National Nutrition Survey Afghanistan

(2013)

Survey Report

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Acronyms

AGP	Alpha-1-Acid Glycoprotein
AKU	Aga Khan University
ANC	Antenatal care
ARI	Acute respiratory infection
BMI	Body Mass Index
BPHS	Basic Package of Health Services
CHW	Community health worker
CRP	C-reactive protein
DMU	Data management unit
EA	Enumeration Area
FGD	Focus Group Discussion
HH	Household
HMIS	Health Management Information System
HCP	Health Care Provider
IDA	Iron deficiency anaemia
IDI	In-depth Interview
IDD	Iodine Deficiency Disorder
IYCF	Infant and young child feeding
KAP	Knowledge, attitude and practice
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MOPH	Ministry of Public Health
MUAC	Mid-upper arm circumference
MWRA	Married women of reproductive age
DMF	Decision Maker Female
DMM	Decision Maker Male
NGO	Non-governmental organization
NNS	National Nutrition Survey
NRVA	National Risk and Venerability Assessment
NR	No response
OTP	Outpatient Therapeutic Program
CSO	Central Statistics Organization
PPS	Proportion to population size
PSU	Primary sampling unit
PSO	Provincial Statistics Office
PNO	Provincial Nutrition Officer
SBA	Skill Birth Attendant
SES	Scio Economic Status
SSU	Secondary sampling unit
SRTRO	Silk Route Training and Research Organization
TBA	Traditional Birth Attendant
TFU	Therapeutic Feeding Unit
TAG	Technical Advisory Group
UIE	Urinary iodine excretion
UNICEF	United Nations Children's Fund
WFP	World Food Programme
WHO	World Health Organization
WRA	Women of reproductive age
NRVA	National Risk and Vulnerability Assessment
CMAM	Community-based Management of Acute Malnutrition

Foreword

I am pleased to present the report of National Nutrition Survey 2013 which aimed to assess the nutrition and micronutrient status of the Afghan population. After the last National Nutrition Survey conducted in 2004 which provided national estimates, this is the first National Survey in Afghanistan targeting all 34 provinces providing province-based nutrition indicators for children, women and elderly.

The report provides important information to help government, health professionals and development partners to understand the changes and effectiveness of strategies in nutrition and micronutrient status of the Afghan population since 2004. Just as importantly, it provides the information needed for the public and private sectors to work together to develop targeted strategies to address a range of nutrition concerns in women and children. It also sets a benchmark against which to measure the impact of health and nutrition strategies. The Ministry of Public Health has initiated various nutrition intervention programs and policies, and actively coordinates the efforts of various sectors towards improving the public nutrition situation in Afghanistan.

This report provides evidence on which the Afghan Government can build informed policies. It will also underpin the direction of the health and nutrition program to encourage innovations, allowing the nutrition programs to respond effectively to the needs of women and children.

I sincerely appreciate the support of UNICEF for providing overall technical and financial assistance to carry out this important survey. I also wish to thank the Aga Khan University (AKU) for providing technical support for the survey and its analysis. My appreciation goes to Silk Route Training and Research Organization (SRTRO) for their support to the Public Nutrition Department in collecting the survey data. Central Statistics Organization (CSO) for their support in selection of clusters, and to the Public Nutrition Department of MoPH, especially Provincial Nutrition Officers (PNOs) for their extensive support in the areas of monitoring, coordination and quality assurance of the survey. I appreciate the inclusive oversight of the survey by the members of Technical Advisory Group Meeting.

Finally, I wish to congratulate the Ministry of Public Health and all the partners who have been involved with the conduct of this survey and the Afghan participants of this survey. I am confident that these findings will pave the way for strengthening action towards the improved nutrition of the Afghan population, especially children and women.

Best Wishes,

Suraya Dalil MD, MPH
Minister of Public Health

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The TAG members who contributed to this survey include the following:

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Executive Summary

The Afghanistan National Nutrition Survey (NNS) 2013 provides a recent benchmark of the national and provincial nutritional status of women, children, adolescent and elderly in Afghanistan and comparison with previous findings from 2004. The objectives of survey were to review the current nutritional situation, establish the trends and look for associated factors that influence the nutritional status of the population in Afghanistan.

The Afghanistan National Nutrition Survey 2013 was designed by the Aga Khan University (AKU), Pakistan in close consultation with the Ministry of Public Health (MoPH) and UNICEF Afghanistan. The survey field activities were implemented by Silk Route Training and Research Organization (SRTRO) with technical assistance from the Aga Khan University, Pakistan. The survey was independently monitored by Provincial Nutrition Officers (PNOs) of Public Nutrition Department (PND), the MoPH Afghanistan. The Ministry of Public Health Afghanistan was closely involved in the oversight of survey activities right from inception until the end of survey activities along with UNICEF Afghanistan.

NNS 2013 was conducted at national scale through a cross-sectional survey at household level. Multistage (two stage) cluster sampling technique was used. The sampling frame and the list of enumeration areas were provided by Central Statistics Office (CSO). A Total of 1,020 enumeration areas (clusters) were selected using PPS methodology, 30 clusters from each of the 34 provinces. 18 households were selected from each cluster through systematic random sampling technique.

Height, weight, MUAC and bi-pedal oedema measurements were obtained to determine nutrition status of different target age groups. Height and weight measurements were taken from all survey target age groups (children 0-59 months, index mother, youngest women of reproductive age, unmarried adolescent girls (10-19 years of age) and elderly above 50 years of age). MAUC measurements were obtained from index mother and children (0-59 months). Bi-pedal oedema assessments were done only for children (0-59 months). The youngest child in the household was selected as the index child.

80 clusters (Enumeration areas) were selected using PPS methodology at national level for biochemical samples. Blood samples were collected from three target groups: children 6 to 59 months, women of reproductive age (15-49 years) and unmarried adolescent girls (10-19 years) for micronutrient assays. Urine samples were collected from women of reproductive age and children 7 to 12 years of age. Standard methods and procedures were adopted for collection and transportation of the specimens. Hemoglobin level were tested at the field, whereas other biochemical assessments including Ferritin, Vitamin A, Vitamin D, Zinc, Urinary Iodine, C reactive protein (CRP), alpha glycoprotein (AGP) and salt-iodization were analyzed at the Nutritional Research Laboratory, of the Aga Khan University, Karachi, Pakistan.

In addition to the quantitative component, qualitative methods were also employed to gather in-depth information regarding Infant and Young Child Feeding (IYCF) and nutrition indicators. Focus group discussions (FGD) and in-depth interviews (32 each) with key informants (mothers of children under 3 years, decision makers in the family (both male & female) and care providers) were conducted in eight regions of Afghanistan, considering the ethnic and geographical diversity.

Implementation of survey started in the last week of May 2013 with training of field staff. The field activities were implemented from the second week of June 2013 and continued till the end of October 2013. Survey activities were suspended from July 10 to September 5, 2013, due to diverse intake pattern of foods consumed during the holy month of Ramadan.

The finding of national nutrition survey 2013 revealed that the malnutrition rates among children 0–59 months of age at national level were as follows; stunting (HAZ <-2SD) 40.9% (95% CI 39.3-42.5), severe stunting 20.9% and moderate stunting at 20.0% r. Wasting (WHZ <-2SD) 9.5% (95% CI 8.73-10.4), moderate wasting 5.5% and severe wasting 4.0%. Whereas, 5.4% children were over-weight (WAZ >+3SD). Proportion of children underweight (WAZ <-2SD) was 25.0% (95% CI 23.7-26.2).

Nutrition status of adolescent girls (10-19 years) was assessed for the first time in Afghanistan in NNS 2013. Findings of survey reported that, 8.0% (95% CI 6.8-9.3) of the adolescent girls were thin (BMIZ <-2SD) and 1.5% (95% CI 1.1-1.9) were severely thin (<-3SD). Furthermore 11.6% (95% CI 10.1-13.2) of adolescent girls were overweight (>+1SD) and only 2.7% were obese (>+2SD).

Among women of reproductive age (15-49 years); at national level 9.2% (95% CI 8.1-10.3) of women were thin or undernourished (BMI <18.5 kg/m^2). The proportion of women with mild thinness (BMI 17.0-18.4 kg/m^2) was 6.7% (95% CI 5.9-7.6) whereas, severe thinness (BMI <17 kg/m^2) among women was 2.4% (95% CI 2.0-2.9). About one fifth (20.7%, 95% CI 19.1-22.2) of women were overweight (BMI 25-29 kg/m^2), and 8.3% (95% CI 7.1-9.5) were obese (BMI 30 kg/m^2 or above).

In the national nutrition survey 2013, elderly persons, above 50 years, were assessed to determine some aspects of their health and nutritional status. Overall, 2569 elderly persons were assessed revealing that more than half (53.0%) of the proportion of elderly persons had normal BMI (BMI 18.5-24.9 kg/m^2) and 8.7% were thin or undernourished (BMI<18.5 kg/m^2). The proportions of mild thinness (BMI 17.0-18.4 kg/m^2) and severe thinness (BMI < 17 kg/m^2) were 6.6% and 3.1%, respectively. Among elderly population 26.1% were pre-obese (BMI 25-29 kg/m^2) and 12.3% obese (BMI > 30 kg/m^2).

NNS 2013 indicated that micronutrient deficiencies are widespread in Afghanistan. Anemia (Hb levels <11.99gm/dl), was common in women of reproductive age (40.4%) and among children 6-59 months of age (44.9%). Vitamin A deficiency (< 0.70 µmol/l) was markedly more common in children 6-59 months of age (50.4%) than among women of reproductive age (11.3%). As per WHO classification, the prevalence of vitamin A among children 6-59 months is a severe public health problem for Afghanistan. Zinc deficiency was observed in both women and children, with a prevalence of 23.4% and 15.1% respectively. Similarly, Iodine deficiency was fairly common among both women of reproductive age and children 7-12 years of age, with a prevalence of 40.8% and 29.5% respectively. Majority of women of reproductive age (95.5%) and children 6-59 months (81.0%) were found to be deficient in vitamin D (<20.0 ng/mL) with a large proportion of women reproductive age (64.7%) suffering from severe vitamin D deficiency (<8.0 ng/mL) while a significant majority of children (64.2%) exhibited moderate deficiency (8.0-20.0 ng/mL).

The findings of KAP module revealed that knowledge about micronutrients was generally poor; around one third (38.7%) of respondents had knowledge about vitamins across the Afghanistan. Most Afghan mothers (69.8%) were not aware of vitamin A. The highest percentage for knowledge of vitamin A was in Panjshir (83.9%) with the lowest in Balkh (4.3%). Overall, 60.8% respondents

had knowledge about anemia. At national level about 64.2% respondents were aware of iodized salt. A considerable variation existed between provinces ranging from 24.7% in Uruzgan to 96.0% in Baghlan. Among those who knew about iodized salt, the majority (52.6%) of them had heard about it from television. At the national level, 78.5% respondents reported use of iodized salt for cooking. The proportion of households using salt testing positive for iodine was 43.6% across Afghanistan. During the survey respondents were also asked about the usage of fortified commodities such as fortified flour, ghee/ oil, milk, etc. at household level. National results showed that 38.1% households used one or more fortified commodities, 48% of respondents reported that they were not using any kind of fortified food and 10.0% did not know about fortified foods.

At national level, 89.7% women reported hand washing with soap after defecation. Likewise, 90% women usually washed hands before preparing the meals. However, from observation by survey team merely 45.1% households had soap available at hand washing place. Hand washing places could not be observed by teams for 18.0% households at the time of visit.

Nationally, 48.1% women sought antenatal care (ANC) during their last pregnancy. Only 16.4% of women reported to have had four or more antenatal care visits during their last pregnancy. Among those women who accessed ANC, just 24.7% made their first ANC visit during the first trimester of pregnancy, 10.8% visited for the first time during 4-5th month and 12.1% after sixth month of pregnancy. The services utilized by pregnant women during antenatal care visits included blood pressure (BP) measurements (68.9%), weight measurements (35.8%), ultrasound scan (41.5%), urine sampling (22.3%), and blood sampling (15.4%). During ANC visits, 47.7% women received information and counseling about eating more nutritious food followed by advice to take extra rest (42.3%) and exclusive breast feeding (15.5%). Almost 21.9% women did not receive any relevant information during visits.

Information related to infant and young child feeding (IYCF) practices was collected from mothers of children under 24 months of age. Almost all infants aged 0-23 months (98.0%) were breastfed after birth. However, 69.4% infants aged 0-23 months were reported to be breastfeed within one hour of birth and 89.9% were breastfed within 24 hours of birth. Half the infants surveyed (52.4%) also received pre-lacteal feeds. Colostrum feeding practice was common (87.5%) across Afghanistan. More than half (58.4%) of the infants aged 0-6 months were exclusively breastfed and 76.3% infants in same age group were predominantly breastfed. More than half (59.9%) infants aged 6-23 months were currently being breastfed along with solid, semi-solid or soft foods. 55.2% infants of 0-23 months were appropriately breastfed. About one third (30.9%) infants of 6-8 months who were currently on breastfeed were introduced complementary food; however, 41.3% infants (6-8 months) were introduced complementary food irrespective of current breastfeeding status. Overall 24.5% of female children received minimum acceptable diet as compared to 19.6% of male children 6-23 months of age. The proportion of children aged 6-23 months receiving minimum acceptable diet increased with mother's level of education and wealth index.

One of the primary objectives of NNS 2013 was to estimate the proportion of malnourished children enrolled in the Basic Package of Health Service's Integrated Management of Acute Malnutrition (IMAM): IPD-SAM, OPD-SAM and OPD-MAM. Findings showed that only 2.5% children with acute malnutrition were registered in one of the above stated programs across Afghanistan during the survey period. Of these, 48.4% children under five years of age were hospitalized in IPD-SAM (TFU/SC), 21.4% in OTP and 17.3% in SFP. The high rate of hospitalization in IPD SAM is possibly due to the lack of sites providing OPD SAM, as a result of which even children without complications may have been admitted to IPD SAM.

NNS 2013 data based on Food Consumption Score showed that overall 75.7% households had acceptable food consumption, 18% had borderline and 6.3% had poor food consumption. Results based on Household Hunger Scale indicated that the majority of the households (84.2%) had no or light hunger scale with the score of 0-1, whereas 14% had moderate hunger with the score of 2-3, and only 0.9% of households were found to have severe hunger with the score of 4-6. The average reduced CSI defined by this NNS was 3.96, which was at the minimal level based on the country-specific classification. Only one province had RCSI at extremely severe coping level and another province at severe coping level. The results of these three indicators were similar to those identified by the Seasonal Food Security Assessment carried out in July-August 2013 in 34 provinces by the Food Security and Agriculture Cluster in Afghanistan.

Key findings of NNS 2013

Nutritional Status children 0-59 months	Percentage
Underweight Prevalence	
Moderate and Severe (-2 SD)	25.0
Severe (-3 SD)	9.7
Stunting Prevalence	
Moderate and Severe (-2 SD)	40.9
Severe (-3 SD)	20.9
Wasting Prevalence	
Moderate and Severe (-2 SD)	9.5
Severe (-3 SD)	4.0
IYCF Indicators	
Percentage who ever breastfeed	98.0
Percentage who breastfeed with in one day of birth (12 hours)	88.9
Percentage who received a prelacteal feed	52.4
Percentage who received colostrum	87.5
Exclusive breastfeeding (0-5month children)	58.4
Percentage predominantly breastfeed (0-6 moths)	76.3
Appropriately breastfed (0-23 months)	55.2
Initiation of solid, semi-solid and soft foods (All infants of 6-8 months)	41.3
Initiation of solid, semi-solid & soft foods (6-8 months with current breastfeed)	30.9
Minimum meal frequency (Infants 6-23 months)	52.1
Minimum acceptable diet	12.2
Water and sanitation	
Use of improved drinking water sources	62.9
Water treatment	10.7
Use of improved sanitation facilities	40.4
Maternal and newborn health	
At least once ANC by skilled personnel	48.1
At least four times ANC by skilled personnel	16.4
Content of antenatal care (BP measure, Urine and blood sample taken)	7.4
Skilled attendant at delivery	45.5
Vitamin A Supplementation Vitamin A supplementation (Children under 5 years)	
Vitamin A supplementation (Children under 5 years)	44.6
Micronutrient deficiencies (Women of reproductive age)	
Anemia	40.4
Iron deficiency	24
Iron deficiency anemia	13.8
Vitamin A deficiency	10.8
Vitamin D deficiency	95.3
Zinc deficiency	23.4
Iodine deficiency	40.8
Micronutrient deficiencies (children 0-59 months of age)	
Anemia	44.9
Iron deficiency	26.1
Iron deficiency anemia	13.7
Vitamin A deficiency	45.8
Vitamin D deficiency	81.0
Zinc deficiency	15.1
Iodine deficiency school age children (7-12 years of age)	29.5
Iodized salt utilization	
Reported use of iodized salt for cooking	37.9
Salt with adequate iodine content (Rapid test kit)	71.5

Chapter 1: Introduction & Background

1.1: Introduction

Afghanistan is a mountainous landlocked country in Central Asia with a rich history and culture that goes back 5,000 years. The country has remained in conflict over the last three decades and is now striving to recover. The current health and nutrition situation of the country indicates that progress towards achievement of MDGs is relatively slow. Afghanistan's under-five mortality rate was reported at 102 deaths per 1,000 live births in MICS 2010(2).

According to NNS 2004(1), the prevalence of chronic malnutrition (stunted linear growth or low height-for-age) amongst children aged 6 to 59 months was 60.5%. In the same age group, the prevalence of acute malnutrition (wasting) was 8.7%. The high prevalence of under nutrition is possibly a major contributor to the under-5 child mortality and morbidity.

Micronutrient deficiencies are even more widespread. According to the National Nutrition Survey 2004, 48.4% of non-pregnant women were iron deficient and 24.7% suffered from anemia, while over 71.5% of children 6-59 months were iron deficient and nearly 38% were anemic. Iodine Deficiency Disorder (IDD) also emerged as a major public health issue, particularly in mountainous provinces of the north and central highlands. The survey found that 74.7% of non-pregnant women of reproductive age and 71.9% of school age children (7-11 years) were iodine deficient.

Access to iodized salt is low in Afghanistan. Only 15.0% of households were found to have iodized salt In MICS 2003 and 28.3% of households had salt which tested positive for iodine content in NNS 2004. Proportion of households consuming adequate iodized salt was 20.4% in MICS 2010.

Lack of access to food, poor care and feeding practices and illness are the major causes of under-nutrition in Afghanistan. The results of the National Risk and Vulnerability Assessment (NRVA) 2011/2012 showed that 31% of households across the country do not meet their daily caloric needs (2,100 kcal/person/day), and 35% of households had inadequate food consumption. The NRVA 2011/12 also found that 36.5% of the Afghan population is living below the poverty line (4). MICS 2010 found that 22.9% of children under 5 years of age had diarrhea in past two weeks (2). Malnutrition is a common consequence as well as a contributing factor of diarrheal diseases. Poor hygiene, sanitation and limited save water supply are other major causes of infectious illnesses. 56.7% of the population had accessed to improved drinking water sources (MICS 2010) and 28.5% of the population used improved sanitation services (2).

1.2: Background

Afghanistan's last national nutrition survey was conducted in 2004 and the latest MICS was completed in 2010. However, both surveys produced national and regional estimates with no provincial specificity. Lack of provincial specific data is a challenge for decision makers and stakeholders to formulate provincial specific policies and planning.

In addition to the high child and maternal mortality rate (6), Afghanistan also has highest rates of stunting in the world, 60.5% reported in NNS 2004. Stunting is primarily caused by mothers' poor nutrition before and during pregnancy, inappropriate infant feeding practices and repeated episodes of infections (7). Other factors contributed to malnutrition are lack of food (destruction of crops during natural disasters and conflict, lower purchasing power) and lack of resources and information (8).

Malnourished children have impaired physical capacity, cognitive development, school performance and productivity as adult.

1.3: Rationale of National Nutrition Survey

The key purpose of Afghanistan National Nutrition Survey (NNS) 2013 was to generate an evidence to prioritize nutrition policies, programs and funding for devising the future nutrition policies to improve the nutrition status of the population especially women and children. Wide spread variations of nutrition situation across the country needed information with provincial specificity. Therefore the NNS 2013 aimed to provide estimates on various nutrition indicators, which can serve as a benchmark for planning and devising nutrition intervention programs for women, children under five years of age in particular and adolescent girls and the elderly in general. Ministry of Public Health, Afghanistan (MoPH) is planning to strengthen and integrate nutrition program in the Basic Package of Health Services (BPHS) with improved nutrition surveillance system at the provincial level.

1.4: Objectives of National Nutrition Survey

1.4.1 Nutritional status (At Provincial Level)

- To determine the prevalence of under-nutrition among children aged 0 - 59 months;
- To determine the prevalence of under-nutrition (BMI, low mid-upper arm circumference) among women of reproductive age(15–49 years);
- To determine the BMI of men and women above 50 years age.

1.4.2 Micronutrient status (At National level)

- To determine anemia status among children aged 6-59 months;
- To determine the urinary iodine status among women of reproductive age;
- To determine the urinary iodine status among primary school age children;
- To determine the anemia status among pregnant and non-pregnant women;
- To determine iron deficiency anemia status including serum Ferritin and C-reactive protein among a sub-sample of non-pregnant women and children 6-59 months;
- To determine vitamin A status among non-pregnant women and children 6-59 months;
- To determine zinc status among non-pregnant women and children 6-59 months;
- To determine vitamin D status among non-pregnant women and children 6-59 months;
- To determine anemia status among adolescent girls 10-19 years ;
- To determine folic acid status among adolescent girls 10-19 years.

1.4.3 Infant and Young Child Feeding (At Provincial Level)

- To gain a better understanding of infant and young child feeding practices (quantitative and qualitative) for children 0-24 months, such as initiation, exclusive breastfeeding and complementary feeding.

1.4.4 Infectious disease (At Provincial Level)

- To determine the prevalence of diarrhea, febrile episode and acute respiratory infections among children aged 0-59months in the last 2 weeks.

1.4.5 Access to health services (At Provincial Level)

- To determine the proportion of pregnant women making ANC visit and receiving adequate iron-folic acid supplementation during pregnancy;
- To determine the proportion of deliveries (home and facility) attended by skilled birth attendants (SBA).

1.4.6 Food security (At Provincial Level)

- To assess food security situation based on food consumption.

1.4.7 Water and sanitation (At Provincial Level)

- Coverage of improved latrines among households (Estimates);
- Access to safe water source among households (Estimates);
- Proportion of care givers washing hands before meal and after defecation (Estimates).

1.4.8 Programmatic coverage (At Provincial Level)

- To estimate the proportion of households with access to adequately iodized salt;
- To estimate the proportion of malnourished children enrolled in CMAM-SC/TFU, OTP, SFP;
- To estimate proportion of CMAM care givers that received IYCF education at community level;
- To estimate proportion of children (6-59 months) who received vitamin A supplementation in the last 6 months;
- To estimate proportion of children (24-59months) who received deworming tablet in the last 6 months.

1.4.9 Food fortification (At National Level)

- To determine quantitative and qualitative level of iodine in salt collected from selected households;
- To determine consumption of oil/ghee by the household;
- To determine consumption of wheat flour by the household;
- To make recommendations to the Ministry of Public Health, UNICEF, WFP, FAO and NGOs on priority and long-term interventions needed in the health and nutrition sectors in Afghanistan.

1.4.10 SES variables (At provincial level)

- To collect data on socio economic variables.

1.4.11 KAP regarding vitamins and micronutrients

- To assess the KAP of mothers regarding micronutrients and vitamins.

1.5: Survey collaborators

The Afghanistan National Nutrition Survey (NNS) 2013 was designed and implemented in a collaborative approach. NNS 2013 was designed by the Aga Khan University (AKU), Pakistan in close consultation with the Ministry of Public Health (MoPH) and UNICEF Afghanistan. The survey field activities were implemented by Silk Route Training and Research Organization (SRTRO) with technical assistance from the Aga Khan University Pakistan. The survey was independently monitored by provincial nutrition officers (PNOs) of Public Nutrition Department (PND), the MoPH Afghanistan. The Ministry of Public Health Afghanistan was closely involved in oversight of survey activities right from inception until the dissemination of findings along with UNICEF Afghanistan.

A Technical Advisory Group (TAG) under the leadership of Director General, Ministry of Public Health, Afghanistan, was responsible to oversee the design, instrument finalization and implementation activities of NNS 2013. Representation from all relevant national and international organizations working in the Afghanistan was ensured in the advisory group. The TAG provided inputs throughout the entire survey process.

Chapter 2: Survey Design and Methods

2.1: Survey Methodology

NNS-2013 was a cross-sectional survey at household level across Afghanistan. The survey used both quantitative and qualitative methods to achieve the information. The survey consisted of interviews, measurement of anthropometric indices, collection and testing of biologic specimens. A multi-stage cluster methodology was adopted for the survey. Sample size was calculated to provide national and provincial representative estimates. The survey was conducted in all 34 provinces of Afghanistan targeting 18,360 households.

2.2: Target Population

Descriptions of survey population are given in table 2.1.

Table 2.1: The target populations of NNS2013

Target Group of Anthropometry	**Measurements**
All children 0-59 months	Height, Weight, MUAC, Edema
Index Mother (Mother of youngest under five)	Height, Weight, MUAC
Youngest WRA (15-49)	Height, Weight, MUAC
Adolescent girl (10-19)	Height, Weight, MUAC
Elderly (men & women ≥50 years age)	Height, Weight, MUAC
Target Group of Biochemical Samples	**Biochemical Test**
Children (6-59 months)	Blood Sample
Women of reproductive age (15-49 years)	Blood & Urine Sample
Adolescent girl (10-19)	Blood Sample
Children 7-11 years	Urine Sample
Household for salt Analysis	Qualitative and Qualitative
Target Groups of qualitative component	**Method**
Mothers	Focus Group Discussion
Female decision maker	Focus Group Discussion
Male Decision Makers	In-depth Interviews
Health care provider	In-depth Interviews
Module of data collection	**Respondent**
Module 1 and 2: Identification and SES	Household Head
Module 3 A: KAP Module 3C: Reproductive history	Index mother
Module 4A: IYCF, 4B: Child Health	Index Mother
Module 5: Questionnaire for Elderly	Elderly
Module 6: Questionnaire for Household Food Security	Index Mother

2.3: Description of Methodology

2.3.1: Household information

Household information was captured from eligible respondents to assess infant and young child feeding and care practices, including exclusive breastfeeding rate and timely complementary feeding rate, morbidity of diarrhea and pneumonia, and feeding practices during illness. Data on socio economic status were also collected.

2.3.2: Household food security- food consumptions, hunger scale and coping strategies

Information related to food security was collected in NNS 2013 using WFP food security model from all targeted household. The collected information was used to estimate food security situation in surveyed areas of Afghanistan.

2.3.3: Anthropometric measurements

Height weight, MUAC and bi-pedal edema measurements were obtained to determine nutrition status of different target age groups. Height and weight measurements were taken from all survey target age groups (Children 0-59 months, index mother, youngest women of reproductive age, unmarried adolescent girls (10-19 years of age) and elderly of above 50 years of age). MAUC measurements were obtained from index mother and children (0-59 months). Bi-pedal edema assessments were done only for children (0-59 months). The youngest child in the household was selected as the index child and measured three times for all three indicators (Height, Weight and MUAC) and the mean measurements were used; for older children were measured once.

2.3.4: Biochemical Analysis

Biochemical samples were collected for assessment of essential micronutrient deficiencies in women of reproductive age (15 -49 years), adolescent girls (10 to 19 years) and children (6 to 59 months& 7-12 years of age). Micronutrients were tested to ascertain the levels of various micronutrient deficiencies; hemoglobin, ferritin, vitamin A, vitamin D, Zinc, and urinary iodine were measured. In addition these micronutrients CRP and AGP were also performed for adjusting the ferritin, zinc and retinol level for possible presence of subclinical infection. Hemoglobin levels were also adjusted for altitudes. Details are given in below table.

Table 2.2: List of Micronutrient Assessment and target groups

Micronutrient Assessment	WRAs (15-49 years)	Children (6-59 months)	Adolescent Girls (10-19 years)	Children (7-12 years)
Haemoglobin level	Yes	Yes	Yes	
Ferritin level	Yes	Yes		
Iron deficiency Anemia	Yes	Yes		
Vitamin A Deficiency	Yes	Yes		
Vitamin D Deficiency	Yes	Yes		
Folic Acid Level			Yes	
Urinary iodine excretion	Yes			Yes

2.3.5. Qualitative and Quantitative Salt Test

Salt samples were tested at both provincial and national levels. At provincial level, teams were instructed to test salt from each of the 18 households selected per cluster using rapid test kit. However, salt was tested in only 4,570 households. Salt testing was not performed in remaining households due to various reasons i.e. household refused or were reluctant to provide or test salt, salt was not available at the time of visit. Salt samples for quantitative test of iodine content were also collected from households in 80 clusters selected for collection of biochemical specimens. These salt samples were collected, stored and transported along with biochemical specimens. Overall 1,162 samples of salt were collected for quantitative assessment of iodine content in salt.

2.3.6: Age determination of children under five years of age

Date of birth of children less than five years of age was determined in two sections (2a and 4a). At first, as part of section 2a, the age of children under-five years of age was determined with other family members of household by team leader. After that the age of children was re-confirmed in IYCF module (section 4a) from mother of respective child. Different sources (identification and immunization cards, birth certificates) were used to ascertain accurate age of the eligible children at both stages.

2.4: Sampling frame, stratification and sampling design

2.4.1: Sampling frame

The sampling frame and enumeration areas for NNS 2013 were provided by Afghanistan Central Statistics Office, (CSO) from available 21,194 enumeration areas (EA). Of those, 107 EAs were excluded by CSO from the sampling frame due to security concerns (Annex- list of un-reachable clusters). Details of enumeration areas are given in below table.

Table 2.3: Total rural urban enumeration areas in Afghanistan

S #	Province Name	Urban UEA	Rural EAs	Total EAs
01	KABUL	1458	524	1982
02	KAPISA	1	336	337
03	PARWAN	94	386	480
04	WARDAK	2	444	446
05	LOGAR	4	247	251
06	NANGARHAR	158	1183	1341
07	LAGHMAN	1	364	365
08	PANJSHER		101	101
09	BAGHLAN	132	572	704
10	BAMYAN	13	321	334
11	GHAZNI	30	897	927
12	PAKTIKA	3	520	523
13	PAKTYA	14	393	407
14	KHOST	20	464	484
15	KUNARHA	12	652	664
16	NOORISTAN		193	193
17	BADAKHSHAN	37	918	955
18	TAKHAR	72	740	812
19	KUNDUZ	148	647	795
20	SAMANGAN	41	277	318
21	BALKH	292	606	898
22	SAR-E-PUL	25	379	404
23	GHOR	7	608	615
24	DAYKUNDI	5	492	497
25	UROZGAN	10	265	275
26	ZABUL	6	269	275
27	KANDAHAR	241	520	761
28	JAWZJAN	82	289	371
29	FARYAB	87	690	777
30	HELMAND	60	1003	1063
31	BADGHIS	12	555	567
32	HERAT	539	1201	1740
33	FARAH	22	408	430
34	NIMROZ	20	82	102
		3648	**17546**	**21194**

2.4.2: Stratification Plan

Each of the thirty-four provinces was constituted as an independent stratum. No additional stratification was undertaken.

2.4.3: Sample Design

A stratified two-stage sample design was adopted for the survey. Enumeration areas were taken as primary sampling units (PSUs) and households within each PSU as the secondary sampling units (SSUs).

2.5: Sample size estimates and allocation

2.5.1: Sample Size Calculations

The sample size for the survey was estimated assuming two children per household based on reasonable estimates of national prevalence of children aged 0-59 months per household. The calculations accommodated a 2% design effect. Details of calculations for each indicator are given in the table below.

Table 2.4: Sample size estimation

		Calculation for number of PERSONS to select						Calculation for number of HHs to select	
Target group	Indicator	Estimated prevalence	Precision in 1 stratum (± X%)	Individual response rate	Number of persons with data in 1 stratum	Number persons to SELECT in 1 stratum	Number persons to SELECT in ALL strata	Number HHs to select in 1 stratum	Number HHs to select in ALL strata
Provincial level									
Household	**Iodized salt**	20%	± 10.0%					137	137
Children 0-59 months	**Wasting***	20%	± 4.0%	80%	769	961	961	534	534
	Stunting*	55%	± 5.0%	80%	761	951	951	529	529
Non-PW	**BMI <17**	18%	± 7.0%	90%	232	258	258	287	287
National Level									
Children 6-59 months	**Anemia**	50%	± 5.0%	85%	769	904	904	503	503
	Iron deficiency	20%	± 5.0%	85%	492	579	579	322	322
	Vitamin A deficiency	50%	± 5.0%	85%	769	904	904	503	503
Children 7-12 years	**Urinary Iodine**	50%	± 5.0%	80%	769	961	961	534	534
Non- PW 15-49 years	**Anemia**	50%	± 5.0%	90%	769	854	854	949	949
	Iron deficiency	20%	± 5.0%	85%	492	579	579	644	644
	Vitamin A deficiency	50%	± 7.0%	85%	392	462	462	514	514
	Urinary Iodine deficiency	50%	± 7.0%	85%	392	462	462	514	514
Adolescent Girls (10-19 years)	**Anemia**	50%	± 5.0%	90%	769	854	854	949	949
	Folate level	50%	± 7.0%	85%	392	462	462	514	514

* Data on nutrition indicators for the age group of children 0 to 59months was not available so the nearest possible and reliable data of 6-59 moths were taken for sample size estimates of NNS 2013

** Sample size for elderly group was not calculated initially

Sample size of 534 (rounded up to 540) households was estimated to ascertain provincial prevalence of malnutrition. It was estimated that 18 households per cluster were sufficient to achieve provincial specificity for malnutrition indicators assuming 80% response rate. A total of 18,360 households were required for data collection across the country.

The sample size for household food security was calculated considering the latest National Risk and Vulnerability Assessment (NRVA) 2011-12 survey, which reported 30.1% of households as food insecure, according to calculation 500 households per province were estimated and information was gathered from all targeted 18360 households to achieve the target.

National level sample size for micronutrient assessment was calculated independently for each target population group using the prevalence of anemia in non-pregnant women, adolescent girls 10-19 years of age and children 6-59 months (Table 2.4).

2.5.2: Selection & Segmentation of enumeration areas (Primary Sampling Unit- PSU)

Clusters for the survey were selected by CSO through the systematic probability proportional to size (PPS) technique. CSO was requested to draw some additional clusters in surplus to the required 30 clusters per province. This was done for possible replacement of clusters inaccessible due to unpredictable security situation and accessibility. But additional clusters for replacement were not provided, hence no replacement was made.

For clusters which were too large to allow mapping of all households in a timely manner, segmentation was applied (3). Segmentation was used for dividing large sized clusters into segments of approximately equal size using geographic boundaries. One of the segments was randomly selected for data collection. The households within the selected segment were listed and 18 households were selected.

2.5.3: Selection of households (Secondary Selection Unit-SSU)

Households within these selected PSUs were taken as secondary sampling units (SSUs). Eighteen households from each PSU were selected with equal probability, using a systematic sampling technique with a random start. CSO directed all PSOs to facilitate identification of selected clusters for the survey. Cartographer from the respective Provincial Statistics Office (PSO) visited each selected cluster and prepared maps and line listing of households and structures before survey team visit for data collection. But in some clusters this activity was performed by the survey teams before data collection.

2.5.4: Selection of respondents for interview and measurements

One woman of reproductive age (15-49 years) from each selected household was interviewed. If there was more than one woman of 15-49 years of age in the household, the youngest woman of reproductive age was selected. If no woman of reproductive age was available in the household, information was collected from any adult male member of the household but in that case only household members and socio economic information was collected and remaining modules were skipped.

IYCF module was filled only from the household with at least one child 0-23 months of age. All children aged 0-59 months, present at the time of visit, were measured for anthropometry. The youngest under-five child in the household, present at the time of the survey team visit was considered as index child and his/her mother was considered as the index mother.

In addition, youngest member from rest of target groups was measured for height weight and MUAC from each selected household.

2.5.5: Selection of clusters for biochemical specimen

The sample size of 950 for micronutrient assessments was calculated to achieve national estimates, 80 clusters were selected from total of 1020 clusters, keeping in mind the poor response rate. These clusters were distributed among provinces using proportionate to population method. Specimens were collected from all eligible members of target group from each household of selected clusters.

2.6: Description of Qualitative research

The overall aim was to gather in-depth information regarding IYCF and nutrition indicators. Purposive sampling is the dominant strategy and purposive sample size is often determined on the basis of theoretical saturation (FHI, 2005). Focus group discussions (FGD) and in-depth interviews with key informants {mothers of children under 2 years, decision makers in the family (both male & female), and care providers} were conducted in eight regions of Afghanistan. Provinces within the regions were selected by partners considering the ethnic and geographical diversity. A total of 32 FGDs and IDIs each were conducted.

2.7: Operational Survey Procedures

2.7.1: Development of Survey Protocol:

Detailed survey protocol was developed by team of the Aga Khan University, reviewed by MoPH, Afghanistan and UNICEF, Afghanistan and finalized by the Aga Khan University in the first phase of survey following the TOR provided by UNICEF and considering previous experience of such surveys in Afghanistan (NRVA 2012, MICS 2010 and NNS 2004, WFP Food security Module) and other countries (NNS Pakistan 2011, Micronutrient survey Maldives etc.).

2.7.2: Technical Advisory Group (TAG)

A Technical Advisory Group (TAG) was established by the Ministry of Public Health, Afghanistan to oversee the survey design, development of instruments and manuals and implementation of field activities. The TAG was composed of technical experts from UNICEF, WFP, WHO, ACF, CSO, Research department of MOPH, PND and Aga Khan University (AKU). The TAG provided guidance, inputs and approvals throughout the survey.

2.7.3: Development of Instruments, manuals and SOPs

Data collection instruments (Household survey questionnaire, interview guides and log sheets for biochemical indicators) were developed in English (Annex). The instruments were translated to Pashtu and Dari and then back-translated to English to ensure the quality of translation. Manuals of instruction for interviews, anthropometry and laboratory procedures were also developed in English and translated in local languages Dari and Pashtu.

