalence is higher in Lowlands (23.3 % (19.1 - 28.0 95% C.I.)) than Highlands (19.2 % (14.4 - 25.3 95% C.I.)) though not statistically significant. The prevalence of underweight is classified as high in Lowlands and medium in Highlands, using the WHO classification of between 10 to 19 and 20 to 29 as medium and high respectively.

IYCF practices

Strong evidence indicates that breastfeeding is the best practice for child health, development and nutrition. WHO and UNICEF recommend that breastfeeding be initiated within one hour of birth, that it continue with no other foods or liquids for the first six months of life, and be continued with complementary feeding (breastfeeding with other age-appropriate foods) until at least 24 months of age. The poor IYCF indicators in both livelihood zone: exclusive breastfeeding prevalence lower than 12%, only a third of children introducing food at 6 months or having the minimum number or meal daily as

recommended for their age, slightly above half of the children having a minimum diversified diets, is worrying and may be linked to the high level of malnutrition.

Health

There is a high prevalence of Acute Respiratory Infection (ARI)/cough reported, 58.1% in Lowlands and 55.1% in Highlands zones. Prevalence of diarrhea was also high 39.9% and 41.2%, and fever prevalence also high with 54.7% and 57.0% resin Lowlands and Highlands respectively.
Coverage of pentavalent vaccination was lower than the sphere standards recommendation 90 % in both strata (84.5% for Lowlands and 60.8% for Highlands's livelihood zone).
The vitamin A supplementation, DPT and measles coverage is lower in Highlands compared to the Lowlands. The coverage in the Highlands are all below 80% WHO threshold, while in the lowlands only DPT has coverage higher than the 80% threshold. As proxy indicator of fully immunized children (FIC), this implies low coverage of fully immunized children in the Highlands livelihood zone. This can be attributed to cultural myth (poisonous) about vaccination, that need to be demystify which requires community sensitization about the importance of having of vaccination.

There was a noted high proportion of recall and do not know among caregivers on immunization and vitamin A response in both livelihood zone. There is need to improve documentation for accuracy in determining the vaccination and immunization coverages.

Water Sanitation and Hygiene

The first main source of drinking water in Lowlands' livelihood zone was "house connected piped water", 60% and the second main source is bottled water 11%. In Highlands the main source of drinking water is water tanker 48% and the second is unprotected well 17%.

Food security

The results show households in both livelihood zones were consuming from acceptable food consumptions scores with more than 90 percent of households (96.9% and 93.9% for Lowlands and Highlands Livelihood zones respectively) had acceptable food consumption score. The mean food consumption score also indicates households in the two livelihood zones were consuming from acceptable food consumption score of above 35.

The mean household coping strategy index CSI of 17.0 and 12.0 for Lowlands and Highlands Livelihood zone respectively ,indicates that despite the good food consumption score, there still exists inherent food access issues at household level.

6. RECOMMENDATIONS

No	Indicator Result	Recommendation	Responsible Organization/ Person	Timeline
1	Acute Malnutrition Lowlands: 11.1% (8.3-14.5 95% CI) - Classified as Serious Highlands: 6.9% (4.8 - 9.5 95%CI) - Classified as poor	Strengthen the community-based management of acute malnutrition (CMAM) through existing programme by empowering CHVs to play effective role in screening, referral	MoPHP and Implementing Partners	Immediate
2.	**High chronic malnutrition** Lowlands: 31.3% (26.5 - 36.6 95% C.I.) Highlands: 32.8%(26.3-40.1 95% C.I.)	Implement mobilization campaigns on IYCF and care practices through behavior change communication interventions CHVS as well as community midwives should be heavily involved to improve the levels of exclusive breastfeeding	MoPHP and Implementing Partners	immediate
3	**High morbidity prevalence,** **Diarrhea:** Lowlands: 39.9% Highlands:41.2% **ARI/Cough:** Lowland: 58.1% Highland:55.1% **Fever:** Lowlands: 54.7% Highlands: 57.0%	Sensitize the community about signs and symptoms of common childhood illnesses Promote health seeking behavior by promoted the intervention covered CHVs amongst the households in their community Distribution of Mosquito nets to prevent malaria	MoPHP and Implementing Partners	Immediate
4.	Low Vaccination and supplementation in Highlands livelihood zone Vitamin A: 64.1% PPT: 60.8% Measles: 56.9%	Have routine vaccination in all the health facilities by repairing all the destroyed cold chain There is need to have vaccination campaigns to improve the coverage. Also need to enhance proper documentation of immunization	MoPHP and Implementing Partners	Ongoing
5	**Poor IYCF Indicators** b) Exclusive breastfeeding			Immediate

