SIERRA LEONE

NATIONAL NUTRITION SURVEY 2021

DECEMBER 2021

MINISTRY OF HEALTH AND SANITATION
GOVERNMENT OF SIERRA LEONE


JAPANGOV
THE GOVERNMENT OF JAPAN


STATISTICS
SIERRA LEONE


Irish Aid
Government of Ireland
Rialtas na hÉireann


unicef


CONCERN
worldwide


HELEN
KELLER
INTL


REACH
unicef


World Vision


JAM
INTERNATIONAL


ACTION
AGAINST
HUNGER


World Health
Organization


WFP
World Food
Programme

Foreword

The COVID-19 pandemic has inadvertently affected economic and development activities, resulting in an increase in the proportion of food insecure Sierra Leoneans from 50 percent in 2015 to 57 percent in 2020. With 4.7 million people in the country suffering from food insecurity, timely assessment of the nutrition conditions of the most vulnerable population, especially children and women, is needed to prevent and control all forms of malnutrition.

Prior to the pandemic, the nutrition situation in Sierra Leone has greatly improved in the last decade and a half, with fewer children suffering from any form of malnutrition. This is evidenced by the overall decreasing trends in malnutrition especially stunting, from various national surveys. However, with the deteriorating food security situation combined with major interruptions in economic and development activities due to the pandemic, the gains in nutrition are at risk, and taking measures to mitigate the adverse effects of the pandemic on the nutritional status of the Sierra Leone population starts with knowing where the country is at and how far the country is in achieving global and national goals and targets in nutrition.

The fourth Sierra Leone National Nutrition Survey using the Standardized Monitoring and Assessment of Relief and Transition, known as the SMART methodology, is a national sample survey wherein two-stage cluster sampling methodology was employed and collected information from 10,803 households in 548 clusters nationwide. The survey provides up-to-date information on child and maternal nutrition indicators, including child health indicators and household-related data such as water, sanitation, and hygiene.

The leadership of the Ministry of Health and Sanitation through the Directorate of Policy, Planning and Information, and Directorate of Food and Nutrition in collaboration with Statistics Sierra Leone, UNICEF, Government of Japan, the National Technical Working Group, and other stakeholders have ensured that the highest quality of standards has been put in place throughout the implementation of the survey. In addition, the field team's hard work, commitment, and dedication national coordinators, regional monitors, district supervisors, team supervisors, team leaders, and enumerators) and the data processing team have ensured the timely completion of field activities and survey reports.

The survey provides timely and valuable information on nutrition. All health and nutrition stakeholders, including donors and partners, are welcome to use and refer to this report in designing, improving, and monitoring the progress made to date in the nutrition sector. It is with the hope that the survey results inspire everyone to do more and do better in our collective action to fight malnutrition,

Additional information regarding Sierra Leone National Nutrition Survey 2021 can be obtained from:

Directorate of Food and Nutrition

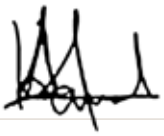
Ministry of Health and Sanitation, Sierra Leone Central Medical Stores, Freetown,
Sierra Leone.
Telephone: +23276300770
Email: sierraleonenutritionprogram@gmail.com

Suggested citation

Ministry of Health and Sanitation Sierra Leone and UNICEF Sierra Leone. (2021). Sierra Leone Nationla Nutrition Survey 2021. Freetown: UNICEF.

SPECIAL THANKS TO

Aminata Shamit Koroma (Director of Food and Nutrition – MoHS Sierra Leone)
Yuki Suehiro (Chief of Section - Health and Nutrition, UNICEF Sierra Leone)
Katherine Faigao (Nutrition Specialist, UNICEF Sierra Leone)
Royston Wright (Health Specialist, UNICEF Sierra Leone)
Dr. Tom Oguta (Consultant for SLNNS 2021, Health and Nutrition Section, UNICEF Sierra Leone)



Dr. Sartie Kenneh

Ag. Chief Medical Officer
Ministry of Health and Sanitation

Acknowledgement

The role of the Directorate of Food and Nutrition within the Ministry of Health and Sanitation is to oversee the nation's nutritional status. The implementation of Sierra Leone National Nutrition Survey 2021 was successful due to joint efforts and consultations with the National Nutrition Technical Working Group (NNTWG) members, which includes: National School Health Programme, UNICEF, UNN REACH, WFP, WHO, World Vision International, MAF, Statistics Sierra Leone, Action Against Hunger, Helen Keller International, Focus 1000, Concern Worldwide and Joint Aid Management (JAM). The survey was mainly organized and coordinated by the Directorate of Food and Nutrition and UNICEF.

The Directorate of Food and Nutrition and the entire NNTWG would like to convey special gratitude to the supporting Donors - Government of Japan and Government of Ireland's Irish Aid. Furthermore, a profound appreciation goes to UNICEF for providing leadership jointly with the Directorate of Food and Nutrition and NNTWG members to complete the survey. In addition, Statistics Sierra Leone is appreciated for ensuring sampling was done in accordance with in-country of maps that supported the survey teams in the field throughout the implementation stage.

Special recognition to our esteemed partners, UN REACH, Concern Worldwide, Joint Aid Management (JAM), World Vision International, Action Against Hunger and Helen Keller International for their financial and technical support to the survey. The contributions from other partners such as the World Health Organization, Ministry of Agriculture and Forestry, School and Adolescent Health Programme are highly appreciated for their logistical and technical support. Their contributions made it easier for the consultant to promptly produce preliminary and final results. Gratitude to all DMOS, DHMT members, PHU staff, and all communities that were selected for helping the survey teams during implementation.

DFN would also like to extend special appreciation to UNICEF and Helen Keller International for their support in providing tablets for data collection. Finally, thank you goes to our technical assistant, regional supervisors, supervisors, team leaders, enumerators, and support staff for their active participation, dedication, commitment, and overall ensuring a successful implementation of the 2021 SLNN survey.

Aminata Shamit Koroma

Director of Food and Nutrition
Ministry of Health and Sanitation

Contents

List of Tables

List of Figures

List of Abbreviations & Acronyms

AAH-SL	Action Against Hunger, Sierra leone
BMI	Body Mass Index
CAPI	Computer-assisted personal interviewing
CDR	Crude Death Rate
CHC	Community Health Center
CHP	Community Health Post
CFSVA	Comprehensive Food Security & Vulnerability Analysis
CI	Confidence interval (at 95per cent throughout the report)
CSD	Child Survival and Development
DEFF	Design Effect
DFN	Directorate of Food and Nutrition
DHS	Demographic Health Survey
EA	Enumeration Area
ENA	Emergency Nutrition Assessments
EPI	Expanded Programme on Immunization
FCS	Food Consumption Score
FCG	Food Consumption Group
FSL	Food Security and Livelihoods
GAM	Global Acute Malnutrition
GFD	General Food Distribution
HAZ	Height for Age z-scores
HDDS	Household Dietary Diversity Score
HFA	Height for Age
HH	Household
HHS	Household Hunger Scale
HKI	Hellen Keller International
HMIS	Health Management Information System
IDPs	Internally Displaced Persons
IMAM	Integrated Management of Acute Malnutrition
INGO	International Non-Governmental Organization
IPC	Infection, Prevention and Control
ISSSF	Introduction of solid, semi-solid or soft foods 6–8 months
ITN	Insecticide Treated Net
IYCF	Infant and Young Child feeding
LBW	Low Birth Weight
LLIN	Long Lasting Insecticidal Net
MAD	Minimum acceptable diet 6–23 months
MAM	Moderate Acute Malnutrition

MDD	Minimum dietary diversity 6–23 months
MDDW	Minimum Dietary Diversity for Women of Reproductive Age
MICS	Multiple Indicator Cluster Survey
MMF	Minimum Meal Frequency 6–23 months
MOHS	Ministry of Health and Sanitation
MUAC	Mid Upper Arm Circumference
NCA	Nutrition Causal Analysis
NFNS-IP	National Food and Nutrition Security Implementation Plan
NFNSP	National Food and Nutrition Security Policy
NGO	Non-Governmental Organization
NNIS	National Nutrition Information System
NNS	National Nutrition Strategy
OTP	Out-Patient Therapeutic Programme
PLW	Pregnant & Lactating Women
PPS	Probability Proportional to Size
PRSP	Poverty Reduction Strategy Papers
RUSF	Ready to Use Supplementary Food
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SCUK	Save the children, UK
SD	Standard Deviation (measure of spread around the mean)
SE	Standard Error
SFP	Supplementary Feeding Programme
SLNNS	Sierra Leone National Nutrition Survey
SMART	Standardized Monitoring and Assessment of Relief and Transitions
SSL	Statistics Sierra Leone
TFC	Therapeutic Feeding Centre
TSFP	Targeted Supplementary Feeding Program
TWG	Technical Working Group
U5DR	Under 5 Death Rate
UNHCR	United Nations Higher Commission for Refugees
UNICEF	United Nations International Children's Emergency Fund
VAD	Vitamin A Deficiency
VAM	Vulnerability Analysis & Mapping
VAS	Vitamin A Supplementation
WASH	Water, Sanitation and Hygiene
WAZ	Weight for Age z-scores
WFA	Weight for Age
WFP	World Food Program
WFH	Weight for Height
WHO	World Health Organization
WHZ	Weight for Height z-scores

Glossary

Body mass Index (BMI):

An weight-for-height index commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m^2). Both high and low indexes are associated with poor health. The normal range for a healthy adult is 18.5 to 24.9. A BMI below 18.5 is considered too lean, while one above 25 is considered overweight. A BMI greater than 30 is considered obese, and one greater than 40 is considered morbidly obese.

Breastfeeding:

A child receiving breast milk directly from the mother or wet nurse's breast within the last 12 hours.

Coping Strategies Index (CSI):

A numerical indicator of household food security based on a questionnaire about what people do in the absence of sufficient food or money to buy such food. CSI is used to predict food crises, identify specific areas of greatest need, assess the impact of food aid programs in emergencies, and outline long-term trends.

Exclusive Breastfeeding:

An infant receiving only breast milk for nourishment. No other liquids or solids are given – not even water – except for oral rehydration solution or drops or syrups of vitamins, minerals, or medicines. Exclusive breastfeeding is recommended for the first six months of life.

Food security:

A situation where 'all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. It entails the availability, access, and utilization of sufficient food by all people for an active, healthy life.

Global Acute Malnutrition (GAM):

Includes children with moderate wasting, severe wasting and Oedema. It is defined as weight-for-height below minus two standard deviations from the mean (WHZ<-2) or no Oedema. And combined Global Acute Malnutrition (**cGAM**) is an aggregated indicator defined as all cases of GAM by WHZ <-2, mid-upper arm circumference (MUAC) <125 mm, and bilateral pitting Oedema.

Low Birth Weight (LBW):

Infants born weighing less than 2,500 grams (5.5 pounds). In rural areas, this is estimated by the infant's "relative size" to other babies, as assessed by the birth attendant or mother.

Malnutrition refers to deficiencies, excesses, or imbalances in a person's energy and nutrient intake.

Malnutrition covers two (2) broad groups of conditions: 1) undernutrition - which includes *stunting* (low height for age), *wasting* (low weight for height), *underweight* (low weight for age) and *micronutrient deficiencies* or insufficiencies (a lack of important vitamins and minerals); 2) overnutrition – which includes overweight, obesity and diet-related non-communicable diseases (such as heart disease, stroke, diabetes, and cancer).
Mid-upper arm circumference (MUAC): One of the anthropometric measures used in assessing nutritional status. It is always measured on the left arm.

Minimum Dietary Diversity for Women of Reproductive Age (MDDW):

A food group diversity indicator and a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality. It is a dichotomous measure of whether women 15–49 years of age consumed at least five of ten defined food groups the previous day or night.

Moderate acute malnutrition (MAM) or moderate wasting:

Is defined as weight-for-height between minus three and minus two standard deviations from the mean or mid-upper arm circumference (MUAC) between 115 and 125 mm, and no Oedema).

Oedema:

Pitting Oedema on both feet (bilateral Oedema): is the sign of kwashiorkor. Any person with bilateral Oedema has severe malnutrition and is classified as severely malnourished even if the WFH z- score is normal.

Severe Acute Malnutrition (SAM):

The term refers to a condition where children with severe wasting or MUAC are below 115 mm or those with Oedema.

Severe stunting, wasting, or underweight rate:

Is a common benchmark in health and nutrition studies. It is technically defined as the percentage of children under five years who suffer from severe stunting, wasting, or are underweight. This definition speaks to factors such as height-for-age, weight-for-height, or weight-for-age value equal to or smaller than the value corresponding to three standard deviations. These are usually below the median of the WHO reference population—the value corresponding to minus three z-scores concerning the WHO reference population (see also the definitions of stunting, wasting, and underweight).

Stunted growth, also known as stunting:

Is defined as impaired growth and development that children experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation; and major effect of, or adaptation to – chronic (as opposed to acute) malnutrition, which can impede both physical and cognitive development. Children are stunted (short for one's age) if their height-for-age is more than two standard deviations below the WHO Child Growth Standards median.

Undernutrition:

Failing to get enough nutrients for a healthy body. Undernutrition takes four broad sub-forms of undernutrition: wasting, stunting, underweight, and deficiencies in vitamins and minerals.

Underweight:

When a child has a low weight compared to other children of the same age. "Underweight" is one way to measure malnutrition. It is defined with factors such as weight-for-age that is equal to or smaller than the value corresponding to two standard deviations below the median of the global reference population. That is, the value corresponding to minus two z-scores concerning the global reference population (a population with a distribution of weight-for-age values that is considered normal by international standards).

Vitamin A deficiency:

A form of micronutrient deficiency resulting from inadequate intake or high loss of vitamin A. Symptoms include growth retardation, night blindness in mild deficiency, and xerophthalmia (drying of the cornea), which leads to complete blindness. In areas where vitamin A deficiency is a public health problem, routine vitamin A supplementation is recommended in infants and children 6-59 months of age as a public health intervention every 6 months to improve vitamin A status and reduce child morbidity and mortality in the long term.

Wasting:

A thin body in relation to height is defined as weight-for-height less than minus two standard deviations below the median of the WHO reference population. It is a symptom of acute undernutrition in children, usually due to insufficient food intake or infectious diseases, especially diarrhoea.

Z-score:

Also known as the standard score, is the number of standard deviations from the mean of a normalized distribution of a reference population; in this case, the WHO reference population. It is calculated as the difference between individual value and the population mean, divided by the population standard deviation.