2.7.4: Liaison between main collaborators

Daily meetings were conducted by representatives of all partner organizations (AKU, PND, UNICEF and SRTRO) to discuss and resolve day to day issues and concerns raised by field teams during the field activities. Progress and day to day plans of survey activities were also discussed during these meetings to ensure timely implementation of field activities and to maintain quality of data collection.

2.7.5: Pilot Testing

A pre-test was undertaken from June 1-2, 2013 in Kabul to pilot the questionnaire and to identify and solve unforeseen problems before actual data collection. The objectives of the pilot were to improve the language of the questionnaire, establish the order of questions, and check accuracy and adequacy of the questionnaire instructions such as “skip” and “go to”. Clarity of instructions to the interviewers, respondents’ discomfort/embarrassment to certain questions and translation of technical terms and the time needed to conduct an interview was also assessed during pilot testing. Both the “participating” and “undeclared” pre-tests were undertaken. Participating pre-tests were done in the classroom among the interviewers themselves while undeclared pre-tests were done in the field without informing respondents that it was a pre-test. About 100 respondents with

reasonably similar characteristics other than the survey population were interviewed in different parts of Kabul. The questionnaire was then revised and finalized on the basis of the pre-test results and direct observations by survey supervisors. The members from partner organizations also monitored the pre-testing activity.

2.7.6: Data collection teams

Data Collection was carried out by a national NGO, Silk Route Training and Research Organization (SRTRO), with the technical support of the Aga Khan University (AKU). Field staff was identified and hired for all activities from respective provinces by SRTRO based on willingness to work in remote areas and fluency in Dari/Pashtu and other local language(s) and cultural sensibilities.

The survey's quantitative part involved three major components: data collection at household level, anthropometric measurements, and biochemical sampling. The structure of the survey team was as follows:

- Team leader
- Couple 1 (1Male and 1Female) for Data collection
- Couple 2 (1Male and 1Female) for Data collection
- Couple 3 (1Male and 1Female) for Anthropometry
- Couple 4 (1Male and 1Female) for Anthropometry
- Phlebotomist & Lab Technicians (only for clusters selected for Biochemical analysis)

2.7.7: Training of survey teams

The training of teams was conducted in two phases. During the first phase, an intensive 10 days training was provided to all field teams from all 34 provinces from May 26 to Jun 4, 2013 by experts from the Aga Khan University. Around 400 participants from all provinces of Afghanistan participated in the training workshop held in Kabul. Participants were divided in ten groups on the basis of cadre and spoken language. Each group was composed of maximum of 30 participants. Team leaders of all provinces were grouped together in a separate training session. All training sessions were supervised and facilitated by the Aga Khan University trainers with assistance of local facilitators.

The second training workshop was conducted at three different locations (Kabul, Herat and Balkh (Mazar City) for teams working in insecure areas (210 clusters) from August 24-30, 2013. For these trainings, local facilitators were trained as master trainers by AKU training experts in a training workshop in Kabul from August 19-21, 2013. Master trainers later facilitated the trainings under AKU and UNICEF monitoring in their respective provinces. The training agenda could be found in annexure.

2.7.8: Data collection activity

On the day of visit, the survey team identified each selected household using the fresh household listing. Informed consent was taken from respondents before data collection. A total of 18 households from each enumeration area were selected and data collection on the structured instrument was carried out. The description of questionnaire is provided in Table 2.5

Module 1 and 2 of the questionnaire were completed for all targeted household by team leader. Module 3 was administered to the household with married women of reproductive age. However, information on module 4a was obtained from household where infant of 0-23 months of age was available and 4b was completed for all selected under five years children. Similarly module 5 was

administered to the household where an elderly person of above 50 years was present and module 6 from household where index mother was present at the time of team visit to the household.

Table 2.5: Modules and sections of Questionnaire

Module	Section	Section Description
1	A	Basic identification information
	B	Informed consent
2	A	Household demographic Information
	B	Socio economic information
3	A	Knowledge, attitude and practices regarding micronutrients
	B	Heath messages awareness
	C	Reproductive history and ANC practices
4	A	Young infants complementary feeding (index child 0-23 months)
	B	Child health status (0-59 months of age -index child)
5		Questionnaire for elderly
6		Household food security- food consumption, hunger scale and coping strategies.
7		Anthropometry

Height, weight, edema and MUAC measurements were performed by the measurement team for all survey target population. The team leader was also responsible to ensure completion of data collection and quality of data in each cluster.

Biochemical samples were collected in 80 selected clusters across the country. Biochemical specimens were collected from all eligible target groups present at the time of household visit. Blood samples were collected by trained phlebotomists ensuring safe blood collection practices. Hemoglobin levels were tested in field using HemoCue machine for all target population.

2.7.9: Duration of data collection activities

NNS 2013 activities started in the second week of June 2013 simultaneously in all 34 provinces of Afghanistan. Teams completed data collection in 786 clusters by July 10, 2013. The progress was reviewed by TAG and advised to suspend activities for 50 days due to the month of Ramadan considering change in food habits and eating pattern. Data collection was re-started in first week of September 2013 to complete the data collection in the remaining 240 clusters. By the end of October 2013 teams were able to cover 210 clusters. The remaining 16 clusters were not surveyed due to various reasons: 4 clusters were Inaccessible due to non-availability of Tajikistan visa), 8 due to security concerns, 3 clusters were unidentifiable and 1 due to duplication.

2.7.10: Transportation and analysis of biochemical samples

Biochemical samples collected from targeted 80 clusters were initially stored in regional hospitals. Cold chain of EPI program in respective regional hospitals was used for the storage of biochemical specimens. These specimens were transported from regions to Kabul via cargo of different airlines. The services of an international courier company were utilized for the shipment of specimens to Karachi, Pakistan. Depending on the duration of transportation gel ice-packs and dry ice was used to maintain cold chain at each stage of transportation. Specimens were analyzed at Nutrition Research Laboratory at Aga Khan University Pakistan.

2.8: Data management, data transfer and data analysis

The filled questionnaires were first desk-edited at field sites for completeness and checked for major errors by the team leaders. The questionnaires were sent through a courier service or by hand to SRTRO Data Management Unit (DMU) in Kabul. A desk was established at SRTRO DMU to

receive the survey questionnaires, maintain log registers and check for completeness. In case of an inconsistent or missing response, the editors flagged the error/omission(s) and consulted the team leaders for clarification. Before data entry, all open-ended responses in the questionnaires were coded.

2.8.1: Software for data entry and analysis

Visual Fox Pro was used for designing the databases, data entry software and procedures for data quality assurance. Range and consistency checks as well as skip patterns were built in the data entry program to minimize entry of erroneous data. Special arrangements were made to enforce referential integrity of the database so that all data tables were related to each other. Analysis of data was undertaken using SPSS version 18.

2.8.2: Data entry and quality checks

Two pass verification or double data entry was carried out for each filled questionnaire to minimize keypunch errors. An error check program was also incorporated into the data entry system to ensure quality of data. Data entry started after one week of data collection, following clearance by the survey coordinators.

2.8.3: Data analysis

Descriptive statistics for variables of interest were estimated and tables generated. Data was analyzed using Univariate methods.

WHO Anthro (version 3.2.2) was used for anthropometric analysis. We used height for age Z scores, weight for height Z scores and weight for age Z score to assess the prevalence of malnutrition. Ranges of -6 to +6, -5 to +5 and -6 to +5 Z scores were used to assess HAZ, WHZ and WAZ respectively. Any values <-6 and >+6, <-5 and >+5, and <-6 and >+5, for HAZ, WHZ and WAZ respectively, were flagged as per WHO recommendations. Overall 0.9%, 4.5% and 5.8% children were excluded from analysis due to flagged readings of WAZ, HAZ and WHZ respectively to avoid measurement bias.

2.8.4: Application of sampling weights

Based on two-stage stratified sample design, first and second stage sampling weights were computed. First stage weights were design weights and second stage weights were calculated based on the information about households listed and enumerated for each of the 1,004 PSUs. 16 PSUs were dropped due to insecurity and inaccessibility. Overall sampling weights pertaining to 1004 surveyed PSUs were computed and applied to generate estimates of the survey variables.

2.8.5: Data management process of qualitative component

As a first step in the analysis, the audio-recordings of the FGDs and IDIs were transcribed into local languages i.e. Dari and Pashto. The qualitative team transcribed the recordings verbatim into the local languages, compared their transcriptions with field notes, and added missing data. The analysis of qualitative data started with coding and identification of important issues.

Two senior members of team with support of expert from AKU manually coded few initial transcripts utilizing a start-list of codes based on the topics of the guides of IDIs and FDGs and using grounded coding in which codes or interpretative categories were derived directly from the text of transcripts. The team then reviewed the coded segments and discussed the implied meanings of their coding, then revised and added codes where needed.

Moreover, in order to make sure that the data and analysis addressed the purposes of the study and had contextual and conceptual validity, the code list was shared with UNICEF nutrition specialist and investigators of the study. They assessed the relevance of the data and the codes to the objectives of the study. This participatory process led to a further revision of the codebook so that it clearly defined and captured the community perceptions and behavior related to nutrition.

The codes were eventually formatted and entered into the qualitative analysis software, ATLAS Ti. After the construction of the codebook, the team manually coded transcripts and again jointly reviewed coding decisions and modified the codebook to attained higher inter-coder agreement.

The coded segments of responses were compiled and printed as ATLAS Ti reports. These reports or coded, topical segments were then summarized in brief narratives by topic. The summary data was compared and triangulated with different categories of participant's quotes and assessed for their relevance to the information needs.

2.9: Ethical approval and confidentiality

The survey design, sampling strategy, instruments and analytical plans were reviewed and approved by the Institutional Review Board (IRB) of Ministry of Public Health (MOPH), Government of Islamic Republic of Afghanistan (GOIRA). Confidentiality of all collected data was assigned high priority during each stage of data handling. Individual names and personal information of respondents were kept confidential and data sets were kept anonymous for analysis. All data files were protected by passwords. Serum and blood samples were also duly secured, as per standard procedures of the IRB. Before participation in the survey, informed consent was taken from head of household of all selected households. The respondents were informed about their rights.

2.10: Quality assurance

All survey activities were monitored to ensure the data quality. A TAG meeting was held to review and approve the survey protocol, methodology and key indicators prior to survey implementation.

Draft questionnaire was developed by the Aga Khan University. The questionnaire was developed after reviewing the other standard survey questionnaires i.e. MICS Afghanistan 2010, NNS 2004 and WFP /NRVA Food Consumption & Diet Diversity. The decision to use these instruments as a reference was based on prior usage in Afghanistan. The questionnaire was reviewed question by question by PND, AKU, UNICEF and SRTRO representatives in a three day workshop at UNICEF office, Afghanistan from May 19-22, 2013. The questionnaire was translated in to Dari and Pashtu and back translated both to English to ensure quality of translation. Questionnaire was pre-tested prior to implementation in the field.

A pilot survey was conducted at the end of training workshop in Kabul. Filled forms were reviewed and feedback was given to all teams for further improvement. The data was analyzed by using ENA and presented to TAG on July 4, 2013. The data was reviewed by TAG and approval was granted for implementation of survey in rest of the provinces on July 6, 2013.

Competency of field staff was also taken in account prior to hiring. Before the training workshop, a literacy test for all field staff was conducted. If a person was unable to do basic literacy exercises, he was not allowed to participate in training. Pre-test and post-test was conducted for all field staff. Scores were reviewed and staff that scored minimum 80% in post-test was recommended for hiring for data collection. Only exception was considered for Nooristan province where literacy is very low especially among females, where competency level was set at 70% score.

Standardization tests were also performed during training and field staff was oriented for standardization.

Many steps were taken to ensure quality of data collection at field. Team leaders were instructed to review all the filled questionnaires for completeness and inconsistencies before leaving from location/cluster. Desk reviewers were hired at provincial level to ensure completeness of forms before sending them to Kabul. The Provincial Nutrition Officers and MoPH-PND staffs were trained as external monitors to ensure data collection activity. They were supposed to visit the field during data collection in their respective provinces. They used a checklist to monitor the activities of field teams and based on observations they could suggest the actions to be taken. They were empowered to stop the survey, if deemed necessary based on observations. The data collection teams reported their locations to the PNOs on regular basis. Each PNO were given the task to check 30% of the clusters in his relevant province. The external monitors reported directly to MoPH.

There was one team per province. The team leader monitored the daily work of the team. The implementing organization SRTRO also appointed trained regional coordinators for quality assurance. Each coordinator was supposed to supervise 3-4 provinces and visited the teams in the field. The coordinators monitored the teams' activities, provided feedback and collected the completed questionnaires.

Team leaders were instructed to check equipment included measuring scales daily prior to field activity, Teams were provided with a standard weight of 10kg to monitor the calibration of the weighing scale. Spare measurement equipment was also available with teams.

During data collection, the representatives of SRTRO, AKU, UNICEF and PND met on a daily basis to review the progress of data collection and performance of each team. The challenges faced by teams were discussed, best suited solution were advised and were followed up with team leaders. A team of 10-15 phone operators were hired to call each team every night and to collect anthro data to check the quality of collected measurements. The survey manager from the Aga Khan University analyzed the data (plausibility checks and digit preference) using ENA Smart software and provided feedback to SRTRO survey coordinators to improve performance of the teams.

Similar quality assurance steps were dully considered during data entry and cleaning. UNICEF Afghanistan country office and UNICEF HQ were also involved to ensure quality and accuracy of survey estimates during the final analysis of data.

Chapter 3: Survey Results/Findings

Section 3.1: Survey Response Rate

The required sample size was 18,360 households and 1,020 clusters across Afghanistan. The survey teams were able to approach 1,004 clusters out of 1,020 and 18,072 households. Sixteen clusters could not be surveyed and 3.9% of selected households refused to participate in the survey.

Table 3.1: Details of Sample size Coverage (PSUs and SSUs by province)

Province	Number of Blocks				Number Households							
	Sampled PSU	Sampled Household	PSU Completed	PSU Not covered	Household Visited	Consent Yes	Refusals	Refusal Rate (%)	Not visited	Not visited (%)	Not visited+ Refusal	Not visited+ Refusal (%)
Badakhshan	30	540	26	4	467	462	5	1.1	73	13.5	78	14.4
Badghis	30	540	30	0	531	528	3	0.6	9	1.7	12	2.2
Baghlan	30	540	29	1	522	522	0	0	18	3.3	18	3.3
Balkh	30	540	30	0	540	537	3	0.6	0	0.0	3	0.6
Bamyan	30	540	30	0	540	537	3	0.6	0	0.0	3	0.6
Diakundi	30	540	30	0	540	532	8	1.5	0	0.0	8	1.5
Farah	30	540	30	0	539	527	12	2.2	1	0.2	13	2.4
Faryab	30	540	30	0	539	526	13	2.4	1	0.2	14	2.6
Ghazni	30	540	30	0	540	535	5	0.9	0	0.0	5	0.9
Ghor	30	540	30	0	540	538	2	0.4	0	0.0	2	0.4
Helmand	30	540	29	1	522	485	37	7.1	18	3.3	55	10.2
Hirat	30	540	30	0	540	536	4	0.7	0	0.0	4	0.7
Jawzjan	30	540	30	0	540	532	8	1.5	0	0.0	8	1.5
Kabul	30	540	30	0	538	508	30	5.6	2	0.4	32	5.9
Kandahar	30	540	30	0	540	472	68	12.6	0	0.0	68	12.6
Kapisa	30	540	30	0	539	535	4	0.7	1	0.2	5	0.9
Khost	30	540	30	0	540	489	51	9.4	0	0.0	51	9.4
Kunar	30	540	30	0	540	531	9	1.7	0	0.0	9	1.7
Kunduz	30	540	30	0	540	536	4	0.7	0	0.0	4	0.7
Laghman	30	540	30	0	539	512	27	5	1	0.2	28	5.2
Logar	30	540	30	0	540	525	15	2.8	0	0.0	15	2.8
Nangarhar	30	540	28	2	504	500	4	0.8	36	6.7	40	7.4
Nimroz	30	540	29	1	522	506	16	3.1	18	3.3	34	6.3
Nuristan	30	540	30	0	540	446	94	17.4	0	0.0	94	17.4
Paktia	30	540	29	1	522	522	0	0	18	3.3	18	3.3
Paktika	30	540	25	5	450	353	97	21.6	90	16.7	187	34.6
Panjsher	30	540	30	0	540	537	3	0.6	0	0.0	3	0.6
Parwan	30	540	30	0	540	494	46	8.5	0	0.0	46	8.5
Samangan	30	540	30	0	540	538	2	0.4	0	0.0	2	0.4
Saripul	30	540	30	0	540	503	37	6.9	0	0.0	37	6.9
Takhar	30	540	30	0	540	539	1	0.2	0	0.0	1	0.2
Uruzgan	30	540	29	1	522	512	10	1.9	18	3.3	28	5.2
Wardak	30	540	30	0	538	515	23	4.3	2	0.4	25	4.6
Zabul	30	540	30	0	536	469	67	12.5	4	0.7	71	13.1
Total	**1020**	**18360**	**1004**	**16**	**18050**	**17339**	**711**	**3.9**	**310**	**1.7**	**1021**	**5.6**

A total of 17,339 households consented to participate in the survey. The refusal rate varied widely between provinces, it was highest in Paktika province (21.6%), followed by Kandahar and Zabul (≥10%) The high non-response rate was mainly due to security concerns. A verbal informed consent

was obtained from participating households prior to the interview for collection of information and anthropometric measurements through a pre-printed questionnaire. For blood and urine sample collection, a written informed consent was obtained. The coverage is documented in above table.

Section 3.2: Household characteristics and respondent's information

3.2.1: Household characteristics

Table 3.2: Population Characteristics

	Males		Females		Total	
	N	%	N	%	N	%
Age (Years)						
0 - 4 Years	12498	19.0	11850	19.0	24348	19.0
5 - 9 Years	11771	17.4	11403	17.5	23174	17.4
10 - 14 years	8895	13.8	7947	13.0	16842	13.4
15 - 19 years	6486	10.2	6290	10.7	12776	10.4
20 - 24 years	4371	7.2	5074	8.6	9445	7.9
25 - 29 years	3876	6.0	4691	7.6	8567	6.8
30 - 34 years	3363	5.2	3507	5.6	6870	5.4
35 - 39 years	3115	4.8	3207	5.2	6322	5.0
40 - 44 years	2634	4.1	2248	3.7	4882	3.9
45 - 49 years	2266	3.4	1884	3.1	4150	3.3
50 - 54 years	1645	2.6	1453	2.2	3098	2.4
55 - 59 years	1191	1.8	891	1.5	2082	1.6
60 - 64 years	1242	2.0	687	1.1	1929	1.5
65 - 69 years	554	0.9	298	0.5	852	0.7
70 - 74 years	552	0.8	247	0.4	799	0.6
75 - 79 years	172	0.3	59	0.1	231	0.2
80 - 84 years	185	0.3	64	0.1	249	0.2
85+ years	106	0.2	51	0.1	157	0.1
Dependency Age groups						
0 - 14 years	33164	50.2	31200	49.5	64364	49.8
15 - 64 years	30189	47.3	29932	49.3	60121	48.3
65 + years	1569	2.5	719	1.2	2288	1.9
Dependency Ratio					110.8	
Child and Adult population						
0 - 17 years	37108	56.3	35021	56.0	72129	56.1
18 + years	27814	43.7	26830	44.0	54644	43.9

The majority (19%) of individuals belonged to the 0 to 4 years age group, 17.4% males and 17.5% females belonged to 5 to 9 year age group. Individuals 20-24 years of age constituted 7.9% of the total surveyed population, followed by 25-29 years (6.8%) and 30-34 years (5.4%) respectively

While examining data in terms of age dependency among total household members in the survey, the dependent age groups of 0-14 years and 65+ year olds made up 49.8% and 1.9% respectively while 15-64 year olds were 48.3% of the surveyed population. Majority (60.4%) of the household members were less than 18 years of age.

Table 3.3: Household Characteristics

Household Size	N	%
1-4	2,585	15.7
5-7	7,124	40.6
8+	7,621	43.7
Average Family Size (Mean ± SD)	7.33 ± 2.88	
Households with at least	17330	
One child of age 0-4 years	14280	81.6
One child of age 0-7 years	16672	95.9
One woman of age 15-49 years	17102	98.8
Languages usually spoken at home (Multiple responses)		
Pashtu	6,613	37.7
Dari	7,261	47.1
Hazarai	1,705	8.1
Uzbeki	1,369	8.3
Others (Turkmeni, Nuristani, Balochi, Pashaee, etc.)	1370	4.7

The reported household with family size of more than eight members was (43.7%), followed by 5 to 7 (40.6%) and 1 to 4 (15.7%). The average family size was 7.33±0.05SD (standard deviation).

Similarly, when asked about the number of children in households, the majority (81.6%) of respondents reported at least one child of age 0-4 years in their households whereas almost 95.9% had at least one child of age 0 - 7 years of age. It was also reported that 98.8% households had at least one woman of age 15 - 49 years.

Dari was the most common (47.1%) spoken language across Afghanistan, whereas 37.7% people were Pashtu speaking. The other commonly spoken languages were Hazarai (8.1%) and Uzbeki (8.3%).

3.2.2: Occupancy status of dwellings and number of rooms per dwelling

Regarding household ownership, 86.4% respondents owned their houses, 7.5% reported living in rented spaces, and 5.6% lived without paying rent. Majority (39.0%) of the respondents reported using two rooms for sleeping purposes in their households. In addition, almost 22.3% and 20.6% respondents reported using one and three rooms for sleeping in their households, respectively. The respondents who used more than three rooms in their households for sleeping purpose were 14.7%. Majority of the respondents (55.1%) reported having natural earth floors in their households, while 4.8% had a finished floor. Only 0.7% respondents reported having rudimentary floor in their household and10.7% respondents mentioned other types of flooring. 71.5% respondents had finished roofs in their homes, followed by rudimentary roofs (16.6%), and natural roofs (0.7%). 10.7% respondents reported other roofing. The majority of respondents reported having rudimentary walls (61.1%), followed by finished (30.5%), natural (7.9%) and other types of walls (0.3%).

Table 3.4: Nature of Dwellings and Number of rooms per Dwelling

	N	%
Ownership status		
Owned	15427	86.4
Rented	764	7.5
Living without paying rent	994	5.6
Others	10	0.0
Not Reported	86	0.5
N	17281	100.0
Number of rooms used for sleeping		
1	3844	22.3
2	6939	39.0
3	3474	20.6
>3	2388	14.7
Not Reported	636	3.4
N	17281	100.0
Type of Floor		
Natural floor	10636	55.1
Rudimentary floor	126	0.9
Finished floor	6041	40.8
Others	418	2.9
Not Reported	60	0.4
N	17281	100.0
Type of Roof		
Natural roofing	115	0.7
Rudimentary Roofing	3160	16.6
Finished roofing	12230	71.5
Others	1695	10.7
Not Reported	81	0.5
N	17281	100.0
Structure of Walls		
Natural walls	1646	7.9
Rudimentary walls	11911	61.1
Finished walls	3635	30.5
Others	31	0.3
Not Reported	58	0.3
N	17281	100.0

3.2.3: Availability of electricity & cooking fuel used

The survey data showed solar panels used as main source of electricity in 40.5% households of surveyed areas. The other major (39.2%) source was electricity connection; however, 12.6% households had no electricity (Table 3.5).

Wood was the most commonly (29.8%) used cooking fuel. The use of LPG/ cylinder/natural gas was 26.9%; straw/shrubs/grass 15.4% and animal dung 16.3% (Table 3.5). A very small number (0.2%) of reported households did not cook food at home and hence used no cooking fuel.

Table 3.5: Availability of Electricity & Cooking Fuel Used

	N	%
Source of Electricity		
No Electricity	2,562	12.6
Electricity Connection	4,393	39.2
Solar Panels	8,684	40.5
Generator	480	2.8
Others	941	3.8
Not Reported	221	1.2
N	17,281	100.0
Cooking Fuel		
Electricity	149	2.0
LPG/cylinder/Natural gas	3,139	26.9
Kerosene oil	63	1.7
Coal, lignite	27	0.1
Charcoal	142	0.6
Wood	6,368	29.8
Straw/shrubs/grass	3,239	15.4
Agricultural crop	563	3.0
Animal dung	2,919	16.3
No food cooked in household	23	0.2
Others	11	0.1
Not Reported	638	3.8
N	17,281	100.0

Section 3.3: Nutrition and health status of children under five years of age

3.3.1: Nutrition status of children 0-59 months

Measurements of height, weight and MUAC were conducted for all under five children (0-59 months). Every under-five child present in the household at the time of visit was included in the survey on acquisition of consent from the parent or caretaker. The youngest child in the household was selected as the index child and measured three times for all three indicators (Height, Weight and MUAC) and the mean measurements were documented. Other children were measured one time. Each field team carried a weighing scale, measuring board and MUAC tapes. Weight measurements were made using lightweight SECA scales (with digital screens) designed and manufactured under the authority of the United Nations Children's Fund (UNICEF). The height boards employed were made by Shorr Inc. for measuring the length/height. Children under 2 years of age were measured lying down on the board (recumbent length), and standing height was measured for older children.

Different sources (identification cards and immunization cards and birth certificates) were used to ascertain accurate age of the eligible children. In case of non-availability of above mentioned source

for the confirmation of date of birth, local (province specific) events calendars were used to calculate the age of child. The events calendars were prepared in consultation with local staff.

Overall 236 (0.9%), 1017 (4.5%) and 1278 (5.8%) children were excluded from analysis due to flagged readings of WAZ, HAZ and WHZ respectively to avoid measurement bias. This however, did not result in loss of precision.

Gender and age distribution of children are given in table 3.6.

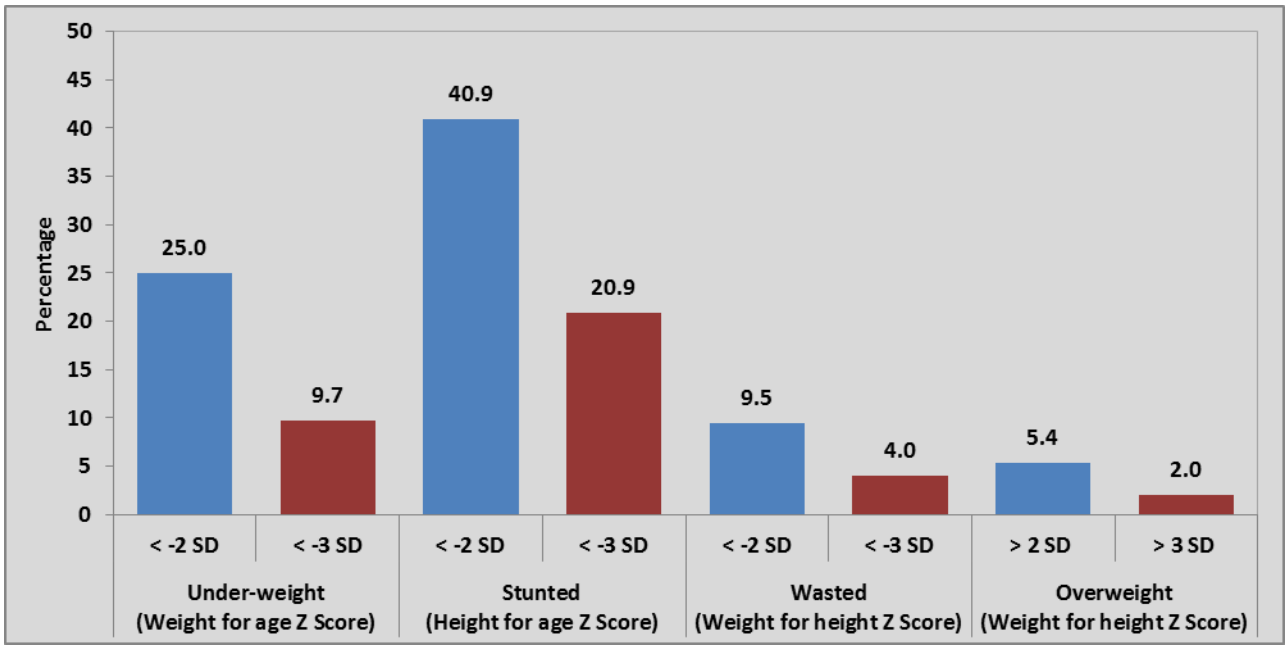
Table 3.6: Age & sex distribution of children 0-59 months

	n	%
Sex		
Male	12498	50.9
Female	11850	49.1
Total	24348	100.0
Age (month)		
< 6 months	2720	11.6
6-11 months	2621	10.8
12-23 months	4425	18.7
24-35 months	5011	19.9
36-47 months	4864	20.0
48-59 months	4693	19.1
Total	24334	100.0

3.3.2: Nutrition status of children 0-59 months of age

At national level, 40.9% (95% CI 39.3-42.5) children were stunted (HAZ <-2SD). The prevalence of severe stunting in children was alarming 20.9% (95% CI 19.7-22.2) and was higher than moderate stunting (19.7%). Across the country, 9.5% (95% CI 8.7-10.4) children were wasted (WHZ <-2SD). The prevalence of moderate and severe wasting was 5.5% and 4.0% respectively. Overall 25.0% children (95% CI 23.7-26.2) were underweight; 9.7% (95% CI 8.8-10.5) were severely underweight and 15.2% were moderately underweight.

Figure 3.1: Nutritional status of children 0-5 years (All children) in Afghanistan



Weight-for-age: As shown in Table 3.7 25.0%of children under 59 months of age were underweight (WAZ <-2SD), and 9.7% (95% CI 8.8-10.5) were severely underweight. Analysis by age group showed similar pattern among different age groups, highest (27.1%; 95% CI 24.9-29.3) in 24-35 months and lowest (21.4%; 95% CI 19.0-23.9) in 0-5 months. Male children are more likely to be underweight (26.4%; 95% CI 24.8 - 27.9) than female children (23.6%; 95% CI 22.1-25.0). Underweight showed a positive relationship with wealth index quintiles. Poorest were more likely to be underweight (30.7%; 95% CI 28.0-33.5) than richest (17.7%; 95% CI 15.6-19.8).

Table 3.7: Nutritional status of children 0-59 months by weight for age (Underweight)

	N	Weight for age (Underweight)				Mean Z Score (SD)
		Percent below - 2 SD	95% CI	Percent below - 3 SD	95% CI	
Overall	**21922**	**25.0**	**23.8 - 26.3**	**9.7**	**8.9 - 10.6**	**-1.16 (1.44)**
Sex						
Male	11248	26.4	24.8 - 28	10.2	9.3 - 11.3	-1.22 (1.44)
Female	10674	23.6	22.2 - 25.1	9.2	8.3 - 10.2	-1.1 (1.43)
Age						
0-5 months	2472	21.4	19.1 - 24	8.6	7.2 - 10.4	-0.8 (1.65)
6-11 months	2429	24.2	21.5 - 27	10.0	8.3 - 11.9	-1.01 (1.63)
12-23 months	4044	25.8	23.9 - 27.9	10.6	9.4 - 12	-1.21 (1.46)
24-35 months	4580	27.1	25 - 29.3	10.3	9 - 11.7	-1.21 (1.42)
36-47 months	4318	25.5	23.5 - 27.7	10.0	8.6 - 11.6	-1.26 (1.32)
48-59 months	4079	24.2	22.2 - 26.3	8.3	7.1 - 9.7	-1.27 (1.21)
Wealth index quintile						
Poorest	4513	30.7	28 - 33.5	13.1	11.3 - 15.2	-1.41 (1.38)
Second	4361	29.9	27.8 - 32	11.9	10.5 - 13.4	-1.36 (1.44)
Middle	4550	28.8	26.7 - 31	12.1	10.4 - 13.9	-1.29 (1.5)
Fourth	4401	24.1	22 - 26.3	9.1	7.8 - 10.5	-1.13 (1.41)
Richest	4064	17.7	15.7 - 19.8	5.7	4.7 - 6.8	-0.86 (1.38)

Height-for-age: Table 3.8 showed the nutritional status of children 0-59 months of age as measured by height for-age. Nationally, 40.9% (95% CI 39.3-42.5) of children were stunted, with 20.9%; (95% CI 19.7-22.2) severely stunted. Analysis by age groups showed that stunting increased with age, peaking at 47.4% (95% CI 44.8-49.9) among children aged 36-47 months with a similar pattern for severe stunting. Stunting was significantly high with p value of <0.001) in male children (42.3%; 95% CI 40.5-44.1) than in female (39.4%; 95% CI 37.5-41.3). Associations were found between stunting and wealth index quintiles. The poorest were more likely to be stunted (49.4%; 95% CI 47.0- 51.7) than richest (31.1%; 95% CI 28.2-33.9).

Table 3.8: Nutritional status of children (0-59 months) by height for age (Stunting)

	N	Height for age (Stunted)				Mean Z-Score (SD)
		Percent below -2 SD	95% CI	Percent below -3 SD	95% CI	
Overall	**20880**	**40.9**	**39.3 - 42.5**	**20.9**	**19.7 - 22.2**	**-1.55 (1.88)**
Sex						
Male	10637	42.3	40.5 - 44.2	21.6	20.2 - 23	-1.61 (1.85)
Female	10243	39.4	37.5 - 41.4	20.3	18.8 - 21.8	-1.5 (1.91)
Age						
0-5 months	2301	24.5	22.1 - 27.1	11.7	10 - 13.7	-0.79 (2.02)
6-11 months	2295	31.4	28.6 - 34.4	15.5	13.3 - 18	-1 (2.08)
12-23 months	3811	42.6	40.1 - 45.1	20.8	18.9 - 22.8	-1.57 (1.89)
24-35 months	4377	45.6	42.9 - 48.3	24.7	22.6 - 26.9	-1.78 (1.85)
36-47 months	4145	47.4	44.8 - 49.9	25.2	23.2 - 27.3	-1.88 (1.73)
48-59 months	3951	43.3	40.4 - 46.2	21.7	19.5 - 24.1	-1.77 (1.64)
Wealth index quintile						
Poorest	4342	49.4	47.1 - 51.7	26.5	24.6 - 28.6	-1.9 (1.78)
Second	4137	48.5	46 - 51	26.1	24 - 28.3	-1.79 (1.91)
Middle	4288	44.7	42.5 - 46.9	23.7	21.8 - 25.7	-1.71 (1.9)
Fourth	4202	39.1	36.1 - 42.1	19.6	17.3 - 22.1	-1.49 (1.93)
Richest	3880	31.1	28.3 - 34	14.4	12.6 - 16.3	-1.19 (1.82)

Weight-for-height: Above Table 3.9 shows the nutritional status of children 0-59 months of age, as measured by weight for height. Overall, 9.5% (95% CI 8.7-10.4) of children in Afghanistan were wasted. Wasting was 13,2% (95% CI 11.1-15.5) at 0-5 months, it decreased with age and at 48-59 months of age only 6.3% (95% CI 5.0-7.9) were wasted. Positive associations were observed between household wealth and wasting pattern. Prevalence of overweight was 5.4% (95% CI 4.7-6.0) at national level.