	Lowlands: 10.2% (3.8 -20.8 95% CI) **Highlands:** 11.8% (4.4 -23.9 95% CI)	Health education campaigns targeting, women groups and other community platforms on importance of appropriate child feeding practices. Education of communities on using local available foods for feeding infant and young children. Conduct Knowledge attitude and practice survey (KAP) to have more information on IYCF to facilitate appropriate response	MoPHP and Implementing Partners	
	b) Continued breastfeeding at 2 years (20-23 months) **Lowlands:** 44.4%(21.5 - 69.2 95% CI) **Highlands:** 47.1%(29.8 – 64.9 95% CI)			
	c). Minimum acceptable diet (6-23 months) **Lowlands** :22.9% (16.0 -31.1 95% CI) **Highlands** : 10.4% (6.4 -15.8 95% CI)			

7. ANNEXES

Annex 1 : Plausibility Lowlands (Automatically generated)

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data (% of out of range subjects)	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	**0** (2.3 %)
			0	5	10	20	
Overall Sex ratio (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	**0** (p=0.336)
			0	2	4	10	
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1	>0.05	>0.001	<=0.001	**0** (p=0.228)
			0	2	4	10	
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	**0** (4)
			0	2	4	10	
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	**2** (10)
			0	2	4	10	
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	**0** (7)
			0	2	4	10	
Standard Dev WHZ	Excl	SD	<1.1 and	<1.15 and	<1.20 and	>=1.20 or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (0.98)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.01)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.09)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.436)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**2** %

The overall score of this survey is 2 %, this is excellent.

Annex: 2 : Plausibility Highland (Automaticaly generated)

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.6 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**2** (p=0.061)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.557)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (7)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (7)
Standard Dev WHZ	Excl	SD	<1.1 and	<1.15 and	<1.20 and	>=1.20 or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (0.91)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.11)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.06)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**3** (p=0.005)

OVERALL SCORE WHZ =	0-9	10-14	15-24	>25	**5** %

The overall score of this survey is 5 %, this is excellent.

Annex: 3: Sampled clusters

Highland Livelihood zone

Geographical unit	Population size	Cluster	District	Cluster name	Segmentation
صندوق الشرقي	721	1	Almahfid	Sandouq Alsharqi	Yes
الطوفان	104	2	Almahfid	Altofan	
تجمع لعقاب	127	3	Almahfid	Tagamo Leqaab	No
الجبن	1782	4	Modiah	Algaban	yes
ريمان	1042	5	Modiah	Reeman	yes
جبلة بادح	322	6	Modiah	Gabala Badeh	yes
ال فجعم	98	7	Modiah	Al Fagam	no
امصره	1059	8	Modiah	Omsoora	yes
العواسج	379	9	Gishan	Alawaseg	yes
امقيمه	55	10	Gishan	Omqima	no
تجمع بدو الحرف ال احمد	47	11	Gishan	Tagamo Badw Alharaf Al Ahmed	no
المعلم	1868	12	Lawdar	Almoalim	yes
الشعراء	894	13	Lawdar	Alsharaa	yes
زاره	1687	14	Lawdar	Zarah	yes
المشرقه	663	15	Lawdar	Almashraqa	yes
عراكبي ال عمير	561	16	Lawdar	Arakby Al Omir	yes
عنبره	298	17	Lawdar	Anbarah	yes
الخضريه	208	18	Lawdar	Alkharia	yes
ال عزة	47	19	Lawdar	Al Ezah	no
الحمره	391	20	Lawdar	Alhamrah	yes
معطاف	325	21	Lawdar	Meattaf	yes
اعلى غرابه	110	22	Lawdar	Ala Gharabah	no
البطان ال شوعان	311	23	Lawdar	Albatan Al Shoaan	yes
البيحاني	180	24	Sabbah	Albehany	no
الدور	120	RC	Sabbah	Aldor	
وعلان	496	25	Rosod	waalan	yes
حبيل فضل	215	26	Rosod	Habil Fadhl	yes
الصحراء	64	RC	Rosod	Alsahraa	
حرشان	596	27	Rosod	Harshan	yes
المشتبح	115	RC	Rosod	Almashtabah	
اعلشيب	110	28	Rosod	Alshib	no
حصن بن سعدان	248	29	Rosod	Hosn Bin Saadan	yes
ال غازي	184	30	Rosod	Al Ghazy	yes