Executive Summary

The Sierra Leone National Nutrition Survey (SLNNS) 2021 data collection started on 1 August 2021 and ended on 31 August 2021. The Directorate of Food and Nutrition (DFN) of Sierra Leone's Ministry of Health and Sanitation (MoHS) and UNICEF Sierra Leone, with funding from the Government of Japan and other partners such as Irish Aid, Concern Worldwide, Hellen Keller International, Joint Aid Management (JAM), Save the Children, and World Vision surveyed in close collaboration and partnership with Sierra Leone Nutrition Technical Working Group (TWG). A nutrition and mortality assessment using SMART methodology was applied. The survey covered 17 statistical (16 districts plus 1 slum) domains countrywide, including the two new districts of Falaba and Karene that were not assessed separately during the 2017 SLNNS. The main objective of the survey was to assess the current nutrition status of the population, especially children 6-59 months old, adolescent girls 10-14 and 10-19 years old, adolescent boys 10-19 years old and women of reproductive age (15-49 years of age). Also included in the survey was a retrospective mortality rate in the population at the district level; and to evaluate the major contextual factors contributing to undernutrition, such as infant and young child feeding (IYCF) practices; minimum dietary diversity and minimum meal frequency for adolescents and women; water, sanitation, and hygiene (WASH); and health situation in Sierra Leone. The last and third national nutrition SMART survey was conducted in 2017. The second and first surveys in 2014 and 2010, respectively, showed a general improvement in the trend. This except a slight deterioration resulting from the effects of the Ebola outbreak of 2015. With the scheduling of the next Demographic and Health Survey (DHS) in another three years (the last was conducted in 2019) and the absence of a reliable nutrition surveillance system in the country to provide real-time data for planning, implementation, and monitoring an effective humanitarian nutrition response during the period of the COVID-19 outbreak has been challenging. The SLNNS 2021 survey findings help evaluate progress in nutrition interventions and provide the platform for policy and strategy development to prioritize the programs for short, medium, and long-term direct and indirect interventions at the national and district levels.

A two-stage cluster sampling methodology was used. A total of 8,755 children aged 6-59 months from 10,803 households in 548 clusters were examined for anthropometry, and 4,572 children aged 0-23 months were assessed for IYCF practices, including 1,410 children aged 0-5 months assessed for exclusive breastfeeding practices. A total of 3,489 adolescent girls (10-14 years), 4,941 adolescent boys (10-19 years) and 13,297 women of the reproductive age (15-49 years) of 3,635 were pregnant or lactating were assessed for their nutrition status and dietary diversity. Assessment of mortality was conducted concurrently in the same households with a mean household size of 4.9 (±1.9) persons. Household-related data, water, sanitation, and hygiene (WASH), and health access, were collected in the same households during the assessment.

Table 1 provides a summary of the key findings. Specific recommendations are outlined in the table.

Table 1: Summary of SLNNS 2021 results

Indicator	SLNNS, Aug-Sep 2021		
	n	%	95% CI
Child Nutrition: Anthropometric Results based on WHO 2006 Standards 6-59 months (N=8993)			
Prevalence of Global Acute Malnutrition, GAM (WHZ<-2 and/ or Oedema), N=8459	439	5.2	4.7-5.8
Prevalence of Moderate Acute Malnutrition, GAM (WHZ>=-3 and <-2)	353	4.2	3.7-4.5
Prevalence of Severe Acute Malnutrition, SAM (WHZ<-3 and/ or Oedema)	86	1.0	0.8-1.3
Mean Weight-for-Height z-score (WHZ)	-0.15	± 1.05	
Bilateral Oedema	49	0.6	0.4-0.7
Prevalence of Global Acute Malnutrition based on MUAC (MUAC<125mm and/or Oedema), (N=8748)	233	2.7	2.3-3.1
Prevalence of Moderate Acute Malnutrition based on MUAC (MUAC>=115mm and <125mm)	143	1.6	1.3-2.0
Prevalence of Severe Malnutrition based on MUAC (MUAC<115mm and/or Oedema)	90	1.0	0.8-1.3
Mean Mid-Upper Arm Circumference (MUAC in mm)	151.6	± 13.7	
Prevalence of stunting (HAZ<-2), (N=8220)	2157	26.2	25.0-27.5
Prevalence of moderate stunting (HAZ>=-3 and <-2)	1605	19.5	18.5-20.6
Prevalence of severe stunting (HAZ<-3)	552	6.7	6.1-7.4
Mean Height-for-Age z-score (HAZ)	-1.16	±1.23	
Prevalence of underweight (WAZ<-2), (N=8560)	944	11.0	10.1-12.0
Prevalence of moderate underweight (WAZ>=-3 and <-2)	759	8.9	8.1-9.7
Prevalence of severe underweight (WAZ<-2)	185	2.2	1.8-2.6
Mean Weight-for-Age z-score (WAZ)	-0.72	±1.04	
Child Mortality Results (Retrospective in 99-120 days prior to survey), N=10,601			
CDR (Total deaths/10,000 people/day)		0.14	0.11-0.18
U5DR (Deaths in U5 children /10,000 U5 children/day		0.29	0.20-0.44
Child Morbidity in two weeks prior to survey 6-59 months (N=9464)			
Prevalence of reported illness (6-59 months)	1163	12.3	11.0-13.6

Indicator	SLNNS, Aug-Sep 2021		
	n	%	95% CI
Prevalence of different types of illnesses			
Fever	753	8.0	7.0-8.9
Cough	362	3.8	3.2-4.4
Diarrhea	157	1.7	1.1-2.2
Skin infection	88	0.9	0.6-1.2
Eye infections	21	0.2	0.1-0.3
Child Health Programmes (N=9384)			
Children (12-35 months) immunized against measles, any dose (N=4207)	4129	97.9	97.3-98.6
Children immunized against measles:			
At least once by EPI card (12-23 months), N=2104	1813	86.2	83.4-88.8
At least once, by recall (12-23 months)	244	11.6	9.1-14.2
Twice, with EPI card (24-35 months), (N=2103)	1151	54.7	50.8-58.7
Twice by recall (24-35 months)	118	5.6	4.1-7.1
Children who received vitamin A supplement (N=9384)	8814	93.9	92.7-94.9
Children who slept under net (LLIN) last night	7554	80.5	78.5-82.6
Proportion (12-59 months) dewormed in the last 6 months (N=8379)	7671	91.6	90.2-92.9
IYCF Practices (N=4570)			
Proportion of children (0-23 months) ever breastfed	4475	97.9	97.3-98.2
Proportion currently breastfeeding (0-23 months)	3571	78.1	76.5-79.3
Proportion fed on prelacteals (0-23 months)	798	17.5	16.3-19.5
Proportion Exclusive Breast Feeding (N=1410)	743	52.7	49.1-56.3
Proportion bottle feeding	443	9.7	8.8-11.1
Timely initiation of breastfeeding (immediately + within 1 hr of birth)	4085	89.4	88.1-90.7
Continued breastfeeding at 23 months (12-23 months), (N=2029)	1077	53.1	50.4-55.8
Timely introduction of complementary feeding (6-8 months), (N=379)	228	60.2	56.9-64.3

Indicator	SLNNS, Aug-Sep 2021		
	n	%	95% CI
Proportion meeting minimum dietary diversity (6-23 months), (N=3134)	718	22.9	19.7-24.3
Proportion meeting minimum meal frequency (6-23 months) (N=3134)	1033	33.0	30.7-36.3
Proportion meeting minimum acceptable diet (6-23 months) [N=3134]	155	4.9	3.5-5.8
Adolescent Girls, Boys and Women Dietary Diversity &Nutrition			
Acute Malnutrition by MUAC in Adolescent Girls			
10-19 years (N=6297)	580	8.5	7.5-9.5
10-14 years (N=3838)	476	12.4	10.9-13.9
Acute Malnutrition by MUAC in Adolescent Boys 10-19 years (N=5433)	580	10.7	9.5-11.9
Acute Malnutrition by MUAC in all WRA (N=14550)	256	1.8	1.4-2.1
Acute Malnutrition by MUAC in PLW (N=3630)	199	5.5	4.5-6.5
Underweight by BMI in non-pregnant Adolescent Girls			
10-19 years (N=6297)	370	5.9	5.1-6.6
10-14 years (N=3838)	92	2.4	1.8-3.1
Underweight by BMI in Adolescent Boys (N=5435)	159	2.9	2.3-3.5
Underweight by BMI in non-pregnant WRA (N=10928)	524	4.8	4.3-5.3
Proportion of overweight in non-pregnant Adolescent Girls			
10-19 years (N=6297)	228	3.6	3.0-4.2
10-14 years (N=3838)	25	0.7	0.4-1.1
Proportion of overweight in Adolescent Boys	47	0.9	0.5-1.2
Proportion of overweight in non-pregnant WRA	2337	21.4	20.1-22.7
Proportion meeting minimum dietary diversity in Adolescent Girls			
10-19 years (N=6821)	5045	74.0	
10-14 years (N=3838)	2763	72.0	68.6-75.6
Proportion meeting minimum dietary diversity in Adolescent Boys (N=5454)	4016	73.6	69.7-75.9
Proportion meeting minimum dietary diversity for WRA (N=14568)	10807	74.2	72.4-77.5

Indicator	SLNNS, Aug-Sep 2021		
	n	%	95% CI
Proportion meeting minimum meal frequency in Adolescent Girls			
10-19 years (N=6820)	1322	19.4	15.8-23.0
10-14 years (N=3841)	752	19.6	15.4-23.6
Proportion meeting minimum meal frequency in Adolescent Boys (N=5440)	1070	19.7	16.0-23.3
Proportion meeting minimum meal frequency in WRA (N=14564)	2904	19.9	16.7-23.2
WASH Results (N=11666)			
Access to safe/protected water source (Borehole, protected well/spring)	8842	75.8	72.6-79.0
Take recommended time (<30 minutes) to collect water (including queuing time)	8067	69.2	66.0-72.3
Appropriate treatment method (boiling, chlorination) for drinking water	10133	86.9	84.4-89.3
Optimal (adequate) water use (15L/person/day)	7746	66.4	63.4-69.4
Access to sanitation facility (latrine/toilet)	7190	62.6	58.9-66.3
Hand washing at (at least 3) critical times	1426	12.2	10.2-14.3
Hand washing with soap	6278	53.8	50.3-57.4

Child health and nutrition

The national prevalence among children 6 -59 months of age of Global Acute Malnutrition (GAM) was **5.2 per cent** (95 per cent CI: 4.7-5.8), moderate acute malnutrition (MAM) was **4.2 per cent** (95 per cent CI: 3.7-4.5), and the severe acute malnutrition (SAM) rate (WHZ<-3 or Oedema) was **1.0 per cent** (95 per cent CI: 0.8-1.3), including forty-nine (0.6 per cent) cases of Oedema. Boys and girls were equally acutely malnourished (p>0.05); however, younger children (aged 6-29 months or 6-23 months) were more malnourished (p<0.05) than the older (aged 30-59 months or 24-59 months) children.

The results indicate a ***poor*** nutrition situation phase (GAM rate of 5.0-9.9 per cent) of acute malnutrition in the country's population according to WHO (2006) classification **(Table 59)** and ***medium*** according to UNICEF (2008) classification and translate to 58,380 acutely malnourished children nationally. Although SLNNS 2021 findings show a slight increase in GAM, MAM and SAM cases, the rates have not changed significantly compared to the SLNNS 2017 findings of GAM, MAM, and SAM rates of 5.1 per cent (95 per cent CI: 4.6-5.6), 4.0 per cent (95 per cent CI: 3.6-4.5) and 1.0 per cent (95 per cent CI: 0.8-1.3) respectively. However, a steady deterioration was observed in the Western Area districts of Urban, Slums and Rural domains, where GAM rates increased from 5.8 per cent, 5.5

per cent, and 3.6 per cent in 2017 to 9.6 7.6 per cent and 5.9 per cent, respectively.

The national prevalence of stunting among children 6 – 59 months old (HAZ<-2) was **26.2 per cent** (95 per cent CI: 25.0-27.5), translating to 294,147 stunted children (SLIH 2019 update based on 2015 population census) with 19.5 per cent (95 per cent CI: 18.5-20.6) moderately stunted and 6.7 per cent (95 per cent CI: 6.1-7.4) severely stunted, with more boys (29.2 per cent; 95 per cent CI: 27.6-30.9) than girls (26.2 per cent; 95 per cent CI: 25.0-27.5 per cent) reportedly stunted ($p<0.05$); a significant reduction compared to the SLNNS 2017 findings when global stunting, moderate stunting and severe stunting rates of 31.3 per cent (95 per cent CI: 30.0-32.6), 21.3 per cent (95 per cent CI: 20.3-22.3), and 10.0 (95 per cent CI: 9.2-10.7) respectively were reported. Although the results for stunting indicate a generally improving trend over the past 10 years, the rate indicates *poor/high* (20-29.9 per cent) chronic malnutrition according to WHO/UNICEF Classification. It remains the most form of malnutrition burden in the country.

Based on MUAC measurements, the national prevalence of global acute malnutrition (MUAC<125mm) and Oedema, moderate acute malnutrition (MUAC≥115mm and ≤125 mm, and no Oedema), and severe acute malnutrition (MUAC<115mm and Oedema) was **2.7 per cent** (95 per cent CI: 2.3-3.1), 1.6 per cent (95 per cent CI: 1.3-2.0) and 1.0 per cent (95per cent CI: 0.8-1.3) respectively. The national prevalence of combined Global Acute Malnutrition (cGAM), defined as all cases of GAM by WHZ<-2 and MUAC<125 mm and Oedema, was **6.6 per cent** (95 per cent CI: 5.9-7.2). The combined Severe Acute Malnutrition (cSAM) as an aggregated indicator defined as all cases of SAM by WHZ <-3, MUAC <115 mm, and bilateral pitting Oedema was **1.4 per cent** (95 per cent CI: 1.2-1.7), both rates higher than respective acute malnutrition based either on weight-for-height z-scores or MUAC alone.

Among children 6-59 months of age, 2.0 per cent (95 per cent CI: 1.6-2.5) are overweight, with zero severe overweight recorded. The prevalence of overweight among young children is highest at 2.3 per cent for those aged 18-59 months and 42-53 months, respectively.

Although breastfeeding is widespread among the population, nearly all the assessed children 0-23 months ever breastfed (97.9 per cent), 89.4 per cent of early initiated breastfeeding, and 78.1 per cent were currently breastfeeding. Only 52.7 per cent of 0-6 months were breastfed exclusively, and 53.1 per cent continued breastfeeding at 23 months. Complementary feeding remains sub-optimal. Only 22.9 per cent receive a diversified diet - minimum dietary diversity (MDD). Only 33.0 per cent meet the recommended minimum meal frequency (MMF) for their age and breastfeeding status, and very few (4.9 per cent) of children 6-23 months meet the minimum acceptable diet (MAD). Approximately 40 per cent of children are prematurely introduced to solid, semi-solid or soft foods (ISSSF) before six months. It is important to note that the districts with very high (>30 per cent) stunting rates, such as Kenema, Koinadugu, and Kailahun, also have the poorest ICYF indicators.