Table 3.9: Nutritional status of children 0-59 months by weight for height (Wasting)

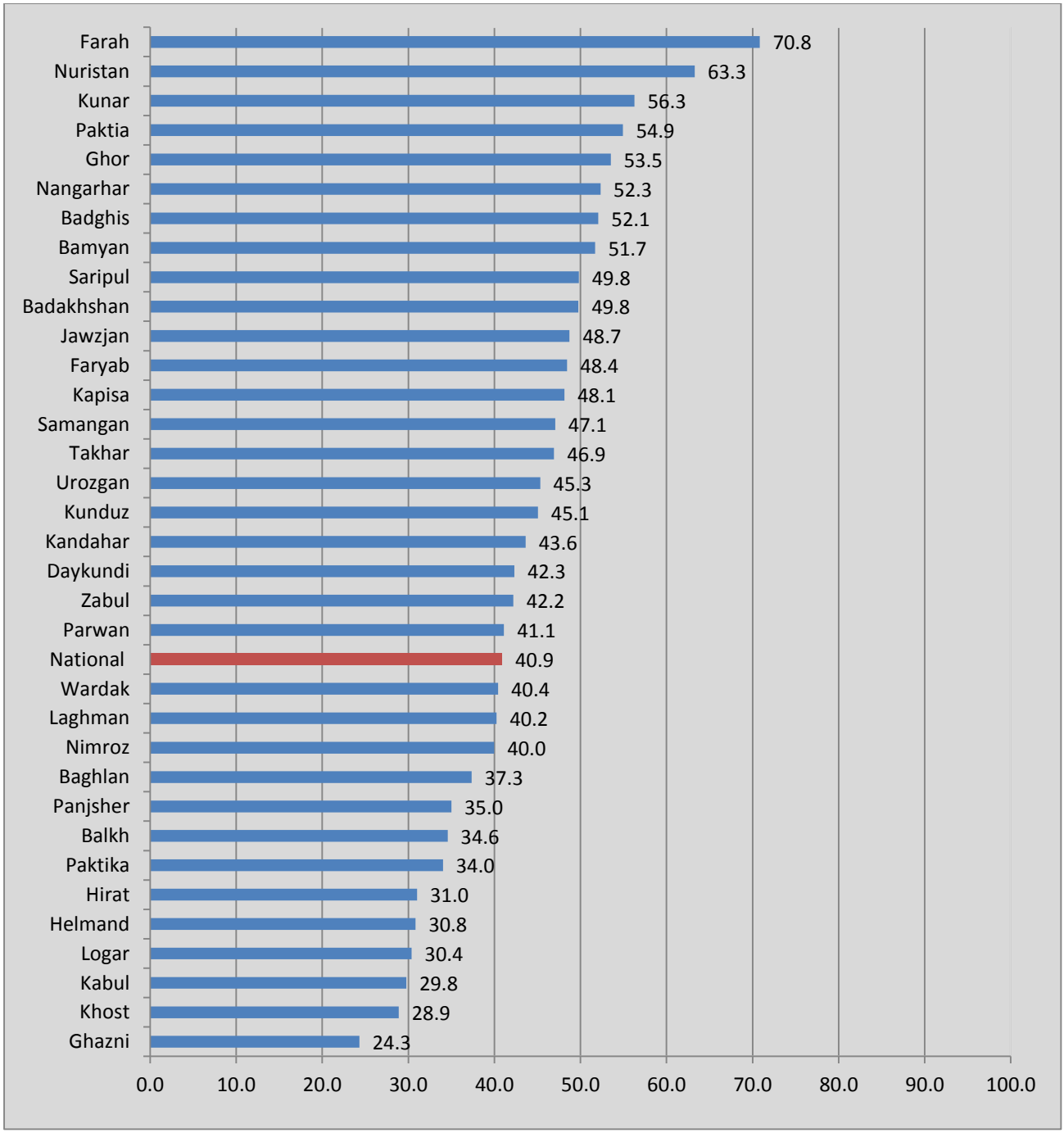
	N	Wasted				Overweight				Mean Z-Score (SD)
		< -2SD	95% CI	<- 3 SD	95% CI	> 2 SD	95% CI	> 3 SD	95% CI	
Overall	21141	9.5	8.7 - 10.4	4	3.51 - 4.62	5.4	3.5 - 4.6	2	1.65 - 2.37	-0.27 (1.44)
Sex										
Male	10827	10.3	9.4 - 11.4	4.5	3.9 - 5.22	4.9	3.9 - 5.2	1.7	1.38 - 2.11	-0.32 (1.45)
Female	10314	8.7	7.8 - 9.7	3.5	2.93 - 4.24	5.8	2.9 - 4.2	2.3	1.82 - 2.8	-0.21 (1.43)
Age in months										
0-5	2326	13.2	11.2 - 15.5	6.3	5 – 8	8.1	5 - 8	2.9	2.13 - 3.87	-0.24 (1.69)
6-11	2339	13.9	12.1 - 16	5.8	4.56 - 7.4	5.9	4.6 - -7.4	1.8	1.29 - 2.59	-0.42 (1.56)
12-23	3927	11.4	10 - 13	4.7	3.81 - 5.82	5	3.8 - 5.8	1.7	1.19 - 2.32	-0.43 (1.44)
24-35	4405	8.9	7.6 - 10.4	3.6	2.85 - 4.5	4.9	2.9 - -4.5	2	1.42 - 2.71	-0.25 (1.4)
36-47	4174	6.6	5.5 - 8	2.6	1.84 - 3.54	5.1	1.8 - 3.5	1.7	1.24 - 2.35	-0.13 (1.33)
48-59	3970	6.3	5 - 7.9	2.8	1.98 - 3.91	4.4	2 - 3.9	2.1	1.46 - 3.04	-0.19 (1.31)
Wealth index quintile										
Poorest	4375	9.8	8.4 - 11.5	5	3.79 - 6.47	4.1	3.8 - 6.5	1.3	0.99 - 1.71	-0.31 (1.42)
Second	4215	10.2	8.8 - 11.9	4.5	3.6 - 5.72	5.6	3.6 - 5.7	1.8	1.34 - 2.49	-0.31 (1.46)
Middle	4363	11.4	10 - 13.1	4.5	3.66 - 5.6	7.1	3.7 - -5.6	2.9	2.16 - 3.9	-0.27 (1.55)
Fourth	4254	11.1	9.5 - 13	4.9	3.89 - 6.19	5.9	3.9 - 6.2	2.1	1.51 - 2.86	-0.32 (1.5)
Richest	3902	6.8	5.5 - 8.4	2.4	1.72 - 3.2	4.4	1.7 - -3.2	1.7	1.22 - 2.32	-0.19 (1.31)

The high rates of under-nutrition among boys than girls for all three nutrition indicators might be due to higher morbidity amongst the gender, a higher exclusive breastfeeding rate and better dietary diversity among girls, etc.

3.3.3: Province wise prevalence of under-nutrition (children 0 to 59 months)

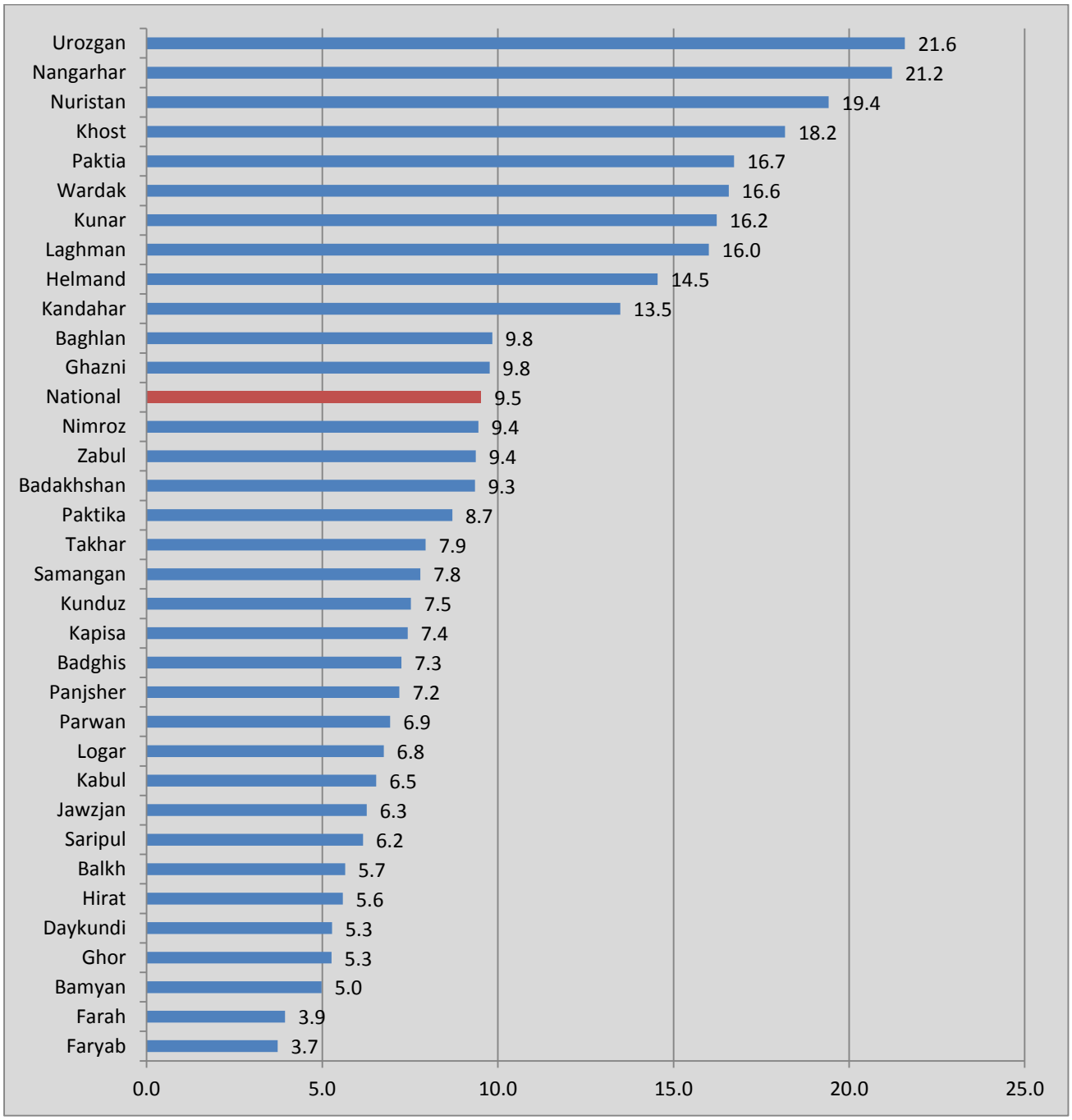
Stunting: The prevalence of stunting varied considerably as depicted in Figure 3.2. A considerable proportion of children were stunted in all provinces; the lowest being 24.3% for Ghazni while higher in Farah and Nuristan 70.8% and 63.3% respectively. This alarming proportion of stunted children aged 0-59 months could be attributed due to low food security in these provinces, as reported in NRVA 2012. Prevalence of stunting among children 0-59 months by province is depicted in below figure as per WHO Classifications.

Figure 3.2: Prevalence of Stunting – (Children 0 to 59 months)



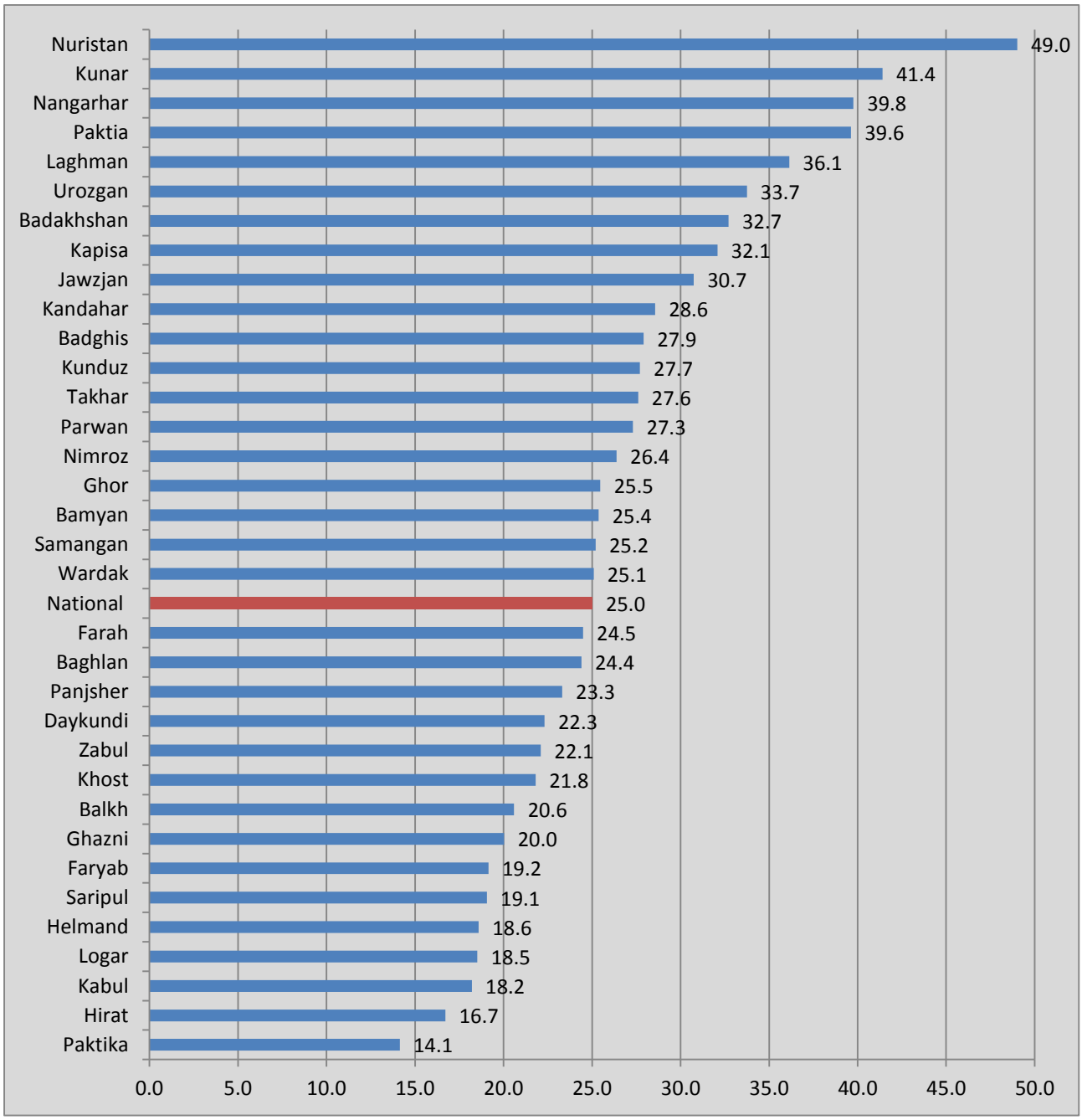
Wasting: Provincial variations in the prevalence of wasting ranged from 3.7% in province Faryab to 21.6% in Uruzgan. In nine provinces more than 15% of children aged 0-59 months were wasted (figure 3.3) as per WHO Classifications.

Figure 3.3: Province wise prevalence of Wasting (Children 0 to 59 months)



Underweight: Overall 25% children were underweight at national level as per WHO classifications. In 24 out of 34 provinces, more than 20% of the children were underweight. Figure below shows the province-wise prevalence of underweight with variations by province.

Figure 3.4: Prevalence of Underweight (Children 0 – 59 months)



3.3.4: Comparison of nutrition indicators of NNS 2013 with NNS 2004

Comparing the current nutrition situation with last NNS 2004, there was an apparent reduction in stunting and underweight amongst children of 0-59 months of age. Stunting in children 0-59 months reduced from 60.5% as reported in NNS 2004 to 40.5% in NNS 2013. However, there was no improvement in wasting; in fact it has increased from 8.7% (NNS 2004) to 9.5% (NNS 2013). Whereas, prevalence of underweight was reduced from 33.7% in NNS 2004 to 24.6% in NNS 2013 (Table 3.10).

Table 3.10: Comparison of nutrition indicators of NNS 2013 with NNS 2004

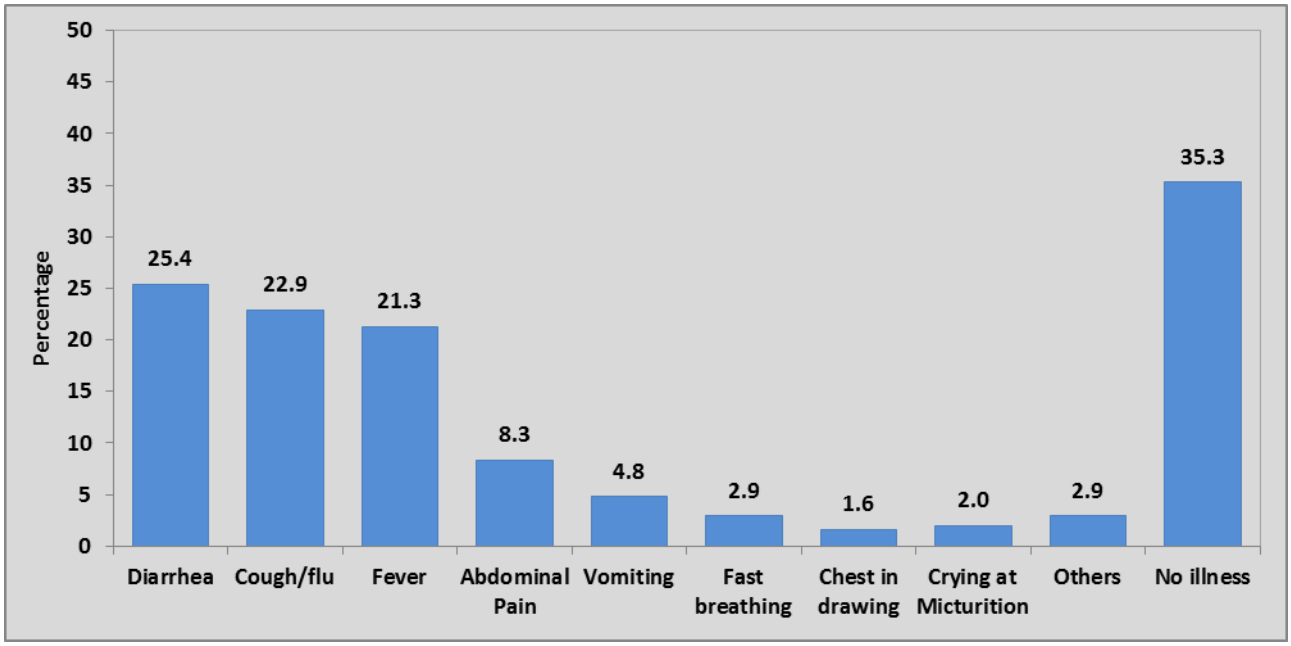
	NNS 2013		NNS 2004	
	<-2 Z score	<-3 Z score	<-2 Z score	<-3 Z score
Stunting (HAZ)	40.9 (CI 39.3-42.51)	20.9 (CI 19.73-22.21)	60.5 (CI 57.2-63.7)	32.6 (CI 29.4-35.7)
Underweight (WAZ)	25.0 (CI 23.76-26.29)	9.7 (CI 8.9-10.58)	33.7 (CI 30.6-36.8)	12.0 (CI 9.9-14.2)
Wasting (WHZ)	9.5 (CI 8.73-10.4)	4.0 (CI 3.51-4.62)	8.7 (CI 6.8-10.5)	4.7 (CI 3.2-6.1)

While reviewing the above comparison, it is important to consider the difference in the study design and sampling methodology of two surveys. The sample achieved for NNS 2004 was 950 children of 6-59 months of age and 32 clusters; whereas in 2013, the 22,000 children 0-59 months and 1,020 clusters were included in the survey and provided provincial estimates in addition to the national estimates. Comparison can be made by stratifying NNS 2013 data by selecting subset of same enumeration areas done in 2004 to assess real change in nutrition status of children under-five years of age.

3.3.5: Child Morbidity (children 0 to 59 months)

Apart from neonatal disorders, diarrhea and acute respiratory infections are other major causes of death in children under five years of age worldwide. In NNS 2013, mothers of children under-five were asked if the children had symptoms associated with acute respiratory illness (cough/flu, fast breathing, and chest in-drawing), diarrhea and associated morbidities on the day of interview or during the last two weeks preceding the survey.

Figure 3.5: Reported current morbidities in children 0 to 5 years of age



NNS 2013 findings revealed that most common symptoms of illness were flu (22.9%), fever (21.3%), and abdominal pain (8.3%) among children 0-59 months of age in Afghanistan at the day of interview.

Table 3.11: Reported current morbidities in children 0 to 5 years of age

	N	Cough /Flu	Fever	Fast Breathing	Chest in drawing	Vomiting	Abdominal pain	Diarrhea	Crying at micturition	Others
Overall	**13762**	**22.9**	**21.3**	**2.9**	**1.6**	**4.8**	**8.3**	**25.4**	**2.0**	**2.9**
Badakhshan	310	22.6	19.6	0.5	0.8	0.5	1.4	38.1	0.3	4.8
Badghis	453	22.2	16.2	0.4	0.0	2.1	11.4	29.4	2.7	0.9
Baghlan	393	17.6	11.5	0.0	0.0	1.8	2.4	24.9	0.3	0.0
Balkh	387	14.2	8.5	0.3	0.8	3.4	1.6	24.6	0.2	1.1
Bamyan	530	28.1	23.4	9.3	1.8	3.0	2.8	24.5	0.2	2.4
Diakundi	480	8.6	35.1	2.5	1.1	7.5	17.9	24.3	1.4	1.2
Farah	433	12.4	4.7	0.5	1.2	1.8	11.0	24.4	1.3	0.2
Faryab	431	26.4	22.5	2.1	0.8	7.1	9.2	37.6	0.9	2.5
Ghazni	522	26.4	19.3	2.5	2.6	8.0	15.9	32.9	7.2	1.7
Ghor	389	29.1	24.3	1.2	0.8	3.7	12.5	36.0	1.1	1.7
Helmand	344	23.5	24.1	3.5	1.7	2.2	8.0	25.7	2.0	0.4
Hirat	422	2.1	25.0	0.2	0.0	5.7	1.2	8.1	0.0	0.2
Jawzjan	327	27.7	14.7	6.8	0.2	0.8	0.2	13.8	0.0	0.2
Kabul	370	22.2	19.9	4.0	1.9	3.8	7.0	17.1	0.6	5.2
Kandahar	354	32.4	28.9	0.2	0.2	6.7	23.0	17.1	10.3	8.7
Kapisa	413	28.0	16.6	1.3	0.4	6.3	12.6	32.7	2.4	2.5
Khost	427	19.3	36.0	1.6	0.4	0.9	3.6	18.3	2.7	5.9
Kunar	471	44.2	54.1	0.6	1.7	17.1	8.6	44.2	0.1	2.9
Kunduz	458	21.8	9.9	0.8	0.2	1.1	2.0	24.5	0.1	4.8
Laghman	430	19.6	22.5	5.5	4.0	2.6	3.0	32.6	0.5	5.8
Logar	392	4.5	13.8	0.0	0.3	5.6	4.3	24.2	0.2	0.9
Nangarhar	397	28.2	13.5	2.6	0.8	4.4	5.8	25.6	0.9	5.9
Nimroz	376	21.1	51.0	3.4	1.0	15.7	38.5	49.4	11.2	2.2
Nuristan	354	37.4	46.5	15.1	2.4	22.9	42.5	32.6	16.8	4.5
Paktia	428	26.4	30.6	4.1	15.7	4.3	15.8	15.3	1.9	0.0
Paktika	278	3.9	33.6	1.0	1.0	12.9	13.6	21.3	5.9	6.4
Panjsher	508	37.7	29.7	0.4	0.7	2.8	4.5	22.5	0.2	8.5
Parwan	368	14.5	3.9	1.8		0.7	0.3	31.9	0.0	3.0
Samangan	393	34.3	20.0	10.2	2.3	2.6	2.3	37.4	0.7	1.9
Saripul	395	53.8	5.6	27.6	7.1	3.5	0.6	57.3	0.0	1.6
Takhar	441	8.8	7.9	0.4	0.5	4.4	0.1	23.5	0.2	0.8
Uruzgan	411	67.8	71.0	1.5	2.8	11.4	51.4	54.3	23.3	0.3
Wardak	365	49.2	42.9	2.5	2.2	10.6	29.2	25.6	5.3	0.2
Zabul	312	38.1	37.6	5.3	7.5	8.4	17.6	27.1	0.0	0.5

Prevalence of Diarrhoea

Diarrhoea is a major cause of mortality among children. Childhood diarrhoea has been a serious health problem in developing countries. A number of programs for its prevention through improved water and sanitation, and management through oral rehydration salts (ORS) and zinc have been initiated. For this survey, prevalence of diarrhea was determined using the WHO definition. The mother was asked to report whether her child had diarrhoea on the day of the interview or two weeks preceding the survey. Overall, 25.4% of children were reported having diarrhoea at the time of the visit and 35.5% had diarrhoea during the previous two weeks.

Prevalence of ARI

ARI is also a common cause of morbidity and death amongst children 0-59 months of age. Pneumonia is characterized by rapid breathing. Severe pneumonia is defined as rapid breathing and chest in-drawing (WHO classification). According to mothers interviewed, 2.4% of children were suffering from pneumonia on the day of the interview and 8.7% during the last two weeks. However, upon observation, 5.3% and 1.4% children were found to have signs of pneumonia and severe pneumonia respectively. Province wise details are given in Table 3.12.

Table 3.12: Reported prevalence of ARI and Diarrhoea in children 0 to 59 months of age

	N	Reported ARI (Past two weeks)		Reported ARI (Current)		ARI By Observation		Current diarrhea	Diarrhea during last two weeks
		Pneumonia (%)	(%) Severe Pneumonia	Pneumonia (%)	(%) Severe Pneumonia	Pneumonia (%)	(%) Severe Pneumonia		
Overall	**13762**	**8.7**	**5.5**	**2.4**	**0.6**	**5.3**	**1.4**	**25.4**	**35.5**
Kabul	370	5.0	7.8	2.6	1.4	2.9	1.5	17.1	24.4
Kapisa	413	7.1	7.4	1.1	0.2	1.2	0.6	32.7	43.4
Parwan	368	25.4	6.1	1.8	0.0	11.3	0.0	31.9	31.0
Wardak	365	7.1	13.2	2.5	0.0	7.6	1.9	25.6	43.7
Logar	392	0.6	7.0	0.0	0.0	0.0	0.6	24.2	33.1
Nangarhar	397	2.2	4.5	2.6	0.0	3.3	1.1	25.6	31.3
Laghman	430	10.5	0.8	5.3	0.2	5.3	3.5	32.6	41.7
Panjsher	508	7.9	4.0	0.4	0.0	1.4	1.5	22.5	54.3
Baghlan	393	41.4	2.2	0.0	0.0	38.3	0.0	24.9	23.4
Bamyan	530	18.4	12.9	7.7	1.6	6.2	0.4	24.5	42.6
Ghazni	522	2.1	4.1	1.0	1.5	1.3	1.1	32.9	33.9
Paktika	278	0.4	1.0	0.5	0.5	0.5	0.5	21.3	26.1
Paktia	428	3.3	4.7	4.1	0.0	3.0	20.9	15.3	39.9
Khost	427	3.7	1.1	1.6	0.0	5.3	2.0	18.3	19.3
Kunar	471	1.0	0.5	0.6	0.0	0.9	1.7	44.2	20.0
Nuristan	354	2.2	1.4	14.2	0.9	14.7	2.4	32.6	34.9
Badakhshan	310	7.8	1.3	0.5	0.0	2.8	1.1	38.1	58.5
Takhar	441	0.4	1.0	0.1	0.3	0.3	0.8	23.5	24.8
Kunduz	458	3.5	0.3	0.8	0.0	0.8	0.2	24.5	35.9
Samangan	393	24.9	4.3	9.5	0.7	11.6	1.4	37.4	48.4
Balkh	387	9.2	7.5	0.3	0.0	1.6	0.6	24.6	41.2
Saripul	395	24.9	8.4	20.7	6.8	20.3	0.0	57.3	58.0
Ghor	389	2.5	2.6	0.7	0.4	0.6	1.1	36.0	46.7
Daykundi	480	21.5	1.8	2.5	0.0	6.4	2.7	24.3	56.2
Uruzgan	411	12.7	26.7	1.0	0.5	3.5	1.6	54.3	56.9
Zabul	312	5.2	3.8	3.0	2.2	6.5	5.7	27.1	47.1
Kandahar	354	2.5	1.0	0.2	0.0	1.9	0.3	17.1	18.0
Jawzjan	327	7.7	0.5	6.6	0.2	6.4	0.2	13.8	16.7
Faryab	431	14.0	3.1	2.1	0.0	5.7	1.0	37.6	44.2
Helmand	344	9.2	6.3	3.5	0.0	5.3	1.8	25.7	38.6
Badghis	453	11.8	7.4	0.4	0.0	15.7	0.5	29.4	50.5
Hirat	422	11.1	9.1	0.2	0.0	4.7	0.2	8.1	44.4
Farah	433	1.9	6.8	0.5	0.0	2.8	1.1	24.4	19.3
Nimroz	376	5.0	13.5	3.1	0.3	4.6	1.2	49.4	57.2

Table 3.13: Association of morbidities with nutrition indicators

	N	Stunting (<-2SD)	95% CI	Normal (≥2SD)	95% CI	p-value
Diarrhea in last two weeks						
Yes	4770	38.8	36.4 - 41.2	61.2	58.8 - 63.6	0.026
No	7142	36.1	34.1 - 38.2	63.9	61.8 - 65.9	
ARI last two weeks						
Yes	1854	39.9	36.7 - 43.1	60.1	56.9 - 63.3	0.058
No	10473	36.8	34.9 - 38.8	63.2	61.2 - 65.1	
	N	**Wasting (<-2SD)**	**95% CI**	**Normal (≥2SD)**	**95% CI**	**p-value**
Diarrhea in last two weeks						
Yes	4886	12.8	11.3 - 14.4	87.2	85.6 - 88.7	0.512
No	7268	13.3	12.1 - 14.7	86.7	85.3 - 87.9	
ARI last two weeks						
Yes	1874	13.5	11.2 - 16.2	86.5	83.8 - 88.8	0.771
No	10697	13.1	11.9 - 14.4	86.9	85.6 - 88.1	
	N	**Underweight (<-2SD)**	**95% CI**	**Normal (≥2SD)**	**95% CI**	**p-value**
Diarrhea in last two weeks						
Yes	5104	28.0	30.3 - 69.7	72.0	69.7 - 74.2	0.040
No	7628	25.5	27.2 - 72.8	74.5	72.8 - 76.2	
ARI last two weeks						
Yes	1976	28.2	31.5 - 68.5	71.8	68.5 - 74.9	0.227
No	11195	26.2	27.9 - 72.1	73.8	72.1 - 75.4	

There was positive association of reported diarrhea during last two weeks with stunting and underweight while there was no association with wasting. Additionally no significant association of ARI was observed with malnutrition.

Section 4: Infant and young child feeding practices (Children 0-23 months)

Research shows that infant and young child feeding (IYCF) practices directly affect the nutritional status of children under two years and impact child growth and survival (9). Improving IYCF in Afghanistan for children 0–23 months is indispensable in order to achieve better nutrition, health and development of children. Exclusive breastfeeding for six months has many benefits for the infant and mother (10). In NNS 2013, the mother of children <24 months of age were asked about the four main components (breastfeeding initiation, exclusive breastfeeding, continued breastfeeding up to 2 years and introduction of complementary foods) of the neonate, infant and young child feeding practices. Food diversification and the consumption of different foods was also analyzed and added as core indicators for this survey. Findings are elaborated as below:

Table 4.1: Sex and age distribution of children aged 0-23 months

	n=7978	%
Sex		
Male	4171	51.5
Female	3807	48.5
Age (month)		
< 6 months	2387	30.3
6-11 months	2280	27.3
12-23 months	3311	41.4

Information was collected from mothers of infants of under 24 months. Around 7978 infants of target age were identified across Afghanistan. Of these, 51.5% were male and 48.5% female, likewise 30.3% infants belonged to <6months, 27.3% were 6-11 months and 41.4% were between 12-23 months of age.

4.1: Initiation of prelacteal feed, colostrum & breastfeeding

Early initiation of breastfeeding is important for both mother and child. The first liquid secreted by the breast, known as colostrum, is produced during the first few days after delivery. Colostrum is highly nutritious and contains antibodies that provide natural immunity to the infant. It is recommended that children be fed colostrum immediately after birth (within one hour).

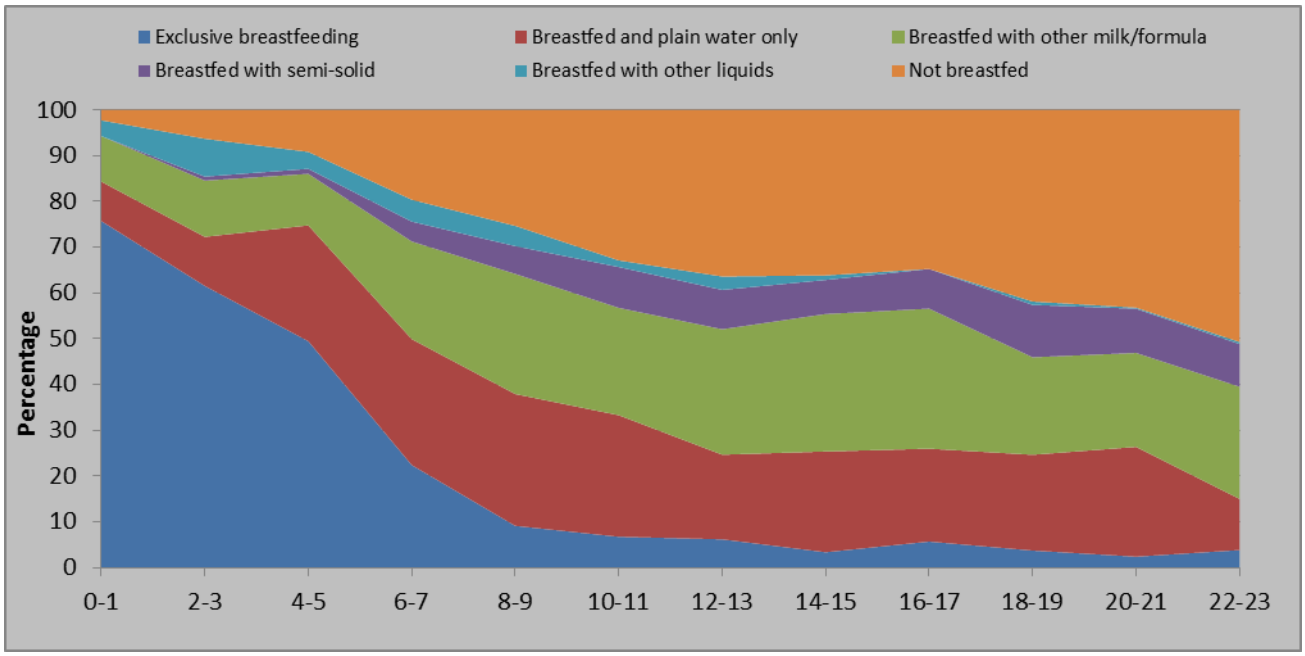
The below mentioned table shows Percentage of children 0-23 months who were ever breastfed, percentage who were breastfed within one hour of birth and within one day of birth and percentage who received a prelacteal feed and percentage who received colostrum

Table 4.2: Breast feeding practices

	N	Percentage who were ever breastfed	Percentage who were breastfed within one hour of birth	Percentage who were breastfed within one day of birth	Percentage who received a prelacteal feed	Percentage who received colostrum
Overall	7614	98.0	69.4	88.9	82.7	87.5
Age groups						
0-11 months	4343	98.3	69.2	89.0	82.2	87.8
12-23 months	3271	97.8	69.6	88.8	83.5	87.1
Delivery assistance						
Skilled	3288	98.0	70.0	89.5	84.9	88.1
Unskilled	4013	98.2	68.7	88.4	81.0	86.6
Place of delivery						
Facility	2972	97.8	70.2	89.2	85.6	89.0
Home	4300	98.3	68.5	88.6	80.8	86.2
Mother's education						
Illiterate	6421	98.0	69.3	88.7	82.5	86.8
Pre/some schooling	807	98.4	68.8	91.6	85.4	89.8
High school & above	178	97.6	69.2	85.7	82.1	91.7
Wealth Index (quintiles)						
Poorest	1575	98.5	67.3	89.3	83.4	85.2
Poor	1497	98.0	70.1	87.5	78.8	86.5
Middle	1576	98.2	67.0	88.6	80.2	86.3
Rich	1533	97.7	70.5	89.9	80.7	86.8
Richest	1425	98.0	70.6	89.0	87.2	90.3

Almost all (98.0%) newborn were breastfed as reported by mothers. However 69.4% of infants were breast fed for first time within one hour of birth while 89.9% of newborns started breastfeeding within one day after birth. There was no notable difference observed for initiation of breast feeding with delivery assistance, place of delivery and mother education (table 4.2).

Figure 4.1: Infant feeding practices by age



Despite the fact that 88.9% were breastfed during first day of life, half of the infants (52.4%) were also fed with pre-lacteal feeds. Details are given in table 4.2.

NNS 2013 findings revealed that 87.5% infants were fed colostrum across Afghanistan and similar pattern of colostrum feeding was reported among different background characteristics. Details are given in table 4.2.

4.1.2: Exclusive Breastfeed practices

The survey finding revealed that more than half (58.4%) of the infants aged 0-5 months were exclusive breastfed, however 76.3% infants in same age group were predominantly breastfed. Around 59.9% infants 0-23 months of age were breastfed currently with solid, semi-solid or soft foods and 55.2% were appropriately breastfed. Details are given in table 4.3.

Table 4.3: Percentage of children 0-23 months according to breastfeeding status

	0-5 months			6-23 months		0-23 months	
	N	Percent	Percent	N	Percent currently	N	Percent
Overall	**2185**	**58.4**	**76.3**	**5429**	**59.9**	**7614**	**55.2**
Gender							
Male	1130	56.9	72.8	2851	60.2	3981	55.4
Female	1055	60.2	80.3	2578	59.6	3633	55.1
Mother's education							
Illiterate	1831	58.5	76.4	4590	58.5	6421	55.7
Pre/Some school	238	59.3	81.2	569	71.0	807	55.2
High school &	56	40.2	58.8	122	64.5	178	53.4
Wealth Index (quintiles)							
Poorest	460	66.2	80.1	1115	65.6	1575	62.9
Poor	407	64.2	80.4	1090	59.4	1497	57.1
Middle	463	62.1	81.1	1113	52.6	1576	51.9
Rich	459	54.6	74.3	1074	53.4	1533	54.5
Richest	393	52.0	70.9	1032	65.5	1425	53.0

4.1.3: Complementary feeding practices

Introduction of complementary foods (solid, semi-solid or soft foods) to infants aged 6-8 months were also assessed in the survey.

The data showed that 41.3% infants 6-8 months of age were introduced solid, semi-solid and soft foods. However, there was no gender difference in introduction of complementary foods observed. Illiterate mothers (29.3%) were less likely to introduce complementary foods to their infants aged 6-8 months as compared to mothers with some level of schooling (34.5%) or high level of schooling (55.2%). Children from richest households (37.9%) were more likely to start receiving complementary foods at an appropriate age than their counterparts belonging to lower wealth quintiles. The findings of the survey corroborated the close relationship between timely introduction of complementary feeding and income and education levels.

Table 4.4: Introduction of solid, semi-solid or soft foods

	Currently breastfed children (age 6-8 months)		All children (age 6-8 months)	
	Percent receiving solid, semi-solid or soft food	N	Percent receiving solid, semi-solid or soft food	N
Overall	**30.9**	**1194**	**41.3**	**1194**
Gender				
Male	31.0	636	40.9	636
Female	30.9	558	41.8	558
Mother's education				
Illiterate	29.3	1002	39.3	1002
Pre/some school	34.5	124	53.4	124
High school &	55.2	34	57.9	34
Wealth				
Poorest	36.0	225	41.8	225
Poor	29.9	257	40.4	257
Middle	24.3	244	30.4	244
Rich	21.9	230	37.3	230
Richest	37.9	238	49.8	238

Table 4.5: Percentage of children age 6-23 months who received 4 or more food groups

	Minimum dietary diversity (Children age 6-23 months)	
	Percent receiving 4 or more food groups	N
Overall	**27.6**	**5429**
Gender		
Male	26.1	2851
Female	29.2	2578
Mother's education		
Illiterate	26.4	4590
Pre/Some school years	32.3	569
High school & above	34.3	122
Wealth Index (quintiles)		
Poorest	16.9	1115
Poor	19.0	1090
Middle	23.8	1113
Rich	31.1	1074
Richest	37.4	1032

* World Food Program (WFP) food groups were used for analysis. However these food groups do not match with WHO IYCF guidelines. As a result, food group findings of NNS 2013 are not exactly comparable with WHO IYCF food groups and findings from other studies.

Table 4.5 shows the percentage of children aged 6-23 months who received foods from 4 or more food groups during last 24 hours preceding the survey. About 29.2% of the female children received foods from 4 or more food groups as compared with 26.1% of male children. Children of illiterate mothers (26.4%) were less likely to receive foods from 4 or more food groups as compared to children of mothers with higher education (34.3%), similar pattern was observed among poorest (16.9%) and richest households (37.4%).