امحبله	146	31	Serar	Amhabala	no
قرن بازرين	86	32	Serar	Qern Bazrin	no
الوضيع	2318	33	Alwadeea	Alwadea	yes
امر كد	1407	34	Alwadeea	Amr kad	yes
الحردوب	736	35	Alwadeea	Alhardoub	yes
الفرع ال وارد	13	RC	Alwadeea	Alfara Al Wared	

Sampled clusters: Lowlands Livelihood zone

Geographical unit	Population size	Cluster	District	Cluster name	Segmentation
العسكر	228	1	Ahwar	Alaskar	yes
السلام	783	2	Ahwar	Alsalam	yes
باشبوه	96	3	Ahwar	Bashabwa	no
اهل صالح المسانى	497	4	Ahwar	Ahl Saleh Almasany	yes
جول الهيل	613	5	Ahwar	Gool Alhil	yes
تجمع ظلومه	68	6	Ahwar	Tagamo Dhalomah	no
باجدار	5238	7	Zongibar	Bagedar	yes
شمس الدين	3654	8	Zongibar	Shams Aldin	yes
22مايو	1723	9	Zongibar	22-May	yes
العصله	3320	RC	Zongibar	Alasala	
سواحل	5244	10	Zongibar	Sawahel	yes
عمودية	2120	11	Zongibar	Amodiah	yes
بربره	143	12	Zongibar	Barbara	no
سعيد علي حيدره	4040	13	Khanfar	Saeed Ali Haidra	yes
حارة محمد ثابت	9097	14	Khanfar	Harath Mohmammed Thabeth	yes
حارة قائد صائل	1691	15	Khanfar	Harath Qaed Sael	yes
قاسم عبدالله	5939	16	Khanfar	Qasem Abduallh	yes
حارة يسلم صالح	3737	17	Khanfar	Harath Yaslam Saleh	yes
حارة الأثار	1726	18	Khanfar	Harath Alathar	yes
حارة المحراق	2695	19	Khanfar	Harath Almehraq	yes
بدر	3810	20	Khanfar	Badr	yes
المسح	669	21	Khanfar	Almash	yes
أهل عطيه	1614	22	Khanfar	Ahl Atiah	yes
حارة السوق	1515	23	Khanfar	Harath Alsouq	yes
باتيس	7098	24	Khanfar	Batis	yes
المخزن	9070	25,26	Khanfar	Almakhzan	yes
كدمه بن لعور	493	27	Khanfar	Kadamah Bin Laawar	yes
ساكن عبد القادر -الديو	935	28	Khanfar	Saken Abdulqader - Aldewo	yes

المسيمير	4506	29	Khanfar	Almuseimir	yes
القرنعه	711	30	Khanfar	Alqarnaa	yes
شقره	5729	RC	Khanfar	Shoqraa	
اللكيده	1126	31	Khanfar	Allokidah	yes
الرواء	3025	32	Khanfar	Alrawaa	yes
الشامي	274	33	Khanfar	Alshami	yes
الدرجاج	3643	34	Khanfar	Aldargag	yes
العبادي	206	RC	Khanfar	Alabady	yes
الرمله عبر الشبعه-بدو	178	35	Khanfar	Alramalaa Abr Alshabaa- Badw	no
الجبلين	172	RC	Khanfar	Algabalin	

Annex: 4: SMART survey questionnaire

Republic of Yemen
Ministry of Public Health and Population
Public Health and Population Office
Nutritional and mortality status Evaluation in Abyan governorate,
in January **2018**

Family Questionnaire (Sample A)

First : it's explained to the occupants (the adult ones) about the assessment program and the facility conducting it and the working personnel (team members), then obtaining verbal approval from them				
Approval	1.	Yes		
	2.	No		Move to the next page

Is the family resident or displaced?		
1.	Resident	
2.	Displaced	

In case of resident families. Is there a displaced family or families residing with you?			
1.	Yes	In cases where a displaced family is staying with a resident family the data of both families should be filled in two separate questionnaires except for death file which should be in a single file for both families, attached with the resident's family questionnaire.	
2.	No		

District	Isolated entity	Village/ neighborhood

Date of Interview	Day		Month		Year				Family serial No.				