In the two weeks before the assessment, one in every eight children evaluated is reported to have frequent illnesses. These are one or more communicable childhood diseases (e.g., fever, cough, diarrhoea, among others). A possible contributing factor is poor nutrition situation.

Illness and infection affect nutrition by reducing appetite for adequate food intake and the metabolism and utilization of the nutrients already ingested into the body. MOHS also enlists malaria and pneumonia as the commonly reported causes of morbidity in health facilities during the rainy season. Morbidity levels are aggravated by the poor WASH conditions in many districts

© UNICEF/Sierra Leone/2022

in the country, characterized by poor access to safe drinking water (24.2 per cent), lack of sanitation facilities (37.4 per cent) and poor handwashing practices at critical times (12.2 per cent).

In the backdrop of reports of polio cases in the country besides the prevailing COVID-19 pandemic, about one in eight **(12.3 per cent)** of children had reportedly suffered from one or more childhood illnesses in the two weeks before the assessment. Of those who fell ill, **64.8 per cent** of the children had a fever, **31.2 per cent** had a cough, and 13.5 per cent reportedly had diarrhoea. Reported as suffering from other illnesses such as skin and eye infections is 9.4 per cent. The proportion of children who slept under mosquito nets was **(80.5 per cent)** vitamin A supplementation coverage was **93.9 per cent**, and the deworming rate was **91.6 per cent**, indicating very good coverage in the preceding 6 months. Measles immunization coverage was **97.9 per cent** for any dose among children 12 to 35 months. However, when disaggregated by age and dosage, nearly all **(97.8 per cent)** of children 12-23 months had received at least the first dosage, while only **60.3 per cent** had received the second dose among the children 24-35 months of age.

Adolescent and women's nutrition

The national prevalence of acute malnutrition using MUAC was 12.4 per cent (95 per cent CI: 10.9-13.9), 10.7 per cent (95 per cent CI: 9.5-11.9), and 1.8 per cent (95 per cent CI: 1.4-2.1) among adolescent girls, adolescent boys and WRA respectively; further the wasting prevalence was 5.5 per cent (95 per cent CI: 4.5-6.5) among pregnant and lactating women. Based on BMI for age, the national prevalence of acute malnutrition was 2.4 per cent (95 per cent CI: 1.8-3.1), 2.9 per cent (95 per cent CI: 2.3-3.5), and 4.8 per cent (95 per cent CI: 4.3-5.3) among adolescent girls, adolescent boys and WRA respectively. The prevalence of overweight and obesity was 0.7 per cent and 0.1 per cent, respectively, in adolescent girls; 0.9 per cent and 0.0 per cent, respectively, in adolescent boys; and 21.4 per cent and 8.5 per cent, respectively, among the assessed

WRA. Low consumption of eggs and other fruits on the household menu yet substantial consumption of other unhealthy foods – savoury and fried snacks, sweets and sugar-sweetened beverages were reported among the adolescent girls (26.1 per cent, 31.6 per cent and 26.4 per cent, respectively); among the adolescent boys (26.0 per cent, 29.4 per cent and 27.0 per cent respectively) and WRA (23.8 per cent, 23.5 per cent and 25.2 per cent respectively).

Mortality

The crude death rate (CDR) and under-five death rates (U5DR) of **0.14** (95 per cent CI: 0.11-0.18) and **0.29** (95 per cent CI: 0.20-0.44) were recorded, respectively. The national (CDR) and (U5DR) rates are below the SPHERE alert thresholds of 1/10,000/day and 2/10,000/day, respectively and no significant change is observed from the (CDR) of **0.19** deaths/10,000/day (95 per cent CI: 0.15-0.24) and (U5DR) of and **0.16** under five deaths/10,000/day (95 per cent CI; 0.10-0.27) reported in SLNNS 2017.

In conclusion, the acute malnutrition situation in the country is at *poor/medium* levels, and chronic malnutrition, as expressed by high stunting rates, is also *poor/high* according to WHO/UNICEF classifications. However, crude and under-five mortality rates remain below the SPHERE *alert* levels. The occurrence of under and over-nutrition in children, adolescents and women indicate the emerging double burden and complexity of malnutrition in the country. A worsening trend of acute malnutrition in Western Area, rural and Urban, including Urban Slums, require attention.

Key underlying factors, i.e., morbidity, food insecurity, poor childcare, lack of safe drinking water, limited sanitation and hygiene facilities, remain key risk factors affecting the nutritional status of the children. Findings of this survey indicate a major problem for young child feeding practices in terms of diversity and frequency of meals. It is also important to note that malnutrition is multifaceted and chronic malnutrition is hinged on the basal socio-economic, education and cultural structures. The various national, regional, and global nutrition goals require continued concerted and integrated efforts among the country's relevant sectors.

Immediate interventions:

- Maintain interventions to prevent all forms of malnutrition, including washing and stunting. Maintain nutrition programmes for rehabilitation of acutely malnourished children through sustained active case finding or early detection, continued self-referrals through scale-up of Family MUAC approach, and capacity building of the existing IPFs, CHC, CHP and MCHP staff and the community (CHW/MSG networks) to manage or treat acutely malnourished children. Improve treatment services, especially MAM services and quality of care in Western Area domains (rural, Urban and Slums), Bonthe and Pujehun.
- Treatment of acute malnutrition among WRA, especially the pregnant and lactating women, not only treats wasting among WRA but also contributes to preventing low birth among newborns, given that wasting is highest among children less than 18 months. Low birth weight is a possible contributing factor to child malnutrition, especially if breastfeeding is practised in the first 6 months.

- Facilitate sharing of experience and best practices across districts and replicate the practices from districts that have had a good impact on other districts.
- Intensify supportive supervision with a focus on mentoring HW staff on the correct use of anthropometric tools, collection and recording, and maintaining use of MUAC and weight-for-height z-scores for admissions for maximum identification of malnutrition cases. Encourage caregivers to take their children for regular growth monitoring programme (GMP) services and self-referral through the family MUAC approach.
- Implement the strategy developed from the qualitative assessment for IYCF in the country.
- Based on the Nutrition Strategy 2020-2030, with emphasis on the systems approach, integrate social protection schemes to improve household food security among vulnerable groups (e.g., promoting backyard gardening and livestock keeping) with health and nutrition education and counselling activities on good IYCF practices. This intervention can be done through different media targeting caregivers with a focus on promoting exclusive breastfeeding, appropriate and timely complementary young child feeding, especially diet diversification and meal frequency, and improvements in household hygiene. This includes health-seeking behaviour and practices through women support groups within the communities advocating for optimal IYCF. Continued health education to sensitize the community on the domestic treatment of drinking water and proper disposal of human faecal waste to avoid contamination of water sources is encouraged.
- Introduce social protection interventions, particularly for the Urban poor whose livelihood depends on cash incomes. Promote care practices or 'parenting' for Urban and rural households differently and with particular attention to those children who do not live with biological parents.
- Improve and popularize adequate consumption of locally available foods using the complimentary food recipe book.
- Scale up the BFHI activities.

Long term interventions

- Implementation of the proven interventions based on the outcomes of operational research, such as social protection measures and nutrition-sensitive livelihood and agricultural interventions (Bhutta et al. 2015).
- Evidence creation: an in-depth analysis of adolescent dietary practices and influencers (including the environment – food market and parenting arrangement); a formative study on overweight and obesity – dietary practices, lifestyle (including physical activity). Conduct a qualitative study to understand the factors, barriers and promoters affecting adolescent malnutrition.
- Implement programmes for managing and preventing the emerging overweight and obesity in children, adolescents, and adults, such as behaviour change communication (BCC) for adopting and maintaining lifestyle behaviours that contribute to dietary intake and physical activity. It is critical to strengthen nutrition counselling within the ANC package, considering the high prevalence of overweight among pregnant women. Design nutrition programs incorporating adolescents in schools, religious institutions, and colleges; use FBDs and agricultural clubs.

Advocate for National surveys to investigate the prevalence of anaemia among adolescent girls. Incorporate practice-based nutrition education in the school curriculum.

- Review policies relating to nutrition and dietary diversity based on the new evidence presented by the SMART survey. The Nutrition for Growth (N4G) targets review paves the way for integrated multisectoral and multistakeholder coordination to address undernutrition in Sierra Leone.
- Improve the policy environment to promote and deliver IYCF practices and services by ensuring the availability of legislation on the Regulation of the Marketing of breast milk substitutes. Implementation/roll out of the Infant feeding policy and the breastfeeding Act.
- In-depth analysis of operational research to assess feasibility and cost-effectiveness of nutrition-sensitive cash transfer programme, nutrition-sensitive livelihood and agriculture programme (including family farming), school health and nutrition interventions (such as nutrition education with practicum – agriculture and food preparation).
- Develop a strategy for Urban nutrition and adolescent nutrition for Sierra Leone.
- Strengthen the national nutrition surveillance system (including family MUAC assessments linked to health facilities) with emergency response mechanisms and triggers in integration with HMIS to monitor the nutrition trends better and implement nutrition-sensitive and nutrition-specific programmes. Given the prevailing COVID-19 situation and recurrent food deficit during hunger gap periods, encourage partners to support periodic annual rapid SMART or LQAS surveys in specific intervention districts, especially during the lean seasons, to provide timely data for monitoring and any early warning signs. Continue the 3-year periodic national nutrition SMART surveys to provide data in between 3-year periodic full SMART surveys on the nutrition situation and assess the progress toward global, regional, and national commitments to eliminate hunger in the country.
- The communities are to be trained on sanitation and maintenance of the water systems to address the issues of limited access to safe water. Provision of sanitary facilities, including building latrines at the household level in settled populations or strategic locations in the bomas and villages for appropriate disposal of human excretal waste, should be coupled with the awareness of the need to use such facilities.
- Assessing WASH indicators during the peak of rainy seasons is insufficient; the next survey questions should differentiate WASH sources/facilities during dry and rainy seasons.

1.
INTRODUCTION

1.1 General background

Sierra Leone is one of the poor developing African countries on the West Coast, covering 72,000 square kilometres (28,000 square miles). The Republic of Guinea borders Sierra Leone in the north and northeast and the Republic of Liberia in the east and southeast. Although, the Atlantic Ocean extends approximately 340 kilometres (211 miles) on the west and southwest. Sierra Leone has a total population of 7,534,883 (3,606,085 males and 3,928,798 females) in 6,840 households of which 4,754,139 (63.1 per cent) persons live in the rural and 2,780,842 (38.9 per cent) live in the Urban areas[1]. In 2018, the mean size of households was 6.0, 6.2 in rural and 5.8 in Urban. Characteristic of young demography, 14.9 per cent are children under five years of age, 42.5 per cent of the population are children (below 15 years old), 53.0 per cent is of working age (15-64 years), and only 4.2 per cent are aged 65

Figure 1: Map of Sierra Leone showing geographic location and the district administrative units

16 districts subdivided into 149 chiefdoms and 12 wards based on the 2015 population and census data

1 Stats SL (2019). 2018 Sierra Leone Integrated Household Survey (SLIHS).

years and above. Adolescents (10-19 years) constitute 22.9 per cent, while women of reproductive age (15-49 years) constitute 24.8 per cent of the total population (SLIHS, 2018).

Administratively, Sierra Leone is divided into five regions. Each region is divided into districts, and each is divided into chiefdoms and wards for Western Urban and rural area. Overall, there are 16 districts subdivided into 149 chiefdoms and 12 wards based on the 2015 population and census data **(see Figure 1)**[2]. The country experiences two main seasons: the dry season, between November and May, and the wet/ rainy season, from April/May to November.

Sierra Leone has made steady progress in human development, health, nutrition, and food security. It is ranked 182 out of 189 countries on the Human Development Index (HDI). The HDI value increased by 57.5 per cent between 1990 (HDI of 0.287) and 2019 (HDI of 0.452), while the under-five-years-old mortality rate has fallen gradually from 327.2 deaths per thousand live births in 1971 to 102.09 deaths per thousand live births in 2020.

In the 2020 Global Hunger Index (GHI)[3], Sierra Leone ranks 101 out of the 107 countries with a score of 30.9, classified as a serious hunger level and gradually improved from an extremely alarming GHI of 58.3 in 2000 and GHI of 53.3 in 2006 through alarming GHI level of 42.4 in 2012 and lately serious GHI level of 30.9.

Similarly, the nutrition situation in Sierra Leone has greatly improved in the last decade, with a smaller proportion of children suffering from any form of malnutrition. This is evidenced by the overall decreasing trend in malnutrition from various national surveys. According to the Sierra Leone Demographic Health Survey (SLDHS, 2019), malnutrition rates have improved significantly in the past 10 years, with a 7 percentage point reduction in childhood stunting from 36 per cent in 2013 to 29 per cent in 2019; a 5 percentage point reduction in childhood wasting from 10 per cent in 2013 to 5 per cent in 2019, and a 4 percentage point reduction in childhood overweight from 8 per cent in 2013 to 4 per cent in 2019[4].

The Sierra Leone National Nutrition Survey (SLNNS) using the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology revealed similar trends in the past 15 years, with a 14 percentage point reduction in childhood stunting from 40 per cent in 2005 to 26 per cent in 2017, and; a 4-per centage point reduction in childhood wasting from 9 per cent in 2005 to 5 per cent in 2017.[5/6]

In 2014 – 2015, Sierra Leone experienced the world's most widespread Ebola Virus Disease (EVD) outbreak along with neighbouring countries Guinea and Liberia. The Ebola outbreak negatively impacted the health and socioeconomic situation of the most vulnerable populations. The recent onset of the COVID-19 outbreak, with national containment measures to prevent and control the spread of infection such as travel restrictions, curfew, community quarantine, and physical distancing have inadvertently affected economic and development activities leading to intermittent disruptions in the delivery of essential services, poor access and utilization of basic social services, and retardation of economic and agricultural activities.

2 Stats SL (2016). Sierra Leone National Population and Housing Census 2015. Statistics Sierra Leone. A.J. Momoh Street Tower Hill Freetown.

3 Based on the values of the four indicators, the GHI determines hunger on a 100-point scale where 0 is the best possible score (no hunger) and 100 is the worst. Each country's GHI score is classified by severity, from low (≤9.9) to extremely alarming (≥50). 2021 Global Hunger Index. https://www.globalhungerindex.org/ranking.html

4 Statistics Sierra Leone (Stats SL) and ICF. 2020. *Sierra Leone Demographic and Health Survey 2019.* Freetown, Sierra Leone, and Rockville, Maryland, USA: Stats SL and ICF.

5 Ministry of Health and Sanitation (MoHS) and Action against Hunger. 2017. *Sierra Leone National Nutrition Survery 2017.* Freetown, Sierra Leone: MoHS and Action against Hunger.