Table 4.6: Minimum meal frequency

[Percentage of children aged 6-23 months who received solid, semi-solid or soft foods the minimum number of times or more during the previous day, according to breastfeeding status]

	Currently breastfeeding (age 6-23 months)		Currently not breastfeeding (age 6-23 months)			All children (age 6-23 months)	
	Percent receiving solid, semi-solid or soft foods the minimum number of times	N	Percent receiving at least 2 milk feeds	Percent receiving solid, semi-solid or soft foods or milk feeds 4 time or more	N	Percent with minimum meal frequency	N
Overall	**43.9**	**358**	**16**	**71.6**	**170**	**52.1**	**542**
Gender							
Male	43.3	187	17	72.3	904	52.2	285
Female	44.4	170	14.8	70.8	802	51.9	257
Mother's education							
Illiterate	43.3	303	17.7	70.7	143	51	459
Pre/some	50.1	384	15.9	77.8	176	60	569
High school &	39.1	76	3	61.2	44	45.2	122
Wealth Index (quintiles)							
Poorest	42.7	798	21.1	77.6	290	50.5	111
Poor	42.8	751	17.1	68.9	311	49.3	109
Middle	39.3	728	11.4	63.4	359	46.3	111
Rich	41.6	694	21.3	72	349	50.8	107
Richest	49.5	614	13.6	74.1	394	58.1	103

Table 4.6 shows that overall 43.6% children received solid, semi-solid or soft foods the minimum number of times in the preceding day and night of the survey but no difference was observed among male and female children aged 6-23 months.

Table 4.7: Minimum acceptable diet

[Percentage of children age 6-23 months who received solid, semi-solid or soft foods the minimum number of times or more & minimum dietary diversity during the previous day, according to breastfeeding status]

	Currently breastfeeding (age 6-23 months) Minimum acceptable diet		All children (age 6-23 months) Minimum acceptable diet	
	%	N	%	N
Overall	16.3	3587	12.2	5429
Gender				
Male	14.5	1879	11.0	2851
Female	18.0	1708	13.5	2578
Mother's education				
Illiterate	14.9	3033	11.6	4590
Preschool / Some school years	20.7	384	14.5	569
High school & above	29.6	76	19.3	122
Wealth Index (quintiles)				
Poorest	10.0	798	8.2	1115
Poor	11.7	751	8.9	1090
Middle	12.4	728	9.0	1113
Rich	16.5	694	13.0	1074
Richest	25.0	614	17.3	1032

Table 4.7 shows that only 16.3% children aged 6-23 months received minimum acceptable diet. Children of illiterate mothers (14.9%) and children from poorest households (10.0%) were less likely to receive a minimum acceptable diet as compared to mothers with higher education (29.6%) and children from richest households (25.0%).

4.2: Association of stunting with IYCF indicators

Table 4.8: Association of stunting (<-2SD) with IYCF indicators

	N	Stunting (<-2SD)	95% CI	Normal (≥2SD)	95% CI	p-value
Exclusive breast feeding(0-5m)						
Yes	1210	24.7	21.3 - 28.5	75.3	71.5 - 78.7	0.738
No	742	23.8	19.9 - 28.2	76.2	71.8 - 80.1	
Predominantly breastfed(0-5m)						
Yes	1534	25.0	22 - 28.1	75.0	71.9 - 78	0.440
No	**418**	22.3	16.9 - 28.7	77.7	71.3 - 83.1	
Minimum dietary diversity(6-23m)						
Yes	**1305**	35.7	31.2 - 40.4	64.3	59.6 - 68.8	0.122
No	3643	39.7	37.3 - 42.1	60.3	57.9 - 62.7	
Minimum meal frequency (6-23m)						
Yes	2449	39.2	36.3 - 42.2	60.8	57.8 - 63.7	0.443
No	2499	37.8	35 - 40.7	62.2	59.3 - 65	
Minimum Acceptable diet (6-23m)						
Yes	**543**	34.1	28.7 - 40	65.9	60 - 71.3	0.088
No	4405	39.2	36.9 - 41.5	60.8	58.5 - 63.1	

Association of stunting (<-2SD) was not observed to be significant with IYCF indicators i.e. exclusive breastfeeding (0-5m) P-value 0.738, Minimum dietary diversity (6-23m) P-value0.122, and minimum acceptable diet p-value 0.088.

Table 4.9: Association of Wasting (<-2SD) with IYCF indicators

	N	Wasting (<-2SD)	95% CI	Normal (≥2SD)	95% CI	p-value
Exclusive breast feeding(0-5m)						
Yes	1189	14.1	10.9 - 18.2	85.9	81.8 - 89.1	0.865
No	732	14.6	11.5 - 18.2	85.4	81.8 - 88.5	
Predominantly breastfed (0-5m)						
Yes	1509	13.8	11 - 17.1	86.2	82.9 - 89	0.404
No	412	16.1	12 - 21.2	83.9	78.8 - 88	
Minimum dietary diversity(6-23m)						
Yes	1330	10.3	8.2 - 12.8	89.7	87.2 - 91.8	0.012
No	3734	13.9	12.2 - 15.9	86.1	84.1 - 87.8	
Minimum meal frequency (6-23m)						
Yes	2493	10.9	9.2 - 12.9	89.1	87.1 - 90.8	0.001
No	2571	15.2	13.2 - 17.4	84.8	82.6 - 86.8	
Minimum Acceptable diet (6-23m)						
Yes	546	8.7	6.2 - 12.2	91.3	87.8 - 93.8	0.014
No	4518	13.5	11.9 - 15.3	86.5	84.7 - 88.1	

However the association of wasting (<-2SD) with some IYCF indicators was significant excluding exclusive breastfeeding (P-value 0.865)

Table 4.10: Association of underweight (<-2SD) with IYCF indicators

	N	Under weight (<-2SD)	95% CI	Normal (≥2SD)	95% CI	p-value
Exclusive breast feeding(0-5m)						
Yes	1273	21.3	18.2 - 24.6	78.7	75.4 - 81.8	0.665
No	800	22.3	18.6 - 26.5	77.7	73.5 - 81.4	
Predominantly breastfed (0-5m)						
Yes	1633	21.3	18.6 - 24.3	78.7	75.7 - 81.4	0.561
No	440	23.1	18 - 29.2	76.9	70.8 - 82	
Minimum dietary diversity(6-23m)						
Yes	1366	23.2	19.9 - 26.8	76.8	73.2 - 80.1	0.039
No	3868	27.5	25.4 - 29.7	72.5	70.3 - 74.6	
Minimum meal frequency (6-23m)						
Yes	2544	24.2	21.7 - 26.7	75.8	73.3 - 78.3	0.007
No	2690	28.7	26.2 - 31.2	71.3	68.8 - 73.8	
Minimum Acceptable diet (6-23m)						
Yes	558	21.6	16.9 - 27.1	78.4	72.9 - 83.1	0.058
No	4676	27.0	25.1 - 28.9	73.0	71.1 - 74.9	

Association of underweight (<-2SD) with exclusive breastfeeding (0-5 months) and predominantly breastfed (0-5 months) was not significant. However it was significant for other IYCF indicators i.e. minimum dietary diversity (6-23 months) P-value 0.039 and minimum meal frequency (6-23 months) P-value 0.007.

Section 5: Nutrition status of other target groups

Apart from children aged 0- 59 months the nutrition status was also assessed for adolescent girls of 10-19 years of age, women of reproductive age (15-49 years of age) and elderly of above 50 years. Findings are presented below by target group:

5.1: Body Mass Index – Adolescent girls (10-19 years of age)

Height and weight measurements of adolescent girls were conducted from all selected households of NNS 2013. WHO Anthro plus was used for calculating BMI Z-Scores. Overall, 5805 adolescent girls of 10-19 years were included in the analysis and 34 cases were excluded from analysis due to flags.

Table 5.1 shows the nutrition status of adolescent girls (10-19 years of age). Overall 8.0% (95% CI 6.8-9.3) of adolescent girls were thin (<-2SD). Out of these 1.5% (95% CI 10.1-13.2) were severely thin (<-3SD). Higher number (10.2%; 95% CI 8.6-12.1) of adolescent girls aged 10-14 years were thin as compared to ones aged 15-19 years (4.1%; 95% CI 3.1–4.1). No clear associations of thinness were observed with education status of adolescent girls and household wealth index quintiles.

Provincial variation in the prevalence of thinness (<-2SD) ranged from 0.4% in Kandahar to 20.3% in Badakhshan province. Prevalence of thinness among adolescent girls in 19 provinces (Kandahar, Logar, Helmand, Farah, Parwan, Zabul, Ghazni, Urozgan, Balkh, Laghman, Kabul, Faryab, Daykundi, Kapisa, Baghlan, Kunduz, Kunar, Nimroz, Takhar) was equal or less than the national estimates (8.0%).

Table 5.1: Anthropometry of Adolescent girls 10-19 years of age

	N	Underweight				Overweight				Mean Z-Score (SD)
		Thinness (<-2 SD)	95% CI	Severe thinness (<-3 SD)	95% CI	Over weight (>1 SD)	95% CI	Obesity (>2 SD)	95% CI	
Overall	5805	8.0	6.8 - 9.3	1.5	1.1 - 1.9	11.6	2.1- 3.5	2.7	2.09 - 3.5	-0.3 (1.2)
Age										
10-14 years	3758	10.2	8.6 - 12.1	1.8	1.4 - 2.5	12.4	2.4 - 4.4	3.3	2.44 - 4.4	-0.4 (1.3)
15-19 years	2047	4.1	3.1 - 5.3	0.9	0.5 - 1.4	10.2	1.05 - 2.7	1.7	1.05 - 2.7	-0.1 (1)
Educational status										
Illiterate	2712	5.9	4.8 - 7.3	1.3	0.9 - 1.9	15.0	3.15 - 6	4.3	3.15 - 6	-0.1 (1.2)
Pre/Some schooling	2976	9.6	8 - 11.5	1.7	1.2 - 2.3	8.8	1.0 - 2.2	1.5	0.97 - 2.2	-0.5 (1.2)
High school & above	70	1.3	0.2 - 6.4	0.2	0.0 - 1.7	3.9	0.4 - 9.3	2.1	0.44 - 9.3	-0.3 (0.9)
Wealth index quintile										
Poorest	1026	8.5	6.3 - 11.3	2.2	1.3 - 3.7	7.2	0.7 - 3.1	1.5	0.7 - 3.1	-0.5 (1.1)
Second	1095	8.7	6.8 - 11.2	1.7	1.0 - 3.1	11.1	1.3 - 3.6	2.2	1.29 - 3.6	-0.4 (1.2)
Middle	1193	6.6	4.9 - 9	1.6	1.0 - 2.6	12.3	2.0 - 5.2	3.2	1.97 - 5.2	-0.3 (1.2)
Fourth	1185	9.0	6.5 - 12.4	1.8	1.1 - 2.8	10.2	1.0 - 2.7	1.7	1.03 - 2.7	-0.4 (1.2)
Richest	1292	7.4	5.5 - 9.8	0.8	0.4 - 1.7	14.3	2.6 - 5.8	3.9	2.63 - 5.8	-0.2 (1.2)

Overall 11.6% (95% CI 10.1-13.2) adolescent girls were overweight (>+1SD) and only 2.7% (95% CI 2.0-3.5) were obese (>+2SD). Adolescent girls with no education (15.0%; 95% CI 12.8-17.5) were more likely to be overweight (>+1SD) as compared to those who have completed high school and above (3.9%; 95% CI 1.3-10.6).

Provincial variation in the prevalence of overweight (>+1SD) ranged from 3.3% (95% 1.0-8.5) in Samangan to 42.9% (95% CI 32.1-54.3) in Helmand province. Prevalence of overweight among adolescent girls in 25 provinces (Samangan, Badakhshan, Nuristan, Panjsher, Kapisa, Ghazni, Parwan, Takhar, Daykundi, Faryab, Nangarhar, Jawzjan, Hirat, Paktika, Saripul, Kunar, Nimroz,

Kunduz, Baghlan, Ghor, Balkh, Logar, Zabul, Badghis, Bamyan) were equal or less than national estimates of 11.6% and higher in other provinces.

Table 5.2: Percentage of adolescent girls (10-19 yeas) by nutritional status according to three anthropometric indices: BMI for age by province

	N	Underweight				Overweight				Mean Z-Score (SD)
		Thinness (<-2SD)	95% CI	Severe thinness (<-3SD)	95% CI	Over Weight (>1 SD)	95% CI	Obesity (>2 SD)	95% CI	
Total	5805	8.0	6.84 - 9.3	1.5	1.14 - 1.9	11.6	10.1 - 13.2	2.7	2.09 - 3.5	-0.3 (1.2)
Province										
Kabul	101	5.8	2.69 - 12.2	0.0	--	14.0	7.34 - 25.1	4.1	1.77 - 9.3	-0.2 (1.1)
Kapisa	297	6.8	3.91 - 11.6	1.4	0.47 - 4.2	4.2	2.12 - 8.3	1.0	0.27 - 3.3	-0.5 (1)
Parwan	192	3.1	1.14 - 8.4	0.0	--	5.2	2.71 - 9.7	0.6	0.09 - 3.9	-0.4 (0.9)
Wardak	135	8.7	4.58 - 15.9	4.9	1.86 - 12.2	19.7	14.13 - 26.7	2.6	0.89 - 7.3	-0.1 (1.3)
Logar	199	2.4	0.96 - 5.7	0.0	--	10.8	6.95 - 16.5	3.0	1.46 - 6.2	-0.1 (1)
Nangarhar	222	19.5	11.57-30.8	5.1	2.65 - 9.5	5.9	3.46 - 9.9	0.3	0.05 - 2.3	-0.7 (1.3)
Laghman	141	5.6	2.87 - 10.6	0.8	0.11 - 5.7	15.2	9.25 - 23.9	0.6	0.08 - 4.2	-0.2 (1)
Panjsher	105	13.5	7.19 - 23.8	0.7	0.11 - 4.8	3.8	1.17 - 11.7	0.0	--	-0.7 (1.1)
Baghlan	147	6.9	3.21 - 14.1	2.4	0.78 - 6.9	8.9	5.39 - 14.3	2.9	0.99 - 8.4	-0.4 (1.2)
Bamyan	161	8.7	5.21 - 14.2	2.1	0.79 - 5.6	11.2	7.08 - 17.2	0.3	0.04 - 2.2	-0.6 (1.2)
Ghazni	137	3.5	1.54 - 7.8	0.0	--	5.2	2.06 - 12.4	0.6	0.08 - 3.7	-0.3 (0.9)
Paktika	140	0.0	--	0.0	--	7.5	3.67 - 14.6	1.0	0.15 - 6.1	0.2 (0.5)
Paktia	111	19.2	11.29-30.8	10.2	5.46 - 18.2	12.5	7.15 - 20.9	1.3	0.33 - 5	-0.4 (1.6)
Khost	75	8.5	3.59 - 18.9	1.6	0.23 - 9.9	13.1	7.56 - 21.7	2.8	0.91 - 8.5	-0.2 (1.3)
Kunar	188	7.1	3.92 - 12.6	1.0	0.21 - 4.7	7.8	4.44 - 13.4	1.9	0.63 - 5.7	-0.3 (1.1)
Nuristan	144	14.2	9.54 - 20.7	5.1	2.45 - 10.3	3.8	1.54 - 9.1	2.4	0.67 - 8.1	-0.8 (1.2)
Badakhshan	166	20.3	15.09-26.7	4.1	1.65 - 9.8	3.5	1.61 - 7.4	0.7	0.1 - 4.5	-1.1 (1.1)
Takhar	258	7.6	4.76 - 12	1.0	0.32 - 3	5.4	3.11 - 9.1	0.4	0.05 - 2.6	-0.7 (1)
Kunduz	178	7.0	3.97 - 12	0.5	0.07 - 3.4	8.7	5.73 - 12.9	1.6	0.59 - 4.3	-0.5 (1.1)
Samangan	150	10.4	5.6 - 18.6	3.3	1.22 - 8.7	3.1	1.06 - 8.5	1.1	0.26 - 4.6	-0.8 (1.1)
Balkh	269	4.9	2.76 - 8.5	1.6	0.68 - 3.7	9.1	6.4 - 12.7	0.9	0.32 - 2.8	-0.5 (1)
Saripul	167	9.1	5.81 - 14.1	0.0	--	7.5	4.7 - 11.9	0.6	0.09 - 4.3	-0.6 (1.1)
Ghor	201	8.4	5.3 - 13.1	2.3	0.74 - 6.8	9.0	5.68 - 14	1.5	0.41 - 5.2	-0.5 (1.1)
Daykundi	123	6.5	2.8 - 14.2	0.0	--	5.5	2.6 - 11.1	0.0	--	-0.4 (0.9)
Urozgan	197	3.6	1.32 - 9.3	1.2	0.31 - 4.8	16.9	12.4 - 22.6	2.4	0.91 - 6.4	0 (1.1)
Zabul	98	3.4	1.11 - 10.2	1.3	0.18 - 8.6	11.0	6.0 - 19.3	0.0	--	0.3 (0.9)
Kandahar	167	0.4	0.09 - 1.7	0.4	0.09 - 1.7	37.9	28.36 - 48.5	13.2	8.14 - 20.6	0.7 (1.1)
Jawzjan	182	11.9	8.55 - 16.4	2.5	0.98 - 6.4	6.5	3.51 - 11.7	1.2	0.31 - 4.9	-0.8 (1.1)
Faryab	214	6.4	3.66 - 11.1	0.5	0.1 - 2.3	5.6	2.62 - 11.4	2.1	0.72 - 5.9	-0.6 (1.1)
Helmand	184	3.0	1.04 - 8.6	1.3	0.33 - 4.9	42.9	32.16 - 54.3	14.4	8.61 - 23	0.7 (1.4)
Badghis	120	10.5	4.07 - 24.4	3.4	1.16 - 9.7	11.2	6.37 - 18.9	2.7	0.93 - 7.8	-0.4 (1.3)
Hirat	191	11.3	7.22 - 17.3	0.0	--	6.5	4.16 - 10.0	1.3	0.42 - 3.9	-0.5 (1.1)
Farah	236	3.1	1.42 - 6.8	0.9	0.23 - 3.3	25.4	16.63 - 36.7	5.8	2.99 - 10.8	0.3 (1.2)
Nimroz	209	7.4	4.77 - 11.4	2.2	0.82 - 5.6	8.1	5.05 - 12.8	1.6	0.61 - 4.0	-0.6 (1.1)

5.2: Nutrition status of women of reproductive age

According to table 5.3, overall mean BMI among women aged 15-49 was 23.4 kg/m^2, with no notable differences across wealth quintiles. However, mean BMI was higher (77.4%) in poorest wealth quintile. Overall 9.2% (95% CI 8.1-10.3) of women of reproductive age were thin or undernourished (BMI <18.5 kg/m^2). The proportions of mild thinness (17.0-18.4 kg/m^2) and

moderate and severe thinness (<17 kg/m^2) were 6.7% (95% CI 5.9-7.6) and 2.4% (95% CI 2.0-2.9) respectively. It was also observed that thinness decreased with increasing age, i.e., for aged women of reproductive age (15-19 year) thinness was 17.1% (95% CI 12.8-22.5), for 20-24 years of age it was 14.5% (95% CI 12.1-17.4) and for age range of 45-49 years it dropped to 6.4% (95% CI 4.6-8.8).

Table 5.3: Body Mass Index (BMI); WRA (15-49 years of age, non-pregnant)

			Normal		Thinness women of reproductive age					
	N	Mean (SD) BMI	18.5-24.9 (normal)	95% CI	<18.5 (total thin)	95% CI	17.0-18.4 (mildly thin)	95% CI	<17 (moderate & severe thin)	95% CI
Overall	11124	23.4 (4.4)	61.9	60 - 63.7	9.2	8.1 - 10.3	6.7	5.9 - 7.6	2.4	2 - 2.9
Age										
15-19	424	21.5 (3.6)	68.8	62.5 - 74.5	17.1	12.8 - 22.5	14.4	10.3 - 19.6	2.7	1.4 - 5.2
20-24	1980	22.1 (3.8)	68.6	65 - 72	14.5	12.1 - 17.4	10.5	8.4 – 13	4.0	3 - 5.4
25-29	2727	23.1 (4.1)	65.3	62.1 - 68.3	9.0	7.6 - 10.7	7.1	5.9 - 8.6	1.9	1.4 - 2.6
30-34	2134	23.6 (4.3)	61.5	57.8 - 65.2	8.0	6.3 - 10	5.4	4 - 7.2	2.5	1.8 - 3.6
35-39	2005	24.2 (4.5)	55.0	51.6 - 58.4	6.9	5.6 - 8.6	5.0	3.9 - 6.3	1.9	1.2 - 3.1
40-44	1182	24.8 (5.0)	55.2	50.8 - 59.6	5.1	3.8 - 6.9	3.3	2.4 - 4.6	1.8	1 - 3.3
45-49	672	24.2 (4.7)	57.1	51.6 - 62.5	6.4	4.6 - 8.8	4.4	3 - 6.4	2.0	1.1 - 3.7
Education										
Illiterate	9698	23.2 (4.2)	63.3	61.4 - 65.2	9.8	8.7 - 11.1	7.1	6.2 – 8	2.7	2.3 - 3.2
Pre/Some schooling	1097	24.4 (4.9)	55.9	51 - 60.6	6.3	4.6 - 8.6	5.4	3.8 - 7.6	0.9	0.4 - 1.7
High school & above	260	25.2 (5.1)	48.4	40.7 - 56.1	5.2	2.7 - 9.5	3.8	1.7 - 8.2	1.3	0.5 - 3.6
Wealth quintile										
Lowest	2289	21.8 (3.3)	74.4	71.4 - 77.2	13.1	10.9 - 15.7	9.6	7.8 - 11.6	3.5	2.7 - 4.6
Second	2256	22.5 (3.6)	69.0	66.1 - 71.7	11.3	9.3 - 13.5	8.4	6.8 - 10.3	2.9	2 - 4.1
Middle	2312	23.0 (4.1)	64.4	61.5 - 67.2	9.6	7.9 - 11.6	6.8	5.3 - 8.6	2.8	2 - 3.8
Fourth	2156	23.1 (4.0)	64.5	61.3 - 67.5	10.2	8.3 - 12.5	7.5	6 - 9.3	2.7	1.8 - 3.8
Highest	2102	25.2 (5.0)	48.2	44.8 - 51.6	5.1	4 - 6.5	3.8	2.9 – 5	1.3	0.9 - 1.9

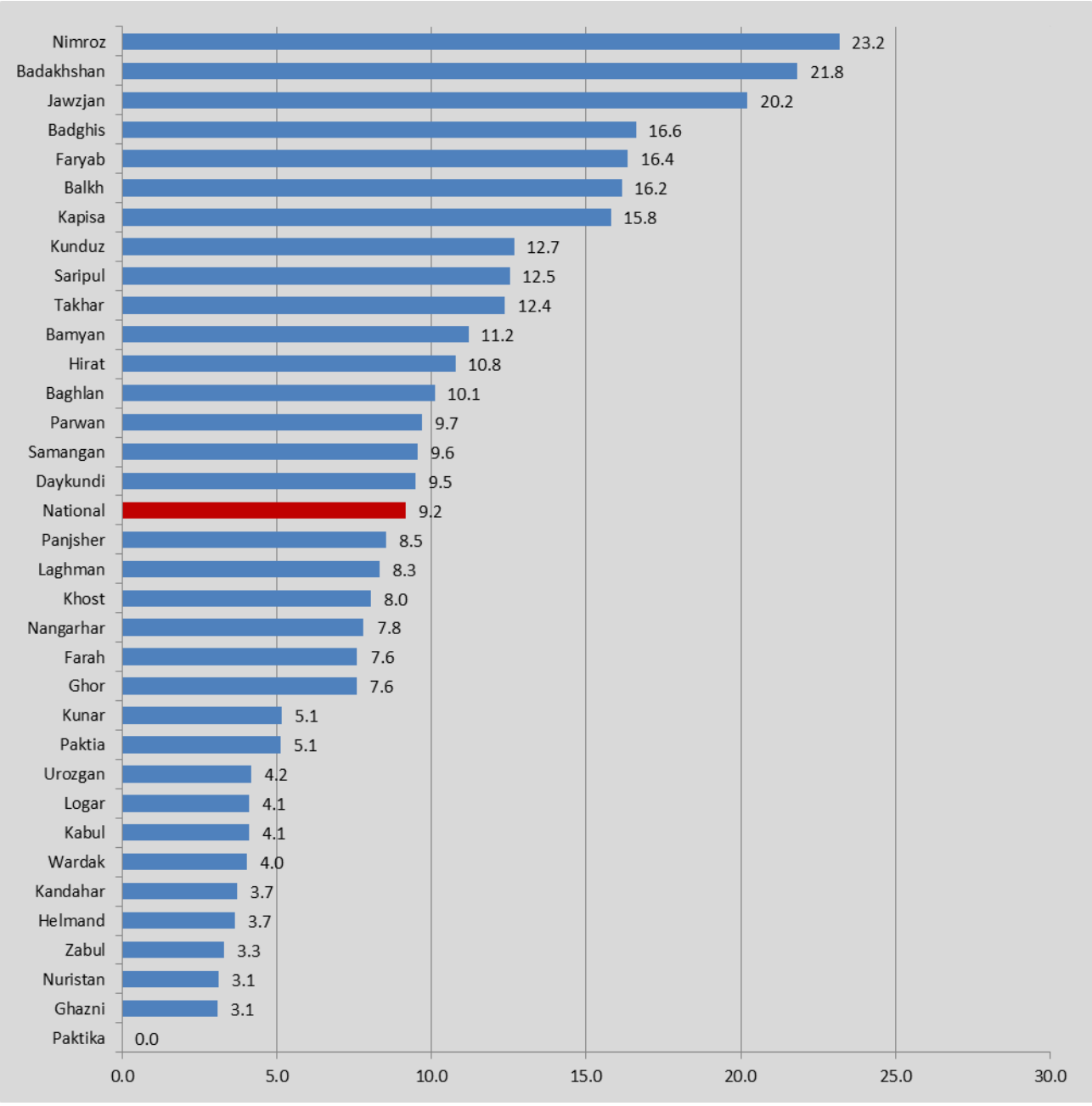
		Overweight/obese					
	Number of women	≥25.0 (overweight or obese)	95% CI	25.0-29.9 (overweight)	95% CI	≥30.0 (obese)	95% CI
Overall	11124	29.0	26.9 - 31.1	20.7	19.1 - 22.2	8.3	7.1 - 9.5
Age							
15-19	424	14.0	9.9 - 19.5	8.7	5.6 – 13	5.4	2.6 - 10.6
20-24	1980	16.9	14.1 - 20.1	12.8	10.6 - 15.2	4.1	2.5 - 6.6
25-29	2727	25.7	22.5 - 29.3	19.9	16.9 – 23	5.9	4.4 - 7.7
30-34	2134	30.5	26.8 - 34.4	22.7	19.5 – 26	7.8	5.9 - 10.2
35-39	2005	38.0	34.5 - 41.7	26.8	23.7 - 29.9	11.3	9 - 13.9
40-44	1182	39.7	35.3 - 44.3	24.1	20.4 – 28	15.6	12.6 - 19.1
45-49	672	36.5	31.2 - 42.1	25.2	21.1 - 29.9	11.2	7.8 - 15.9
Education							
Illiterate	9698	26.9	25 - 28.9	19.7	18.2 - 21.2	7.2	6.2 - 8.3
Pre/Some school years	1097	37.8	32.9 - 43	23.4	19.7 - 27.4	14.4	10.6 - 19.1
High school & above	260	46.5	38.3 - 54.9	32.5	25.7 - 40.1	14.0	8.8 - 21.6
Wealth quintile							
Lowest	2289	12.5	10.5 - 14.8	10.1	8.3 - 12.2	2.4	1.8 - 3.3
Second	2256	19.8	17.6 - 22.1	15.8	13.9 - 17.8	4.0	3 - 5.2

Middle	2312	26.0	23.6 - 28.5	21.0	18.8 - 23.4	5.0	3.9 - 6.3
Fourth	2156	25.4	22.5 - 28.4	18.4	16.2 - 20.8	6.9	4.9 - 9.7
Highest	2102	46.7	43 - 50.5	30.1	26.9 - 33.3	16.6	13.9 - 19.5

Overall 29.0% (95% CI 26.9-31.1) of women of reproductive age were overweight (BMI 25-29 kg/m^2) and 8.3% (95% CI 7.1-9.5) were obese (BMI 30 kg/m^2 or above). Variations in overweight or obesity among women of reproductive age were apparent by background characteristics. The prevalence of overweight among women of reproductive age increased with wealth quintiles (poor-12.5% to rich-46.7%). Provincial trends for BMI of women of reproductive age are reported in figure 5.1.

Measurement of MUAC was conducted only for index mothers and findings reveal that 13.7% mothers were moderately malnourished (≥ 210 & < 230 mm); among those 3.2% were severely malnourished (< 210 mm).

Figure 5.1: Percentage of WRA with BMI <18.5, by province and national



Malnutrition (BMI <18.5 kg/m^2) status in women of reproductive age was also reduced from 20.9% (95% CI 14.8-26.9) in NNS 2004 to 9.2% (95% CI 8.1-10.3) in NNS 2013.

Table 5.4: Comparison of BMI of women of reproductive age in NNS 2013 with NNS 2004

Target Groups	Survey year	<18.5 (Underweight)	18.5-24.9 (Normal)	Overweight (25.0-29.9)	>30.0 (Obese)	N
Women of reproductive age (15-49 Years)	2004	20.9 (95% CI 14.8-26.9)	63.6 (95% CI 58.1-69.1)	12.2 (95% CI 9.2-15.2)	3.4 (95% CI 1.9-4.8)	1173
	2013	9.2 (95% CI 8.1-10.3)	61.9 (95% CI 60-63.7)	20.7 (95% CI 19.1-22.2)	8.3 (95% CI 7.1-9.5)	11124

In NNS 2004,12.2% (95% CI 9.2-15.2) and 3.4% (95% CI 1.9-4.8) of non-pregnant women were overweight (BMI 25.0 to 29.9 kg/m^2) and obese (BMI ≥ 30 kg/m^2) respectively where as in NNS 2013 around 20.7% (95% CI 19.1-22.2) were overweight and 8.3% (95% CI 7.1-9.5) were obese (BMI ≥ 30 kg/m^2).

5.3: Nutritional and health and status of elderly

In recent years, there has been an increase in the proportion of older persons worldwide (11). More old people are alive nowadays than at any time in history (12). There are a number of factors that are known to have an impact on the general health of this population. These factors can contribute to an increased risk of diseases such as cardiovascular disease and cancer. Some of the contributing factors include cigarette smoking; excessive alcohol, excessive fat consumption; high blood pressure, high cholesterol levels, limited exercise and being overweight. Population above 50 years of age was considered elderly for NNS 2013; as per WHO age classification of elderly population for developing countries (13). In the NNS 2013, elderly persons were assessed to determine some aspects of their health and nutritional status. Overall, 2,569 elderly persons were interviewed at their residence.

5.3.1: Nutrition status of elderly persons (50 and above years)

Findings of this survey reported that more than half (53.0%) of elderly persons were in normal range (BMI 18.5-24.9 kg/m^2) and 8.7% were thin or undernourished (BMI <18.5 kg/m^2). The proportions of mild thinness (BMI 17.0-18.4 kg/m^2) and moderate and severe thinness (BMI <17 kg/m^2) were 6.6% and 3.1%, respectively. Whereas, 26.1% of elderly were pre-obese (BMI 25-29 kg/m^2) and 12.3% were obese (BMI >30 kg/m^2).

Table 5.5: Body Mass Index – Elderly- above 50 years of age

			BMI (kg/m^2)							
	N	Mean (SD) BMI	<16 Severe thinness	16-16.99 Moderate thinness	17-18.49 Mild thinness	18.5-24.99 Normal range,	25-29.99 Pre-obese	30-34.99 Obese class I	35-39.99 Obese class II	>=40 Obese class III
Overall	4126	24.3 (4.8)	1.3	1.8	5.6	**53.0**	26.1	9.8	2.0	0.5
Gender										
Male	1554	23.7 (4.0)	0.4	1.0	4.5	**59.9**	28.2	4.9	0.8	0.2
Female	2572	24.6 (5.2)	1.8	2.3	6.3	**48.7**	24.7	12.9	2.7	0.7
Age										
50 - 55 Years	2312	24.6 (4.7)	0.7	1.5	4.2	**52.6**	27.2	11.1	2.4	0.4

56 - 60 Years	906	24.2 (4.8)	1.6	1.0	7.3	**51.2**	28.8	7.9	1.6	0.7
61+ Years	908	23.4 (4.9)	2.2	3.2	7.5	**55.9**	20.5	8.8	1.4	0.5

5.3.2: Health status of elderly (above 50 years population)

During survey 29.4% (698) male and 70.6% (1871) female elderly were assessed. The proportion of elderly female was more because usually male were away from their home at day time. 76.9% of the elderly population belonged to the age group 50–60 years and 23.1% was above 60 years of age.

Half of elderly persons (51.3%) reported moderate decline in their food intake over the past three months, 16.8% reported severe decrease. However, no reduction in food intake was reported by 31.1% elderly. Some variation was observed by gender. Regarding weight loss during last three months, around half (46.4%) of elderly respondents had no idea if they have had weight loss, 23.4% lost around 1-3 kg of weight and 9.3% reported more than 3 kg weight loss and 20.2% reported no loss. Pattern of weight loss in last three months was similar in both genders.

Table 5.6: Loss of weight & appetite of elderly by gender

	Males (698)		Females (1871)		Total	
	n	%	N	%	n	%
Age						
50 - 60 Years	520	75.5	1470	77.5	1990	76.9
>60 Years	178	24.5	401	22.5	579	23.1
N	698	100	1871	100	2569	100
Elderly Persons by Loss of appetite						
Severe decrease in food intake	112	11.4	371	19.0	483	16.8
Moderate decrease in food intake	352	51.5	976	51.2	1328	51.3
No decrease in food intake	229	35.9	505	29.1	734	31.1
Not Reported	5	1.2	19	0.7	24	0.8
N	698	100	1871	100	2569	100
Wight Loss in last three months						
Don't know	348	47.5	929	45.9	1277	46.4
Weight loss between 1 and 3 kg	152	18.9	470	25.3	622	23.4
Weight loss greater than 3 kg	60	8.9	138	9.4	198	9.3
No weight loss	133	23.6	321	18.8	454	20.2
Not Reported	5	1.2	13	0.5	18	0.7
N	698	100	1871	100	2569	100

Section 6: Biochemical analysis

Following important and essential biochemical assessments were performed during NNS 2013 to determine the status of micronutrient deficiencies among target age groups.

Table 6.1: Target age group wise details of biochemical assessments

Biochemical Assessments	Women of reproductive age (15-49 years)	Children (6-59 months)	Adolescent girls (10-19 years)	Children (7-12 years)
Haemoglobin	Yes	Yes	Yes	
Ferritin level	Yes	Yes		
Iron deficiency Anemia	Yes	Yes		
Vitamin A deficiency	Yes	Yes		

Vitamin D deficiency	Yes	Yes		
Folic Acid Level			Yes	
Urinary iodine excretion	Yes			Yes

In addition to above micronutrients, CRP and AGP were also performed for adjustment of ferritin, zinc and retinol level. Hemoglobin levels were also adjusted for altitudes. The inflammatory response rapidly influences the concentration of several important micronutrients such as vitamin A, Fe and Zn in the blood, even in the first 24 hours, whereas dietary deficiencies can be envisaged as having a more gradual effect on biomarkers of nutritional status. The rapid response to infection may be for protective reasons, i.e. conservation of reserves, or by placing demands on those reserves to mount an effective immune response. However, because there is a high prevalence of disease in many developing countries, an apparently-healthy child may well be at the incubation stage or convalescing when blood is taken for nutritional assessment and the concentration of certain micronutrient biomarkers will not give a true indication of status. AGP and CRP are indicators of presence of infection and most commonly used for adjustment of micronutrient (48).

6.1: Prevalence of anemia, iron deficiency and iron deficiency anemia among women of reproductive age and children 6-59 months of age

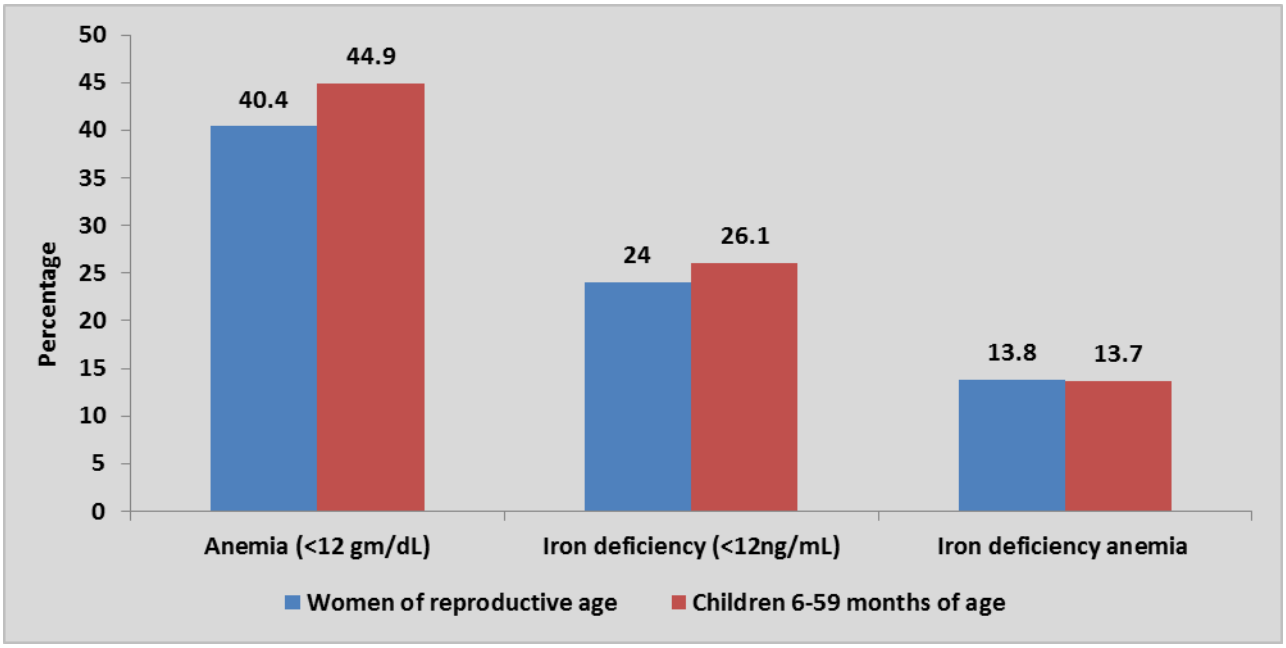
Anemia, a major health problem grappling the developing world, is defined as Hemoglobin level less than 12.0 g/dL. Severe anemia is Hb<7g/dL and moderate anemia is 7 to 11.99 g/dL. Iron deficiency anemia is defined in terms of Ferritin levels <12ng/ml.