Name of the family head	

Assessment Team No.	Team	Name	Signature
	Researcher 1		
	Researcher 2 + 3		

(----------)	Team Leader		
	Field supervisor		

The following data are copied from x1- family and mortality (death) data to the form of discharge of cluster collection

Number of family members	Number of children less than 5 years	Number of children less than 6 months	Number of women in childbearing age 15-49	Number of individuals of mortality (death) form

Indicate if there is :		
1.	Absence of the family at the first visit requiring a second visit	
2.	Absence of the woman at the first visit requiring a second visit	
3.	Absence of a child at the first visit requiring a second visit*	

*in case of absence of a child, all his data are taken except for anthropometric measurements and edema status which are taken in his presence

Note: data in the cover are for field and administrative use by the team member

Filled by team leader (used for data entry)

Interview date	Day		Month		Year			

Team Number	

Code of village/neighborhood			Code of the isolation entity		
Code of the district			Code of the governorate		
Code of assessment level			Number of the cluster		

Is the area urban (1) or rural (2)?	

Absence of the family even after the second visit (1 yes, 2 No)	

Acceptance (approval) (1 yes, 2 No) If (No) move to the next family	

Family questionnaire No.			
The family is resident (1) or displaced (2)			
In case of a resident family : does it host a displaced family (1 yes, 2 No)			
Displaced families serial			

Office Work

	Name	day		month		year				signature
Data entry operator										
Data entry operator										
Review										

Notes

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Q001: Data of the family (only the alive ones and those who live currently in the family).

H001a	Number of family members(only the alive and those who currently live in the family on the day of the visit)	The Number	

H001b	Number of children less than 5 years (only the alive currently residing in the family on the day of the visit)	The Number	

H001c	Number of children less than 6 months (only the alive currently residing in the family on the day of the visit)	The Number	

H001d	Number of women at the age 15 – 49 years old (currently residing in the family on the day of the day of the visit)	The Number	

Q002: Data on the gender of the head of the family (the person responsible for spending on the family)

H002	**What is the gender of the head of the family?**			
	1.	**Male**		
	2.	**Female**		

Q003 – 005: Data on the sponsor of the family (the person taking care of the family especially children).

H003	**What is the gender of the family sponsor?**			
	1.	**Male**		
	2.	**Female**		

H004	**Marital status of the family sponsor**			
	1.	**married**		
	2.	**Widow (widower)**		
	3.	**divorced**		
	4.	**Separated(angry)**		
	5.	**Single**		

H005	**The educational level of the family sponsor**			
	1.	**Illiterate**		
	2.	**Reads and writes**		
	3.	**Primary education**		
	4.	**Secondary education**		
	5.	**Higher education (university, college or institute)**		

Q 006- 007 : Data on family income and expenditure.

	Did the family income decrease during the past twelve (12) months ?

H006	1.	Yes		
	2.	No		
	3.	I don't know		

H007	What is the average expenditure (household expenditure) in Yemeni Riyals ?			Expenditure amount (in Y.R)	
	1.	Daily spending			
	2.	Weekly spending			
	3.	Monthly spending			
		Total			

Q 008- 0012: Data on water, sanitation and hygiene

H008	What is the main source of drinking water in your house ? (only one option)			Moved to
	1.	Water supply system delivered to houses (public or private)		
	2.	Public Faucet / Community Water Point / benevolent(charity) Water		
	3.	Artesian well		
	4.	Covered well		
	5.	Unprotected well		
	6.	Covered spring		
	7.	Unprotected water spring		
	8.	Treated water (mineral or Kawther)		→ H010
	9.	Surface water , stream / rivulet/ irrigation channels		
	10.	Protected rainwater harvesting		
	11.	Unprotected rainwater harvesting (water tank /pond/Magel -a wide water pool -)		
	12.	Water transport vehicles.		
	13.	Others: mentioned		

H009a	Do you purify (treat) water before drinking ?			
	1.	Yes		
	2.	No		→ H010
	3.	I don't know		→ H010

	What is the main method used for treatment (purification) of drinking water (only one option)			
	1.	Boiling water before drinking		
	2.	Water chlorination		

H009b	3.	Filtration through a clean cloth		
	4.	Use a ceramic, sand or similar filter (filter or dropper)		
	5.	Leave the water still before drinking to precipitate the impurities		
	6.	Using alum		
	7.	Others: mentioned ……		