6 Tolla, A., Cassard, F. and Johnston, R. 2010. *Report on the Nutritional Situation of Sierra Leone: Nutrition Survey using SMART Methods.* Freetown, Sierra Leone: MoHS and UNICEF.

While the Government of Sierra Leone (GoSL) and its partners make efforts to reduce the impact of COVID-19 on the health and nutrition of its population, it is assumed that the nutrition conditions of the most vulnerable population in the country, especially children and women, deteriorates. However, the extent to which the outbreak has led to deterioration in children and women's nutritional status is unknown. This precarious situation has resulted in an increase in the proportion of food insecure Sierra Leoneans from 44 per cent in August 2019 to 63 per cent (approximately 5.1 million people) in June 2020, based on the findings of the June 2020 emergency food security monitoring system (E-FSMS).

1.2 Justification

Various stakeholders have conducted nutrition assessments at regular intervals to assess the impact of the various interventions designed to address the high prevalence of malnutrition. These include stunting levels, evaluating progress towards sustainable development goals (SDGs 2030), and monitoring the nutritional status of specific population groups in Sierra Leone. The Directorate of Food and Nutrition (DFN) at MoHS conducts SMART surveys every two-three years to obtain data across timelines and therefore enable trend analysis. The last and third national nutrition SMART survey was conducted in 2017, following the second and first surveys in 2014 and 2010, respectively. With the next DHS scheduled in another three years (the last was conducted in 2019) and the absence of a reliable nutrition surveillance system in the country to provide real-time data, planning, implementation, and monitoring. It was therefore critical to organize a national nutrition survey following a SMART methodology to support evidence-based planning and response to the humanitarian crisis.

Therefore, the government of Sierra Leone (GoSL), led by the Ministry of Health & Sanitation (MoHS) and its partners, planned to conduct the fourth national nutrition survey (NNS) using SMART Methodology. UNICEF supported the current survey that would enhance the comparison of results given the standard study design, timing of the nutrition surveys, indicators assessed and data analysis, including analysis of trends. Implementing a national nutrition survey using the SMART methodology protocol is also shown to enhance the quality, validity and reliability of survey data generated and ultimately enable comparison and efficient prioritization and targeting of interventions and resources.

The NNS 2021 also assessed the severity and geographical scope of nutrition-related factors. The information on child, adolescent and maternal nutrition, mortality, infant and young child feeding, and associated factors improves program planning and monitoring for better maternal and child survival and development outcomes. Furthermore, it provides the platform for policy and strategy development to prioritize the programs for short, medium, and long-term direct and indirect interventions at the national and district levels.

© UNICEF/Sierra Leone/2022

1.3 Nutrition context

1.3.1 Sources of nutrition information

Nutrition SMART surveys provide the main sources of reliable nutrition information at district and national levels. Desk review of secondary data was mainly based on the NNS 2014 and NNS 2017 reports. Other sources of national nutrition indicators have been the MICS 2016 and DHS 2019. Other sources, such as the Census Report 2015 and the Sierra Leone Integrated Household Survey (SLIHS, 2018), provided information on the demographic and livelihood context of the country.

1.3.2 Nutrition situation in the country: Secondary review

In the SLNNS 2017, the prevalence of global acute malnutrition (GAM) rate of **5.1 per cent** (95 per cent CI: 4.6-5.6), moderate acute malnutrition of **4.0 per cent** (95 per cent CI: 3.6-4.5) and severe acute malnutrition (SAM) rate (WHZ<-3 or Oedema) of **1.0 per cent** (95 per cent CI: 0.8-1.3) indicating a *poor* situation (GAM rate of 5.0-9.9 per cent) of acute malnutrition in the country's population according to WHO classification. When compared to NNS 2014, the results indicated an insignificant 0.4 per cent rise from the *acceptable* level with respective GAM, MAM, and SAM rates of 4.7 per cent (95 per cent CI: 4.3-5.2), 3.7 per cent (95 per cent CI: 3.3-4.1) and 1.0 per cent (95 per cent CI: 0.9-1.2). The DHS 2019 also showed similar results, with 5.4 per cent of children wasting 1.1 per cent severely.

The national prevalence of stunting (HAZ<-2) in NNS 2017 was **31.3 per cent** (95 per cent CI: 30.0-32.6); 21.3 per cent (95 per cent CI: 20.3-22.3) moderate, and 10.0 per cent (95 per cent CI: 9.2-10.7) severe stunting indicating the *high* or *serious* situation of chronic malnutrition, an insignificant increase from the 2014 findings of **28.8 per cent** (95 per cent CI: 27.5-30.2), 21.0 per cent (95 per cent CI: 19.9-22.1), and 7.8 per cent (95 per cent CI: 7.2-8.5) for global, moderate, and severe stunting respectively. The DHS 2019 showed similar results with stunting and severe stunting prevalence of 29.5 per cent and 10.7 per cent, respectively.

The national prevalence of GAM and stunting rates have shown a generally improving trend since the 2008 assessment, with GAM rates reducing from 10.9 per cent in 2008, 6.9 per cent in 2010, to 4.7 per cent in 2014. Stunting rates reduced from 37.4 per cent in 2008 to 34.1 per cent in 2010 to 28.8 per cent in 2014. However, the 2017 NNS findings indicated a plateau and no significant improvement from 2014 results due to aggravating factors prevailing at that time, including the impact of the Ebola pandemic in the country. The NNS 2017 rates were, however, better than the previous years (2008-2010) rates and the regional prevalence in Sub-Saharan Africa (SSA) and West and Central Africa (WCA).

According to the UNICEF Conceptual framework, the causes of malnutrition are multifaceted. They are associated with poor food consumption/ dietary diversity and high morbidity burden in less favourable environments aggravated by poor infant and young child feeding practices, livelihood shocks, water, and sanitation. The nutrition improvement can thus be attributed to the national IMAM program and supportive treatment programs and associated WASH, food security and livelihood interventions by DFN, line ministries and national NGOs with support from international UN and NGO partners.

2.

OBJECTIVES

2.1 Overall objective

The overall objective of the Sierra Leone National Nutrition Survey (SLNSS) 2021 using SMART methodology is to determine and evaluate the current nutrition status of the population (especially children 6-59 months old, adolescent girls 10-14 years, adolescent boys 10-19 years and women of reproductive age 15-49 years) and the retrospective mortality rate in the population at district and national levels. The assessment of major contextual factors contributing to malnutrition, such as (IYCF), dietary diversity, water, sanitation, and hygiene (WASH) and the health situation in Sierra Leone, define program planning priorities for direct and indirect nutrition interventions.

2.2 Specific objectives

1. To determine the prevalence of acute malnutrition among children 6-59 months to estimate acute and chronic malnutrition (global acute malnutrition, underweight, overweight, and stunting) at the national and in the 17 domains (16 districts and one Western Area Urban Slum) of Sierra Leone.
2. To assess nutrition status (underweight and overweight using BMI and MUAC in adolescent girls (10-14 years old and 10-19 years old) and adolescent boys (10-19 years old) at the national and in the 17 domains (16 districts and one Western Area Urban Slum) of Sierra Leone.
3. To assess maternal nutrition status (underweight and overweight using BMI (BMI-for-Age) and MUAC) in Women of Reproductive Age (15-49 years old) at the national and in the 17 domains (16 districts and one Western Area Urban Slum) of Sierra Leone.
4. To assess the coverage of access to key primary health care services for child survival outcomes at the national and in the 17 domains (16 districts and one Western Area Urban Slum) of Sierra Leone.
5. To assess two-week retrospective morbidity among children under 5 at the national and in the 17 domains (16 districts and one Western Area Urban Slum) of Sierra Leone.
6. To assess retrospective mortality (Crude Mortality and U5 Mortality rates) over 3 months recall period among populations at the national and in the 17 domains (16 districts and one Western Area Urban Slum) of Sierra Leone.
7. To assess other contextual factors contributing to malnutrition, such as Minimum Dietary Diversity for Women or Adolescents and WASH at the national and in the 17 domains (16 districts and one Western Area Urban Slum) of Sierra Leone.
8. To assess levels of core Infant and Young Child (IYCF) practices among the mothers or primary caregivers of 0-23 months old children in Sierra Leone.

3.
METHODOLOGY

3.1 Study design

The SLNNS 2021 mainly employed a cross-sectional design using the SMART methodology. This methodology provides a basic integrated method for assessing nutritional status and mortality rate as well as other associated factors, including food security, morbidity, health programs, and WASH hence providing the basis for understanding the magnitude and severity of the humanitarian crisis in the 16 districts to be assessed and among the populations of the Western Area Slums.

3.2 Study population

The SLNNS 2021 targeted primarily children less than five years, women of reproductive age (15-49 years), adolescent girls (10-14 years), and adolescent boys (10-19 years) for household interviews and anthropometric measurement. The following definitions are applied for the sake of this study:

- A household is defined as a group of people who routinely eat out of the same pot and live on the same compound (or physical location). It is possible that they may live in different structures. Sharing the pot is the unifying factor for households.
- Definition of HH head: is member of the family who manages the family resources and decisions (He/She is the final decision maker on most of the decision related to income allocation and major family activities).
- Respondent is the mother or caregiver in the household.

3.3 Sampling

3.3.1 Sampling strategy

A two-stage cluster sampling approach was applied in the SLNNS 2021 to select sampling units at different levels (clusters and households) in each domain (district or administrative area).

3.3.2 Sample size calculation

The sample size for nutrition, mortality and IYCF were determined using the 11 January 2020 updated version of ENA for SMART (2020) by entering all the required data in the planning menu of the ENA delta software. The data entered into the software included estimated prevalence

of global acute malnutrition (GAM) and crude death rate (CDR), desired precision, design effect (DEFF), average household size based on the most recent 2015 census data, percentage of children under five years old (in the 6-59 months for anthropometry and 0-23 months for IYCF), non-response rate and recall period. A national date which is remembered by most of the population (e.g., 27 April, *Independence Day*, depending on the data collection) was taken as the beginning of the recall period for the three to four months retrospective mortality assessment. Prevalence of GAM and CDR and other parameters were estimated from the NNS 2017 for each domain. However, for Karene and Falaba – the two new districts that were not distinct in the 2017 assessment, parameters from the 2019 Sierra Leone Demographic and Health Survey results were used for sampling.

The software (ENA) calculated the sample size based on the formula below:

$$N = \frac{[Z^2xp(p-1)xDeff]/[1-NRR]}{d^2}$$

where;

N:	is the total sample size
Z:	is the normal deviate (confidence limit) taken as 1.96 at 95% confidence level
p:	proportion of global acute malnutrition (GAM) in the study population
d:	is the acceptable degree of accuracy (precision) desired
Deff:	Design effect
NRR:	Non-response rate (expected)

The 95% Confidence Interval (CI) for prevalence (proportions) was computed in ENA using the formula:

$$95\%\ CI\ (\tilde{p}) = \tilde{p} \pm Z\sqrt{\frac{\tilde{p}(1-\tilde{p})}{\tilde{n}}}$$

Table 2: Sample size calculation for SLNNS 2021 survey

Province	District		Prevalence (2017)	Precision	DE	Non response	% children	Mean HH size	Sample children	Sample HHs	No of clusters (20 HHs/cluster)	No of Reserve Clusters (RCs)	Total Clusters Sampled
Eastern	Kailahun	Anthro	3.2	1.7	1.20	3	16.1	6.3	538	607	30		
		Mortality	0.52	0.30	1.52	3	16.1	6.3	3949	646	**32**	4	36
		IYCF (0-23 mo)	50.8	10.5	1.20	3	8.1	6.3	114	574	29		
	Kenema	Anthro	5.7	2.5	1.20	5	13.2	5.5	432	695	**35**	4	39
		Mortality	0.46	0.26	1.15	5	13.2	5.5	3519	673	34		
		IYCF (0-23 mo)	78.5	10.5	1.50	5	6.6	5.5	96	681	34		
	Kono	Anthro	4.6	2.4	1.50	3	15.8	5.9	478	587	29		
		Mortality	0.53	0.29	1.22	3	15.8	5.9	3457	604	**30**	4	34
		IYCF (0-23 mo)	87.6	8.0	1.50	3	7.9	5.9	106	588	29		
Northern	Bombali	Anthro	5.9	2.5	1.35	3	16.8	5.7	502	600	**30**	4	34
		Mortality	0.75	0.35	1.14	3	16.8	5.7	3139	568	28		
		IYCF (0-23 mo)	82.8	9.0	1.50	3	8.4	5.7	110	593	30		
	Falaba*	Anthro	3.6	1.9	1.50	3	16.2	6.9	603	618	31		
		Mortality	0.33	0.20	1.12	3	16.2	6.9	4155	621	31		
		IYCF (0-23 mo)	39.7	10.5	1.50	3	8.1	6.9	136	628	**31**	4	35
	Koinadugu	Anthro	5.7	2.0	1.20	3	16.2	7.3	674	653	**33**	4	37
		Mortality	0.30	0.18	1.10	3	16.2	7.3	4580	647	32		
		IYCF (0-23 mo)	75.2	9.5	1.50	3	8.1	7.3	130	565	28		
	Tonkolili	Anthro	5.5	2.3	1.20	5	14.9	6.1	493	634	**32**	4	36
		Mortality	0.44	0.25	1.10	5	14.9	6.1	3482	601	30		
		IYCF (0-23 mo)	77.3	10.0	1.50	5	7.5	6.1	110	620	31		

Province	District		Prevalence (2017)	Precision	DE	Non response	% children	Mean HH size	Sample children	Sample HHs	No of clusters (20 HHs/cluster)	No of Reserve Clusters (RCs)	Total Clusters Sampled
N. Western	Kambia	Anthro	5.6	2.0	1.20	3	18.2	6.4	663	652	**33**	4	37
		Mortality	0.42	0.25	1.10	3	18.2	6.4	3324	535	27		
		IYCF (0-23 mo)	91.0	6.0	1.50	3	9.1	6.4	143	631	32		
	Karene*	Anthro	3.0	1.8	1.50	3	14.9	6.5	451	533	**27**	4	31
		Mortality	0.42	0.25	1.10	3	14.9	6.5	3324	527	26		
		IYCF (0-23 mo)	78.2	9.5	1.20	3	7.5	6.5	95	501	25		
	Port Loko	Anthro	5.8	2.2	1.20	3	18.3	5.5	567	645	**32**	4	36
		Mortality	0.36	0.32	1.50	3	18.3	5.5	2371	444	22		
		IYCF (0-23 mo)	74.3	9.5	1.20	3	9.2	5.5	106	540	27		
Southern	Pujehun	Anthro	4.8	2.0	1.20	3	18.9	6.7	573	519	26		
		Mortality	0.38	0.21	1.10	3	18.9	6.7	4262	656	**33**	4	37
		IYCF (0-23 mo)	92.0	6.0	1.50	3%	9.5	6.7	128	519	26		
	Bonthe	Anthro	4.1	1.9	1.20	5%	16.2	6.2	547	636	**32**	4	36
		Mortality	0.35	0.25	1.20	5	16.2	6.2	3108	528	26		
		IYCF (0-23 mo)	90.1	7.0	1.50	5	8.1	6.2	114	597	30		
	Bo	Anthro	5.7	2.3	1.13	3	17.4	5.6	480	564	28		
		Mortality	0.68	0.35	1.43	3	17.4	5.6	3570	657	**33**	4	37
		IYCF (0-23 mo)	79.5	9.5	1.50	3	8.7	5.6	113	597	30		
	Moyamba	Anthro	4.3	2.1	1.20	3	15.4	5.1	468	683	**34**	4	38
		Mortality	0.66	0.35	1.23	3	15.4	5.1	2980	602	30		
		IYCF (0-23 mo)	89.5	8	1.50	3	7.7	5.1	92	604	30		