The survey finding revealed that children 6-59 months of age and women of reproductive age were the most affected, with 43% of children and 40% of women were suffering from anemia.

Based on the WHO 2008 prevalence cut off values for public health significance; if 20% to 39.9% of a population has anemia, it is considered a moderate public health problem, whereas if 40% or more of a population has anemia, it is considered as a severe public health problem. Hence the prevalence of anemia in children 6-59 months of age and women of reproductive age in Afghanistan is a severe public health problem.

NNS 2013 results also revealed high prevalence of iron deficiency anemia in children and women. 24.0% women of reproductive age and 26.1% children aged 6-59 months were observed iron deficient and prevalence of Iron deficiency anemia in children 6-59 months of age and women of reproductive age was 13.7% and 13.8% respectively.

Figure 6.1: Prevalence of anemia, iron deficiency and iron deficiency anemia among women of reproductive age and children 6-59 months of age



6.2: Prevalence of anemia and folate deficiency among adolescent girls

Prevalence of anemia and folate deficiency was assessed among adolescent girls of 10-19 years of age.

Table 6.2: Prevalence of anemia and folate deficiency among adolescent girls

Assessment		Percent
Folic Acid Level	Deficient (<3.0 ng/mL)	7.4
	Non Deficient (>= 3.0 ng/mL)	92.6
	N	741
Anemia (<11.99 gm/dL)	Anemic (<11.99 gm/dL)	30.9
	Normal (≥ 12 gm/dL) †	69.1
	N	**726**

Among adolescent girls (10-19 years), a significant proportion 29.9% had anemia and it is a moderate public health problem as per WHO classification.

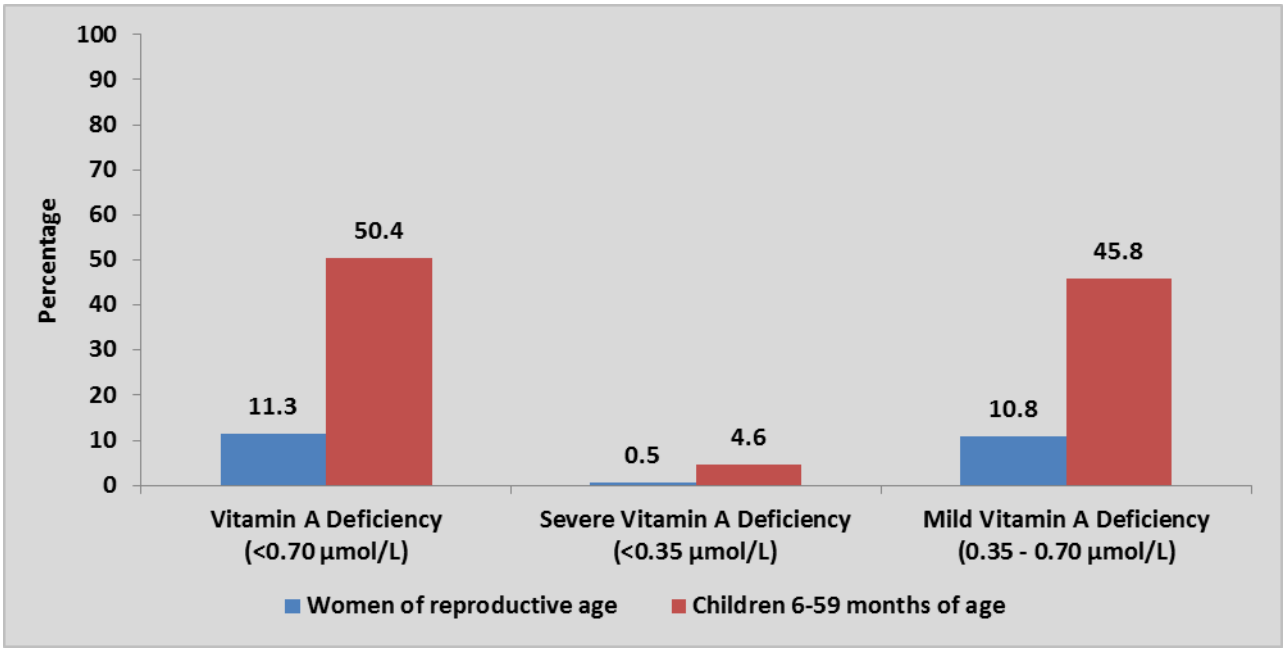
Folate levels were only checked in adolescent girls (10-19 years) and7.4% were found to be deficient (<3.0ng/mL). Folate deficiency has implications for the health of women as well as of their off springs. The association of maternal folate deficiency with congenital birth defects, especially neural tube defects, is well established (32). Folate deficiency also causes megaloblastic anemia (33-34).

6.3: Vitamin A deficiency

Vitamin A, required for healthy epithelial growth and maturation, is a fat soluble Vitamin found in liver and leafy vegetables. While dietary sources are more often than not adequate, children remain particularly susceptible owing to the growing age and hence increased demand. Among mothers, apart from their own health needs, optimal vitamin A levels are required for healthy pregnancy and lactation.

In NNS 2013, half (50.4.8%) of the children 6-59 months of age and 11.3% women of reproductive age had vitamin A deficiency (vitamin A levels of <0.70 µmol/L . Likewise 45.8% of children (0-59 months) and 10.8% women of reproductive age were suffering from a mild deficiency (vitamin A levels of 0.35-0.70 µmol/L). Similarly severe deficiency (Vitamin A levels<0.35 µmol/L) was seen in 4.6% of children and 0.5% of WRA. Based on the WHO 2008 prevalence cut off values for public health significance, if ≥ 2% of population has vitamin A deficiency (< 0.70 µmol/l) its considered as moderate public health problem whereas if 20% or more of population has vitamin A deficiency (< 0.70 µmol/l), then it is considered as a severe public health problem. Hence the prevalence of vitamin A in children 6-59 months of age in Afghanistan is a severe public health problem.

Figure 6.2: Vitamin A deficiency in women of reproductive age and children (0-59 months)



6.4: Zinc deficiency

Zinc, required by the body in trace amounts is essential for the activity of myriads of enzymes and hence for the maintenance of normal body metabolism and growth. Zinc deficiency among children has deleterious effects on immunity making them more prone to infections such as diarrhea and pneumonia (36). It has also been implicated in compromised linear growth and possibly cognitive and motor skills development among young children (37). Zinc deficiency has been observed to predispose to poor pregnancy outcomes although the evidence is not conclusive (38). However, children born with low zinc stores are at a higher risk for developing deficiency (39) thus underlining the importance of adequate maternal zinc intakes.

NNS 2013 finds revealed that prevalence of zinc deficiency in children 6-59 months of age was 23.4% and 15.1% in women of reproductive age.

Table 6.3: Zinc deficiency in WRA and children (6-59months)

Zinc Deficiency	Women of reproductive age	Children (6-59 months)
Deficient (<60 µg/dL)	23.4	15.1
Non-Deficient (≥60 µg/dL)	76.6	84.9
N	**1187**	**728**

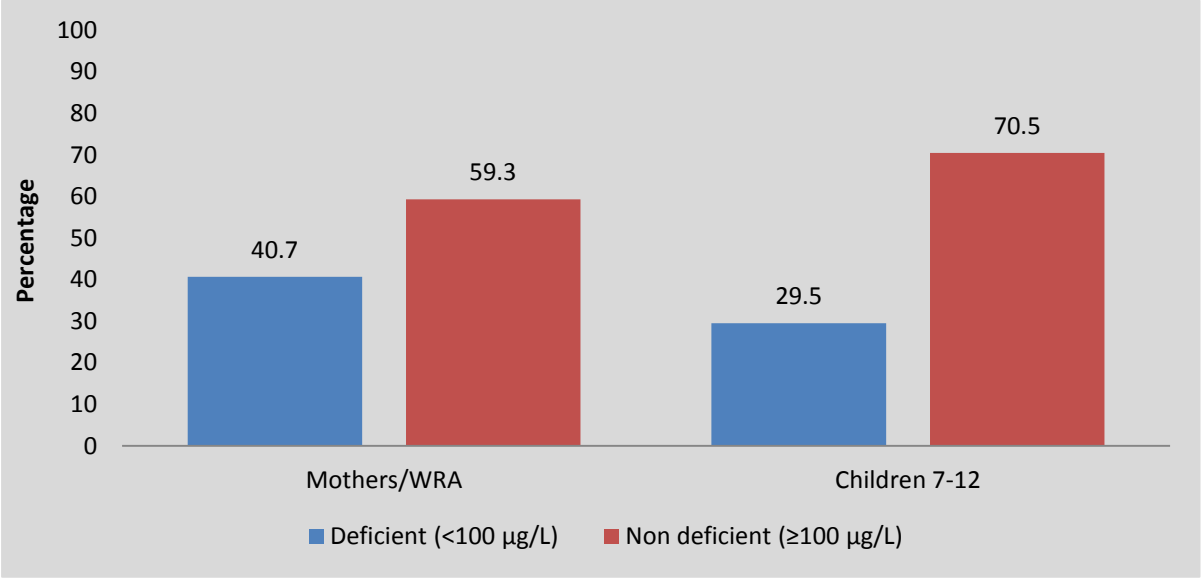
6.5: Urinary iodine excretion in primary school age children and non-pregnant WRA

At the population level, since urinary iodine excretion values are not normally distributed, median is the preferred measure of central tendency recommended by WHO, UNICEF and ICCIDD (International Council for the Control of Iodine Deficiency Disorders) (40-42). The optimal range for median urinary excretion levels is 100-199 µg/L. The NNS 2013 results showed that median urinary iodine excretion was 107.1µg/L in women of reproductive age and 171.1µg/L in children 7-12 years of age.

Table 6.4: Median Urinary Iodine Excretion

	Mothers/WRA	Children 7-12
Median Urinary Iodine (µg/L)	107.1	171.1
N	**1135**	**763**

Figure 6.3: Urinary iodine excretion in children (7-12 years) and WRA (15-49 years)

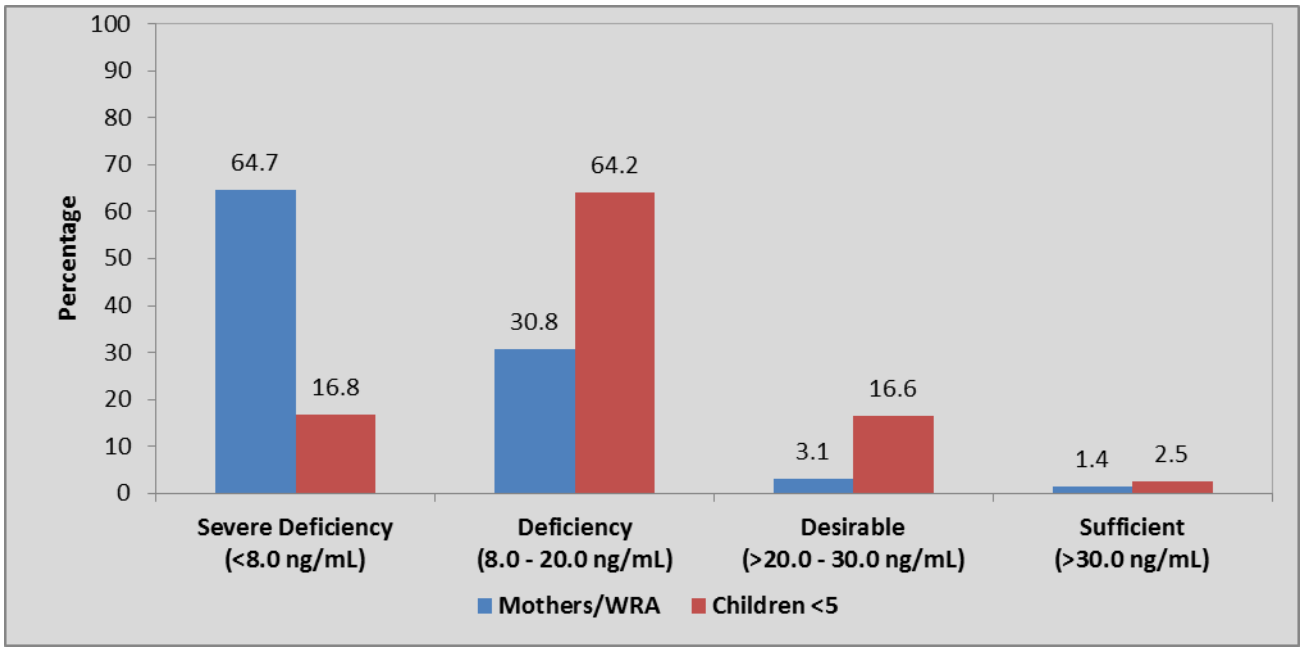


Urinary iodine excretion was studied as an indicator of individual iodine status. Urinary iodine excretion of <100 µg/L was observed in non-pregnant women and children 7-12 years of age. 40.7% of women were found effected as compared to 29.5% of children 7-12 years of age.

6.6: Vitamin D deficiency

Vitamin D, an essential Vitamin needed for maintaining adequate calcium and phosphate absorption and hence bone health, is pandemically deficient. The major source of this vitamin is endogenous production in the skin by UV-B light; with additional dietary sources like milk, meat, fish etc. to supplement the intrinsic production. The most vulnerable population is women of reproductive age, owing probably to both increased demands during pregnancy and lactation and also because of a marked propensity for staying indoors and getting reduced sun exposure because of nature of clothing due to socio cultural reasons. Moreover, the high melanin content in Asian skin inherently predisposes them to decreased UV B absorption from sunlight, which calls for a longer duration of sun exposure for adequate endogenous vitamin D synthesis as compared to Caucasian population (14, 15, 16).

Figure 6.4: Vitamin D level among WRAs and children



In the NNS 2013, 1,190 women of reproductive age who were assessed for vitamin D levels majority(64.7%) had severe deficiency (Vitamin D levels <8.0 ng/mL), while 30.8% were moderate vitamin D deficient (8.0 to 20.0 ng/mL), and cumulatively 95.5% of women were vitamin D deficient.

64.2% of children 6-59 months of age were vitamin D deficient (8.0 to 20.0 ng/mL), and an additional 16.8% had severe deficiency (<8.0 ng/mL); hence a cumulative 81% children 6-59 months of age had vitamin D deficiency.

High prevalence of vitamin D deficiency among children could be due to low dietary intake of vitamin D rich foods and limited sunlight exposure. This could have serious consequences for bone growth and strength and may increase the risk of hip fracture later in life (45). Among women high deficiency should also be interpreted in the context of cultural phenomena such as burka and purdah, which would substantially reduce skin exposure to sunlight. (46). Widespread vitamin D deficiency among Afghan women may be due to combined nutritional and cultural factors. Findings of NNS 2013 are consistent with India, Bangladesh and Pakistan.

6.7: Salt assessment at household level

Three approaches were adopted for the assessment of salt iodization at household level in NNS 2013. Firstly survey team observed labels of salt packages available at household at time of visit. Secondly teams tested the salt from package by using rapid iodized salt test kits for iodine content in the salt. The salt sample was taken on a teaspoon, and, after shaking the reagent (test solution) bottle well, a drop of the test solution was poured on the salt. The salt was considered iodized if color changed (blue) and not iodized if no change in color was observed. Third, salt sample was collected in sterilized tube for quantitative salt test. The test was performed at Nutrition Research Laboratory of the Aga Khan University, Pakistan to assess iodine concentration in salt.

Salt samples for quantitative assessment were collected from 80 clusters for national estimates and these clusters were also selected for collection of biochemical specimens.

6.5: Salt test and observation at household level

	N	%
Salt used for last night family meal (Observation of Packets)		
Iodized	6242	73.5
Non Iodized	1627	19.9
No Salt in home	580	6.5
N	8449	100.0
Salt used for last night family meal (Salt Test)		
No color Change	2084	44.2
Color change (Blue)	2486	43.6
No Salt in home	573	12.3
N	5143	100.0
Salt Iodine Concentration (lab results)		
<=15 PPM	398	33.8
15-30 PPM	372	31.6
31-50 PPM	268	22.8
>50 PPM	140	11.9
N	**1178**	**100**

Labeling on salt packing was observed in 8,499 households by the survey teams. Among households where salt was available for observation, 73.5% had salt packages mentioned "iodized salt". At national level qualitative test revealed that salt tested from 43.6% of households had iodine content. Results of quantitative salt test showed that 66.3% of household were using adequately iodized salt (ppm ≥15). Iodine content more than 50 PPM was found in 11.9% households. Province specific details are given in below table.

Table 6.6: Observation and test of salt at household level

	Salt used for last night family meal (Observation of Packets)		Rapid Test Kits for Salt Iodization Color change (Blue)	
	Iodize	N	Iodized	N
National	73.5	8449	43.6	5143
Kabul	88.3	354	55.3	178
Kapisa	90.3	209	54.9	258
Parwan	97.9	439	81.6	96
Wardak	66.1	141	19.6	46
Logar	96.5	158	81.3	25
Nangarhar	97.8	343	94.6	181
Laghman	75.6	212	44.6	153
Panjsher	92.6	487	97.8	244
Baghlan	54.7	370	24.2	274
Bamyan	43.0	141	28.6	147
Ghazni	91.6	479	56.2	86
Paktika	92.2	132	85.1	123
Paktia	56.3	228	39.6	161
Khost	97.9	240	58.2	52
Kunar	93.9	298	94.9	256
*Nuristan	69.5	12	0.0	2
Badakhshan	32.3	311	15.8	243
Takhar	52.4	246	29.2	189
Kunduz	77.2	285	52.7	171
Samangan	71.8	246	63.9	166
Balkh	52.6	350	10.2	169
Saripul	70.3	334	65.1	280
Ghor	64.1	230	43.9	212
Daykundi	70.3	188	63.8	147
Urozgan	63.2	104	39.7	68
Zabul	82.6	187	43.7	130
Kandahar	56.2	164	16.0	85
Jawzjan	55.2	258	23.6	142
Faryab	84.7	308	53.5	102
Helmand	64.1	181	50.4	102
Badghis	48.0	194	24.2	141
Hirat	39.5	272	7.7	286
Farah	32.9	122	17.0	99
Nimroz	97.4	226	59.8	129

* Findings for salt observation and test for iodine content in Nuristan province is not representative, please read with caution.

Section 7: WASH indicators

Some important WASH indicators i.e. sources of water for drinking and other purpose, water treatment and fetching practices, access to improved sanitation facility and hand washing practices (before meal preparation and after defecation) were assessed in NNS 2013. Results of these indicators are presented below.

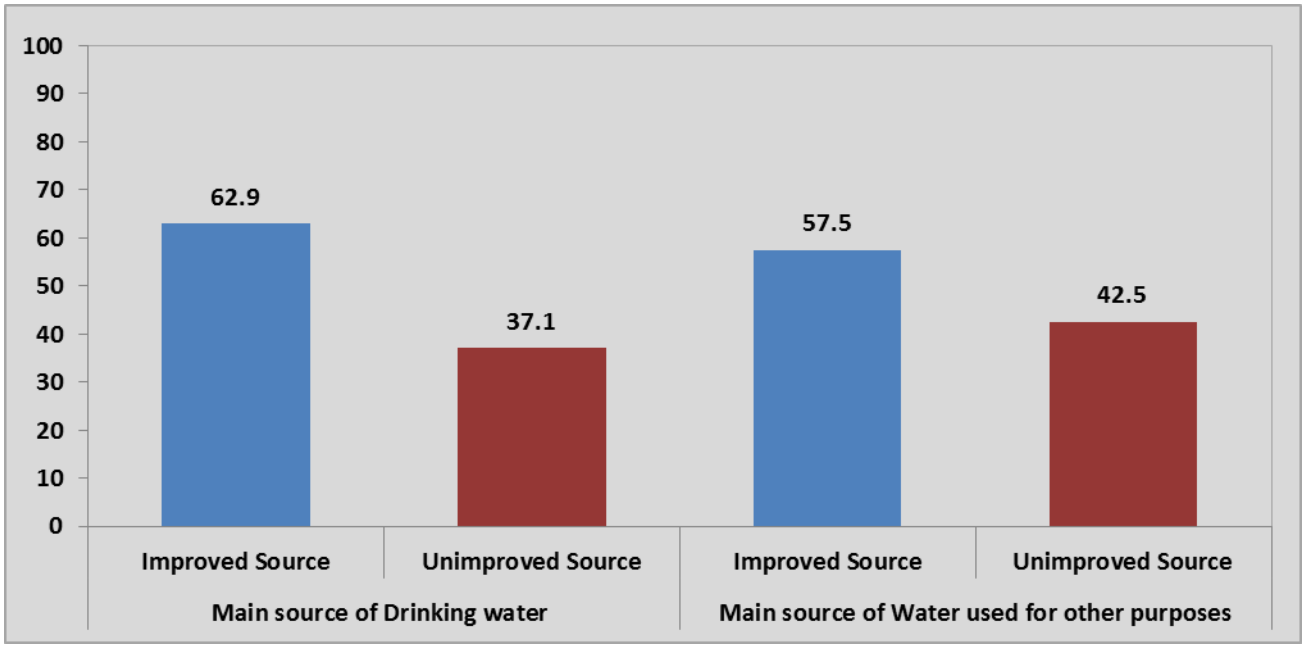
7.1 Main Source of drinking water

Respondents were asked about the main source of household drinking water and their responses were divided into following two improved and unimproved sources. The survey findings revealed that 62.9% households used improved sources for drinking water across Afghanistan.

Improved Water Sources: Overall 31.0% household obtained drinking water from a hand pump in their homes. Piped water was used by 15.1% of households. Other sources of improved water used were less common and included protected wells (6.2%), protected springs (3.7%), and borehole/tube wells (5.4%).

Unimproved Water Sources: 16.3% of households used unprotected wells as main source of drinking water. Unprotected spring (9.5%) and surface water (9.1%) were other sources of drinking water Province-specific details are given in figure 7.1.

Figure 7.1: Main source of water for drinking and other purposes



7.2: Main source of water used for other purposes

Overall, 57.5% households acquired water from improved sources for other purposes.

Improved Water source: Majority of households (27.4%) used hand pumps as main source of water for purposes other than drinking, followed by piped water (14.4%), protected well (6.1%), borehole/tube well (5.3%) and protected spring (3.0%).

Unimproved Water source: 16.1% households used surface water as main source of water for purposes other than drinking, followed by unprotected wells (15.9%), unprotected spring (8.4%), and tanker water (0.9%). Figure 7.1 shows details of water source

Table 7.1: Reported sources of drinking water by province

	Improved Sources							Unimproved Sources						
	Piped water	Borehole /Tube well	Hand pump	Protected Well	Protected spring	Rain Water	Bottled Water	Un-Protected well	Un-Protected Spring	Tanker truck	Small Cart tank	Surface water*	Other Specify	N
Total	15.1	5.4	31.0	6.2	3.7	1.4	0.1	16.3	9.5	1.1	0.5	9.1	0.1	17281
Badakhshan	39.3	1.5	0.2	5.8	22.0	0.0	0.0	2.4	8.2	0.3	0.0	19.5	0.2	460
Badghis	6.0	0.0	9.7	0.4	1.1	20.6	0.0	14.4	38.0	0.0	0.0	9.9	0.0	528
Baghlan	2.1	1.9	8.3	5.7	1.4	0.0	0.0	23.0	15.5	4.4	0.0	37.6	0.2	522
Balkh	10.6	15.4	28.9	0.8	0.1	17.0	0.0	11.3	2.3	0.2	0.0	13.5	0.0	537
Bamyan	5.8	0.2	15.4	1.2	4.0	0.0	0.0	8.0	52.6	0.0	0.0	12.9	0.0	536
Diakundi	1.0	0.0	2.6	1.3	3.7	0.1	0.0	23.4	49.2	0.0	0.0	17.9	0.0	532
Farah	3.5	3.4	14.7	28.4	1.1	0.0	0.0	47.5	1.3	0.0	0.0	0.0	0.0	526
Faryab	7.6	6.0	24.5	7.5	7.4	0.3	0.0	22.5	6.7	0.8	4.3	12.4	0.0	526
Ghazni	7.8	4.7	40.7	7.9	4.1	0.0	0.0	28.8	5.7	0.0	0.0	0.0	0.0	532
Ghor	3.8	0.0	21.0	2.0	0.7	0.2	0.0	19.5	35.1	0.0	0.0	17.8	0.0	538
Helmand	2.4	4.7	69.1	13.6	0.1	0.0	0.0	6.1	0.7	0.0	0.2	2.4	0.0	485
Hirat	43.3	0.9	11.8	15.4	2.1	0.0	0.0	20.6	4.1	0.0	0.0	1.8	0.0	535
Jawzjan	8.6	4.0	36.1	1.5	0.0	0.0	0.0	33.1	0.5	6.6	0.0	9.4	0.2	531
Kabul	33.7	10.7	30.7	2.7	3.2	0.2	0.4	11.2	0.9	2.0	0.8	2.4	0.2	494
Kandahar	10.2	12.7	58.8	2.4	0.0	0.0	0.0	14.2	0.5	0.0	0.2	0.8	0.2	470
Kapisa	6.1	0.0	31.9	4.2	3.6	0.0	0.2	1.9	7.8	0.0	0.2	43.4	0.0	534
Khost	13.8	10.1	60.8	5.8	3.5	0.0	0.0	0.2	0.8	0.6	2.4	1.0	0.0	486
Kunar	2.8	1.9	65.2	2.2	0.4	0.0	0.0	1.8	23.3	0.0	0.0	2.0	0.0	531
Kunduz	2.7	0.4	31.9	7.2	2.5	0.0	0.0	42.1	3.8	0.0	0.0	8.9	0.0	536
Laghman	1.2	6.3	38.9	19.5	1.9	0.0	0.0	6.8	24.4	0.0	0.0	0.0	0.0	512
Logar	0.0	3.0	57.7	2.7	1.0	0.0	0.0	30.7	3.1	0.0	0.0	1.5	0.0	525
Nangarhar	15.2	7.8	49.5	4.0	1.0	0.0	0.0	11.0	7.3	0.0	1.0	2.4	0.0	495
Nimroz	10.0	0.5	5.5	10.2	0.0	0.1	1.7	26.5	3.2	23.7	1.0	17.3	0.0	506
Nuristan	0.0	0.0	0.0	0.1	0.7	1.1	0.0	0.1	62.1	0.0	0.0	35.9	0.0	444
Paktia	3.9	7.5	59.9	4.3	3.9	0.0	0.0	7.4	10.6	0.0	1.2	0.8	0.0	519
Paktika	0.0	0.0	39.6	0.0	10.6	0.0	0.0	2.1	47.3	0.0	0.0	0.0	0.0	353
Panjsher	6.5	1.2	3.8	3.2	33.1	0.0	0.4	1.3	21.6	0.0	0.0	28.8	0.0	535
Parwan	27.7	0.5	18.7	7.8	3.1	0.2	1.3	3.3	1.7	4.0	0.3	31.0	0.0	492
Samangan	5.0	1.2	18.1	3.5	1.5	3.4	0.0	4.2	7.2	3.5	4.1	47.6	0.5	538
Saripul	0.8	1.3	15.7	1.6	4.0	0.4	0.0	30.5	20.1	0.0	0.4	22.0	0.2	502
Takhar	9.8	0.0	41.3	8.4	9.6	0.0	0.0	11.2	6.1	2.9	0.0	10.6	0.0	539
Uruzgan	0.6	1.1	9.1	8.3	1.3	0.2	0.0	61.8	15.8	0.0	0.0	1.7	0.0	512
Wardak	2.5	15.8	22.4	12.5	13.6	0.0	0.0	18.5	6.1	0.0	0.0	3.3	0.0	511
Zabul	8.2	8.9	60.5	8.2	0.7	0.0	0.1	8.5	3.4	0.3	0.0	0.1	0.0	459

7.3: Water treatment methods

In NNS 2013, 89.7% households did not treat water to make it safer. Only 10% of households pre-treated drinking water to make it safer. Boiling was reported as most commonly used method (4.7% households). Details of other treatment methods are given in table 7.2.

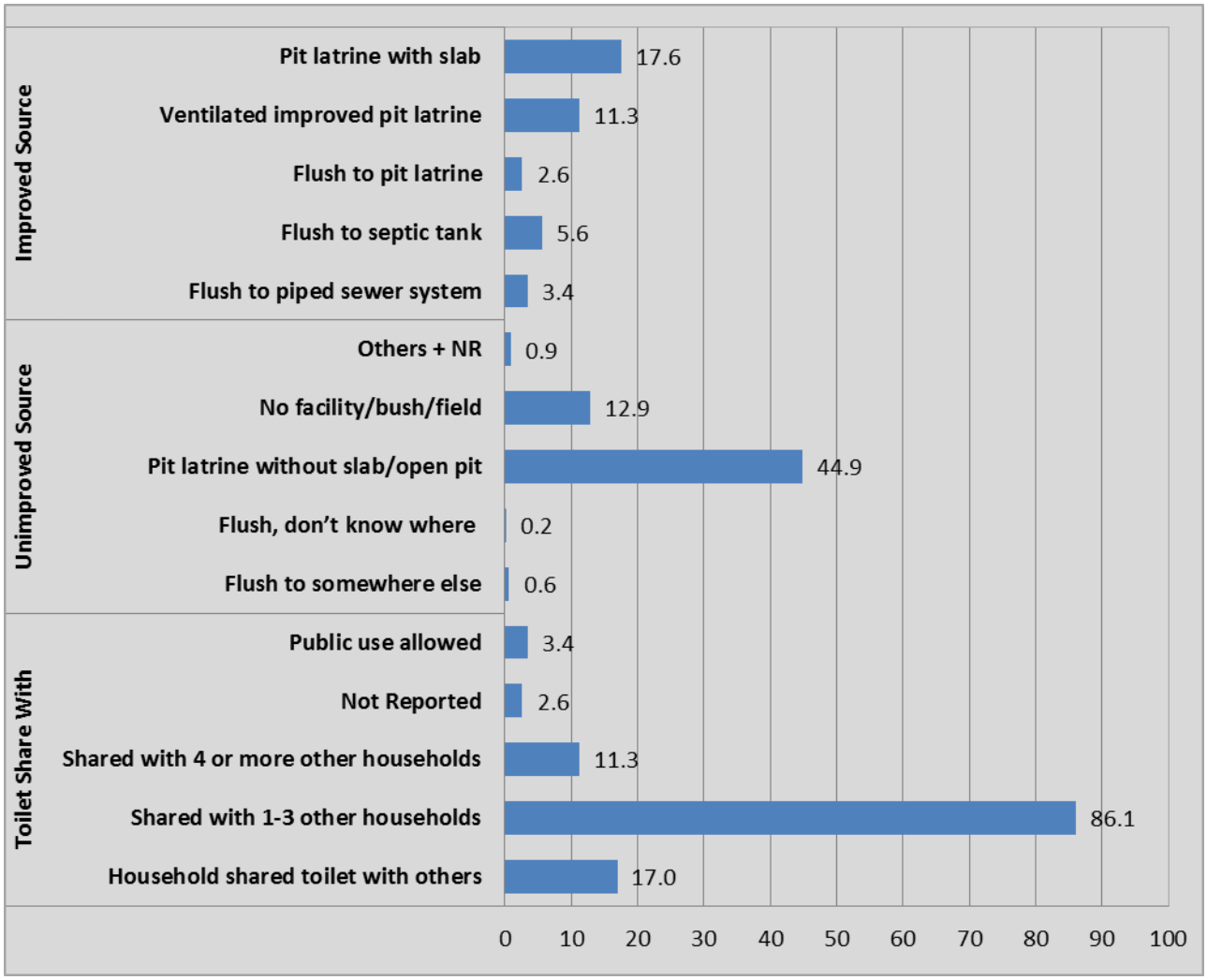
Table 7.2: Reported water treatment Methods

	N	%
Methods of water treatment		
No Treatment	15513	89.7
Boil	648	4.7
Add bleach/chlorine	365	2.2
Strain it through a cloth	224	0.7
Use water filter (ceramic, sand, composite, etc.)	71	0.3
Solar disinfection	62	0.4
Let it stand and settle	456	2.3
Others	12	0.1
Not Reported	40	0.2
N	17281	
Time to source of drinking water		
No family member goes out to collect water	6703	46.6
Up to 30 minutes	8660	43.6
Over 30 minutes	1649	7.7
Not Reported/Don't know	269	2.1
N	17281	100.0
Person who usually collects water		
Adult woman	4963	39.5
Adult man	2905	30.2
Female child (under 15 years)	1106	11.4
Male child (under 15 years)	1327	15.2
Not Reported / Don’t Know	277	3.8
N	10578	100.0

As detailed in table 7.2, a family member fetched drinking water in 53.4% of households. For most (43.6%) of households distance of water source from household was 30 minutes or less. In majority (39.5%) of households an adult female household member collected water from source outside home. In one third of the households, this task was performed by an adult man (30.2%) and in 26.6% households by children.

7.4: Type of Sanitation Facility

Figure 7.2: Type of Sanitation Facility



Majority (58.9%) of households in Afghanistan did not have access to an improved sanitation facility. Only 40.4% households used an improved facility. A pit latrine with a slab was the most (17.6%). Commonly used improved sanitation method. Only 3.4% respondents reported using flush to piped sewer system. Most (44.9%) respondents reported using pit latrines without slab/open pits and, 12.9% mentioned having no facility/bush/field.

Sharing of latrines with other households was reported by 17% respondents. Among these, 86.1% shared the toilet with one to three other households. Further details on the types of sanitation facilities used are given in Figure 7.2. Province-specific details are given in table 7.3:

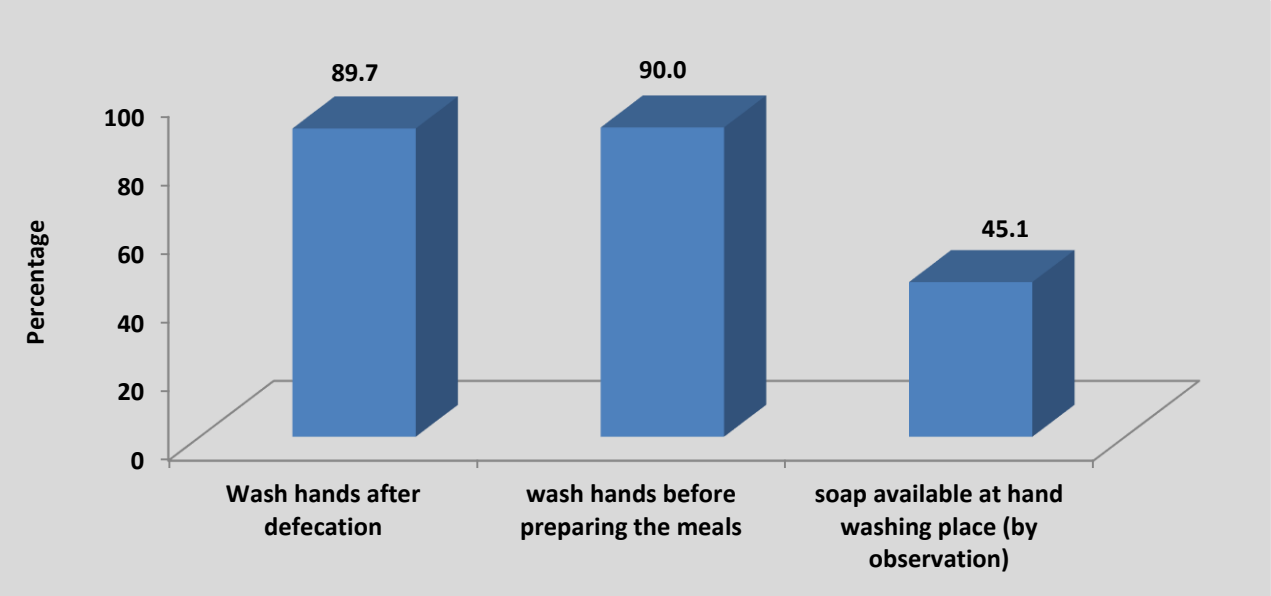
Table 7.3: Province wise sanitation situation in Afghanistan

	Improved sanitation					Un-improved sanitation				N
	Flush to piped sewer system	Flush to septic tank	Flush to pit latrine	Ventilated improved pit latrine	Pit latrine with slab	Pit latrine without slab/open pit	No facility / bush/ field	Others	NR	
Total	**3.4**	**5.6**	**2.6**	**11.3**	**17.6**	**44.9**	**12.9**	**1.1**	**0.6**	**17281**
Badakhshan	0.0	1.5	0.0	12.4	4.0	49.2	32.9	0.0	0.0	460
Badghis	0.6	0.9	0.5	0.3	6.2	68.3	21.9	1.2	0.1	528
Baghlan	0.8	4.7	0.9	29.1	2.0	35.2	27.3	0.0	0.1	522
Balkh	0.5	8.8	6.9	7.2	8.6	61.5	4.4	0.6	1.4	537
Bamyan	0.6	0.9	0.0	31.6	0.9	37.9	27.5	0.3	0.5	536
Diakundi	0.0	0.4	0.0	0.4	0.5	24.0	74.3	0.0	0.4	532
Farah	0.0	6.4	20.7	7.5	11.2	38.3	15.4	0.2	0.3	526
Faryab	0.9	1.5	1.7	8.1	7.7	78.4	1.4	0.3	0.0	526
Ghazni	0.0	1.0	0.6	2.6	26.1	60.2	4.6	1.8	3.1	532
Ghor	0.0	0.4	0.0	1.9	8.3	26.1	63.2	0.0	0.0	538
Helmand	2.8	2.1	1.6	33.0	49.4	6.2	4.3	0.6	0.0	485
Hirat	2.2	2.1	0.2	20.4	29.3	45.0	0.2	0.0	0.5	535
Jawzjan	1.8	3.6	1.9	8.7	8.6	63.3	7.2	4.7	0.3	531
Kabul	12.0	18.8	4.6	13.4	20.9	27.7	0.2	1.8	0.7	494
Kandahar	15.3	2.4	3.0	24.4	22.7	17.5	11.7	2.5	0.5	470
Kapisa	0.0	0.8	0.0	2.9	1.8	83.4	11.0	0.0	0.1	534
Khost	1.8	2.0	2.0	4.3	15.5	38.5	22.0	11.7	2.2	486
Kunar	0.0	1.7	1.1	2.0	32.2	50.0	12.9	0.0	0.1	531
Kunduz	0.1	13.2	1.0	3.1	13.1	63.6	5.4	0.3	0.1	536
Laghman	0.0	1.0	0.0	0.9	21.5	62.1	14.2	0.0	0.2	512
Logar	0.0	0.3	0.0	1.0	29.1	68.9	0.0	0.2	0.5	525
Nangarhar	5.2	6.7	1.6	8.7	29.9	28.4	16.8	2.2	0.7	495
Nimroz	0.2	5.1	11.5	5.6	19.6	53.5	4.0	0.0	0.5	506
Nuristan	0.0	0.0	0.0	0.8	0.4	39.9	58.5	0.0	0.3	444
Paktia	0.5	1.7	0.6	8.0	25.9	37.9	24.1	0.7	0.6	519
Paktika	0.0	0.0	0.0	2.9	0.3	13.5	82.2	0.4	0.7	353
Panjsher	0.0	1.2	0.0	23.2	18.8	40.4	16.1	0.2	0.1	535
Parwan	1.7	4.0	0.2	2.3	1.7	88.9	0.9	0.0	0.3	492
Samangan	0.3	2.9	5.3	0.6	1.5	65.8	23.3	0.4	0.1	538
Saripul	0.2	1.6	0.6	10.0	6.4	79.6	1.3	0.2	0.1	502
Takhar	0.3	0.6	0.2	3.9	24.3	62.2	8.6	0.0	0.0	539
Uruzgan	0.2	1.1	21.8	0.2	3.1	41.0	31.8	0.2	0.6	512
Wardak	0.2	0.9	0.5	25.3	24.8	45.5	1.0	0.0	1.9	511
Zabul	0.0	4.4	17.4	11.0	20.5	32.2	11.1	2.0	1.3	459

7.5: Hand washing practices

Washing hands after defecation, washing hands before preparing meals, and availability of soap at hand washing places (observation) were also assessed in NNS 2013.