H010	Note: Check the availability of water storage points for drinking water: Is the container containing the drinking water clean (algae free)?			
	1.	Yes (algae free)		
	2.	No (algae present)		

H011	Where does defecation take place ? (select one of the following)- check the availability of the facilities and the practices			
	1.	Toilet (WC)- equipped with water pouring for self-cleaning(siphon or bucket) to public sewer		
	2.	Toilet (WC)- equipped with water pouring for self-cleaning(siphon or bucket) to ---------		
	3.	Toilet (WC)- equipped with water pouring for self-cleaning(siphon or bucket) into a pit toilet		
	4.	Toilet (WC)- equipped with water pouring for self-cleaning(siphon or bucket) to outdoors		
	5.	Toilet (WC)- equipped with water pouring for self-cleaning(siphon or bucket) into an unknown site		
	6.	An improved toilet hole –ventilated.		
	7.	Toilet hole with pad		
	8.	Toilet hole without pad/ not covered		
	9.	Toilet fertilizer		
	10.	Bucket		
	11.	Hanging toilet		
	12.	Defecating outdoors (e.g. In the field, etc..)		
	13.	Other: mentioned ……		

H012	**H012a When did you wash your hands** (Write only if one or both of the situations were mentioned)	**1.Mentioned** → **2. Not mentioned (move to H013)**	If the answer was (1) in H012a Question ↓ **H012b : By what do you wash your hands?**					
			a	**Water only**	**b**	**Water with Soap (Piece, Powder, liquid, Paste)**	**c**	**Water with ash / soil/ /stones/ leaves**
			1	**Yes**	**1**	**Yes**	**1**	**Yes**

				2	No	2	No	2	No
	a.	After going out from Bathroom							
	b.	Before eating							

Q 013 – 015: Food consumption and adaptation mechanisms

	Did the family eat any of the following nourishment or food groups. First column answer with: Yes or No (1 or 2) Second column answer with : Number of days during last 7 days		H013a	H013b
			Did the family eat during the last 7 days 1. Yes 2. No If no move to the next option	If the answer was yes in the previous question How many days did they eat during the last 7 days (Answer is from 1 to 7)
H013	a.	Corn, Millet, Barley, Pastries, or any products made from Cereals.		
	b.	Rice or Pasta.		
	c.	Potato.		
	d.	Vegetables (Green Vegetables, Tomato, Pepper, Carrot, ….).		
	e.	Fruits (Mangoes, Bananas, Grapes, ... etc).		
	f.	Meat (Beef, Sheep), Livers, kidneys.		
	g.	Poultry.		
	h.	Egg.		
	i.	Fish (Fresh, Dried or Canned)		
	j.	Legumes (Beans, Lentils, Peas, ...)		
	k.	Milk products (Milk, Cheese, Yogurt, ...)		
	l.	Oils / Fats (Margarine, Butter, Vegetable Oil, ...)		
	m.	Sugar, Sweets, Honey, Dried Fruits (Dates, Raisins)		
	n.	Spices, Tea, Coffee		

H014a	**During the last 7 days did the family have no adequate amount of food or money to buy food.**		**Move to**
	1-	**Yes**	
	2-	**No**	**H015** →

H014b	**How many days during the last 7 days the family resorted to one of the following procedures as result of not having enough food or money to buy enough amount of food.**		**Number of days (Answer is from Ø to 7)**	
	a.	**Depend on low quality or cheap food.**		
	b.	**Borrow food or deepened on aids form family and friends.**		
	c.	**Lowering the main meals portion (amount).**		
	d.	**Lowering the portion of adults meals in order to offer it to children.**		
	e.	**Lowering the number of daily meals.**		
	f.	**Purchasing food by loan or pledge**		
	g.	**Collect food from bushes or harvesting immature food.**		
	h.	**Consumed farming seeds of next farming season.**		
	i.	**Sending family members to eat food in other places.**		
	j.	**Sending family members for begging people.**		
	k.	**Living a whole day with eating no food at all**		