Province	District		Prevalence (2017)	Precision	DE	Non response	% children	Mean HH size	Sample children	Sample HHs	No of clusters (20 HHs/cluster)	No of Reserve Clusters (RCs)	Total Clusters Sampled
Western	Urban	Anthro	5.8	2.5	1.22	3	14.9	5.4	446	635	32		
		Mortality	0.50	0.27	1.10	3	14.9	5.4	3393	648	32		
		IYCF (0-23 mo)**	57.7	10.5	1.15	3	7.5	5.4	106	677	**34**	4	38
	Slums	Anthro	5.5	2.3	1.41	7	16.1	6.8	579	632	**32**	4	36
		Mortality	0.35	0.21	1.10	7	16.1	6.8	3926	621	31		
		IYCF (0-23 mo)	55.2	10.5	1.50	7	8.1	6.8	113	547	27		
	Rural	Anthro	3.6	2.0	1.2	3	13.3	5.6	435	670	34		
		Mortality	0.50	0.27	1.24	3	13.3	5.6	3824	704	**35**	5	40
		IYCF (0-23 mo)	57.9	10.5	1.10	3	6.7	5.6	100	689	34		
Notes:										**10920**	**548**	**72**	**620**

$ The largest of the three sample sizes is taken. The population parameters are based on Stats SL (2019) and the Reanalysis of the 2015 Census Report for the Sierra Leone Integrated Household Survey (SLIHS) 2018 Report.

* Figures for 2019 SLDHS used for the new district not covered in the SLNNS 2017.

**Sample size calculated based on initiation to breastfeeding rates (targeting 0-23 mo) to accommodate some IYCF indicators. Other indicators will be computed at aggregated regional and national levels.

IYCF analysis for some aggregation at the regional and national levels enhances the measurement of IYCF indicators with high precision. The largest sample sizes, 533-704 households, are required in each district to be assessed in the integrated SMART assessment. Based on the determined number of households and the average time a team would take to interview a household, there will be 27-35 clusters per district to be covered in 27-31 days, assuming 20 teams; each team being able to interview 20 HHs in a day.

According to the 2018 Integrated Household Survey[7], the total population of Sierra Leone is 7,534,883 (3,606,085 males and 3,928,798 females), with a mean household size of 6.0. Of these, the proportion of U5 children, adolescent girls (10-14 years), adolescent boys (10-19 years) and women of the reproductive age (15-49 years) is 14.9 per cent, 5.9 per cent, 11.5 per cent, and 24.8 per cent respectively.

Based on these computations, a total of 548 clusters were selected nationally. By visiting 20 households per cluster, the expected number of demographic groups to be assessed was as follows **(see Table 3):**

7 Stats SL (2019). Sierra Leone Integrated Household Survey (SLIHS) 2018 Report.

Table 3: Final sample size selection for the different survey groups

Province	District	# Clusters	# HHs	HH Size	U5 Prop	U2 Prop	NRR	# Children (0-23 Mo)	# Children (6-59 Mo)	# Adolescent Girls (10-14 yrs)	# Adolescent Boys (10-19 yrs)	# WRA (15-49 yrs)
Eastern	Kailahun	32	640	6.3	0.161	0.081	0.03	315	567	231	450	970
	Kenema	35	700	5.5	0.132	0.066	0.05	241	435	216	421	907
	Kono	30	600	5.9	0.158	0.079	0.03	271	489	203	395	852
Northern	Bombali	30	600	5.7	0.168	0.084	0.03	279	502	196	382	823
	Falaba	31	620	6.9	0.162	0.081	0.03	336	605	245	477	1029
	Koinadugu	33	660	7.3	0.162	0.081	0.03	379	681	276	537	1159
	Tonkolili	32	640	6.1	0.149	0.075	0.05	276	498	219	427	920
North Western	Kambia	33	660	6.4	0.182	0.091	0.03	373	671	242	471	1016
	Karene	27	540	6.5	0.149	0.075	0.03	254	456	201	392	844
	Port Loko	32	640	5.5	0.183	0.092	0.03	312	562	201	393	847
Southern	Pujehun	33	660	6.7	0.189	0.095	0.03	405	729	253	493	1064
	Bonthe	32	640	6.2	0.162	0.081	0.05	305	550	222	434	935
	Bo	33	660	5.6	0.174	0.087	0.03	312	562	212	412	889
	Moyamba	34	680	5.1	0.154	0.077	0.03	259	466	198	387	834
Western	WA-Urban	34	680	5.4	0.149	0.075	0.03	265	478	210	410	883
	WA-Slums	32	640	6.8	0.161	0.081	0.07	326	586	239	465	1004
	WA-Rural	35	700	5.6	0.133	0.067	0.03	253	455	224	437	943
National*		**548**	**10960**	**6.0**	**0.149**	**0.075**	**0.03**	**4752**	**9292**	**3787**	**7382**	**15919**

3.3.3 Cluster selection

Upon compilation of the sample sizes and number of clusters required, the cluster sampling with probability proportionate to size (PPS) design was employed for the survey based on SMART guidelines. In the first stage, Statistics Sierra Leone (SSL) selected between 34-41 clusters of Enumeration Areas (EAs), including 4-5 reserve clusters (RCs) per study domain from an updated list of population data (2015 Census) for the targeted geographical areas of study (**Annex I**) using probability proportionate to size (PPS) strategy. Based on ENA guidelines, the number of clusters includes 10 per cent plus one RC reserved in each domain to be visited in case a critical number (10 per cent) of the targeted clusters are not reachable during data collection for unavoidable reasons. In which case, the teams would have to seek approval from the SMART consultant or national coordination team. Statistics Sierra Leone also provided the maps for each of the EAs to aid in identifying their locations.

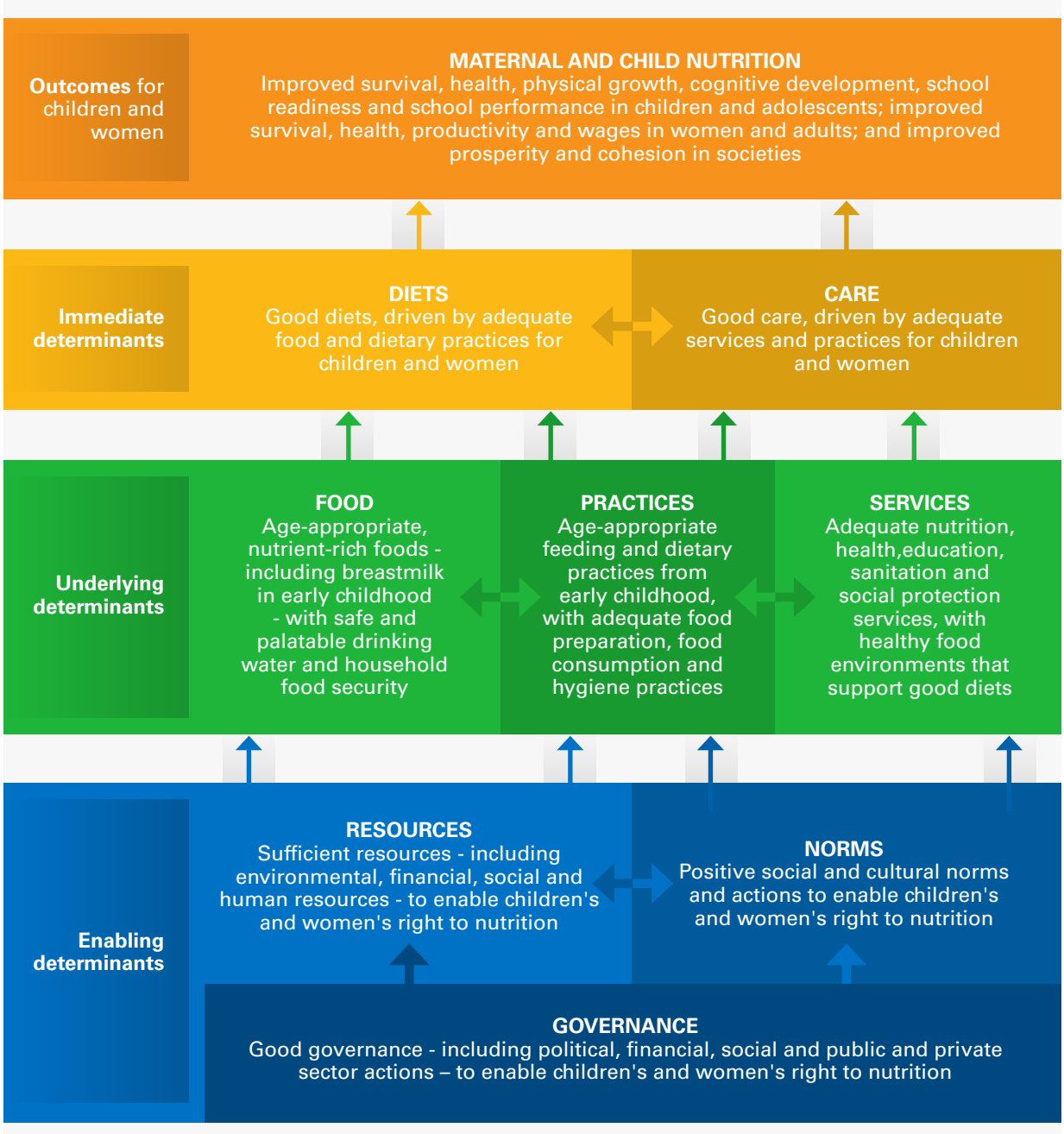
3.3.4 Household selection

In the second stage, households were selected in the field using simple random sampling (SRS) techniques after population listing. In the randomly selected enumeration areas or localities, the survey teams contacted the local leadership or elder who helped in the segmentation (if large – more than 100 households in the rural or 200 in the Urban area) and listed the households within the EA or segment, from which a list of households was generated to form a cluster. After completing the list of all households (HHs) in a cluster, 20 households were selected for interview by balloting - folding papers with all the listed households, shuffling and randomly picking the required number (20). The consensus was reached beforehand that a neutral party such as the chief/community guide would do the picking so they would feel part of the exercise and understand that the households are selected randomly.

3.4 Conceptual framework

The NNS 2017 design for indicators, tools and analysis is based on the UNICEF Conceptual Framework of Malnutrition (**see Figure 2**).

Figure 2: UNICEF conceptual framework of malnutrition, 2020



The framework underpins the primary and underlying factors associated with malnutrition collected in the survey.

3.5 Study tools

Structured and semi-structured questionnaires were used to conduct household interviews, with mortality data collected using the demography & mortality questionnaire (Household Demography & Mortality Tool – **Annex A**); this includes the WASH questionnaire. Data on child anthropometry, morbidity, health and IYCF were collected in the respective anthropometry and IYCF questionnaires (**Annex B** and **Annex C**, respectively). Adolescent and Maternal nutrition, minimum dietary diversity for women (MDD-W) and meal frequency questionnaires (**Annex D**) was used to collect the suggested data on adolescent girls (10-14 years), adolescent boys (10-19 years) and women of the reproductive age (15-49 years). For standardization and ease of interpretation and inter-country comparisons, the questions were adopted from local tools to mirror the indicators collected in 2017. With the addition of BMI-for-age and minimum meal frequency for women and adolescents, and framed in such a way that they are consistent with international studies and methodologies such as DHS/HHS and MICS protocols. However, the 2021 SLNNS did not include the Food Security Modules, given that the Food Security Sector just conducted a VAM comprehensive study in 2020. The tools were peer-reviewed by the nutrition technical working group (TWG) members, and the consultant incorporated different stakeholders and comments into the final protocol. The final questionnaires were programmed in KoBo Collect (v1.30.1), uploaded into the server and electronic forms downloaded into the tablets (Android mobile phones) for enumerators.

The survey tools thus covered indicators from several sections, including:

1. Mortality and demography (household structure)
2. Child anthropometry
3. Morbidity, Immunization & Health Seeking Behaviours of Child
4. IYCF
5. WASH
6. Women and Adolescent Anthropometry
7. Minimum Dietary Diversity for Women and Adolescents; and
8. Minimum Meal Frequency for Women and Adolescents[8]

3.6 Field data collection procedures

Survey teams adhered to this protocol of procedures during data collection in the field.

3.6.1 Social mobilization

The DFN sent an official communication to the district health authorities and District Medical Officers (DMOs) one week before the field survey, with SLNNS 2021 posters in strategic sites in the headquarters and district offices. The team supervisors were also given letters of introduction explaining the ongoing national survey as an important national activity. The authorities would

8 Modified and adopted from IndiKit by People in Need. Guidance on SMART Indicators for Relief and Development Projects; and Intake/FHI360. Interactive Multiple Pass (IMP) 24-hour Recall Tool.

© UNICEF/Sierra Leone/2022

then work closely with the district and community social mobilizers and the survey teams to broadcast and communicate the information in their jurisdiction areas in preparation for the teams' arrival at the villages and localities. The teams were also provided with individual IDs, MoHS/SLNNS 2021 branded T-shirts, vests, and vehicles for ease of identification by the community.

At the community level, the supervisors presented and introduced the team to the local leader and chiefs. They would then assist them in identifying a community guide to lead them through the 20 selected households in the village/locality.

3.6.2 Consent process

In this survey, the primary respondent is the mother or caregiver of the child or the person responsible for food preparation on the recall day. At the household, the survey teams would present themselves to a responsible adult household member (not a guest). After introductions of the team members, the supervisor (team leader) would briefly explain to the respondent the purpose of their study, who has funded/supported it, how the data would be gathered, the expected duration of the interview and how the findings of the study would be used. The household was also screened for any members with COVID-19 using a rapid COVID-19 screening form before they could be interviewed by the team members who followed the COVID-19 compliance IPC guidelines. Before the interview, verbal consent was obtained from the respondent, an adult household member. This was indicated on the Cluster Control Form, documenting the non-response households.