Figure 7.3: Hand washing practices



At the national level, 89.7% women reported washing hands with soap after defecation ranging from 28.5% in Nuristan to 99.4% in Saripul province. Likewise, 90% women usually washed hands before preparing the meals, provincial variations ranged from 60.0% in Balkh to 99.2% in Takhar Province. But only 45.1% households had soap at the place used for washing hands. However, hand washing places could not be observed by teams for 18.0% households. Province-specific details are given in Table 7.4 below.

Table 7.4: Hand washing practices by province

	Do you usually wash hands after defecation		Do you usually wash hands before preparing the meals		Is there soap available at hand washing place (by observation)	
	Yes	N	Yes	N	Yes	N
Kabul	90.7	466	92.1	466	74.2	401
Kapisa	98.6	518	98.5	518	59.0	278
Parwan	98.2	468	98.5	468	82.9	463
Wardak	95.4	449	94.7	449	50.5	433
Logar	87.6	510	85.0	510	14.6	510
Nangarhar	98.0	456	93.0	456	80.3	325
Laghman	92.7	491	84.8	491	36.2	362
Panjsher	95.7	516	94.1	516	67.4	248
Baghlan	98.5	488	97.5	488	40.2	476
Bamyan	96.9	532	98.5	532	46.7	529
Ghazni	85.3	529	94.8	529	18.8	358
Paktika	35.6	351	95.1	351	5.7	92
Paktia	61.9	466	89.6	466	67.9	425
Khost	90.4	471	92.2	471	63.3	377
Kunar	97.3	517	95.5	517	17.8	463
Nuristan	28.5	430	74.4	430	7.2	288
Badakhshan	94.0	428	88.9	428	46.9	425
Takhar	97.9	535	99.2	535	62.0	524

Table 7.4 (Continued) Hand washing practices by province

	Do you usually wash hands after defecation		Do you usually wash hands before preparing the meals		Is there soap available at hand washing place (by observation)	
	Yes	N	Yes	N	Yes	N
Kunduz	99.0	519	98.5	519	36.7	260
Samangan	98.1	494	98.0	494	30.8	318
Balkh	90.2	517	60.0	517	22.8	462
Saripul	99.4	479	99.1	479	67.0	419
Ghor	49.4	491	62.8	491	8.8	419
Daykundi	69.8	521	68.8	521	40.3	460
Urozgan	95.0	498	94.1	498	39.6	458
Zabul	96.7	420	95.6	420	81.0	304
Kandahar	88.9	459	95.6	459	39.6	277
Jawzjan	79.1	470	87.8	470	57.6	269
Faryab	68.7	498	77.6	498	30.2	429
Helmand	98.8	472	95.4	472	23.5	349
Badghis	93.3	518	94.5	518	7.3	495
Hirat	98.9	519	87.2	519	13.7	518
Farah	91.9	515	92.1	515	38.1	405
Nimroz	86.5	472	96.4	472	37.0	431
Total	89.7	16483	90.0	16483	45.1	13250

7.6: Association of WASH indicators with nutrition

Data analysis revealed significant association of source of drinking water with stunting and underweight and similarly type of sanitation facilities also had significant association with stunting and underweight.

Table 7.5: Association of WASH indicators with nutrition indicators

	N	Stunting (<-2SD)	95% CI	Normal (≥2SD)	95% CI	p-value
Drinking water source						
Improved	11187	38.7	36.7 - 40.7	61.3	59.3 - 63.3	<0.001
Un-improved	9552	44.7	42.9 - 46.4	55.3	53.6 - 57.1	
Sanitation facility						
Improved	6312	34.4	31.9 - 37	65.6	63 - 68.1	<0.001
Un-improved	14433	44.8	43.2 - 46.4	55.2	53.6 - 56.8	
	N	**Wasting (<-2SD)**	**95% CI**	**Normal (≥2SD)**	**95% CI**	**p-value**
Drinking water source						
Improved	11306	9.9	8.9 - 11.1	90.1	88.9 - 91.1	0.068
Un-improved	9693	8.7	7.8 - 9.7	91.3	90.3 - 92.2	
Sanitation facility						
Improved	6388	10.0	8.6 - 11.6	90.0	88.4 - 91.4	0.336
Un-improved	14615	9.2	8.4 - 10.1	90.8	89.9 - 91.6	
	N	**Underweight (<-2SD)**	**95% CI**	**Normal (≥2SD)**	**95% CI**	**p-value**
Drinking water source						
Improved	11829	24.3	22.8 - 25.9	75.7	74.1 - 77.2	0.032
Un-improved	9945	26.4	24.8 – 28	73.6	72 - 75.2	
Sanitation facility						
Improved	6690	21.8	19.9 - 23.8	78.2	76.2 - 80.1	<0.001
Un-improved	15087	27.1	25.7 - 28.6	72.9	71.4 - 74.3	

Section 8: Reproductive history and antenatal care

8.1. Reproductive history of married women of reproductive age

Table 8.1: Age distribution & Education of mothers

	N	%
Age Group		
15-19 years	674	4.6
20-24 years	2955	19.0
25-29 years	3794	24.1
30-34 years	2999	18.7
35-39 years	2697	17.3
40-44 years	1513	10.0
45-49 years	926	6.3
N	15558	100.0
Mothers' Education		
Illiterate	13570	83.4
Pre/some school years	1511	11.9
High school & above	374	3.9
Total	103	0.8

During the survey, respondents were asked about reproductive history, supplementation during last pregnancy, antenatal care and place of last delivery. Age distribution and education status of respondents is given in table 8.1.

8.2: Reproductive History of married women of reproductive age

Table 8.2: Reproductive history of married women of reproductive age

Reproductive History	N	%
Pregnancies		
1-2	2917	19.7
3-5	5513	35.7
6+	7110	44.4
Not Reported	18	0.1
N	15558	100.0
Live Births		
None	175	1.0
1-2	3906	26.1
3-5	6424	40.8
6+	5035	32.0
Not Reported	18	0.1
N	15558	100.0
Miscarriages		
None	11025	72.1
1	2856	17.5
2	1090	6.7
3 or more	569	3.5
Not Reported	18	0.1
N	15558	100.0
Still births		
None	12026	78.8
1	2241	13.6
2	805	4.7
3 or more	467	2.8
Not Reported	19	0.2
N	15558	100.0
Currently pregnant	3026	17.7

Survey findings showed that 44.4% had been pregnant more than 6 times, 35.7% women for 3 to 5 times and 19.7% women for only 1 to 2 times .Similarly 40.8% reported 3-5 live births, 32.0% had more than 6 and 17.7% women were pregnant at the time of interview.

Across Afghanistan, 17.5% married women had a history of at least one miscarriage, 6.7% had two while 3.5% women had a history of three miscarriages. Similarly 12.6% women had a history of three or more. Around 21.1% of the women reported having had at least one stillbirth. Details are given in table 8.2.

8.3: Antenatal care during last pregnancy

Antenatal care is very essential for safe delivery. It prevents adverse outcomes when it is sought early in pregnancy and is continued through delivery. The World Health Organization recommends that a woman without pregnancy complications should have at least four visits to provide sufficient antenatal care (47).

Table 8.3: Antenatal care visits during last pregnancy

	Percent distribution of women who had:						Number of women
	1 visit	2 visits	3 visits	4 + visits	NR*	No ANC visits	
Overall	10.1	12.1	9.5	16.4	2.8	49.1	15558
Mother Age							
< 20	11.8	15.9	10.3	18.3	3.0	40.7	671
20-34	10.5	12.3	10.1	17.8	2.8	46.5	9749
35-49	9.2	11.4	8.2	13.5	2.6	55.1	5138
Education							
Illiterate	10.4	12.1	8.9	13.4	2.4	52.8	13570
Pre/some school years	9.5	14.2	12.9	28.8	3.7	30.9	1511
High school & above	7.9	8.3	11.0	44.8	4.9	23.2	374
Wealth quintile							
Lowest	9.6	9.3	6.0	5.8	1.9	67.4	3171
Second	10.3	10.1	8.0	8.8	1.7	61.2	3147
Middle	11.6	13.1	8.3	10.5	1.9	54.6	3161
Fourth	11.5	12.8	11.7	13.7	2.3	48.0	3064
Highest	8.7	13.7	11.3	30.2	4.5	31.5	3003

* Not reported

Overall in Afghanistan, 48.1% women sought antenatal care during their last pregnancy, but only 16.4%pregnant women visited four or more times during their last pregnancy. More (44.8%) women with high school & above education had four or more antenatal visits as compared to women with pre/some school years education (28.8%) and Illiterate (13.4%). Similarly higher proportion of women (30.2%) from highest wealth quintile had four or more antenatal visits as compared to those from the lowest quintile (5.8%). Details are given in table 8.3.

8.4: Timing of antenatal care visits

Among women who sought ANC, only 24.7% made their first visit during the first trimester of pregnancy, 10.8% visited during 4-5 months and 12.1% after six months of pregnancy. Similarly most (54.5%) of the literate (high school & above) women made their first antenatal visit during first trimester of pregnancy as compared to illiterate. More women from higher wealth quintiles sought early ANC than those from lower quintiles.

Table 8.4: Timing of antenatal care visits

	Month of first ANC Visit							Number of women
	<4	4-5	6-7	8+	Don't know	NR	No ANC	
Overall	24.7	10.8	8.2	3.9	1.4	1.8	49.1	15558
Mother Age								
< 20	33.2	10.4	7.3	4.8	1.6	1.8	40.8	674
20-34	26.8	11.7	8.3	3.6	1.4	1.8	46.5	9748
35-49	19.6	9.3	8.3	4.4	1.5	1.8	55.0	5136
Education								
Illiterate	21.2	10.3	8.2	4.0	1.5	1.9	52.8	13570
Pre/some schooling	38.8	14.3	9.6	3.9	1.0	1.5	30.9	1511
High school & above	54.5	11.9	5.7	1.9	1.1	1.7	23.2	374
Wealth quintile								
Lowest	12.5	8.8	6.3	2.6	1.4	1.2	67.2	3180
Second	15.5	8.8	7.9	3.2	1.1	2.2	61.3	3145
Middle	19.2	10.0	8.9	3.5	1.6	1.9	54.9	3153
Fourth	23.4	11.4	8.1	6.1	1.2	2.3	47.5	3066
Highest	39.2	13.1	8.9	3.8	1.7	1.7	31.6	3002

Table 8.5: Components of antenatal care visit

	Care component received during ANC visits								N
	Weighed	BP Measured	Urine sample taken	Blood sample taken	Ultrasound (scan)	Others	NR	None	
Overall	35.8	68.9	22.3	15.4	41.5	2.0	0.2	7.0	7025
Mother Age									
< 20	39.2	67.9	25.9	21.5	37.0	2.6	0.2	6.7	356
20-34	35.6	69.0	22.7	15.2	42.9	2.0	0.1	6.2	4599
35-49	35.7	68.7	21.0	14.8	39.4	1.7	0.5	8.8	2070
Education									
Illiterate	37.1	68.2	21.2	14.0	36.2	2.2	0.3	7.8	5881
Pre/ some school years	28.3	71.2	22.4	17.7	58.6	1.2	0.0	5.1	842
High school & above	41.5	73.0	34.5	27.2	66.2	0.4	0.0	1.8	263
Wealth quintile									
Lowest	40.2	72.7	19.3	8.0	18.3	3.0	0.1	8.9	964
Second	35.7	66.3	18.6	12.7	25.0	3.0	0.1	9.6	1215
Middle	36.3	66.6	21.9	10.8	27.6	3.2	0.3	9.0	1432
Fourth	40.0	71.7	22.5	15.0	34.8	0.5	0.2	6.4	1546
Highest	32.8	68.4	24.2	19.8	60.2	1.6	0.3	5.3	1861

The services received by pregnant women during antenatal care visits included BP measurements (68.9%), weight measurements (35.8%), ultrasound scan (41.5%), urine testing (22.3%), and blood sampling (15.4%). Type of services received by pregnant women during antenatal care visits varied with education level, age groups and wealth quintiles (Table 8.5).

Table 8.6: Information / Counselling received during ANC Visit

	Percent of women who received information during ANC visit:						# of women
	Eating more nutritious food	Exclusive breast feeding	Extra rest	Others	NR	None	
Overall	47.7	15.8	42.3	0.4	0.8	21.9	7025
Mother Age							
< 20	41.6	13.8	41.7	0.6	2.2	23.2	356
23-34	48.4	15.0	43.1	0.5	0.8	21.5	4599
35-49	47.2	17.9	40.5	0.3	0.5	22.4	2070
Education							
Illiterate	45.5	15.7	42.4	0.4	0.7	22.8	5881
Pre/some school years	51.3	12.2	43.0	0.7	1.5	21.1	842
High school & above	64.8	26.9	39.8	0.3	0.5	12.7	263
Wealth quintile							
Lowest	38.7	10.3	36.8	0.3	0.3	29.9	964
Second	40.1	11.5	39.0	0.5	0.8	26.3	1215
Middle	44.3	14.8	40.5	0.3	0.7	23.1	1432
Fourth	49.6	18.6	44.0	0.4	0.5	18.2	1546
Highest	52.3	17.5	44.2	0.5	1.1	20.0	1861

During ANC visits, 47.7% women received information/counseling about eating more nutritious food followed by take extra rest (42.3%) and exclusive breast feeding counseling (15.5%). 21.9% women did not receive any relevant information/counseling during visits. Details are given in table 8.6.

Table 8.7: Supplementation during last pregnancy

	Supplementation during last pregnancy								N
	Iron	Folic Acid	Iron & Folic Acid	Calcium	Multiple Micronutrients	Vitamins	Not Remember	None	
Overall	23.2	13.8	9.4	2.9	4.3	12.4	54.1	8.1	15558
Mother Age									
< 20	24.7	14.6	9.5	4.9	5.4	14.4	50.0	6.1	674
23-34	24.8	14.6	9.9	3.0	4.3	13.2	52.6	7.7	9748
35-49	20.2	12.2	8.4	2.5	4.1	10.6	57.4	9.1	5136
Antenatal care visits									
None	8.2	7.2	3.4	1.4	2.2	6.8	71.2	9.6	8533
1-3	32.9	17.1	12.7	3.6	5.1	15.3	42.0	7.2	4587
4+	49.0	25.4	20.1	5.5	9.1	22.7	27.9	6.1	2107
Education									
Illiterate	20.8	12.2	8.1	2.4	3.8	11.1	57.1	8.5	13570
Pre/ Some school years	34.2	17.7	13.8	5.0	7.0	18.9	42.1	5.7	1511
High school & above	43.9	35.9	24.2	8.1	7.7	19.7	25.9	7.6	374
Wealth quintile									
Lowest	16.1	7.8	5.9	1.0	2.0	6.5	67.5	8.6	3180
Second	15.3	9.4	6.6	1.8	2.9	8.3	64.9	7.7	3145
Middle	17.3	11.4	7.5	2.5	4.1	10.7	61.3	6.5	3153
Fourth	21.1	11.7	7.7	1.9	4.3	12.8	56.9	6.6	3066
Highest	35.6	21.6	14.6	5.2	6.3	18.2	36.2	9.9	3002

Most women (54.1%) did not remember whether they received any supplements during their last pregnancy. However, commonly used supplements were iron (23.2%), folic acid (13.8%), and vitamins (12.4%). Calcium (2.9%) and multiple micronutrients (4.3%) were used less frequently. Women with high school and above level of education (43.9%) and women from the highest wealth

quintiles (36.0%) were more likely to have iron supplements during their pregnancy than women with less education and from lower wealth quintiles. Similar trends were observed in other vitamin/mineral supplementations. Details are given in table 8.7.

8.5: Place of delivery, delivery attendant and postnatal care during last pregnancy

Table 8.8: Place of last delivery of married women of reproductive age

Background characteristic	Place of delivery (last pregnancy)						Total Delivered in health facility	Number of women
	Govt. clinic/ hospital	*NGO clinic/ hospital	Private clinic/ hospital	Health post	Home	Not Reported		
Overall	33.5	2.9	5.3	0.3	55.5	2.6	41.9	15558
Mother Age								
< 20	38.8	3.9	6.9	0.1	42.1	8.2	49.7	674
23-34	35.4	3.4	5.4	0.4	52.8	2.6	44.5	9748
35-49	29.1	1.8	4.8	0.2	62.1	1.9	36.0	5136
Antenatal care visits								
None	18.6	1.7	2.6	0.4	73.3	3.3	23.3	8533
1-3	41.6	4.1	5.5	0.3	46.5	2.1	51.4	4587
4+	60.6	3.7	11.9	0.1	22.6	1.1	76.3	2107
Education								
Illiterate	30.2	2.5	4.0	0.3	60.8	2.2	37.0	13570
Pre/Some schooling	49.8	3.4	10.2	0.3	32.2	4.1	63.7	1511
High school & above	55.2	5.8	19.4	0.1	13.7	5.8	80.5	374
Wealth quintile								
Lowest	13.7	1.9	0.8	0.4	79.0	4.1	16.9	3180
Second	20.4	1.8	2.4	0.5	73.0	1.9	25.1	3145
Middle	26.8	2.8	3.1	0.2	65.3	1.8	32.9	3153
Fourth	34.3	3.6	3.3	0.4	56.3	2.1	41.6	3066
Highest	53.1	3.5	11.3	0.2	28.9	3.0	68.2	3002

* Some government facilities are run by different NGO's

Table 8.9: Assistance during delivery

Background characteristic	Assistance during delivery									% delivered by a skilled provider	N
	Private doctor	Govt. Doctor	Nurse/ Midwife	Community midwife	Elder family member	Dai/ TBA	CHW	Others	NR		
Overall	4.7	12.1	26.2	2.5	22.5	28.2	0.5	0.8	2.5	45.5	15558
Mother Age											
< 20	4.4	12.6	32.8	2.7	17.3	21.4	0.1	0.5	8.1	52.6	674
23-34	4.8	12.5	28.0	2.5	22.5	26.3	0.5	0.7	2.2	47.8	9748
35-49	4.7	11.3	22.0	2.4	23.2	32.4	0.6	1.1	2.3	40.4	5136
Antenatal care visits											
None	2.5	7.1	14.7	3.1	32.0	35.5	0.6	1.3	3.2	27.4	8533
1-3	4.7	14.1	33.7	2.1	16.0	26.7	0.5	0.6	1.7	54.6	4587
4+	10.8	22.4	44.2	1.8	7.9	11.1	0.2	0.1	1.6	79.1	2107
Education											
Illiterate	3.6	10.9	23.5	2.7	24.5	30.9	0.6	1.0	2.3	40.7	13570
Pre/Some schooling	7.8	16.9	40.9	1.3	13.3	16.5	0.0	0.3	2.9	66.9	1511
High school & above	19.1	22.7	39.9	1.3	5.4	6.6	0.0	0.0	5.2	82.9	374
Wealth quintile											
Lowest	0.5	3.5	12.7	3.5	33.3	41.0	0.9	2.3	2.4	20.1	3180
Second	1.8	7.4	15.7	2.6	31.4	36.3	0.7	1.4	2.6	27.5	3145
Middle	2.7	9.5	20.7	2.5	27.1	34.5	0.6	0.4	1.8	35.5	3153
Fourth	3.2	11.8	28.2	2.3	21.8	29.5	0.3	0.8	2.1	45.5	3066
Highest	10.3	20.4	40.4	2.0	10.4	13.1	0.2	0.1	3.1	73.1	3002

Majority (55.5%) of deliveries were conducted at home where only 41.9% were in health facilities. The type of health facility included government clinic/hospital 33.5%, private clinic/hospital 3.5%, NGO clinic/hospital 2.9% and health posts 0.3%.

Table 8.10: Timing of postnatal visit during last birth

Background characteristic	Timing of Post Natal Visit						NR	N
	Checkup not done	within 1 hour	1-6 hours	7-12 hours	13-24 hours	> 24 hours		
Overall	55.0	21.5	13.5	0.8	0.2	4.3	4.8	15558
Mother Age								
< 20	46.4	25.6	15.7	1.0	0.1	4.3	7.0	674
20-34	53.6	23.0	13.9	0.8	0.1	4.2	4.5	9748
35-49	58.8	18.2	12.7	0.7	0.3	4.4	5.0	5136
Antenatal care visits								
None	69.4	10.2	10.2	0.4	0.1	4.6	5.0	8533
1-3	48.3	25.7	16.1	1.0	0.3	3.8	4.7	4587
4+	26.7	47.4	17.3	1.5	0.2	3.4	3.4	2107
Education								
Illiterate	59.2	18.2	13.3	0.6	0.1	4.2	4.5	13570
Pre/some school years	36.8	35.7	14.8	1.8	0.0	5.5	5.4	1511
High school & above	20.9	49.3	14.7	2.1	2.2	4.4	6.3	374
Wealth quintile								
Lowest	77.6	8.2	7.9	0.2	0.0	3.0	3.1	3180
Second	68.1	11.7	11.8	0.3	0.0	3.9	4.2	3145
Middle	62.0	15.9	12.7	1.0	0.0	4.4	3.9	3153
Fourth	56.3	22.8	11.9	0.5	0.1	4.1	4.3	3066
Highest	32.4	35.5	18.7	1.3	0.4	5.3	6.6	3002

Most (28.2%) deliveries were conducted by dais/traditional birth attendants followed by nurses/midwives (26.2%), older family members (22.5%) and government doctors (12.1%). Most (55.0%) married women did not receive any postnatal checkup. Among those who received, 35%were checked in the immediate postpartum period (within6 hours of birth). Province specific details are given in table 8.11.

Table 8.11: Place of last delivery, birth attendant and postnatal care by province

		Place of last delivery			Delivery assisted by					Postnatal visit			
	# of women	Delivered in health facility	Home	NR	Skilled attendant	Elder family member	Dai/ TBA	Others	NR	Checkup not done	within 6 hour	> 24 hours	NR
Total	**15558**	**41.9**	**55.5**	**2.6**	**45.5**	**22.5**	**28.2**	**2.2**	**2.5**	**55.0**	**36.0**	**4.3**	**4.8**
Badakhshan	387	13.5	84.9	1.6	13.3	64.5	15.1	5.0	2.2	79.8	14.1	1.7	4.5
Badghis	508	9.4	87.9	2.7	11.9	24.5	55.3	3.8	4.6	77.6	12.4	4.1	5.9
Baghlan	455	28.1	69.4	2.4	35.0	4.7	57.9	0.3	2.1	73.2	16.3	7.4	3.1
Balkh	459	34.1	64.1	1.7	45.4	34.4	17.8	0.0	2.4	59.5	32.0	3.0	5.5
Bamyan	528	45.7	54.3	0.0	47.8	8.1	42.3	0.9	0.9	48.8	43.7	1.1	6.4
Diakundi	510	11.5	87.4	1.0	14.5	47.3	34.1	3.0	1.0	84.1	9.9	3.0	3.0
Farah	511	31.6	67.4	1.0	34.7	15.7	48.1	0.2	1.3	60.5	24.7	2.5	12.3
Faryab	464	25.5	73.8	0.6	32.5	16.5	50.1	0.6	0.3	53.9	32.4	11.3	2.4
Ghazni	524	34.8	65.0	0.1	36.1	32.6	28.9	1.2	1.3	62.9	28.7	5.5	2.9
Ghor	468	10.4	89.4	0.3	15.9	30.2	52.2	1.4	0.3	78.7	6.2	12.8	2.3
Helmand	460	27.2	72.8	0.0	29.1	32.9	31.9	4.8	1.2	62.7	31.8	4.5	0.9
Hirat	507	54.7	43.7	1.6	58.5	5.6	34.7	0.2	1.0	34.7	60.9	1.8	2.6
Jawzjan	393	41.8	55.3	2.9	48.7	7.3	38.8	2.3	2.9	66.4	21.1	6.5	6.0
Kabul	385	78.0	15.1	6.9	80.9	7.4	5.7	0.0	6.0	16.7	66.8	5.1	11.4
Kandahar	448	40.2	59.3	0.6	48.9	11.7	37.7	1.2	0.5	52.9	32.5	11.4	3.2
Kapisa	468	35.3	63.4	1.3	36.5	15.5	40.5	4.2	3.3	64.8	25.8	3.9	5.5
Khost	451	46.3	52.8	0.9	47.2	37.8	11.5	1.6	1.9	67.1	28.0	2.9	2.0
Kunar	500	24.0	75.1	0.9	24.4	35.5	36.7	1.2	2.3	58.8	30.5	6.0	4.8
Kunduz	504	40.0	58.7	1.3	43.0	14.2	40.3	1.2	1.3	81.4	16.9	0.6	1.2
Laghman	474	38.6	59.1	2.3	38.8	19.8	38.0	0.5	2.9	78.9	20.0	0.5	0.6
Logar	483	55.1	43.8	1.0	56.2	28.6	13.5	0.2	1.4	51.9	43.6	2.4	2.1
Nangarhar	435	50.5	48.8	0.7	49.6	30.8	17.1	0.2	2.4	55.4	37.6	2.0	5.0
Nimroz	430	47.1	51.4	1.5	54.7	19.6	23.5	0.6	1.6	47.0	48.5	2.1	2.5
Nuristan	404	2.5	4.3	93.2	9.9	67.5	16.0	1.1	5.5	83.0	7.2	3.5	6.3
Paktia	455	56.4	40.0	3.5	57.4	36.0	2.3	0.7	3.6	57.9	35.3	5.0	1.8
Paktika	323	28.3	68.0	3.7	44.9	8.3	19.1	21.3	6.5	71.4	26.8	0.0	1.7
Panjsher	509	57.3	42.7	0.0	59.2	26.4	13.7	0.0	0.7	36.8	56.1	6.5	0.6
Parwan	426	59.7	37.9	2.4	61.4	25.3	9.0	0.0	4.3	37.3	56.3	2.4	4.0
Samangan	464	41.3	57.0	1.7	42.6	21.8	32.9	0.0	2.7	58.7	26.9	5.3	9.2
Saripul	446	33.7	65.7	0.6	34.2	3.7	61.2	0.0	0.9	68.7	28.3	0.6	2.4
Takhar	484	26.4	71.9	1.6	27.5	43.9	24.4	1.5	2.7	69.3	23.1	4.7	2.9
Uruzgan	494	35.7	63.9	0.3	42.1	30.9	25.1	0.6	1.3	66.2	31.7	1.5	0.6
Wardak	421	23.9	74.2	1.9	28.5	41.8	25.1	0.3	4.3	63.2	25.0	3.9	7.9
Zabul	380	40.8	57.4	1.8	54.5	27.0	16.2	0.3	2.0	63.9	31.5	1.4	3.1

8.6: Prevalence of worm infestation and Deworming

Table 8.12: Worm Infestation

	n	%
Reported worm infestation (last pregnancy)		
Yes	586	3.6
No	14037	90.3
Not Reported	163	1.5
Don't know	772	4.6
N	15558	100.0
Reported used of de-worming medicine (last one year)		
Yes	725	3.8
No	13661	89.4
Not Reported	131	1.2
Don't know	1041	5.5
N	15558	100.0

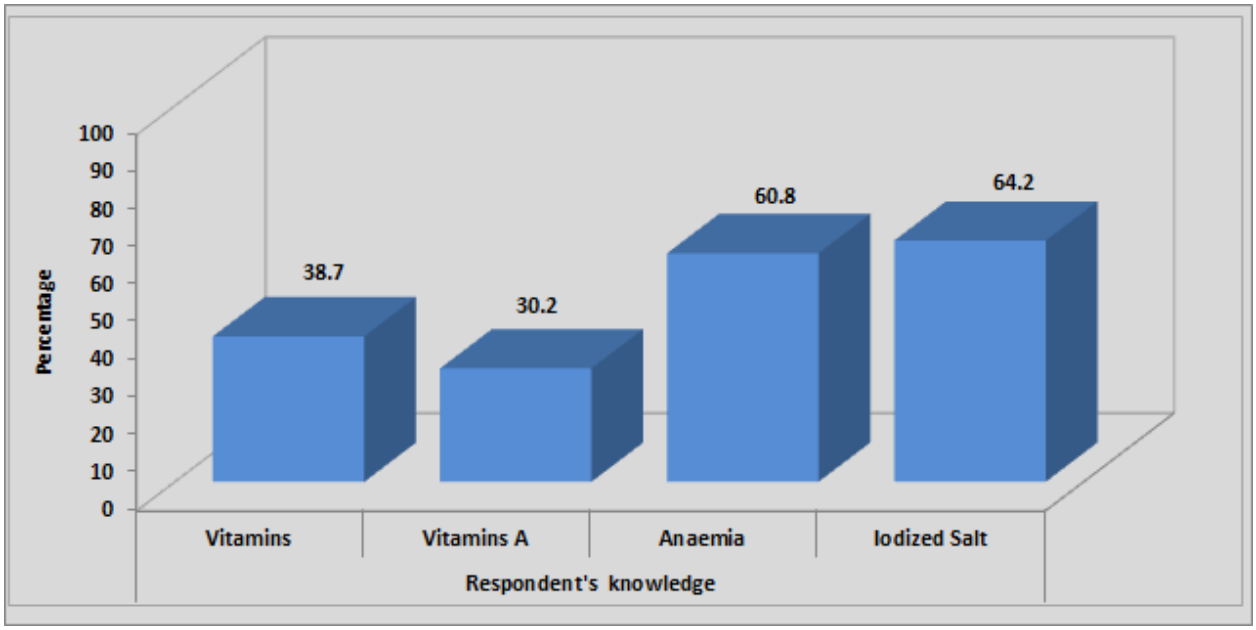
Table 8.12 illustrates the status of worm infestation in women of reproductive age. Overall 3.8% pregnant women were diagnosed with worm infestation during the last one year. However, only 3.8% women reported to take deworming medicines during last pregnancy.

Section 9: KAP regarding Micronutrients

9.1: Knowledge about Vitamins and Micronutrients

Micronutrient deficiency is an important public health problem in developing countries. In NNS 2013, questions were asked to determine respondents' level of knowledge about vitamins, minerals and anemia.

Figure 9.1: Awareness about vitamins, vitamin A, anaemia and iodized salt



The survey findings revealed that knowledge of women about micronutrients was generally low. Only 38.7% of mothers had knowledge about vitamins across Afghanistan. However, this knowledge varied greatly between provinces, with the highest (94.4%) in Panjshir and the lowest (8.1%) in Nuristan.

Overall; 30.2% respondent had knowledge about vitamin A. The highest percentage of respondents with knowledge of vitamin A was reported in Panjshir (83.9%) whereas lowest was in Balkh (3.8%). Overall, 60.8% women had knowledge about anaemia but it varied between provinces, highest (88.4%) in Nimroz and lowest (27.6%) in Nuristan. More than half of the women (64.2%) were aware about iodized salt. Province-specific details are given in table 9.1.

Table 9.1: Knowledge about vitamins, vitamin A, anaemia and Iodized Salt by Province

	N	Knowledge of respondent about			
		Vitamins	Vitamin A	Anaemia	iodized salt
Badakhshan	428	55.0	84.0	74.9	71.8
Badghis	518	29.3	5.8	72.3	39.6
Baghlan	488	53.5	32.0	77.5	96.0
Balkh	517	29.5	3.8	63.3	72.7
Bamyan	532	9.1	4.4	62.6	37.0
Diakundi	521	28.1	32.6	38.2	38.6
Farah	515	41.4	46.3	62	30.9
Faryab	498	33.7	22.3	63.6	52.2
Ghazni	529	39.1	59.9	81.5	92.4
Ghor	491	44.3	21.6	56.2	52.4
Helmand	472	47.3	45.1	70.4	37.3
Hirat	519	50.5	35.9	61.4	66.8
Jawzjan	470	27.9	16.1	45.4	54.2
Kabul	466	54.0	40.5	70	90.8
Kandahar	459	19.5	10.4	24.1	34.2
Kapisa	518	39.5	28.1	68.4	71.1
Khost	471	26.4	30.6	40.6	53.3
Kunar	517	50.5	57.3	47.5	59.6
Kunduz	519	10.2	5.5	70.3	66.0
Laghman	491	36.3	15.6	56.2	54.3
Logar	510	25.0	5.4	38.2	31.4
Nangarhar	456	32.6	18.2	59.9	75.9
Nimroz	472	46.3	29.6	88.4	49.3
Nuristan	430	8.1	6.6	27.6	4.6
Paktia	466	11.5	7.1	53.2	55.2
Paktika	351	59.3	40.3	37.9	46.8
Panjsher	516	94.4	83.7	83.9	95.0
Parwan	468	44.6	17.4	53.9	95.2
Samangan	494	11.3	9.8	53.2	60.5
Saripul	479	41.4	45.9	68.3	70.6
Takhar	535	29.6	29.3	48.6	45.7
Uruzgan	498	39.8	30.0	38.1	24.1
Wardak	449	40.5	26.7	62.5	41.7
Zabul	420	34.0	30.9	62.7	46.7
Total	**16483**	**38.7**	**30.2**	**60.8**	**64.2**

9.2: Knowledge of vitamins and their benefits

At the national level 38.7% women had heard about vitamins. Of those, who had some knowledge, 62.5% considered that vitamins give strength, keep a person healthy (60.5%), prevent illness

(35.1%), treat illness (21.3%) and make a person smarter (20.2%). Among those who knew about vitamin A, 64.2% thought it was good for eyes and 54.8% perceived it prevented illness.

Table 9.2: Respondents knowledge about benefits of vitamins and vitamin A

	n	%
Benefits of Vitamins (N)	16,483	
Give strength	4,079	62.5
Make healthier	3,586	60.5
Prevent Illness	2,432	35.1
Treatment of illness	1,519	21.3
Make smarter	1,274	20.2
Others	73	2.0
Don't know	194	4.8
Heard of Vitamin	4,765	30.2
Benefit of vitamin A for human body		
It is good for the eyes	3,083	64.2
It helps prevent illness	3,017	54.8
Others	147	3.1
Don't know	379	9.9

9.3: Knowledge and practices about iodized salt

Knowledge, source of information about iodized salt, reported use of iodized salt and reasons of not using iodized salt for cooking were also included in NNS 2013.

Table 9.3: Knowledge and practices regarding use of iodized salt

	N	%
Knowledge about iodized salt (Yes)	9,438	64.2
N	16,483	
Source of information about iodized salt (multiple response)		
Radio	1,856	18.6
Television	3,770	52.6
Newspaper	91	0.9
Health worker (doctor, nurse, etc.)	2,660	23.6
Relative (mother, father, aunt, etc.)	2,446	19.4
Neighbor	2,450	20.7
Others	196	1.6
Don't know	244	2.9
Reported use e of Iodized salt for cooking (Yes)	7,531	78.5
Reasons of not using Iodized salt		
Expensive	364	25.9
Not available	800	38.4
Bad taste	31	1.6
Impairs reproductive ability	38	1.6
Birth control (Family planning)	19	0.6
Ill effects on health	13	0.3
Others	8	0.6
Not Reported	492	24.5
Don't know	142	6.5

Overall, 64.2% women were aware of iodized salt. A considerable variation existed between provinces ranging from 24.1% in Uruzgan to 96.0% in Baghlan. Only 4.6% respondents were aware of iodized salt in Nuristan province as presented in table 9.4.

Among those who knew about iodized salt, the majority (52.6%) had heard about it from television, 23.6% received information from health workers (doctors, nurses, etc.), 20.7% had heard about it from neighbors, 19.4% from relatives and 18.6% from radio (Tables 9.3 & 9.4). At the national level, 78.5% households used iodized salt for cooking. Usage patterns varied among provinces from 33.9% in Badakhshan to 99.4% in Panjsher (Table 9.4).