H015	**Did any member of your family do any of the following procedures due to food shortage during the last 30 days?** **(Ø) Never** **(1) Rarely (Once or twice during last 30 days)** **(2) Usually (From 3-10 times during last 30 days)** **(3) Always (More than 10 times during last 30 days)**		**Ø. Never** **1. Rarely** **2. Usually** **3. Always**	
	a.	**Selling assets/ House stuff (Furniture, Jewelries, clothes ….ect).**		
	b.	**Purchasing food by loan or pledge due to having no many at time of buying.**		
	c.	**Expenditure of savings.**		
	d.	**Borrow money.**		
	e.	**Selling productive assets or transportation means (Sewing machine, car, bicycle, …. ect).**		
	f.	**Consumed farming seeds of next farming season.**		
	g.	**Drop off children from going to school.**		
	h.	**Selling the family house or lands.**		
	i.	**Begging**		
	j.	**Selling the last female cattle the family have.**		
	k.	**Lowering expenditures in Education and Health (including medical drugs).**		

Q 016 – 020: Mid Upper Arm Circumference For Women in Childbearing Age (15 - 49 years).

		Q016	Q017	Q018	Q019	Q020
Woman No.	Woman First Name	Woman Age (By Years)	Marital Status: 1= Married 2= Widowed 3= Divorced 4= Separated (angry) 5= Single (If Answer was 5= Single, Move to Q019)	The statues of the women now: 1= Pregnant 2= Breastfeeding 3= Not pregnant nor breastfeeding	Mid Upper Arm Circumference (by cm) MUAC 88.8 = Refused 99.9 = Absent	How much time did the women spend out of her house yesterday ?
1.		☐☐			☐☐.☐	
2.		☐☐			☐☐.☐	
3.		☐☐			☐☐.☐	
4.		☐☐			☐☐.☐	
5.		☐☐			☐☐.☐	
6.		☐☐			☐☐.☐	
7.		☐☐			☐☐.☐	
8.		☐☐			☐☐.☐	
9.		☐☐			☐☐.☐	
10.		☐☐			☐☐.☐	

Q 021 – 023: Children Age (All children aged from 0 to 5 years should be registered, start with the older)

		Q021	Q022	Q023a	Q023b	
Child No.	Child First Name	Gander 1= Male 2= Female	Women No. (Taken from the women previous page)	Birth Date (Hajeri or Gregorian) For children aged:(0- 59) months	Child Age (By Months)	What did the mother say about the child's age?
1.				Day Month Year		
2.				Day Month Year		
3.				Day Month Year		
4.				Day Month Year		
5.				Day Month Year		
6.				Day Month Year		
7.				Day Month Year		
8.				Day Month Year		
9.				Day Month Year		
10.				Day Month Year		

Q 024 – 026: Anthropometric Measurements for Children between 6-59 Months (leave it empty for children less than 6 months)

			Q024	Q025	Q026
Child No. (Take it from previous page)	**Child's First Name (Take it from previous page)**	**Child Age –Month (Take it from previous page)**	**Wight (KG – Gm)** **88.8 = Refused** **99.9 = Absent**	**Height (Cm – Mm)** **888.8 = Refused** **999.9 = Absent**	**Mid Upper Arm Circumference MUAC** **88.8 = Refused** **99.9 = Absent**
			.	.	.
			.	.	.
			.	.	.
			.	.	.
			.	.	.
			.	.	.
			.	.	.
			.	.	.
			.	.	.
			.	.	.

Q 027 – 033: Edema, Vaccination and Childhood diseases for children between (0-59) months in the family (For every child under 5 years old)

			Q027	Q028	Q029	Q030	Q031	Q032	Q033
			For every child between (0-59) months				For children older than 6 months		For children older than 9 months
Child No. (Take it from previous page)	Child First Name (Take it from previous page)	Child Age By month (Take it from previous page)	Edema in both legs 1= Yes 2= No 8= Refused 9= Absent	Diarrhea* During last 2 weeks 1= Yes 2= No	Caught or Difficulty of Breathing During last 2 weeks 1= Yes 2= No	Fever During last 2 weeks 1= Yes 2= No	Did child receive Vit. (A) during last 6 months? 1= Yes 2= No 3= Don't know	Did child receive Pentavalent vaccine (Injection in thigh) 1= Yes, from vaccination card 2= Yes, as they remember 3= Don't know 4= Didn't Vaccinated	Did child vaccinated against Measles (Injection in LF. Hand) 1= Yes, from vaccination card 2= Yes, as they remember 3= Don't know 4= Didn't Vaccinated

***Diarrhea: Increase number of times for passing watery stool**

Q 034- 035: write down breastfeeding for children between 0 and 24 months in the past 24 hours (leave empty for children older than 24 months).