3.6.3 Team selection and composition

The survey team members were selected from the 114 trained enumerators invited from the NNS database comprising DFN and Statistics Sierra Leone staff and persons from partners who participated in previous similar surveys. One hundred (100) persons were proposed for training, but 114 were trained. After a pre-test, standardization exercise and post-test evaluation during the training, 80 members were selected to serve as supervisors, team leaders and enumerators, leaving 34 persons on standby. Besides passing the tests, the selection of team members and constitution of teams was based on knowledge of English and a local language spoken in the districts to assess (*Krio, Mende, Temne, Loko and Limba*), previous experience in similar studies/assessments, and physical fitness. The team composition considered gender balance by having at least a woman in the team for ease of handling the children and interviews with respondents **(Annex F)**.

A total of 20 teams were constituted to undertake the fieldwork. Each team consisted of 4 members – a supervisor, a team leader, and 2 nutrition enumerators in addition to the village/field guide. Based on the length of the household questionnaires and the long distances expected in the field, each team would interview 20 households per cluster daily.

In addition, field supervision and monitoring of the NNS 2021 was conducted by a team of six members led by the SMART consultant, a technical assistant from the DFN, and composed of regional monitors. The five regional monitors were also selected from those who participated in the refresher ToT training.

3.6.4 Team training and pretesting

Eight monitors underwent a short (4 days) refresher training before the main survey team training, facilitated by the consultant in Radisson Blu, Freetown. The refresher covered the survey planning processes, reasons, timing, and budgeting. The sessions also covered the survey design and methodology, requirements, data management, monitoring, quality controls, analysis and interpretation of findings.

The 6-day training of the SLNNS 2021 survey teams was conducted at the Radisson Blue Hotel (with three spacious enough conference halls) in Freetown in compliance with COVID-19 regulations. A hundred and fourteen participated in the survey team training on a lighter package for SMART methodology in the period 21-27 July 2021, with a day's break on Sunday, 25 July 2021. The training included a standardization test and pretesting field exercise in the last two days, respectively.

The training covered the following key topics:

- An overview of the SLNNS 2021 survey, scope, and its objectives, as well as an introduction to SMART methods

Anthropometric measurements (height or length, weight and MUAC), measurement techniques with an emphasis on taking accurate measurements (practical lessons to evaluate enumerators and their ability to measure accuracy),

- Interviewing techniques and general communication skills; assessment of health status of the child (illness), immunization and mortality data; Introduction, consent process and identification of individuals to measure or interview.
- Sampling procedures - Segmentation, PPS, and simple random sampling/selection of households.
- KoBo mobile data collection application and data recording procedures - how to complete the questionnaires in KoBo using the tablets. The specific training on tablets included testing for basic literacy

and numeracy, testing capacity to enter data in the tablet; saving, editing, and sending of finalized data; how to handle system crashes of the tablet and when the data entry form closes accidentally.

- Quality control measures, handling of equipment and field procedures, and general courtesy during the assessment. The data entry using tablets of quality control forms – Cluster Control Forms (by Supervisor), Rapid Covid Screening Form (by Team Leader).
- Estimation of age in months and validation using the calendar of local events developed.
- The standardization of anthropometric measures: Each measurer had to measure 10 children less than five years of age twice (height, weight and MUAC) to assess the accuracy and precision of measurement by enumerators. The results of the standardization test by measurers were analyzed and used to identify good measurers during team formation with defined roles and responsibilities (**Annex G**).
- The identification of severe acute malnutrition and bilateral Oedema and how to refer children with SAM to the nearest health facility for treatment.

The SMART consultant from UNICEF led the training with the assistance of three other MoHS and HKI staff who had participated in the refresher ToT sessions. The training used mixed methodologies, including PowerPoint presentations, discussions, Q&A sessions, Quizzes, role plays and practical sessions.

Standardisation exercise was conducted in three groups and halls at the training venue for all of the enumerators, each group with 10 stations (caregiver and child pair and a set of anthropometric equipment) with the trainers assisting in the set-up and organization of the stations and supervisors assisting in the management of the teams.

Standardization exercise is a pre-survey practice recommended by SMART methodology and involves repeated measurements of weight, height and MUAC for 10 children between 0 and 5 years by each of the enumerators.

Pre-testing of the questionnaire and equipment was carried out in 75 households (each team interviewing three households) in five nearby Western Area Rural Eas and localities of Koya Rural Chiefdom in the outskirts of Freetown, which are not part of the actual assessment.

3.6.5 Interviews and measurements

Interviews were conducted by enumerators trained on the type of data collected by each specific question and item, the reason the data was collected, and how to read verbatim from the questionnaire. Interviews were conducted at households within the respondent's homestead. Children's ages, if they did not have birth registration documents, were estimated to the nearest month using an appropriate local events calendar (**Annex E**). Where the question required a single response, the responses were coded and programmed to select only one response. Where there were possible multiple responses, the Kobo application allowed more than one box to be checked. The application also enabled the programming of special filters for questions such that only questions that are supposed to follow a suitable response appear.

Anthropometric measurements were made according to the SMART guidelines using electronic scales for weight in kg (to the nearest 1 decimal place), rigid height boards for height (for both child/adolescent and woman) or length in cm (to the nearest 1 decimal place) and MUAC tape (for child and adult) for Mid-Upper Arm Circumference in cm (to the nearest 1 decimal place). Children below 87 cm were measured lying down for length, while children 87 cm and above were measured for standing height as recommended in the SMART guidelines.

4.

DATA MANAGEMENT PLAN

4.1 Data collection

The teams were deployed and sent to the field (districts) on July 31, 2021, from the DFN/MoHS. Data collection was conducted over 5 weeks from August 1 – 31. The teams followed a movement plan developed by DFN and the consultant. To collect data quickly and in real-time, the 20 teams were organized into 4 groups, each composed of 5 teams such that the 5 teams would work in one district at a time (i.e. 4 districts at a time throughout the country) thus:

- **North Eastern Group covering 4 districts (Kono, Tonkolili, Karene and Bombali)**
- **Northern Group covering 2 districts (Falaba and Koinadugu) before moving to Western Area (Slums and Urban) domains**
- **South Eastern Group covering Kailahun, Kenema, Pujehun and Bo; and**
- **South Western Group covering Bonthe, Moyamba, Kambia and Port Loko**

The strategy was to start with far-stretched and hard-to-reach districts before the peak of the rainy season. The teams thus started with Bonthe (in the Southern Province), Kailahun and Kono (in Eastern Province), and Falaba (in Northern Province). The teams took 6-7 days in the district (depending on the number of clusters covered) before moving to the next set of districts, all the teams converging to finish with the Western Area Rural District.

Data was collected and captured using the different KoBo-built Microsoft Excel forms developed by the consultant and downloaded into the tablets.

4.2 Data processing and analysis plan

Since the mobile phones/tablets were used for data capturing, anthropometric data were downloaded regularly or every week, depending on access to the internet and analyzed using SMART recommended software ENA (Delta Version 2011 and latest update of January 11, 2020). The supervisor reviewed anthropometric data daily for completeness of the questionnaire, plausibility of measurements and identification of any cases of malnutrition requiring a referral in line with SMART guidelines. To enhance data quality control and allow the supervisor to provide feedback to the teams and the coordinators, the supervisor recorded the day's work on the cluster control form and uploaded the finalized forms/data to the server as soon as they accessed the internet. The anthropometric and other data were merged into the meta-data set in other formats such as EPI Info and SPSS for integrated analysis. The consultant undertook analysis in Freetown using both ENA and SPSS in the third and fourth weeks of September.

Rates of malnutrition (wasting, stunting, underweight and overweight) and mortality were generated in ENA software. The analysis was done separately for each district and domain, and weighted rates were generated for globally aggregated data for the national rates. Further analysis included frequency distributions to derive the prevalence of various dietary diversity, nutrition and health indicators and mean/ median distributions in SPSS.

4.3 Data quality control

The data quality control began from the questionnaire design to the processing and cleaning stage. Quality of data was ensured through: (i) adequate training of monitors and enumerators; (ii) monitoring of fieldwork by coordination/ monitoring team, (iii) crosschecking of filled questionnaires daily; recording of observations; confirmation of disease outbreaks; severe malnutrition and Oedema cases by team leaders/ supervisors. All households sampled were visited and recorded, including empty houses; (iv) daily review with the teams to address any difficulties encountered; (v) progress evaluation according to the schedule and progress reports shared among the coordination team regularly;.(vi) continuous data cleaning and plausibility checks in ENA for SMART; (vii) calibration - monitoring accuracy of equipment (weighing scales) by regularly measuring objects of known weights; and (viii) continuous reinforcement of good practices such as good probing, the accuracy of measurements taken, shouting of measurements by both the enumerators reading and recording them.

5.

SURVEY COORDINATION & MANAGEMENT

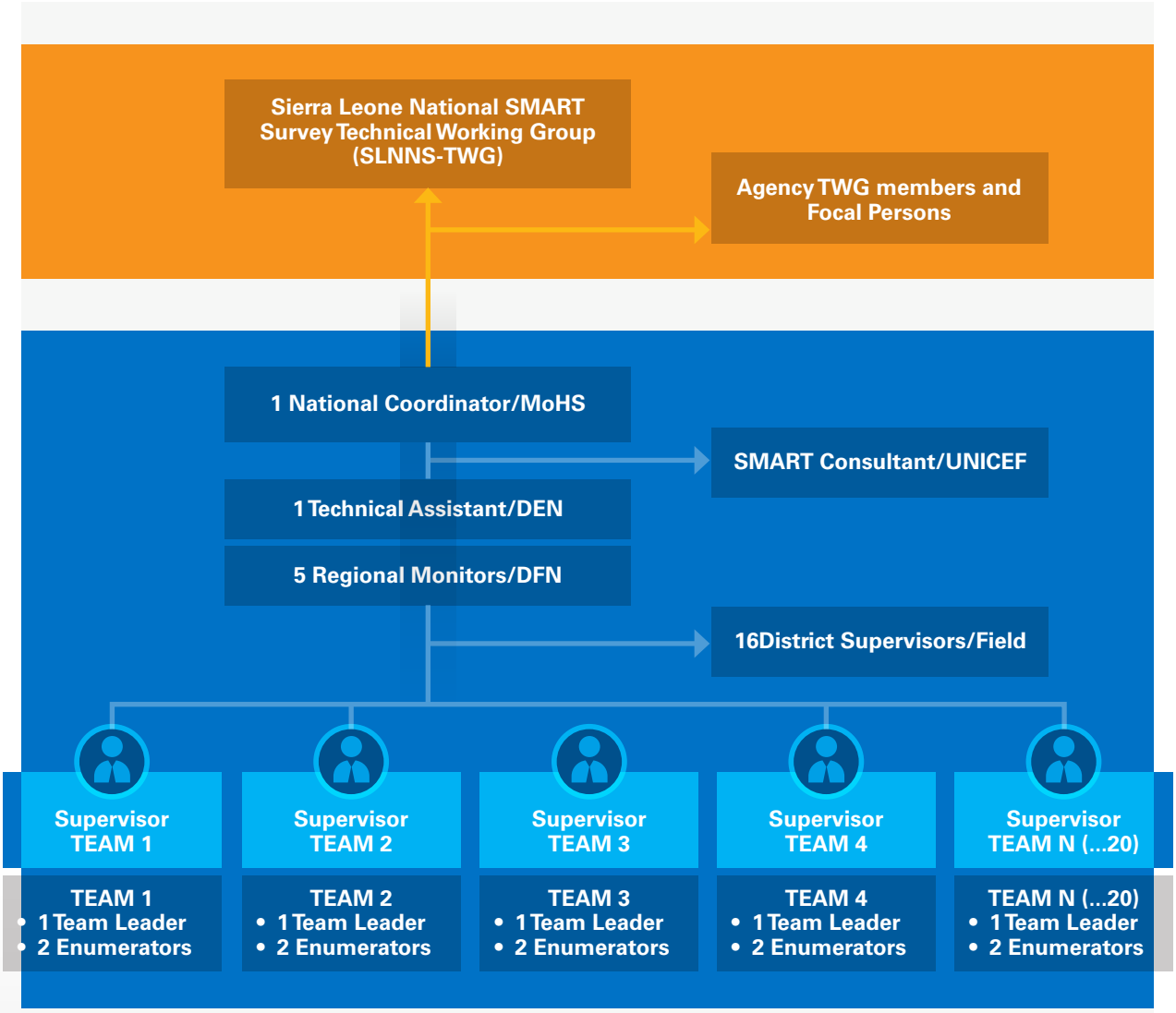
© UNICEF/Sierra Leone/2022

5.1 Study coordination

The study was managed by the National Nutrition Survey Coordination and Management Committee derived from the Technical Working Group (TWG), which constitutes members from key agencies including the Ministry of Health and Sanitation, UNICEF, WHO, WFP, Hellen Keller, JAM, FAO, WV, CWW, and MOHS/DFN among others. Under the leadership of the director, MOHS/DFN appointed a technical assistant as a focal person to represent it in the coordination & monitoring of the SLNNS 2021 study.

The national survey was technically led by a consultant recruited by UNICEF with strong survey and analysis capabilities and experience in SMART surveys. He worked closely with a team of local SMART managers and monitors from the government and partner agencies with variable experience and skills. The MoHS, with UNICEF support, provided the overall coordination in logistics and community mobilization. The survey team consisted of 20 teams, a coordinator, a technical and monitoring team of 6 persons (1 technical assistant and 5 regional monitors) working closely with 20 supervisors, and one supervisor assigned to each team **(see Figure 3)**.

Figure 3: SLNNS 2021 Organogram



5.2 Logistics and management

The DFN staff led the logistical organization and plans for the survey. DFN/MoHS staff, with support from UNICEF, facilitated the drafting of budgets, contracts for the SMART consultant and the survey teams and logistics for the team training and fieldwork, including sourcing for the equipment, tablets, vehicles, training venue and refreshments besides communication and operational costs during the fieldwork. UNICEF also facilitated consultant meetings with TWG/stakeholders, monitors, and supervisors to finalize the tablets and KoBo electronic tools, field supervision (Cluster Control Forms) and monitoring forms administration in the field. Each team supervisor was assigned two tablets (20 from UNICEF and 17 from HKI[9]; other

9 HKI provided 20 tablets, however 3 of these could not configure to update KoBo apps, and therefore only 17 were given to the teams

supervisors were encouraged to use the android phones that were installed with KoBo and the SLNNS 2021 tools uploaded to them, with the IT assistance from HKI.