Table 9.4: Knowledge and use of iodized salt for cooking by provinces

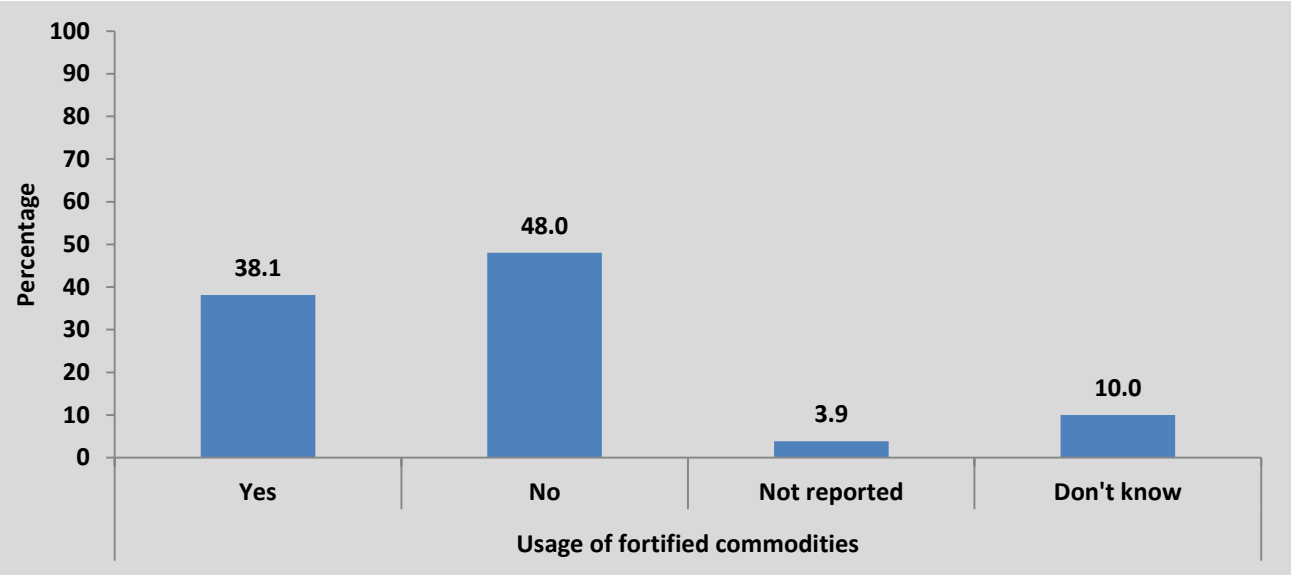
	Before today, had you ever heard of iodized salt?		Are you using Iodized salt for cooking?	
	Yes	N	Yes	N
Kabul	90.8	466	91.0	424
Kapisa	71.1	518	93.3	360
Parwan	95.2	468	98.9	446
Wardak	41.7	449	77.3	182
Logar	31.4	510	93.4	158
Nangarhar	75.9	456	98.7	351
Laghman	54.3	491	79.1	270
Panjsher	95.0	516	99.4	490
Baghlan	96.0	488	87.5	470
Bamyan	37.0	532	90.5	208
Ghazni	92.4	529	97.9	482
Paktika	46.8	351	86.2	157
Paktia	55.2	466	47.9	263
Khost	53.3	471	84.9	259
Kunar	59.6	517	95.4	310
*Nuristan	4.6	430	56.4	**15**
Badakhshan	71.8	428	33.9	319
Takhar	45.7	535	51.6	258
Kunduz	66.0	519	89.3	332
Samangan	60.5	494	93.1	295
Balkh	72.7	517	65.8	389
Saripul	70.6	479	88.4	335
Ghor	52.4	491	57.7	262
Daykundi	38.6	521	61.3	193
Urozgan	24.1	498	65.3	119
Zabul	46.7	420	80.7	199
Kandahar	34.2	459	57.0	168
Jawzjan	54.2	470	64.7	266
Faryab	52.2	498	83.6	318
Helmand	37.3	472	59.4	190
Badghis	39.6	518	57.7	208
Hirat	66.8	519	42.4	341
Farah	30.9	515	64.9	155
Nimroz	49.3	472	95.8	246
Total	**64.2**	**16483**	**78.5**	**9438**

* Findings of Nuristan province is not representative, please read with caution.

9.5: Use of fortified food commodities

During the survey, usage of fortified food commodities such as fortified flour, ghee/ oil, milk, etc. at household level was inquired. Findings showed that across Afghanistan 38.1% (5062 out of 16,483) households used one or more fortified commodity, 48% of mothers were not using any kind of fortified food and 10.0% did not know about fortified foods (Figure 9.2).

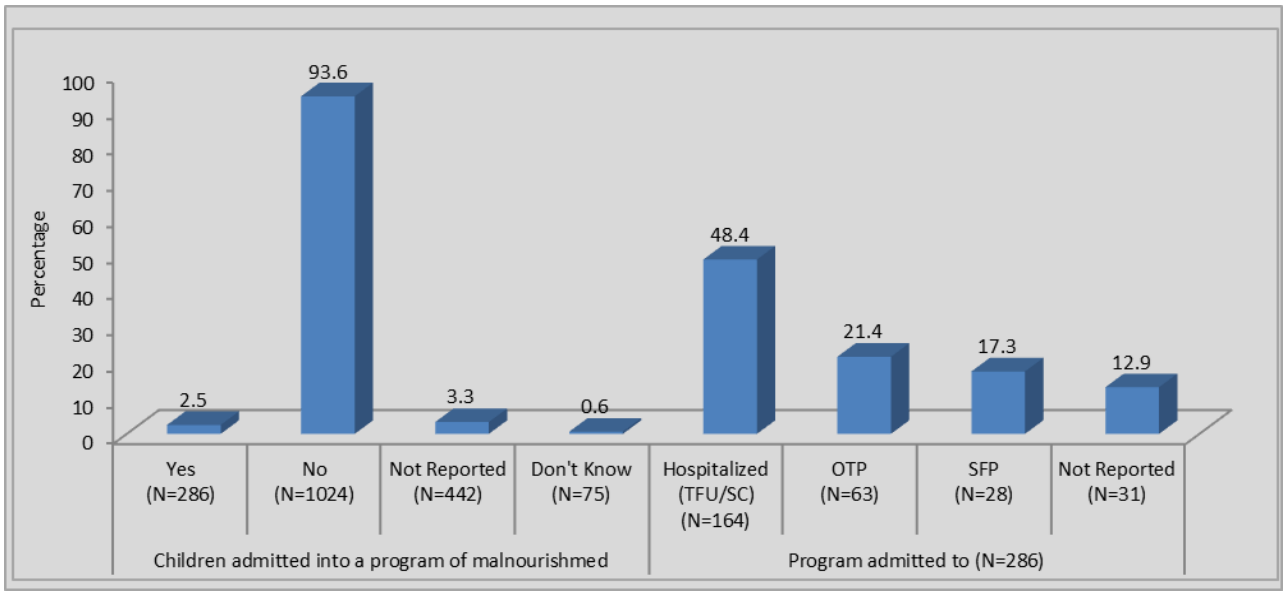
Figure 9.2: Use of fortified food commodities at household



9.6: Admission status of malnourished children in CMAM-SC/TFU, OTP and SFP program

One of the objectives of NNS2013 was to estimate the proportion of malnourished children enrolled in CMAM-SC/TFU, OTP, and SFP. Data showed that only 2.5% children (0-59 months of age) with malnutrition were registered in different ongoing nutrition programs in Afghanistan. Of these who were registered, 48.4% children (0-59 months) were hospitalized in IPD-SAM (TFU/SC), 21.4% in OTP and 17.3% in SFP. Mothers of 12.9% children were not aware of the name of program. This high rate of hospitalization in IPD SAM is possibly due to lack of facilities providing OPD SAM, as a result of which even children without complications may have been admitted to IPD SAM. Details are given below in Figure 9.3.

Figure 9.3: Admission status of malnourished children in CMAM-SC/TFU, OTP, and SFP program



Section 10: Food security- food consumption, hunger scale and coping strategies

Food security was also assessed in NNS 2013. Three different measures: Food Consumption Score (FSC), Household Hunger Scale (HHS) and Reduced Household Coping Strategies Index (RCSI) were used to estimate food security situation in Afghanistan. All are elaborated below;

10.1: Food Consumption Score (FCS)

The FCS is considered as a proxy indicator of current food security. FCS is a composite score based on dietary diversity, food frequency and relative nutrition importance of different food groups. Dietary diversity is the number of individual foods or food groups consumed over the past seven days. Food frequency is the number of days (in the past 7 days) that a specific food item has been consumed by a household. Household food consumption is the consumption pattern (frequency * diversity) of households over the past seven days. The Calculation of FCS and household food consumption groups was calculated as follows:

- Using standard 7-day food frequency data, all the food items were grouped into nine specific food groups.
- All the consumption frequencies of food items of the same group were summed, and the value of each group above 7 was recoded as 7.
- The value obtained for each food group was multiplied by its weight and new weighted food group scores were created.
- The weighed food group scores were summed, thus, creating the food consumption score (FCS). The most diversified and best consumption with maximal FCS means that all food groups were eaten 7 days a week.
- Using the appropriate thresholds, the variable food consumption score were recoded, from a continuous variable to a categorical variable, to calculate the percentage of households of poor, borderline and acceptable food consumption.

Table 10.1: Food Items, Food Group and Weight applied for Afghanistan

No	Food groups	Weight
1	Cereals (bread, rice, maize, barley) and tubers (potatoes, sweet potatoes)	2
2	Pulses and nuts (beans, lentils, peas, peanuts, etc.)	3
3	Vegetables	1
4	Fruits	1
5	Meat and fish (all types)	4
6	Dairy products (milk, yoghurt, cheese, other milk's products)	4
7	Sugar, honey	0.5
8	Oil, fat, butter	0.5

10.2: Food Consumption Score thresholds

Table 10.2: Thresholds of FSC used to categorize households in three food consumption groups

Food consumption groups	Food Consumption Score	Description
Poor	1-28	An expected consumption of staple 7 days, vegetables 5-6 days, sugar 3-4 days, oil/fat 1 day a week, while animal proteins are totally absent
Borderline	28.1 -42	An expected consumption of staple 7 days, vegetables 6-7 days, sugar 3-4 days, oil/fat 3 days, meat/fish/egg/pulses 1-2 days a week, while dairy products are totally absent
Acceptable	> 42	As defined for the borderline group with more number of days a week eating meat, fish, egg, oil, and complemented by other foods such as pulses, fruits, milk

The table below shows the result of food consumption score with households classified as having poor, borderline and acceptable food consumption. Our survey showed that majority (75.7%) of the households had acceptable food consumption with a score of > 42, whereas about 18% had borderline food consumption with a score of 28.1-42 and a very small (6.3%) proportion had poor food consumption with a score of < 28.

Table 10.3: Result of Food consumption score

Food Consumption Score (FSC)	Total Number (N)	Percentage (%)
Poor (1 -28)	1037	6.3
Borderline (28.1 -42)	2887	17.9
Acceptable (> 42)	12051	75.7
Total	15975	100

The results found in this NNS are very consistent with those of the 2013 Seasonal Food Security Assessment conducted by the Food Security and Agriculture Cluster in July-August 2013. The latter reported 5.1% of the households had poor food consumption, 18.9% has borderline and 76% had acceptable food consumption.

10.3: Household Hunger Scale (HHS)

HHS is a proxy of food access. Our HHS was built around 3 questions about perceptions of a household on varying degrees of hunger by the number of times a household has experienced hunger within past 30 days prior to the survey.

Questions

1. In the past 30 days, was there ever no food of any kind to eat in your house because of lack of resources to get food?
2. In the past 30 days, did you or any household member go to sleep at night hungry because there was not enough food?
3. In the past 30 days did you or any household member go a whole day and night without eating anything at all because there was not enough food?

Scoring

Three scoring options for scoring the response to each question were:

- Never (0 times) =0 score
- Rarely/ Sometimes (1-10 times) = 1 score
- Often (more than 10 times) =2 scores

HHS = Score of response 1+ Score of response 2 + Score response 3.The total HHS ranges from 0 to maximum 6 score.

HHS thresholds

The following thresholds of HHS were used to categorize households into three hunger groups – None/light, Moderate and Severe:

- 0-1 score: None or light hunger
- 2-3 scores: Moderate hunger
- 4-6 scores: Severe hunger

The table 10.4 shows the result of household hunger scale. Our data showed that most (84.2%) of the households had no or light hunger scale with the score of 0-1, whereas 14% had moderate hunger with the score of 2-3. Further, only 0.9% of households were found to have severe hunger with the score of 4-6.

Table 10.4: Results of Household Hunger Scale (HHS)

Household Hunger Scale (HHS)	Total Number (N)	Percentage (%)
None or light hunger (0-1 score)	13385	84.2
Moderate hunger (2-3 scores)	2650	14.0
Severe hunger (4-6 scores)	159	0.9
Not Reported	139	1.0
N	16333	100

The results of HHS in NNS were very similar to those of the 2013 FSAC-led Seasonal Food Security Assessment. The latter reported 84% of households having no or light hunger, 13% had moderate hunger and 3% experienced severe hunger.

10.4: Reduced Coping Strategy Index (RCSI)

When livelihoods are negatively affected by a shock /crisis, households may adopt various mechanisms (strategies) which are not adopted in a normal day-to-day life, to cope with reduced or declining access to food.

Coping Strategy Index (CSI) is often used as a proxy indicator of household food insecurity. CSI is based on a list of behaviors (coping strategies). CSI combines: (i) the frequency of each strategy (how many times each strategy was adopted?); and (ii) their (severity) (how serious is each strategy?) for households reporting food consumption problems. Higher CSI indicates a worse food security situation and vice versa. CSI is a particularly powerful tool for monitoring the same households or population over time. There are two types: “Full CSI” and “Reduced CSI”.

In this NNS, Reduced CSI is used. Reduced CSI is based on the same short list of 5 food-related coping strategies applied during the past 7 days prior to the NNS, and the same severity weights. It is very useful for comparing across regions and countries, or across income/livelihood groups, because it focuses on the same set of behaviors. The maximal RSCI is 56 during the past 7 days prior to the NNS (i.e. all 5 strategies are applied every day).

There are no universal thresholds for Reduced CSI. But the higher the RCSI, the more severe the coping is applied by a household. In Afghanistan, WFP and FSAC partners usually classify RCSI in 5 levels based on its mean value: minimal (0-8), moderate (8.1 – 15.0), severe (15.1 – 25.0), very severe (25.1 -30.0), and extremely severe (>30.0)

Table 10.5 Household coping strategy

Household Coping Strategies Index (mean, SD)	(4.0, 6.4)
N	16241

In NNS 2013, the average Reduced CSI was 4.0 and categorized at the minimal level based on the above classification. Only one province had RCSI at extremely severe coping level and another province at severe coping level.

Table 10.6: Association of food security with wealth quintile

	Household Hunger Scale (HHS)					Household Coping Strategies Index		Food Consumption Score (FSC)			
	None or light hunger (0-1 score)	Moderate hunger (2-3 scores)	Severe hunger (4-6 scores)	NR	N	Mean (SD)	N	Poor (1 -28)	Borderline (28.1 -42)	Acceptable (> 42)	N
Overall	84.2	14.0	0.9	1.0	16333	4.0 (6.4)	16241	6.3	17.9	75.7	15975
Wealth Index (quintiles)											
Poorest	70.7	27.3	1.5	0.5	3316	7.1 (8.5)	3306	11.5	23.6	64.9	3272
Poor	81.9	16.5	1.0	0.6	3279	4.9 (6.4)	3265	8.1	19.8	72.1	3211
Middle	84.3	13.4	1.1	1.2	3275	3.9 (5.9)	3256	6.0	19.1	74.8	3214
Rich	85.9	12.1	0.7	1.3	3216	3.6 (5.8)	3191	4.5	15.8	79.7	3145
Richest	90.7	7.8	0.5	1.0	3233	2.2 (5.2)	3209	4.1	14.9	81.0	3128

Table 10.7: Food Security – Food Consumption Score, Household Hunger Scale and Reduced Coping Strategy Index, by province

	Household Hunger Scale (HHS)					(mean, SD) Household Coping Strategies Index		Food Consumption Score (FSC)			
	None or light hunger (0-1 score)	Moderate hunger (2-3 scores)	Severe hunger (4-6 scores)	NR	N	Mean (SD)	N	Poor (1 - 28)	Borderline (28.1 -42)	Acceptable (> 42)	N
Kabul	89.1	8.3	1.0	1.6	413	2.6 (5.5)	405	8.5	21.2	70.3	395
Kapisa	92.0	7.7	0.2	0.1	522	3 (4.7)	522	3.9	19.4	76.7	516
Parwan	96.6	3.2	0.0	0.2	470	1.3 (3.4)	469	1.4	18.1	80.6	451
Wardak	67.7	21.6	5.7	4.9	405	4.8 (6.4)	389	2.1	6.7	91.2	390
Logar	90.8	8.8	0.0	0.4	513	4 (6.7)	512	0.6	7.2	92.2	502
Nangarhar	67.8	28.4	2.7	1.1	465	9 (7.3)	462	0.6	7.7	91.7	449
Laghman	78.6	18.1	3.3	0.0	455	5.2 (8.1)	455	9.9	7.4	82.8	448
Panjsher	80.6	19.0	0.1	0.2	518	6.8 (6.6)	516	3.4	15.7	80.8	507
Baghlan	95.2	2.8	0.0	2.0	488	1.7 (2.9)	483	1.5	16.9	81.6	478
Bamyan	77.3	22.1	0.1	0.5	536	9.6 (7.9)	534	16.3	25.9	57.7	532
Ghazni	92.9	5.1	1.1	0.9	528	1.7 (2.1)	527	1.3	20.4	78.2	524
Paktika	88.7	10.0	0.5	0.9	340	3.9 (4.2)	336	0.3	18.9	80.8	339
Paktia	93.1	5.6	0.1	1.2	448	7.5 (5.2)	443	15.7	32.0	52.3	444
Khost	83.9	14.6	0.0	1.5	464	0.9 (3.8)	462	3.1	14.5	82.4	451
Kunar	92.8	7.2	0.0	0.0	521	4 (4)	521	0.7	3.1	96.2	512
Nuristan	51.6	48.3	0.0	0.1	419	32.2 (14.1)	419	10.3	23.1	66.6	415
Badakhshan	94.0	5.4	0.0	0.6	414	3.9 (4.2)	413	9.4	33.0	57.6	404
Takhar	97.7	2.0	0.0	0.4	521	0.1 (0.8)	519	4.7	22.3	72.9	520
Kunduz	51.6	47.0	1.2	0.2	526	8.5 (5.9)	525	12.4	11.7	75.9	518
Samangan	79.9	19.1	0.2	0.7	496	2.1 (2.9)	493	15.1	28.1	56.8	486
Balkh	82.3	16.3	1.2	0.1	519	6.5 (7.6)	519	13.1	21.7	65.2	511
Saripul	93.5	6.1	0.0	0.4	490	2.4 (2.7)	488	1.0	7.1	91.9	477
Ghor	84.6	14.8	0.1	0.5	498	5 (4)	496	17.2	34.6	48.2	482
Daykundi	39.2	60.1	0.3	0.3	523	9.7 (6)	523	17.3	25.8	56.9	516
Urozgan	15.7	73.8	10.4	0.1	508	12.6 (7.9)	506	1.2	7.1	91.7	498
Zabul	88.6	5.5	0.0	5.9	410	3.8 (4.7)	396	0.8	6.5	92.8	370
Kandahar	88.4	9.6	0.6	1.4	454	1.5 (3.4)	450	6.6	12.9	80.5	445
Jawzjan	97.5	1.7	0.0	0.8	452	0.4 (1.2)	451	3.9	26.0	70.1	440
Faryab	62.9	36.2	0.9	0.0	491	5.3 (5.9)	491	5.2	19.1	75.7	481
Helmand	98.9	0.4	0.1	0.6	471	0.1 (0.7)	469	1.2	23.8	75.0	469
Badghis	83.0	16.1	0.0	0.9	525	6 (6.1)	521	13.5	33.7	52.8	514
Hirat	94.9	3.7	0.4	1.0	529	1.8 (6.3)	526	3.6	9.3	87.1	514
Farah	97.4	1.2	0.0	1.4	517	1.2 (2.5)	516	0.2	4.9	94.8	507
Nimroz	95.3	2.8	2.0	0.0	484	1.5 (4.8)	484	8.6	17.5	73.9	470
Total	**84.2**	**14.0**	**0.9**	**1.0**	**16333**	4.0 (6.4)	**16241**	**6.3**	**17.9**	**75.7**	**15975**

Table 10.8 depicts the food groups consumed by the mother of index child/WRA in the last 24 hours. The data showed that almost all women (98.0%) consumed cereals (Bread, wheat, rice, maize etc.) and Oil, Fats followed by sugar and honey (78.4%), and dairy products (76.9%). Whereas, 68% consumed Tubers (potato, sweet potato, etc.), fruits (56.1%) and 40.5% pulses and nuts. However 44.9% respondents had access to meat, fish and eggs during last 24 hours. No significant association was found between intake of different food items and wealth status of respondents.

Table 10.8: Proportion of mothers of index children consumed food groups (last 24 hours)

	Cereals (%)	Tubers (%)	Pulses and nuts (%)	Vegetables (%)	Fruits (%)	Meat, fish and eggs (all types) (%)	Dairy and dairy products (%)	Sugar, honey (%)	Oil, Fats (%)	N
Overall	98.0	68.0	40.5	49.9	56.1	44.9	76.9	78.4	95.2	15975
Wealth Index(quintiles)										
Poorest	97.8	61.4	32.8	30.9	38.9	34.0	75.1	64.6	93.4	3259
Poor	98.1	67.3	38.6	41.2	48.6	41.9	77.3	77.1	95.9	3222
Middle	98.6	67.9	43.5	45.7	54.3	42.9	76.9	82.1	96.1	3222
Rich	98.7	72.4	44.3	55.1	64.7	47.1	80.6	83.5	95.5	3137
Richest	97.2	69.0	41.5	62.9	64.0	51.5	75.6	80.6	95.0	3130

Table 10.9: Food groups consumed in last 24 hours (Index child)

	N	Cereals	Tubers	Pulses and nuts	Vegetables	Fruits	Meat, fish and eggs (all types)	Dairy and dairy products	Sugar, honey	Oil, Fats
Overall	12998	72.9	48.9	27.3	31.3	41.5	29.5	67.1	61.7	70.6
Gender										
Male	6693	72.6	48.9	27.4	30.9	41.8	29.2	66.9	62.2	69.8
Female	6305	73.1	48.9	27.1	31.7	41.2	29.8	67.3	61.2	71.4
Age groups										
< 6 months	2345	10.8	7.9	4.6	4.6	5.8	3.2	25.3	11.8	11.9
6-11 months	2212	59.3	39.6	20.5	22.8	35.9	21.6	67.0	51.0	58.3
12-23 months	3257	88.6	58.8	31.6	36.3	49.8	37.0	82.5	73.8	85.6
24-35 months	2587	95.7	64.4	36.8	39.5	53.3	39.9	77.3	80.3	91.9
36-47 months	1451	96.6	66.7	37.1	46.2	55.7	39.0	72.9	80.2	92.2
48-59 months	1131	96.4	62.8	39.6	50.2	55.2	40.3	74.9	82.1	93.3
Mother's education										
Illiterate / Religious education	11088	73.2	48.1	26.6	29.9	40.0	28.4	67.1	61.7	71.4
Pre-school / Some school years	1266	72.7	50.6	29.0	34.5	47.2	32.6	68.3	59.3	68.4
High school & above	294	64.9	51.7	31.4	39.3	51.4	37.7	67.7	63.0	61.0
Wealth Index (quintiles)										
Poorest	2724	73.9	44.0	21.1	20.0	28.3	22.6	63.5	51.1	70.7
Poor	2624	72.1	47.2	24.1	24.6	34.7	24.9	65.5	58.5	70.1
Middle	2666	72.5	47.1	28.4	28.6	41.1	27.9	65.7	65.0	70.4
Rich	2522	71.3	48.4	27.2	32.6	45.0	30.0	68.8	63.4	68.5
Richest	2457	73.8	53.5	31.7	41.6	50.1	36.3	69.4	65.9	72.1

Table 10.9 depicts the food groups consumed by the index child/ in the last 24 hours. The data showed that almost 3/4th of children under 5 consumed cereals (72.9%) and Fats (70.6%). Followed by Dairy and dairy products (67.1%) and Sugar (61.7%). Whereas, 48.9% consumed Tubers, 41.5% Fruits, 27.3% pulses and nuts. However, 29.7% respondents had access to meat, fish and eggs during last 24 hours. An association was not found between intake of different food items and wealth status of respondents.

Table 10.10: Average number of days food groups consumed (past week)

	Cereals (Bread, wheat, rice, maize etc.) (%)	Tubers (potato, sweet potato, etc.) (%)	Pulses and nuts (beans, lentils, peas, peanut, etc.) (%)	Vegetables (%)	Fruits (%)	Meat, fish and eggs (all types) (%)	Dairy and dairy products (Milk, yogurt, cheese, other milk products) (%)	Sugar, Honey (%)	Oil, Fats (%)	N
Overall	6.8	3.1	1.8	2.4	2.9	1.9	4.4	5.3	6.6	15975
Age groups										
15-19 years	6.9	3.0	1.7	2.3	3.0	1.9	4.3	5.0	6.6	994
20-24 years	6.8	3.2	1.7	2.5	3.0	2.1	4.5	5.2	6.5	3121
25-29 years	6.8	3.1	1.9	2.4	2.9	1.9	4.4	5.2	6.5	3772
30-34 years	6.8	3.0	1.8	2.3	2.7	1.9	4.4	5.3	6.5	2965
35-39 years	6.8	3.2	2.0	2.4	2.8	1.9	4.3	5.4	6.6	2681
40-44 years	6.8	3.1	1.9	2.6	2.9	2.0	4.4	5.4	6.6	1517
45-49 years	6.7	3.1	1.9	2.4	2.8	1.8	4.4	5.1	6.6	925
Wealth Index (quintiles)										
Poorest	6.8	2.5	1.3	1.5	1.9	1.5	4.4	4.1	6.2	3259
Poor	6.8	2.9	1.7	2.0	2.4	1.7	4.4	5.1	6.5	3222
Middle	6.9	2.9	1.8	2.1	2.6	1.7	4.4	5.5	6.6	3222
Rich	6.8	3.3	2.1	2.6	3.2	2.0	4.6	5.5	6.6	3137
Richest	6.8	3.5	2.0	3.2	3.6	2.4	4.4	5.6	6.7	3130

The average number of days each food group is consumed determines the dietary diversity in the household. In general, mothers of index child/ WRA consumed at least seven days of cereals and almost seven days of oil and fats per week followed by sugar/ Honey and Dairy and dairy products (Milk, yogurt, cheese, other milk products) which were used for 5.3 and 4.4 days respectively. Further the tubers, pulses, vegetables; fruits were used for 3.1, 1.8, 2.4 and 2.9 days respectively. It was observed that the meat, fish and eggs were used for only 1.9 days, and it was noted that for almost all food groups the maximum usage was in richest quintile which subsequently decreased with the change of wealth quintile.

Table 10.11: Mean consummation of foods per week (Index Child)

	N	Cereals (Bread, wheat, rice, maize etc.)	Tubers (potato, sweet potato, etc.)	Pulses and nuts (beans, lentils, peas, peanut, etc.)	Vegetables	Fruits	Meat, fish and eggs (all types)	Dairy and dairy products (Milk, yogurt, cheese, other milk products)	Sugar, honey	Oil, Fats
Overall	**12802**	4.7	2.1	1.2	1.4	2.0	1.2	3.3	3.9	4.6
Gender										
Male	6596	4.7	2.1	1.2	1.5	2.0	1.2	3.3	3.9	4.6
Female	6206	4.7	2.1	1.2	1.4	2.0	1.2	3.3	3.9	4.6
Age groups										
< 6 months	2276	0.6	0.2	0.1	0.1	0.3	0.1	0.7	0.6	0.7
6-11 months	2161	3.6	1.7	0.9	0.9	1.6	0.8	2.7	3.1	3.7
12-23 months	3214	5.8	2.5	1.4	1.6	2.5	1.6	4.0	4.7	5.6
24-35 months	2576	6.4	2.8	1.7	1.9	2.7	1.7	4.4	5.2	6.1
36-47 months	1441	6.5	3.0	1.7	2.3	2.8	1.7	4.4	5.2	6.3
48-59 months	1119	6.5	2.8	1.7	2.4	2.9	1.7	4.2	5.3	6.3
Mother's education										
Illiterate /Religious education	10924	4.7	2.0	1.2	1.4	1.9	1.2	3.3	3.9	4.6
Pre/Some school years	1250	4.7	2.2	1.2	1.7	2.6	1.4	3.5	3.7	4.6
High school & above	288	4.5	2.2	1.4	2.0	3.0	1.5	3.3	3.9	4.6
Wealth Index(quintiles)										
Poorest	2707	4.8	1.7	0.9	0.9	1.3	0.9	3.2	3.0	4.4
Poor	2596	4.7	1.9	1.1	1.2	1.6	1.0	3.3	3.7	4.5
Middle	2636	4.5	1.9	1.1	1.3	1.8	1.1	3.3	4.1	4.5
Rich	2470	4.6	2.0	1.3	1.5	2.2	1.2	3.4	3.9	4.5
Richest	2388	4.9	2.5	1.4	2.0	2.7	1.5	3.4	4.3	4.9

10.5: Association of stunting (<-2SD) with household hunger scale and food consumptions score

Table 10.12: Association of stunting (<-2SD) with household hunger scale and food consumptions score

	N	Stunting (<-2SD)	95% CI	Normal (≥2SD)	95% CI	p-value
Household Hunger Scale (HHS)						
None or light hunger (0-1 score)	16551	40.1	38.4 - 41.8	59.9	58.2 - 61.6	
Moderate hunger (2-3 scores)	3399	46.1	43.2 - 49.1	53.9	50.9 - 56.8	<0.001
Severe hunger (4-6 scores)	214	46.8	37.4 - 56.3	53.2	43.7 - 62.6	
Food Consumption Score (FSC)						
Poor (1 -28)	1273	44.7	41.1 - 48.4	55.3	51.6 - 58.9	
Borderline (28.1 -42)	3525	43.7	41.1 - 46.3	56.3	53.7 - 58.9	0.006
Acceptable (> 42)	15234	40.2	38.4 - 42	59.8	58 - 61.6	
	N	**Wasting (<-2SD)**	**95% CI**	**Normal (≥2SD)**	**95% CI**	**p-value**
Household Hunger Scale (HHS)						
None or light hunger (0-1 score)	16748	9.3	8.5 - 10.2	90.7	89.8 - 91.5	0.030
Moderate hunger (2-3 scores)	3444	10.8	9.1 - 12.8	89.2	87.2 - 90.9	
Severe hunger (4-6 scores)	218	15.5	10.2 - 22.8	84.5	77.2 - 89.8	
Food Consumption Score (FSC)						
Poor (1 -28)	1292	9.9	8.1 - 12.1	90.1	87.9 - 91.9	
Borderline (28.1 -42)	3574	9.8	8.4 - 11.5	90.2	88.5 - 91.6	0.835
Acceptable (> 42)	15412	9.5	8.5 - 10.5	90.5	89.5 - 91.5	
	N	**Underweight (<-2SD)**	**95% CI**	**Normal (≥2SD)**	**95% CI**	**p-value**
Household Hunger Scale (HHS)						
None or light hunger (0-1 score)	17336	23.9	22.6 - 25.3	76.1	74.7 - 77.4	
Moderate hunger (2-3 scores)	3596	30.1	27.3 – 33	69.9	67 - 72.7	<0.001
Severe hunger (4-6 scores)	236	42.0	31.5 - 53.3	58.0	46.7 - 68.5	
Food Consumption Score (FSC)						
Poor (1 -28)	1333	28.2	24.6 - 32.1	71.8	67.9 - 75.4	
Borderline (28.1 -42)	3680	28.2	25.9 - 30.6	71.8	69.4 - 74.1	0.002
Acceptable (> 42)	16008	24.1	22.6 - 25.6	75.9	74.4 - 77.4	

Section 11: Findings of Qualitative component

Total 31 focus group discussions (FGDS) and 33 in-depth interviews (IDIs) were conducted at different locations of Afghanistan to get the representation from all target ethnic groups. Focus group discussions were conducted with mothers having a child less than five years of age, male and female elders of the family. In-depth interviews were conducted with male family elders, and male and female health care professionals. Background characteristics of FGDs and IDIs participants are as under:

Table 11.1: Participants details

		Focus Group Discussions			In-depth interviews		
		Mothers FGDs	Female Family Elders	Total	Male Elders	Care Provider	Total
No of FGDs and IDIS conducted		16	15	31	17	16	33
Number of participants by location	Kabul - Urban	7[1]	8	15	1	1	2
	Kabul – Rural	8[2]	8	16	1	1	2
	Jawzjan - Urban	9	7	16	1	1	2
	Jawzjan – Rural	10	9	19	1	1	2
	Kunduz – Urban	8	8	16	1	1	2
	Kunduz – Rural	8	8	16	1	1	2
	Logar –Urban	7	6	13	1	2	3
	Logar –Rural	7	7	14	1	1	2
	Laghman –Urban	8	0	17	2	1	3
	Laghman – Rural	10	8	18	1	1	2
	Bamyan – Urban	8	8	16	1	1	2
	Bamyan - Rural	8	12	20	1	1	2
	Kandahar – Urban	2	3	5	1	1	2
	Kandahar – Rural	7	4	11	1	1	2
	Hirat– Urban	8	8	16	1	1	2
	Hirat - Rural	12	8	20	1	1	2
Age Groups of participants	<21 years	13	0	13	0	0	0
	21-30	62	1	63	1	9	10
	31-40	38	5	43	4	4	8
	41-50	3	46	49	6	4	10
	50>	0	52	52	6	2	8
Education status of participants	Illiterate	116	98	214	5	0	5
	Grade 1-6[3]	2	0	2	4	1	5
	Grade 7-9[4]	5	0	5	1	1	2
	Grade 10-12[5]	1	0	1	1	1	2
	High School Graduate	1	1	2	3	1	4
	Grade 14[6]	1	1	2	3	4	7
	Some University	1	0	1	0	0	0
	Midwifery /Nursing Education	0	0	0	0	2	2
	Medical Doctor	0	0	0	0	8	8

[1] The age of six of the respondents was not recorded.
[2]The age of three of the respondents was not recorded.
[3] Primary School Years
[4] Secondary School Years
[5] High School
[6] These respondents are either assistant doctors or school teachers

11.1 Determinants of maternal and child under nutrition: Qualitative Findings

11.1.1: Maternal and child under nutrition

This study identified multiple levels of factors that led to the malnutrition of women and children in Afghanistan. One of the major factor reported is lack of access to variety of food items needed at different stage of life cycle to meet the nutritional needs of both women and children due to a number of reasons as lack of awareness about adequate feeding practices; lack of affordability and availability of diverse food items and various cultural and health determinants. The brief description of each factor based on findings of this study is described as under;

11.1.2: Lack of knowledge about optimal feeding practices

There was general awareness that consumption of "good" food or "balanced" diet leads to a healthy life. But it was not clear to most of the nursing mothers and decision makers that what does it mean in terms of quality and quantity of good food or balanced diet. The advice regarding balanced diet even by care providers regarding what constitutes good food was reported to be generic by mothers and decision makers. "When the doctor doesn't advise what is to be given or not to a young child and the child eats what is available… and the food has a bad effect on him/her….. Laghman- Rural"

The perceived causes of malnutrition reported are related to inadequate feeding practices in terms of quality and quantity of nutrition intake. The mothers believed that their breast milk is not sufficient to meet the needs of children in early few months of life hence they start early introduction of complementary feeding. Moreover, due to lack of resources it becomes difficult to afford to buy food items of their choice. Few participants also reported that illness also causes malnutrition. "When the economic condition of a family is poor and mother couldn't feed her child with breast milk due to lack of breast milk or ignorance; the child will suffer from malnutrition"

11.1.3: Poor socio economic Status

The other important factor for under nutrition identified was low socio economic status of the communities in terms of purchasing power to buy nutritious foods. This affects their access to required food. On the whole, nursing mothers and decision makers reported that it was most of the time not possible to follow the nutrition advice they receive in counseling about good food because they were unable to afford the recommended food items due to lack of finances.

"I took my child to the governmental doctor; he (doctor) just advised me to cook these things in such and such ways. He didn't give me anything to cook for my child. DMF-R-Kabul"

"When mother does not eat proper food and does not have enough breast milk, child does not find and eat food and stays hungry." Bamyan – Urban,

"Poverty… poor families cannot feed their children. Even a nursing mother cannot get hygienic food and medications and obviously cannot breastfeed the child-she is weak and this will lead to the child becoming malnourished." HP Kandahar- Rural"

The low socio economic status was reflected by respondents as follows;

- Not being able to buy desired fruits and vegetables
- Joblessness of husbands/partner and not being able to provide enough for the children
- Being in debt
- Large families and few breadwinners

- Being unfortunate
- Less food available and large families
- Poverty and having nothing to eat
- Hungry and malnourished mothers
- Suffering
- Deprivation

“For example when they cook eggplant in TV, they place bell pepper, carrots, vegetables and bananas on the side. You can know from the color and appearance of the food that the meal has vitamins, proteins… and is very important for the growth of the children. There are people who eat meat the entire week and there is someone who does not eat meat in months and eats the same food all the time. The growth of the later will be altered and worse than ever and they will become malnourished” …. A female decision maker

11.1.4: Shorter Birth interval

Mothers become pregnant again and again. Shorter birth interval was considered by the participants as one of the important factor of under nutrition of both mothers and their children. This was also one of the reasons for stopping breastfeeding. “If there is not enough birth space between two children, the children will suffer from malnutrition; because the child will be separated earlier (deprived of breast milk) from mother and (mothers) don’t know what to give the child at that stage. If she can’t afford to buy powder milk she can offer cow milk to her child.” DMF-R-Laghman-FGD

“They (children) should receive good food; feed them balanced food they become healthy; should eat fruit and good food, along with eggs; Therefore, it is better to think at the beginning that you don’t have milk in your breast; you could find other options for feeding your child, this way you could prevent malnutrition of your child”. NM Kabul.