Child No. (copied from the previous page)	Child's first name (from the previous page)	Child's age (in months) (from the previous page)	C034	C035				
			Is the baby breastfed by his mother (breast feeding) In the last 24 hours? 1 = Yes 2 = No	Record the number of times the child ate yesterday (record 0 if the child didn't eat)				
				C035a	C035b	C035c	C035d	C035e
				If the answer is Yes in the previous question How many times has the baby been breastfed and how many times has the baby been given breast milk in the last 24 hours?	How many times did the child have Infant (formula) milk during the last 24 hours?	How many times did the child have Any other milk, powder, milk, or fresh milk or canned milk or animal source milk during the last 24 hours?	How many times did the child have Yoghurt, Laban during the last 24 hours?	How many times did the child have Other food Provided they are solid, semi-solid or soft (such as banana)

Q 036: Children Feeding Practice aged between (0-24) months, during last 24 hours (Leave it empty if the child is older than 24 months).

Child No. (Take it from previous page	Child First Name (Take it from previous page)	Child Age By month (Take it from previous page)	Q036								
			Did the child eat any of the following food groups below (Start asking from the time the child woke up until he got sleep yesterday) let the mother answer then mention to her the food groups below.								
			Q036a	Q036b	Q036c	Q036d	Q036e	Q036f	Q036g	Q036h	Q036i
			Water with or without sugar	Grain: Porridge, chips, bread, rice, Pasta, or any cereal food. Tubers: White potatoes or any other Tuberous Foods.	Beans: Any foods made from beans, beans, basil, lentils, peanuts or any other legumes.	Cheese or Ice cream	Meat: Livers, kidneys, heart s or other intestines. Meets: beef, sheep, goats or poultry. Fresh, dried or canned fish.	Eggs	vegetables and fruits: Pumpkin, carrot or sweet potato with yellow or orange core. Any dark green leaves vegetables. Mature Mango or Boubia.	Any other fruits or vegetables not mentioned in the previous box.	Any other beverages or foods (Except baby milk, any other types of milks, Yogurt and Laban)

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Assessment of nutritional and mortality status in Lahj governorate, March - April 2017

Demographic Monitoring Form during the period since 19 December 2016 (model 2)

Assessed Directorate: _____ District / Town: _____ Date: _____ Cluster Number: _____

Team Number: _____ Family Questionnaire Number: _____ Assessment Rank:_____

	Name	Sex (male or female)	Age in years	Joined the family at or after the anniversary of the Prophet's birth	Left the family at or after the anniversary of the prophet's birth	Born at or after the anniversary of the prophet's birth	Deceased at or after the anniversary of the prophet's birth	Cause of death	Site of death
List members of the family who are currently with the family, and then use the sign (✓) to indicate whether the person joined the family or were born at or after the birth of the Prophet									
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

25									

Continued to the previous page

	Name	Sex (male or female)	Age in years	Joined the family at or after the anniversary of the Prophet's birth	Left the family at or after the anniversary of the prophet's birth	Born at or after the anniversary of the prophet's birth	Deceased at or after the anniversary of the prophet's birth	Cause of death	Place of death
Make a list of those who left the family at or after the date of the birth of the Prophet, then use the sign (✓) to indicate whether the person joined the family or were born at or after the birth of the Prophet									
1					✓				
2					✓				
3					✓				
4					✓				
5					✓				
6					✓				
7					✓				
8					✓				
9					✓				
10					✓				
11					✓				
12					✓				

	Name	Sex (male or female)	Age in years	Joined the family at or after the anniversary of the Prophet's birth	Left the family at or after the anniversary of the prophet's birth	Born at or after the anniversary of the prophet's birth	Deceased at or after the anniversary of the prophet's birth	Cause of death	Site of death
Make a list of those who died at or after the date of birth of the Prophet, then use the sign (✓) to indicate whether the person joined the family or were born at or after the birth of the Prophet									
1							✓		
2							✓		
3							✓		

رقم إستبيان الأسرة: .....

4							✓		
5							✓		

Was there any pregnant women in the family since the anniversary of the prophet birth.	**1- Yes**		**If yes, how many pregnant women**	

Codes of Death Causes	
1= Unknown	**5= Malnutrition**
2= Accident or Injury	**6= Fever**
3= Diarrhea	**7= Others (Mention)**
4= Respiratory Problems	

	Codes of Death Places	
	1= Current Place	
	2= During Immigration	
	3= Last Place Resided	
	4= Others (Mention)	