DFN facilitated the payment of surveyors' allowances, issuance of identification cards, and branded T-shirts. Each team was assigned a vehicle, a set of anthropometric equipment (electronic weighing scale, height board, and MUAC tapes), Local Events Calendar, Cluster Control Forms, Referral Forms, copy of the questionnaires, EA maps, and soft copy list of clusters. Each team was also issued a thermometer to take their daily temperatures and record in a daily temperature monitoring form for team members and a quick CIOVID-19 screening form for household members during COVID-19 screening.

The DFN facilitated advance communication to DHMTs in every district and social mobilization, including production banners or posters announcing the July to August SLNNS 2021 activity and the release of the district nutritionists to undertake supervision of the survey in their respective districts.

5.3 Partners participation

DFN/MoHS and Stats SSL have largely been involved in implementing this survey from the GoSL side. MoHS provided personnel and guidance for the survey. Stats SL provided staff, demographic parameters for sample size determination, PPS sampling for clusters, sampling weights for aggregated analysis, and maps for the EAs. With financial support from the Government of Japan, UNICEF was the main technical partner for the SLNNS 2021, engaging a SMART survey consultant to take the technical lead in the survey implementation. UNICEF also provided anthropometric equipment, including SECA weighing scales, height meters, MUAC tapes and tablets. Several partners supported the planning, monitoring, social mobilization and visibility of the survey activities, including AAH, Concern Worldwide, HKI, Irish Aid, JAM, Government of Japan, UNICEF, WHO and World Vision. The TWG stakeholders also participated in monitoring and supervision, review of survey tools and validation of findings, and monitoring and response planning.

6.

SURVEY RESULTS

6.1 Demographic characteristics of the survey population (households and children)

A total of 10,165 children aged 0-59 months were assessed in the Sierra Leone National Nutrition Survey 2021. Of these, 8755 children, (4238 boys and 4517 girls) aged 6-59 months were assessed for anthropometry and morbidity in the 17 districts/units. IYCF information was collected among 4572 children (0-23 months), of which 1410 were under 6 months (0-5 months) and assessed for exclusive breastfeeding practices. The survey covered a total number of 10,803 households, of which 8959 households responded to the mortality questionnaire. The mean household size was 4.9 (±2.0), and most of the assessed households were male-headed (78.6 per cent), and a significant proportion of the household's female-headed (21.4 per cent).

The distribution of children assessed for anthropometry by age and sex shows that the younger (6-29 months) and the older (30-59 months) children were equally sampled (p=0.167), with the overall ratio (ratio: 0.88) in the acceptable range (value should be around 0.85). With a sex ratio of 0.94, fewer boys than girls were assessed (p<0.05) even though the ratio is still within the as-expected range of 0.8-1.2 **(Table 4)**

Table 4: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	No.	%	No.	%	No.	%	Boy: Girl
6-17	988	48.3	1059	51.7	2047	23.4	0.93
18-29	980	48.0	1060	52.0	2040	23.3	0.92
30-41	1033	47.6	1136	52.4	2169	24.8	0.91
42-53	974	49.3	1001	50.7	1975	22.6	0.97
54-59	263	50.2	261	49.8	524	6.0	1.01
Total	**4238**	**48.4**	**4517**	**51.6**	**8755**	**100.0**	**0.94**

The sex and age distribution bias among the assessed children 6-59 months of age are likely to arise from errors in age estimation. This is in the population where a significant proportion of home deliveries and events were later registered at the health facilities by mother's recall or where birth records are unavailable. Analysis flagged several age measurement errors even where exact birth dates from child cards were recorded. From the plausibility report, 7 per cent of children had no actual birthday. There were also reports of mothers hiding some children from being assessed, especially in the northern districts. However, it is unclear whether any particular child's gender in preference was excluded from the assessment. **Figure 4** shows the population pyramid of the assessed sample from the mortality assessment.

Figure 4: Population age and sex pyramid

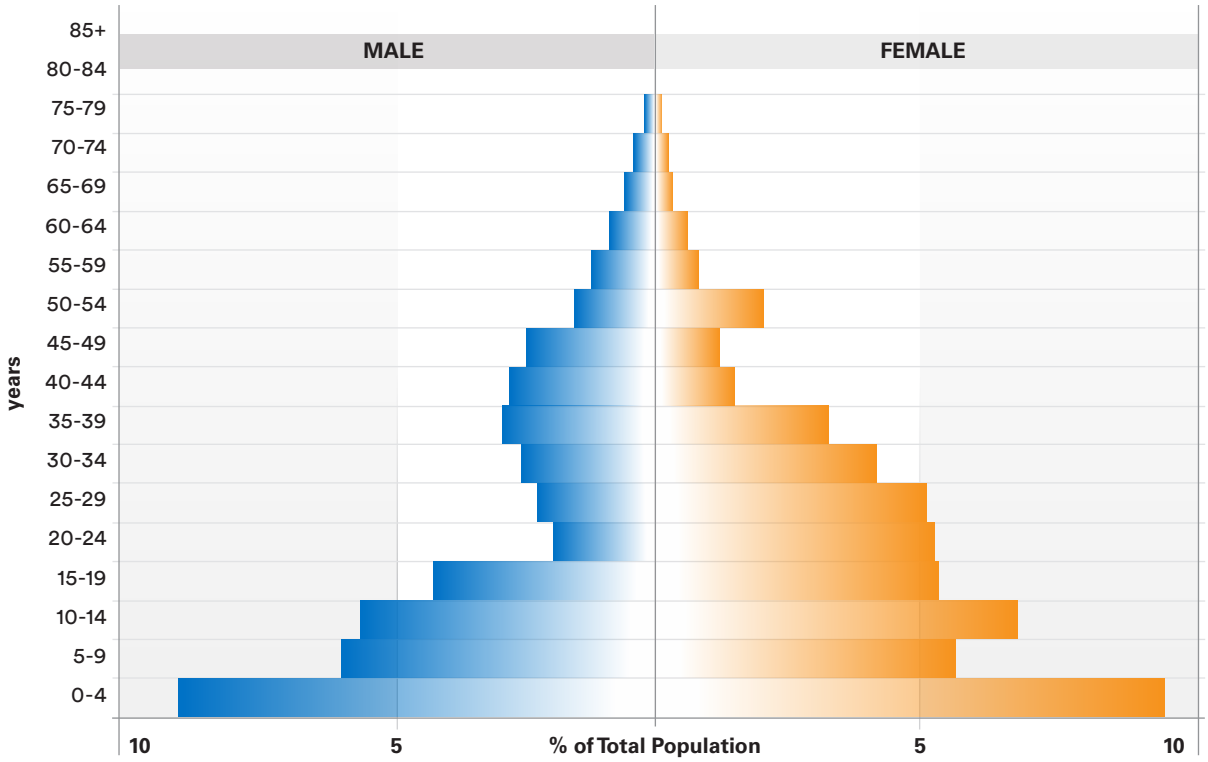


Table 5: Response rate and geographic coverage of the SLNNS 2021

	HHs Sampled	HHs Assessed	Response (% HHs)	U5 (6-59) Sampled	U5 (6-59) Assessed	Response (% U5s)	U2 (0-23) Sampled	U2 (0-23) Assessed	Response (% U2s)	HH Size (Planned)	HH Size (Assessed)
Kailahun	640	616	96.3	567	484	85.4	315	220	69.8	6.3	4.2
Kenema	700	700	100.0	435	602	138.4	241	266	110.4	5.5	4.6
Kono	600	600	100.0	489	541	110.6	271	253	93.4	5.9	5.1
Bombali	600	540	90.0	502	570	113.5	279	258	92.5	5.7	6.1
Falaba	620	600	96.8	605	409	67.6	336	162	48.2	6.9	4.3
Koinadugu	660	660	100.0	681	559	82.1	379	249	65.7	7.3	5.2
Tonkolili	640	638	99.7	498	634	127.3	276	295	106.9	6.1	5.5
Kambia	660	660	100.0	671	513	76.5	373	257	68.9	6.4	4.6
Karene	540	540	100.0	456	565	123.9	254	273	107.5	6.5	6.1
Port Loko	640	604	94.4	562	428	76.2	312	231	74.0	5.5	4.7
Pujehun	660	660	100.0	729	638	87.5	405	297	73.3	6.7	5.5

	HHs Sampled	HHs Assessed	Response (% HHs)	U5 (6-59) Sampled	U5 (6-59) Assessed	Response (% U5s)	U2 (0-23) Sampled	U2 (0-23) Assessed	Response (% U2s)	HH Size (Planned)	HH Size (Assessed)
Bonthe	640	636	99.4	550	481	87.5	305	210	68.9	6.2	4.1
Bo	660	659	99.8	562	575	102.3	312	277	88.8	5.6	4.9
Moyamba	680	680	100.0	466	487	104.5	259	257	99.2	5.1	4.2
WA-Rural	700	700	100.0	455	472	103.7	253	231	91.3	5.6	4.6
WA-Slums	640	634	99.1	586	458	78.2	326	270	82.8	6.8	5.1
WA-Urban	680	676	99.4	478	424	88.7	265	218	82.3	5.4	4.9
National	**10960**	**10803**	**98.6**	**9292**	**8840**	**95.1**	**5161**	**4224**	**81.8**	**6.0**	**4.9**

The response rate was high at 95.1 per cent for children (6-59 months) and 98.6 per cent for households nationally. The response rate for households was 100 per cent in most districts and ranged except in a few districts where non-response ranged between 0.2 per cent in Bo to 10 per cent in Bombali (see **Table 5**). In Falaba, Port Loko, Kambia, WA-Slums, for instance, fewer children (6-59 months) were assessed due to a high percentage of non-response rate. This was caused by absenteeism in a few clusters that fell among farming families, Urban labourers or migrant port workers, who reportedly had split families staying in Freetown. In Falaba and Karene, which were not part of the 2017 assessment, the national prevalence and parameters used in sample size determination were probably under or overestimated for both children assessed for nutrition and the population reached for mortality. Other discrepancies could have arisen from selection bias and actual demographic and migration dynamics since the 2015 Census in the country, as seen in differences in the parameters (such as average household size and under-five) used in the planning stage and those from the findings. The proportion of children under five years per household was 19.2 per cent, i.e., per 0.83 children per household assessed for a household size of 4.9 nationally. **Figure 5** shows the survey coverage from the GPS data submission points.

Figure 5: Map of data submission points showing coverage in SLNNS 2021

6.2 Child nutrition status (anthropometric results)

6.2.1 Prevalence of acute malnutrition based on weight-for-height z-scores

The national prevalence of Global Acute Malnutrition (GAM), defined as Weight-for-height z-scores (WHZ<-2 and Oedema) rate for Sierra Leone, was **5.2 per cent** (95 per cent CI:4.7-5.8). Moderate acute malnutrition (MAM), defined as WHZ≥-3 and ≤-2, was 4.2 per cent (95 per cent CI: 3.7-4.7), and severe acute malnutrition (SAM), defined as WHZ<-3 and Oedema rate, was **1.0 per cent** (95 per cent CI: 0.8-1.3). Forty-nine Oedema cases(0.6 per cent) were

observed during the assessment (**Table 6**). A slightly higher proportion of boys (5.8 per cent; 95 per cent CI: 5.1-6.6) was more acutely malnourished than girls (4.7 per cent; 95 per cent CI: 4.0-5.4) although not statistically significant (p>0.05). The findings indicate a ***poor*** nutrition situation (GAM rate of 5-9.9 per cent) according to WHO (2006) and ***medium*** according to UNICEF (2008) classification.

Table 6: Prevalence of acute malnutrition based on weight-for-height z - score and Oedema by sex

	All n = 8459	Boys n = 4093	Girls n = 4366
Prevalence of global malnutrition (<-2 z-score and/or Oedema)	(441) 5.2 % (4.7 - 5.8 95% CI)	(237) 5.8 % (5.1 - 6.6 95% CI)	(204) 4.7 % (4.0 - 5.4 95% CI)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no edema)	(353) 4.2 % (3.7 - 4.7 95% CI)	(200) 4.9 % (4.3 - 5.6 95% CI)	(153) 3.5 % (2.9 - 4.2 95% CI)
Prevalence of severe malnutrition (<-3 z-score and/or edema)	(88) 1.0 % (0.8 - 1.3 95% CI)	(37) 0.9 % (0.7 - 1.2 95% CI)	(51) 1.2 % (0.9 - 1.5 95% CI)

The prevalence of Oedema is 0.6 per cent

The global acute malnutrition (GAM) rates (WHZ<-2 and Oedema) varied from acceptable/low (GAM rate 2.5-<5 per cent) to poor or medium levels (GAM rates 5-<10 per cent). Low GAM rates (<5 per cent) were recorded in: Falaba (3. 6 per cent; 95 per cent CI: 1.9-6.8), Moyamba (3.5 per cent; 95 per centCI: 2.2-5.5), Kono (3.7 per cent; 95 per cent CI: 2.1-6.5), Koinadugu (4.3 per cent; 95 per cent CI: 2.8-6.4), Bombali (4.3 per cent; 95 per cent CI: 2.6-7.1), Kailahun (4.7 per cent; 95 per cent CI: 3.6-6.2); Tonkolili (4.8 per cent; 95 per cent CI: 3.2-7.1), Karene (4.8 per cent; 95 per cent CI: 2.8-8.1), and Bo (4.9 per cent; 95 per cent CI: 3.0-7.8) in that order (**Figure 6**). Poor or medium GAM (WHZ<-2 or Oedema) rates were recorded in: Kambia (5.4 per cent; 95 per cent CI: 3.6-7.9); Kenema (5.5 per cent; 95 per cent CI: 3.6-8.4); Port Loko (5.5 per cent; 95 per cent CI: 3.2-9.3); Pujehun (5.6 per cent; 95 per cent CI: 4.2-7.3); Western Area Rural (5.9 per cent; 95 per cent CI: 3.7-9.3); Bonthe (6.2 per cent; 95 per cent CI: 3.7-10.2), Western Area Slums (7.6 per cent; 95 per cent CI: 5.2-11.1); and highest in Western Area Urban (9.6 per cent; 95 per cent CI: 6.1-14.8). **Table 7** shows the distribution of acute malnutrition rates by district.