Disease: Most participants believed during diarrhea and fever, children either does not eat or there is not enough to feed them. Treatment is also delayed due to various factors mentioned under treatment heading hence it leads to under nutrition.

11.2: Breastfeeding beliefs and practices

11.2.1: Colostrum administration

Most of the respondents reported giving colostrum (locally termed as Filla, Dulma and Wurka, Jack, Tooj, Ozha) to the newborns. Some discard just couple of drops of colostrum ceremonially but there are still areas where colostrum is not given. In past colostrum was used to be discarded but due to some interventions like promotion of colostrum use through counseling of health care providers and media campaigns the tradition of discarding colostrum has changed in many areas but there are still some sections of society who still follow the custom.

The main source of information for the promotion of colostrum use is health care providers including doctors, vaccinators, midwives, clinic staff, followed by media and books. The main sources of information are given in following table by province influencing use of colostrum.

Box: Change in tradition of discarding colostrum

"We were ordinary / simple people didn't understand the importance of colostrum; therefore, we discarded colostrum. But now we understand the importance of colostrum which is useful to the infant. We right away give it to infant… ". NM Kandahar

"We explain to the people to give colostrum to your babies right away because; it is easily digestible, it increases immunity therefore, protects babies from communicable diseases". HCP Kandahar

"We just discard a few first drops of colostrum and wash breast and then give it to the baby". NM LAGHMAN-RURAL

"In the past I discarded the colostrum, when I heard about (usefulness of colostrum) it from TV, now, I am using it". NM Kabul

"It is said in the news that if a child gets colostrum, s/he will not become malnourished…. ". A female decision maker; Jawzjan Rural

"In past, we considered colostrum dirty, and instead of giving it to the newborn, we used to discard it in river or water or under a tree. But now, I say that it is beneficial and strengthens the baby". DMF Logar Rural

Table 11.2: Sources of information influencing use of colostrum

Province	Type of Area	Source of Information
Kabul	Rural	Health Care Provider
Kabul	Urban	Doctor
Jawzjan	Rural	Doctor Vaccinator Clinic staff Books TV
Jawzjan	Urban	Doctor Clinic staff
Kunduz	Rural	Health care providers
Kunduz	Urban	TV Doctor, Midwives Clinic staff
Logar	Rural	Doctors Traditional birth attendants Mather-in-law
Logar	Urban	Grandmothers Health provider
Laghman	Urban	Some people
Bamyan	Rural	Health workers, i.e. doctors
Bamyan	Urban	Health providers, i.e. doctors
Kandahar	Rural	Previous generations Doctor Health education. Mother mother-in-law
Hirat	Rural	Doctor Clinic staff
Hirat	Urban	Doctor Clinic staff

11.3: Initiation of Breastfeeding and pre lacteal use

As women are considered to be unclean after delivery hence it was considered inappropriate to initiate breastfeeding till women gets bath. This tradition has changed to a large extent and women now initiate breastfeeding immediately just only after washing breasts.

"There is a new custom of immediately washing the breast and starting breastfeeding nowadays." DMF- Jawzjan – Rural

Some women believed it is religious obligation to breastfeed the newborn immediately after birth.

"Prophet Mohammad (PBUH) has said that once the baby is born, hug the baby and start breastfeeding him/her immediately because it increases the love between the mother and child." DMM Jawzjan Rural

"If newborn does not cry at birth, breastfeeding is delayed till he/she cries. (Newborn) is fed when the baby cries. If the baby is calm, we let the baby sleep until noon and then we start breastfeeding." NM; Bamyan- Rural

A decision maker female from rural areas of Jawzjan province reported that "Whenever the baby cries should be breastfed. Otherwise it is not necessary to give the breast milk to the baby."

Moreover, if a woman does not feel well after delivery, the initiation of breastfeeding is delayed. The other factor identified that some of the women used to feel shy to hug their newborns and immediately start breastfeeding but this practice is also changing.

"Our mother-in-law **used to give the baby black tea and butter**. After 1-2 weeks, we used to hug the baby and start breastfeeding while we felt ashamed. Look at the women nowadays, they breastfeed the baby the minute s/he is born. The world has changed and people say that breast milk is beneficial." DMF- Rural

Few of the participants believed that early initiation of breast feeding can cause constipation to newborn hence breast feeding is avoided for few days.

"Some people advise delayed initiation because they believe it will cause constipation in the newborn." DMM; Kunduz – Urban

"Some mothers and grandmothers think that starting breastfeeding 3 days after the birth increases the production of breast milk." HCP Kabul

HCP from Kunduz province reported that it is tradition to delay initiation of breast feeding for 3-7 days in case of home birth but in case of institutional birth early initiation of breast feeding is promoted and mothers are encouraged to practice the same as well.

"The mothers start breastfeeding 3 or 7 days after the delivery. But if they deliver in the health facility, we make them start breastfeeding within the first hour after the delivery."

"If the baby is born at noon, according to our customs, we start breastfeeding in the evening." DMF Kandahar – Rural

a. Reasons for early initiation of breastfeeding

- Doctors' advice (counseling)

- In case of institutional birth
- Mother's milk is the best thing in the world to feed newborn
- Breast milk is very beneficial and prevents from getting sick
- Early initiation of breast feeding prevents malnutrition, diarrhea and other diseases
- Midwife's advice
- Women to take bath before they start breastfeeding hence it used to delay
- Religious Obligation
- Media messages about the benefits of early initiations of breast feeding
- The first milk is perceived to be beneficial more than a vaccine for a newborn
- Beneficial for the health of mother (womb contracts)

b. Reasons for delayed initiation of breastfeeding

- Mother does not feel well/comfortable after delivery
- In case if newborn is calm and does not cry after birth
- Does not produce milk
- Religious leader advice
- Early initiation of breast feeding causes constipation to newborn
- Cultural practice
- Newborn cannot suck

The use of pre lacteals is quite common reported from across all the provinces studied. The main pre lacteals used by province and type of area are given in the following table:

Table 11.3: Pre lacteal used in different province

Province	Type of Area	Pre lacteal used
Kabul	Rural	Butter Ghee (oil) Glucose sugary tea
	Urban	Butter Sweetened tea and butter
Jawzjan	Rural	Glucose Powder milk Black or green tea with or without sugar Fresh butter or Roghan-e-Zard (yellow oil made from butter) (ghee) Milk and nabat (sugar rocks/rock candy)
	Urban	Powder milk Cerelac Some fluids (there was no further explanation available; it can be tea, water, milk, etc.) Butter Jawani Badyan (fennel + Jawani (some other herb that is used mixed with fennel to relief stomach discomfort) Broth and other liquids (tea, water, milk, etc.) Glucose Black tea with or without sweeteners Nabat (sugar rocks/rock candy) Bartang (also called Zoof; some type of herbals) (Plantago major seeds)
Kunduz	Rural	Butter Animal Milk (Cow's milk, goat's milk) Tea and sugar Zoof (Plantago major seeds)
	Urban	Nabat (sugar rocks/rock candy)

		Glucose Sugar solution ZamZam water (The water from a well located within the Masjid al-Haram in Mecca, Saudi Arabia, the holiest place in Islam) Tea
Logar	Rural	Roghan-e-Zard (yellow oil) (Ghee) Castrol oil (It can be CASTOR oil but the respondents used the word castrol for this oil, maybe mistakenly) Butter Sweetened tea Zoof (Plantago major seeds)
Laghman	Urban	Milk from bazaar (by the use of a baby bottle) Honey Tea with or without sugar Some sweet liquids Bartang (Plantago major seeds) Black tea
Bamyan	Rural	Turbat/Turbah (soil from Karbala; a holy place in Iraq) with some sugar and oil Sherdel oil (a plant based oil) Nabat (sugar rocks/rock candy) Sugar Roghan-e-Zard (yellow oil/Ghee)
	Urban	Cow's milk (some for 3 days) Soaked bread after it is softened with a spoon Powder milk Qaymaq (cream) A bit oil mixed with cow's milk Luwab (something gravy like or sauce) Goat's milk Oil Butter Nabat (sugar rocks/rock candy) brought from a holy place
Kandahar	Rural	Tea (usually black) with or without sugar Qaymaq (cream) Powder milk Cerelac Biscuit Badyan (Fennel) Khaksheer (FLixweld) Nabat (sugar rocks/rock candy) dissolved in water
Hirat	Rural	In past, Nabat (sugar rocks/rock candy), Eshkana (a meal; the main ingredient is keshk (a dry dairy product), Ghaardo (not specified/probed), or Saffron Ghee Glucose Power milk
	Urban	Nabat (sugar rocks/rock candy) Gur-e-Poda (make from sugar cane) Roghan-e-Zard (Ghee) with or without grinded Nabat (sugar rocks/rock candy). Butter Glucose Powder milk Cerelac (a brand of instant cereal) Boiled water and Nabat (sugar rocks/rock candy) after it is cold Kapa made from Greek medications mixed with Nabat (sugar rocks/rock candy) Grinded Kalpura (a mixture of herbs also called Jawanibadyan) Dates The milk of herbal medicines

11.4: Exclusive breastfeeding

The practice of exclusive breastfeeding for six months is limited unlike administration of colostrum and immediate initiation of breast feeding. The major reason for early weaning is perception of not having sufficient milk. The other factor that lactating mothers are usually busy in household chores and other responsibilities hence they discontinue exclusive breastfeeding and introduce complementary feeding earlier than the recommended time of six months.

“(Breast milk is not given) one or two days after the delivery because, the mother does not produce breast milk immediately. What the mother has soon after giving birth is Jack (colostrum) but it is not enough to make the baby full.” DMF Hirat - Urban

“I didn't have enough breast milk therefore; I fed my children with tea and bread only.” FGD-NM-R-Logar

Health care provider reported that religious leaders (Mullah) also promote feeding things other than breastfeeding during early months of life.

“Mullahs children have not received good care at home and have become weak. Now the mullah thinks that it was the breast milk the made the child weak.” HP; Kunduz – Rural

It is believed that water is needed to quench the thirst of infant particularly if the weather is warm. Some even consider it a sin if water is not given to child during early days or few months of life. A nursing mother said: "after the first 40 days, boiled water should be given to the baby because it refreshes the baby's lungs. The babies become thirsty; they should be given water if the weather is warm."

An elderly woman said: "Not giving a baby food other than breast milk is a sin; when I become thirsty, the young children become thirsty too. I start giving water to the baby when s/he is 2 months old”. Hirat Province

The mother who delays initiation of complementary feeding believed that only mother’s milk is sufficient for growth of the child or if child does not like the taste of food items offered.

On the other hand most of the health care providers were aware about the need and importance of exclusive breastfeeding for six months and have been advising mothers during health education or counselling sessions but few were advising to introduce complementary feeding early at the age of four months.

“During the health education sessions for nursing mothers, we recommend giving small amounts of liquid food to children after 4 months; mothers can increase the amount of food after 6 months. As time passes, the consistency of the food can increase as well." HCP Hirat Province

"We are told at the hospital that children cannot eat food before 7 months of age and they should be only breastfed", said an elderly woman. ”Bamyan Province

11.5: Complementary Feeding

Initiation of complimentary feeding is started as early as at the age of 40 days of newborn by some participants and delayed up to age of one year. Most of the participants introduced complementary feeding at the age of 3-4 months and only few participants reported exclusively breastfeeding their newborns up to recommended six months of life. In some cases even health care provider advised

to initiate early feeding. The mother who delayed the initiation of complementary feeding believed breast milk to be sufficient for growth of their children.

“I am starting complementary feeding within 40 days of birth; because I don’t have enough milk. ”NM-R-Logar

“If we don’t have enough breast milk; we have to start weaning at third or fourth months.” DMF-R-Laghman.

“I have enough breast milk; it is enough for one year of my baby. He is not asking for extra food.” NM-U-Kabul.

Soft diets are used as complementary feeding such as beans, peas, watery rice, banana, boiled potato, Cerelac, biscuits, tea and vegetable soup. Frequency of complementary feeding varied between two to six times. Majority of the participants reported feeding children at least four times.

11.6: Treatment and Prevention of Under Nutrition

Most of the participants believed that treatment of malnutrition is possible only at health facilities and takes quite a time to recover. But few considered it incurable and deadly.

“My grandchild has suffered from malnutrition; it is not curable. Due to use of different medicines his liver has been destroyed. FGD-DMF-R-Kabul

“We have lost several children due to malnutrition”. FGD-DMF-U-Kandahar

11.6.1: Signs and Symptoms of malnourished child

The respondents identified different signs and symptoms of malnourished child. These include:

- Small child with distended abdomen
- Big head and slim limbs
- Weak children
- Child became skinny and bared bone
- Can’t sit and stand

11.6.2: Treatment of malnourished children

Malnourished children are taken to clinics at first place then to hospitals if the family is not satisfied with the treatment. Some people don't know if their children are malnourished, it is only diagnosed when they go to a clinic.

“Yeah, treated him for three years in the clinic and several time admitted to the Hospital. Now he is better”. FGD-DMF-U-Logar

“We didn’t know that he (child) was suffering from malnutrition, every prescription of him worth AFA 3000. We can’t afford this”. FGD-DMF-R-Kabul

“If (child) become malnourished it is difficult to recover.” NM-U-Laghman

The cost of the treatment is also considered to be quite high. Some of the participants reported receiving free of cost treatment from health care facilities. The health care providers also reported doing screening at community level and facility level to identify malnourished children and referring the malnourished children for treatment to the hospitals.

“A large number of patients come to us but we do not have the malnutrition department at our hospital to admit the patients. We can only diagnose and classify malnutrition by performing required measurements. We refer the diagnosed patients to other facilities…. ” HCP.

“My two children suffered from malnutrition and admitted them to the Hospital. They received free treatment after admission from the clinic as well. They are still slim and weak” FGD-DMF-R-Laghman.

“The children who come here to the clinic or doctors visit the community, if they find any child suspected of malnutrition; they can be referred to the malnutrition focal point. If he diagnosed him/her as malnourished; he can provide him/her all the facilities available in the clinic for treatment of malnutrition.” HCP-U-KDR

11.6.3: Prevention of malnutrition

Interviews with health care providers showed that they were mainly involved in counselling pregnant women and nursing mothers during ANC visits and postnatal visits about benefits of balanced diet and good foods needed for themselves and their children to keep healthy. Only few healthcare providers reported to be involved in outreach malnutrition prevention programs for screening and recruitment of malnourished women and children for provision of food supplements and treatment. Most of health care providers believed that malnutrition can be eliminated by designing and implementation of multi sectoral strategies. “Until we don’t work in different sectors, we can’t completely eliminate the malnutrition”. HP-U-Laghman

First step is to create awareness about the causes of malnutrition including prevention and treatment. The communities where food affordability and availability are issues, interventions are to be introduced that ensure access to nutritious foods in adequate quantity. Employment creation is also an identified key strategy to deal with menace of malnutrition in women and children. “We worry because until all sectors are not rehabilitated and economic level of people not improved; malnutrition will not be eliminated from Afghanistan.”

Participants (nursing mothers and decision makers) from Jawzjan province informed about such outreach program where health workers used to visit villages for screening, nutrition education such as cooking recipes and recruitment of malnourished women and children for provision of food supplements. “We have the program in our village. They (HCP) told us in the clinic to bring malnourished children. They will be weighed and government will give them cream and other healthy food.” Jawzjan province

“A female health worker used to come to the village and used to boil a tomato, an onion, a spoon of cooking oil, a glass of rice, a little bit beans and peas, a potato and some salt in a big pot. Once the food was soft enough, she used to give one glass of food for each one of the ten children present. She did not give curative food or other things”…FDM Jawzjan province

“The clinic gave my malnourished grandchild small packets containing something soft similar to cocoa. I give one packet per day to my grandchild.” NM Kunduz province

“We used to take our children there and they used to cook the ingredients we had brought from home and teach us. In the last day, they weighed the children, if it was low; they gave a packet and told us to leave”… NM Bamyan Province

Some showed reservation about the targeting procedure in terms of selection of beneficiary, information sharing and implementation of the nutrition programs.

Table 11.4: Awareness and Use of intervention for prevention and treatment of Malnutrition

Province	Type of Area	Interventions
Kabul	Rural	Aware about malnutrition treatment services (health facility level) and had experience of using them.
Kabul	Urban	Some knew about prevention and treatment of malnutrition and main source of information reported was media and health care providers. But very few had experience of using treatment services.
Jawzjan	Rural	The participants were aware about nutrition screening and intervention programs implemented at community level and facility level with prevention and treatment strategies. The key components of the program included screening, health and nutrition education, provision of food/nutrition supplementation and treatment services.
Jawzjan	Urban	Most of the participant reported not using any nutrition prevention or curative services. Only few had heard of some interventions.
Kunduz	Rural	The majority of the participants were aware of the existence of the program at facility level but very few reported using it.
Kunduz	Urban	Some of the participants were aware of the program.
Logar	Rural	The participants showed lack of awareness about the nutrition prevention or treatment services program. They were neither aware about Therapeutic Feeding Unit (TFU) workers nor services.
Logar	Urban	They are aware of the program but rarely used the services may be due to access issues.
Laghman	Rural	Lack of awareness of the program.
Laghman	Urban	Lack of awareness and had not used the therapeutic services.
Bamyan	Rural	Only nursing mothers knew about the program and also participated in cooking nutritious food items. On the other hand, male and female decision makers were not aware about the presence of any nutrition intervention in their area.
Bamyan	Urban	The nursing mothers were aware about the program and some of them had experience of using the services especially during pregnancy but male and female decision makers were not aware about any nutrition screening or nutrition program being implemented in their area.
Kandahar	Rural	The participants showed lack of awareness about nutrition program. They were also unable to identify malnutrition at early stages. They only came to know about malnutrition when it was diagnosed at health facility. Most of the participants never used the services.
Kandahar	Urban	They were aware about availability of treatment services at health facilities. Most of the participants had not used the services. Only one of the participant reported use of the services and her daughter was diagnosed with malnutrition.
Hirat	Rural	Most of the participants were not aware of the availability of treatment services for severe acute malnutrition in the area.
Hirat	Urban	None of the participant was aware about any nutrition program being implemented in their area.

"Clinic had distributed curative food to the identified families and patients. However, all the families in the village consider themselves eligible to get the food and they think that the clinic staff has only distributed food to those they know from before". NM Jawzjan province

"Sometimes health workers come to our village but only about 10% of the population gets the news. The health worker does not go to the village to make the list of eligible malnourished children. Instead, they ask the head of the village or health Shura for the list of malnourished

children. Head of Shura makes a list of his children and children of his acquaintances. Therefore, food gets distributed among healthy children including mine. I would be very happy if the malnutrition supplement was given to a needy person instead of my children who are healthy"…DMM Jawzjan province

"They initially gave me a card and I was promised on receive curative food six times. When we sent our children, they provided food three times. They never gave food the remaining three times, I do not know the reason, maybe the people in charge of the program took the food themselves and left the area or something else happened. I have still kept the card. Another woman told the same story too…." FDM

"We have heard the treatment of malnutrition is free but no one has come to our area for its provision"….FDM

Some of the mothers from Bamyan province also showed some concerns about the distribution of food supplements.

"Food comes to clinic but the staff takes it or the food items are mostly given to the rich and those in power instead of the poor, sick and the widows." Bamyan province

Section 12: Limitations of NNS 2013

The limitations of the survey included the following;

1. Allocated time for data collection was very tight. It was agreed between stakeholders to complete the survey in given time frame (before Ramadan). Due to this limitation, very limited time (one week) was available to prepare and finalize all survey related documents (data collection instruments, monitoring instruments, manual and guidelines for data collection, anthropometry, phlebotomy and qualitative component).

2. Insecure clusters, the list of clusters were checked by the teams before they left training to identify areas that may be insecure to access. In total 200 clusters were identified to be in insecure areas at start of survey activities. These clusters were checked with UNICEF security officer who categorized them into different degrees of insecurity. A cluster was categorized as inaccessible or insecure if a written, signed and stamped letter was issued from the Provincial Health Department to the survey team. The letter was presented to TAG for approval for not to survey.

3. In terms of "replacement/spare" for clusters in insecure areas, the original plan was that CSO would provide 32-33 clusters per province (additional 2 to 3 clusters as replacement) however they only provided 30 clusters. This meant that no other clusters were available as replacement, in case some cluster could not be visited by the team. CSO was approached to identify additional clusters however they did not agree. After numerous high level discussions with CSO and waiting for 6 weeks no "additional" clusters were provided, Therefore, TAG decided that the survey should do its utmost efforts to collect data from the insecure clusters.

4. After second round of field activities it was reported to TAG that data collection was not carried out in 16 clusters. 4 clusters in Paktia were not accessible due to law and order situation and 4 clusters in Badakhshan were not accessible because teams were not granted multiple entry visa of Tajikistan after all efforts by SRTRO and MoPH. Five clusters in Paktia were dropped due to continuous conflict and insecurity in the target districts.

5. For data collection in insecure areas, the SRTRO and the survey teams indicated that the team size will have to be reduced to avoid unnecessary attention of local communities and also allocate more time to complete the data collection. This was agreed by TAG.

6. The sample size for household data collection was calculated using available data of NNS 2004. The prevalence of stunting of children 6-59 months was taken for the sample size estimates but the scope of this survey was children from 0-59 months of age. This age was considered by UNICEF and partners to generate benchmark information for future planning and policy development.

7. Recording the age of under-two year's children

a. Age of children aged 0-23 months was collected in two modules. First Age in months was recorded in member information module "module 2a" with age of other family members. This information was collected from the head of household, who was male in most cases. In absence of head of household at the time of visit during survey, information was collected from an adult woman. For selection of the index child, (youngest child among under-five year) survey teams also re-confirmed the age from mothers. The age of 0-23 month's children were also recorded in IYCF module (module 4a) as date of birth. The province and month specific events calendar, vaccination card, or any other available evidence of date of birth was used by data collection teams for recording the age of children under-5 years in both modules. There were some discrepancies in age determination of children 0-23 months in two modules. After consultation with UNICEF HQ, the age as date of birth documented in IYCF module for children 0-23 months was considered for analysis.

b. It has been mentioned earlier that the data was collected in two phases; first in all accessible clusters before Ramadan and remaining 210 clusters were completed after Ramadan. Provincial teams were not ready to collect data in 210 clusters due to security threat. The issue was discussed in TAG meeting and was decided to hire local persons from the respective in-secure clusters to get maximum coverage from those clusters for provincial specificity. The teams members hired and trained from in-secure clusters were not able to calculate age from the date of birth. Therefore, after consultation it was decided to add another column for recording date of birth with age (in months) in member information sheet (module 2a).

8. World Food Program (WFP) food consumption questions were used to assess food security, food consummation and dietary diversity at household level. However, these food groups do not exactly match with WHO IYCF guidelines. Therefore some IYCF indicators were not analyzed as per WHO IYCF guidelines.

Section 13: Conclusion

Comparing the current nutrition situation with available information from almost a decade back, Afghanistan has made progress with reduction in the prevalence of stunting and underweight among children of 0-59 months of age and rates of malnutrition among women of reproductive age. Stunting in children less than 5 years has decreased from 60.5% in NNS 2004 to 40.5% in NNS 2013. The prevalence of underweight was reduced from 33.7% in NNS 2004 to 24.6% in NNS 2013. Similarly significant under-nutrition (BMI <18.5 kg/m^2) among women of reproductive age reduced from 20.9% in NNS 2004 to 9.2% in NNS 2013. In NNS 2004, 12.2% and 3.4% women were overweight (BMI 25.0-29.9 kg/m^2) and obese (BMI ≥ 30 kg/m^2), respectively, whereas in NNS 2013 29.0% (more than double) were overweight and 8.3% were obese (BMI ≥ 30 kg/m^2). Although there is decline in prevalence of stunting and underweight rates of malnutrition are still high. Though, some improvement in rates of significant malnutrition (BMI <18.5 kg/m^2) among women of reproductive age was noted, there was a converse increase in the burden of overweight and obesity. It must be recognized however that the 2004 survey was preliminary and at national level.

In addition to the high prevalence of under-nutrition among target age groups, the prevalence of micronutrient deficiencies such as anemia, iron deficiency anemia, vitamin D, Vitamin A was very high in NNS 2013. Urgent attention is required to address these micronutrient deficiencies and efforts should be made for the strengthening of national programs i.e. vitamin A supplementation, salt iodization, promotion of exclusive breastfeeding and complementary feeding as well as further improvements in content of maternal antenatal care programs.

Section 14: Recommendations

The key finding from the Afghanistan NNS 2013 is that while some progress has been made over the few decades in terms of core maternal and childhood nutrition indicators, rates of stunting and wasting remain high. These coupled with high rates of maternal wasting and micronutrient deficiencies, underscore the need for concerted action and sustained focus on integrated strategies for promotion, prevention and treatment of under nutrition. Given the health transition in Afghanistan, there is also a need to increase awareness of emergence of non-communicable diseases, promotion of healthy lifestyle and prevention of obesity.

There is a clear need for greater public and political awareness at all levels of the importance and impact of nutrition in the social and economic development of society. This is critical to build the political support towards addressing under-nutrition in Afghanistan at scale as an important pillar for reducing the burden of mortality, improving long term developmental outcomes, human capital and economic development. Creation of national awareness among public as well as policy makers about under nutrition, especially stunting and silent micronutrient deficiencies, should be considered a national priority.

Nutrition must cut across Afghanistan's current social safety nets and income support programs with a special focus on supporting women and girls in rural populations and among the urban poor. This will mean integration with the existing maternal and child health programs and a focus on addressing food insecurity, especially in conflict-affected areas. This also means integration with current programs for education, awareness of the need to reduce child marriages and promotion of family planning services. At primary care level there are clear opportunities for integration with midwifery services and improvement of iron folate use in antenatal care. Given the emerging data on the rates of under nutrition among adolescent girls in Afghanistan, the proportion who enter motherhood at a young age, there is a huge opportunity for linking nutrition promotion and education services through schools and community-based platforms.

The current rates of moderate and severe acute malnutrition in various provinces of Afghanistan underscore the importance for preventive and therapeutic measures. Preventive strategies to support early initiation of and promotion of exclusive breastfeeding and scaling up strategies for appropriate complementary feeding are important. These appropriate infant and young child feeding strategies must be promoted nationally, especially among provinces with food insecure and displaced populations; and also coupled with efforts at therapeutic feeding of severely malnourished children. In some instances this also opens up opportunities for reaching the poorest sections of the population through cash transfers and food commodity support. If possible, these services must target households with women and children, those most vulnerable to food insecurity and financial shocks or displacement.

The survey findings also highlight the relationship between nutrition outcomes and interventions related to WASH, childhood illness and care as well as the influence of social factors like wealth and education status of caregivers. These findings highlight the multi-sectoral nature of the nutrition problem, and in the case of Afghanistan, the relationship of some of these elements to insecurity. The preponderance of severe acute malnutrition in some regions marks the need for action to both prevent and treat moderate to severe acute malnutrition in young children.

Treatment of children with acute malnutrition, especially SAM, should be scaled up by increasing coverage of outpatient treatment program and ensuring integration in the current health system at all levels.

Widespread micronutrient deficiencies in Afghanistan among women and children also create opportunities for mass fortification strategies to reach large numbers of population. These include fortification of oil with vitamin A and D, wheat flour fortification with Iron and Folic acid and promotion of iodized salt use. These must be coupled with programs for monitoring and evaluation.

In summary, this nutrition survey provides the evidence for action, with much urgency. These measures must be institutionalized with a national strategy focused on clear targets and indicators. While multi-sectoral support and coordination is imminently required, the role of national institutions in promotion of nutrition awareness, technical support, food safety and regulatory mechanisms; food fortification; and behavior change communication must be strengthened. There is the need for a central coordination and oversight mechanism to support provinces, especially those with limited capacity, as well as creation of sufficient capacity at provincial level to ensure implementation and oversight of nutrition strategies.

It is beyond the scope of this report to suggest remedies and discuss nutrition-related interventions and strategies in depth. It is envisaged that this Afghanistan NNS 2013 report will provide the basis for further analyses of the collected data and discussions at national and provincial level for concerted action and strategy development. It is recommended to organize forums for discussion like technical symposia with wide representation of academia, program staff and policy makers to provide further recommendations to the MoPH and other stake holders. Afghanistan urgently needs a formal nutrition policy and strategy for a coordinated, interlinked and multi-pronged approach for future endeavors to address malnutrition, and this situational analysis provides the basis for action. Garnering the political will to make this happen is a key outcome and we trust that this survey will be an important milestone in this quest.

Section 15: definition and cut-off used for analysis

15.1: Indicators for assessing infant and young child feeding practices

Indicator	Formula
Children ever breastfed: Proportion of children born in the last 24 months who were ever breastfed	Children born in the last 24 months who were ever breastfed / Children born in the last 24 months
Early initiation of breastfeeding: Proportion of children born in the last 24 months who were put to the breast within one hour of birth	Children born in the last 24 months who were put to the breast within one hour of birth / Children born in the last 24 months
Exclusive breastfeeding under 6 months: Proportion of infants 0–5 months of age who are fed exclusively with breast milk	Infants 0–5 months of age who received only breast milk during the previous day / Infants 0–5 months of age
Predominant breastfeeding under 6 months: Proportion of infants 0–5 months of age who are predominantly breastfed	Infants 0–5 months of age who received breast milk as the predominant source of nourishment during the previous day / Infants 0–5 months of age
Continued breastfeeding at 1 year: Proportion of children 12–15 months of age who are fed breast milk	Children 12–15 months of age who received breast milk during the previous day / Children 12–15 months of age
Continued breastfeeding at 2 years: Proportion of children 20–23 months of age who are fed breast milk	Children 20–23 months of age who received breast milk during the previous day / Children 20–23 months of age
Age-appropriate breastfeeding: Proportion of children 0–23 months of age who are appropriately breastfed The indicator is calculated from two fractions:	Infants 0–5 months of age who received only breast milk during the previous day / Infants 0–5 months of age **&** Children 6–23 months of age who received breast milk, as well as solid, semi-solid or soft foods, during the previous day / Children 6–23 months of age
Introduction of solid, semi-solid or soft foods: Proportion of infants 6–8 months of age who receive solid or semi-solid	Infants 6–8 months of age who received solid, semi-solid during the previous day / Infants 6–8 months of age

Indicator	Formula
Minimum dietary diversity: **Proportion of children 6–23 months of age who receive foods from 4 or more food groups** ***Notes:*** *The below foods groups used for tabulation of this indicator are:* • *Cereals (Bread, wheat, rice, maize etc.)* • *Tubers (potato, sweet potato, etc.)* • *Pulses and nuts (beans, lentils, peas, peanut, etc.)* • *Vegetables* • *Fruits* • *Meat, fish and eggs (all types)* • *Dairy and dairy products (Milk, yogurt, cheese, other milk products)*	Children 6–23 months of age who received foods from ≥ 4 food groups during the previous day ——— Children 6–23 months of age
Minimum meal frequency: Proportion of breastfed and non-breastfed children 6–23 months of age who receive solid or semi-solid (but also including milk feeds for non-breastfed children) the minimum number of times or more. The indicator is calculated from the following two fractions: **Notes:** Minimum is defined as: 2 times for breastfed infants 6–8 months 3 times for breastfed children 9–23 months 4 times for non-breastfed children 6–23 months	Breastfed children 6–23 months of age who received solid or semi-solid the minimum number of times or more during the previous day ——— Breastfed children 6–23 months of age **&** Non-breastfed children 6–23 months of age who received solid or semi-solid or milk feeds the minimum number of times or more during the previous day ——— Non-breastfed children 6–23 months of age
Minimum acceptable diet: Proportion of children 6–23 months of age who receive a minimum acceptable diet (apart from breast milk). This composite indicator will be calculated from the following two fractions:	Breastfed children 6–23 months of age who had at least the minimum Dietary diversity and the minimum meal frequency during the previous day ——— Breastfed children 6–23 months of age & Non-breastfed children 6–23 months of age who received at least 2 milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day ——— Non-breastfed children 6–23 months of age

15.2: Reference ranges for biochemical assessments

Biochemical Test	Children under 5 years	Women of Reproductive Age Non-pregnant	Women of Reproductive Age Pregnant
Vitamin A	Deficient (<0.70 µmol/L)	Deficient (<0.70 µmol/L)	Deficient (<0.70 µmol/L)
	Non deficient (>0.70 µmol/L)	Non deficient (>0.70 µmol/L)	Non deficient (>0.70 µmol/L)
Vitamin D	Severe deficiency (<8.0 ng/mL)	Severe deficiency (<8.0 ng/mL)	Severe deficiency (<8.0 ng/mL)
	Deficiency (8.0 - 20.0 ng/mL)	Deficiency (8.0 - 20.0 ng/mL)	Deficiency (8.0 - 20.0 ng/mL)
	Desirable (>20.0 - 30.0 ng/mL)	Desirable (>20.0 - 30.0 ng/mL)	Desirable (>20.0 - 30.0 ng/mL)
	Sufficient (>30.0 ng/mL)	Sufficient (>30.0 ng/mL)	Sufficient (>30.0 ng/mL)
Zinc	Deficient (<60 µg/dL)	Deficient (<60 µg/dL)	Deficient (<60 µg/dL)
	Non-deficient (>=60 µg/dL)	Non-deficient (60 - 150 µg/dL)	Non-deficient (60 - 150 µg/dL)
Haemoglobin	Severe deficiency (<7 gm/dL)	Severe deficiency (<7 gm/dL)	Severe deficiency (<7 gm/dL)
	Moderate deficiency (7 - 10.99 gm/dL)	Moderate deficiency (7 - 11.99 gm/dL)	Moderate deficiency (7 - 10.99 gm/dL)
	Normal (>= 11 gm./dL)	Normal (>= 12 gm./dL)	Normal (>= 11 gm./dL)
Ferritin	Low Ferritin (<12 ng/mL)	Low Ferritin (<12 ng/mL)	Low Ferritin (<12 ng/mL)
	Normal (>=12 ng/mL)	Normal (>=12 ng/mL)	Normal (>=12 ng/mL)
CRP	--	Elevated (>1 mg/dL) Normal (0-1 mg/dL)	
Folic Acid	--	Deficient (<3.0 ng/ml) Normal (>=3.0 ng/ml)	
Alpha 1 Acid Glycoprotein (AGP)	--	Elevated(>=100 mg/dL) Normal (< 100 mg/dL)	
Salt Iodine Concentration	--	Not Iodized 0 PPM >0 to <15 PPM 15-30 PPM 31-50 PPM >50 PPM	
Urinary Iodine	--	**Median Urinary Iodine Mothers/WRA & Children 7-12 years**	
		Deficient (<100 µg/L)	Deficient (<150 µg/L)
		Non deficient (≥100 µg/L)	Non deficient (≥150 µg/L)

15.3: BMI (Adults- 15-49 year women)

Normal	18.5-24.9 (Normal)
Thin	<18.5 (Thin)
	17.0-18.4 (Mildly thin)
	<17 (Moderately and severely thin)
Overweight/obese	≥25.0 (Overweight or obese)
	25.0-29.9 (Overweight)
	≥30.0 (Obese)

15.4: WHO Standards for Stunting, wasting and underweight

Height for Age – Stunting	Weight for Height – Wasting	Weight for Age - Under weight
Severe Stunting (-6 to -3)	Severe Wasting (-5 to -3)	Severely under-Weight (-6 to -3)
Stunting (-6 to <-2)	Wasting (-5 to <-2)	Under-Weight (-6 to <-2)
Normal (-2 to +6)	Normal (-2 to +5)	Normal (-2 to +5)

15.5: Nutrition Landscape Information System (NLIS), COUNTRY PROFILE INDICATORS Interpretation Guide

Indicator	Prevalence cut-off values for public health significance	Reference
Underweight	< 10%: Low prevalence 10-19%: Medium prevalence 20-29%: High prevalence ≥ 30%: Very high prevalence	WHO, 1995
Stunting	< 20%: Low prevalence 20-29%: Medium prevalence 30-39%: High prevalence ≥ 40%: Very high prevalence	
Wasting	< 5%: Acceptable 5-9%: Poor 10-14%: Serious ≥ 15%: Critical	
Adult BMI < 18.5 (underweight)	5-9%: Low prevalence (warning sign, monitoring required) 10-19%: Medium prevalence (poor situation) 20-39%: High prevalence (serious situation) ≥ 40%: Very high prevalence (critical situation)	WHO, 1995
Anaemia	≤ 4.9: No public health problem 5.0–19.9: Mild public health problem 20.0–39.9: Moderate public health problem ≥ 40.0: Severe public health problem	WHO, 2008
Serum or plasma retinol < 0.70 µmol/l in preschool-age children	≤ 1.9: No public health problem ≥ 2%-< 10%: Mild ≥ 10%-< 20%: Moderate ≥ 20%: Severe	WHO, 2009
Night blindness (XN) in pregnant women	≥ 5: Moderate	
Iodine deficiency measured by median urinary iodine concentration (µg/l)	Median urinary iodine concentration: < 20 µg/l: Severe deficiency 20–49 µg/l: Moderate 50–99 µg/l: Mild deficiency 100–199 µg/l: Optimal 200–299 µg/l: Risk of iodine-induced hyper-thyroidism ≥ 300 µg/l: Risk of adverse health consequences	WHO, 2008

http://whqlibdoc.who.int/publications/2010/9789241599955_eng.pdf

15.6: Other definitions

Improved water	Piped water, Borehole/Tube well, Hand pump, Protected well, Protected spring, Rainwater & Bottled water
Improved sanitation	Flush to piped sewer system, Flush to septic tank, Flush to pit latrine, Ventilated improved pit latrine & Pit latrine with slab
Diarrhea prevalence	Diarrhea in last two weeks (3 or more watery stools per day)
Skilled care provider (ANC)	Doctor, Nurse/Midwife & Community midwife
Health facility	Government, clinic/hospital, NGO clinic/hospital, Private clinic/hospital & Health post
Skilled birth attendant	Private doctor, Government doctor, Nurse/Midwife & Community midwife

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