Figure 6: GAM (WHZ<-2 and Oedema) by district

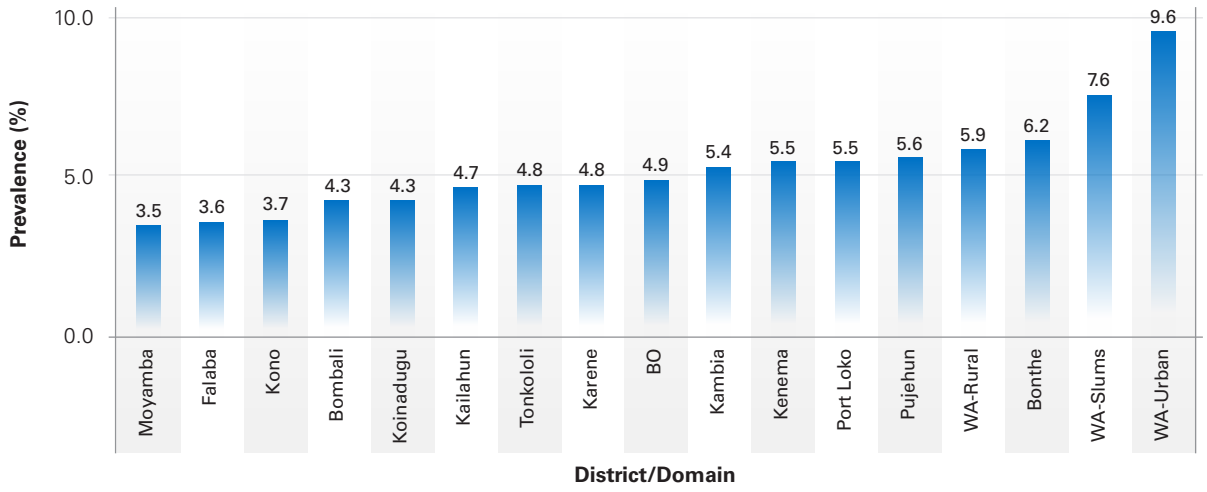


Table 7: Prevalence of global, moderate and severe acute malnutrition in children (6-59 months) based on weight for height z-scores by district

Indicator	District	Global Acute Malnutrition (GAM) [WHZ<-2 and/or Oedema]				Moderate Acute Malnutrition (MAM) [-3≤WHZ≤-2 and no Oedema]			Severe Acute Malnutrition (SAM) [WHZ<-3 and/or Oedema]		
		N	n	%	95% CI	n	%	95% CI	n	%	95% CI
Eastern	Kailahun	467	22	4.7	3.6-6.2	17	3.6	2.5-5.3	5	1.1	0.5-2.5
	Kenema	580	32	5.5	3.6-8.4	22	3.8	2.3-6.1	10	1.7	0.8-3.5
	Kono	514	19	3.7	2.1-6.5	14	2.7	1.4-5.3	5	1.0	0.4-2.2

Indicator	District	Global Acute Malnutrition (GAM) [WHZ<-2 and/or Oedema]				Moderate Acute Malnutrition (MAM) [-3≤WHZ≤-2 and no Oedema]			Severe Acute Malnutrition (SAM) [WHZ<-3 and/or Oedema]		
		N	n	%	95% CI	n	%	95% CI	n	%	95% CI
Northern	Bombali	556	24	4.3	2.6-7.1	18	3.2	1.8-5.6	6	1.1	0.5-2.3
	Falaba	390	14	3.6	1.9-6.8	13	3.3	1.7-6.6	1	0.3	0.0-2.0
	Koinadugu	514	22	4.3	2.8-6.4	15	2.9	1.7-4.9	7	1.4	0.5-3.8
	Tonkolili	604	29	4.8	3.2-7.1	22	3.6	2.3-5.7	7	1.2	05-2.6
N. Western	Kambia	502	27	5.4	3.6-7.9	24	4.8	3.2-7.1	3	0.6	0.2-1.8
	Karene	546	26	4.8	2.8-8.1	20	3.7	2.1-6.4	6	1.1	0.4-3.0
	Port Loko	420	23	5.5	3.2-9.3	22	5.2	2.9-9.2	1	0.2	0.0-1.8
Southern	Bo	554	27	4.9	3.0-7.8	23	4.2	2.5-6.8	5	0.9	0.4-2.1
	Bonthe	453	28	6.2	3.7-10.2	27	6.0	3.5-9.9	1	0.2	0.0-1.7
	Moyamba	456	16	3.5	2.2-5.5	13	2.9	1.6-4.9	3	0.7	0.2-2.0
	Pujehun	611	34	5.6	4.2-7.3	28	4.6	3.3-6.3	6	1.0	0.4-2.7
Western	WA-Rural	474	28	5.9	3.7-9.3	22	4.6	2.8-7.6	6	1.3	0.6-2.7
	WA-Slums	419	32	7.6	5.2-11.1	23	5.5	3.5-8.5	9	2.1	1.1-4.1
	WA-Urban	407	39	9.6	6.1-14.8	28	6.9	4.3-10.9	11	2.7	1.4-5.2
National		**8457**	**439**	**5.2**	**4.7-5.8**	**353**	**4.2**	**3.7-4.7**	**86**	**1.0**	**0.8-1.3**

The quality of the survey evaluated by the ENA software is considered good, with a plausibility score of 14 per cent. In the districts, the quality was either excellent (plausibility scores of 0-9 per cent), good (plausibility score of 10-15 per cent), or acceptable (15-24 per cent). Mild penalties were meted on age measurements and sample distribution parameters (see **Table 8**).

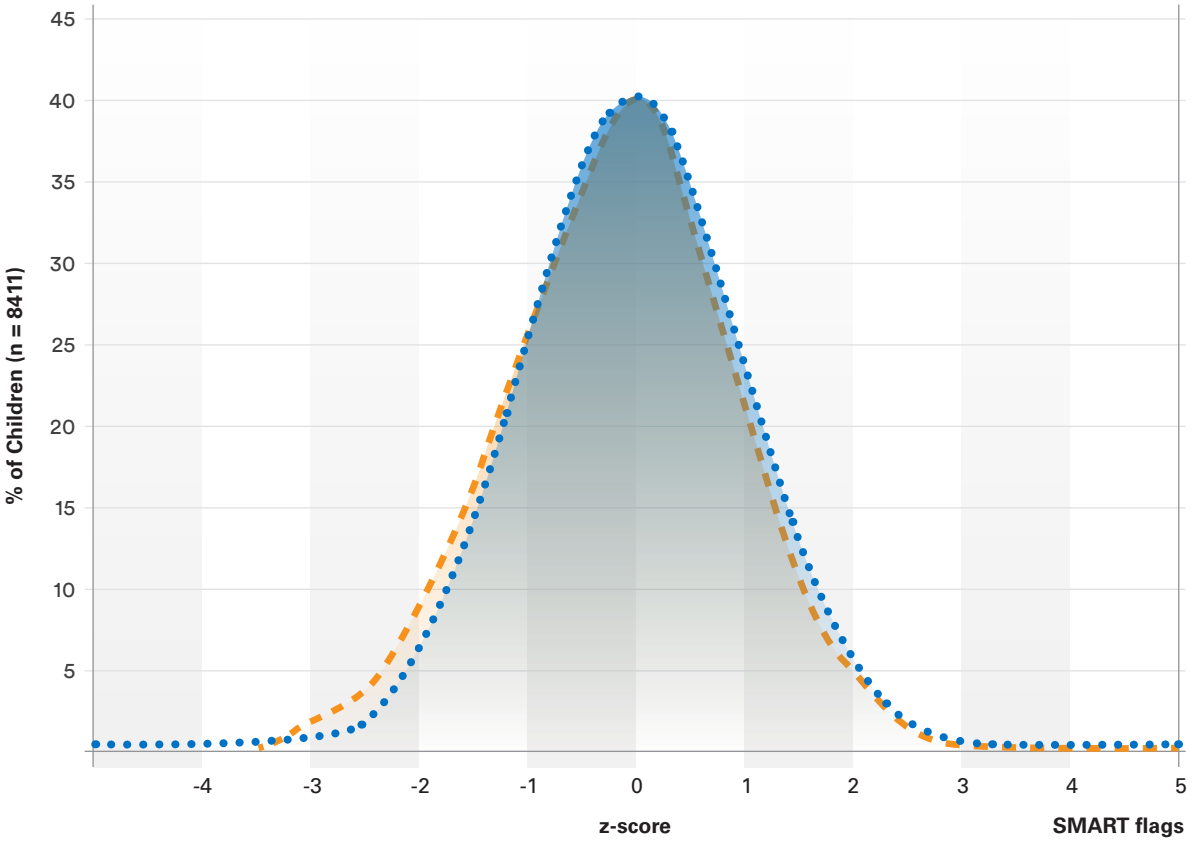
Table 8: Data quality evaluation report for the SLNNS 2021

District		Flags (SMART)		Overall Sex Ratio (x^2)		Age Ratio (6-29: 30-59 Mo (x^2)		DPS - Wt		DPS - Ht		DPS - MUAC		SD WHZ		Skewness WHZ		Kurtosis WHZ		Poisson Distribution SMART WHZ<-2 (x^2)		Overall	
Code	Name	%	Score	p	Score	p	Score	#	Score	#	Score	#	Score	SD	Score	#	Score	#	Score	p	Score	Score	Quality
1	Kailahun	2.7	5	0.715	0	0.049	4	5	0	7	0	7	0	1.03	0	-0.03	0	0.00	0	0.979	0	9	Excell
2	Kenema	3.0	5	0.414	0	0.723	0	6	0	8	2	10	2	1.06	0	-0.20	1	0.06	0	0.228	0	10	Good
3	Kono	2.3	0	0.794	0	0.402	0	7	0	10	2	8	2	1.02	0	-0.08	0	0.04	0	0.006	3	7	Excell
4	Bombali	1.4	0	0.866	0	0.44	0	6	0	8	2	4	0	0.96	0	-0.18	0	0.45	3	0.044	1	6	Excell
5	Falaba	3.7	5	0.026	4	0.691	0	4	0	10	2	5	0	1.05	0	-0.16	0	-0.12	0	0.032	1	12	Good
6	Koinadugu	4.7	5	0.229	0	0.387	0	5	0	10	2	8	2	1.07	0	-0.03	0	-0.07	0	0.157	0	9	Excell
7	Tonkolili	3.4	5	0.247	0	0.151	0	4	0	9	2	7	0	1.08	0	-0.02	0	0.13	0	0.585	0	7	Excell
8	Kambia	1.0	0	0.007	4	0.291	0	5	0	7	0	7	0	1.03	0	-0.12	0	-0.14	0	0.206	0	4	Excell
9	Karene	1.8	0	0.204	0	0.695	0	4	0	8	2	4	0	1.00	0	-0.08	0	0.45	3	0.035	1	6	Excell
10	Port Loko	1.9	0	0.562	0	0.271	0	3	0	8	2	9	2	0.99	0	-0.08	0	0.16	0	0.002	3	7	Excell
11	Bo	2.3	0	0.071	2	0.424	0	7	0	11	2	6	0	1.11	5	-0.24	1	-0.01	0	0.038	1	11	Good
12	Bonthe	4.0	5	0.017	4	0.134	0	3	0	4	0	5	0	1.09	0	-0.22	1	-0.29	1	0.009	3	14	Good
13	Moyamba	4.2	5	0.160	0	0.013	4	3	0	7	0	4	0	1.00	0	0.02	0	-0.36	1	0.544	0	10	Excell
14	Pujehun	2.3	0	0.034	4	0.862	0	7	0	11	2	9	2	1.02	0	-0.23	1	-0.31	1	0.952	0	10	Good
15	WA-Rural	2.1	0	0.467	0	0.432	0	4	0	6	0	8	2	1.07	0	-0.26	1	-0.16	0	0.013	1	4	Excell
16	WA-Slums	7.3	10	0.158	0	0.592	0	6	0	8	2	7	0	1.1	5	-0.10	0	0.01	0	0.172	0	17	Accep
17	WA-Urban	3.4	5	0.407	0	0.356	0	7	0	3	0	4	0	1.16	10	-0.19	0	-0.24	1	0.001	5	21	Accep
National		**3.1**	**5**	**0.003**	**4**	**0.167**	**0**	**3**	**0**	**6**	**0**	**4**	**0**	**1.05**	**0**	**-0.14**	**0**	**-0.03**	**0**	**0.000**	**5**	**14**	**Good**

The distribution curve for WHZ for the sample compared to WHO 2006 standard is presented below **(see Figure 7)**. The exclusion of z-scores is computed from the observed mean SMART flags: WHZ-3 to 3; HAZ-3 to 3; WAZ-3 to 3.

The curve is slightly shifted to the left with a mean z-score of -0.15 and a standard deviation of 1.05, indicating that the surveyed population's nutritional status is moderately poorer than the WHO reference population **(see Figure 7)**. The standard deviation is within an acceptable range of 0.8 to 1.2 and with a high precision of ±0.6. The design effect (DEFF) determined was 1.41, which shows some heterogeneity for WHZ distribution among the clusters but is lower than the default DEFF of 1.5 used in the planning for sample size determination for this survey.

Figure 7: Distribution of weight-for-height z-scores



The cases of malnutrition, however, appeared to be clustered more in certain clusters and districts as indicated by index of dispersion (ID) values for WHZ<-2 (ID=1.43, p<0.05) and for WHZ<-3 (ID=1.13, p<0.05)[10]. For instance, some districts reported significantly more Oedema cases (Kailahun, Koinadugu, Karene, and Pujehun) than others.

The prevalence of acute malnutrition (WHZ<-2 and Oedema) by age is presented in **Table 8**. It shows a higher proportion of acutely malnourished among the 6-17 months old children and the 18-29 months old children. Further analysis showed that the prevalence of acute malnutrition was significantly higher (p<0.05) among the younger (6-29 months) children (GAM 7.1 per cent; 95 per cent CI: 6.3-8.0) than among the older (30-59 months) children (GAM 3.5 per cent; 95 per cent CI: 3.0-4.2).

10 The Index of Dispersion (ID) indicates the degree to which the cases are aggregated into certain clusters (the degree to which there are "pockets"). If ID has p value between 0.05 and 0.95 the cases are aggregated into certain cluster(there appear to be pockets of cases).

Table 9: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and Oedema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z-score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	1977	10	0.5	121	6.1	1839	93.0	7	0.4
18-29	1949	14	0.7	105	5.4	1814	93.1	16	0.8
30-41	2105	9	0.4	60	2.9	2023	96.1	13	0.6
42-53	1912	4	0.2	51	2.7	1846	96.5	11	0.6
54-59	516	2	0.4	16	3.1	496	96.1	2	0.4
Total	**8459**	**39**	**0.5**	**353**	**4.2**	**8018**	**94.8**	**49**	**0.6**

Table 9 shows the distribution of acute malnutrition based on WHZ and Oedema. The difference in the distribution of acute malnutrition among the younger (6-29 months) and older (30-59 months) age groups is not entirely unexpected, given that this age bracket includes the critical of children ages 6-23 months. This age group is more vulnerable to the risks of poor IYCF practices and associated infections and malnutrition. Forty-nine kwashiorkor cases were reported **(see Table 10)**.

Table 10: Distribution of acute malnutrition and Oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor. 5 (0.1 %)	Kwashiorkor. 44 (0.5 %)
Oedema absent	Marasmic No. 216 (2.5 %)	Not severely malnourished. 8459 (97.0 %)

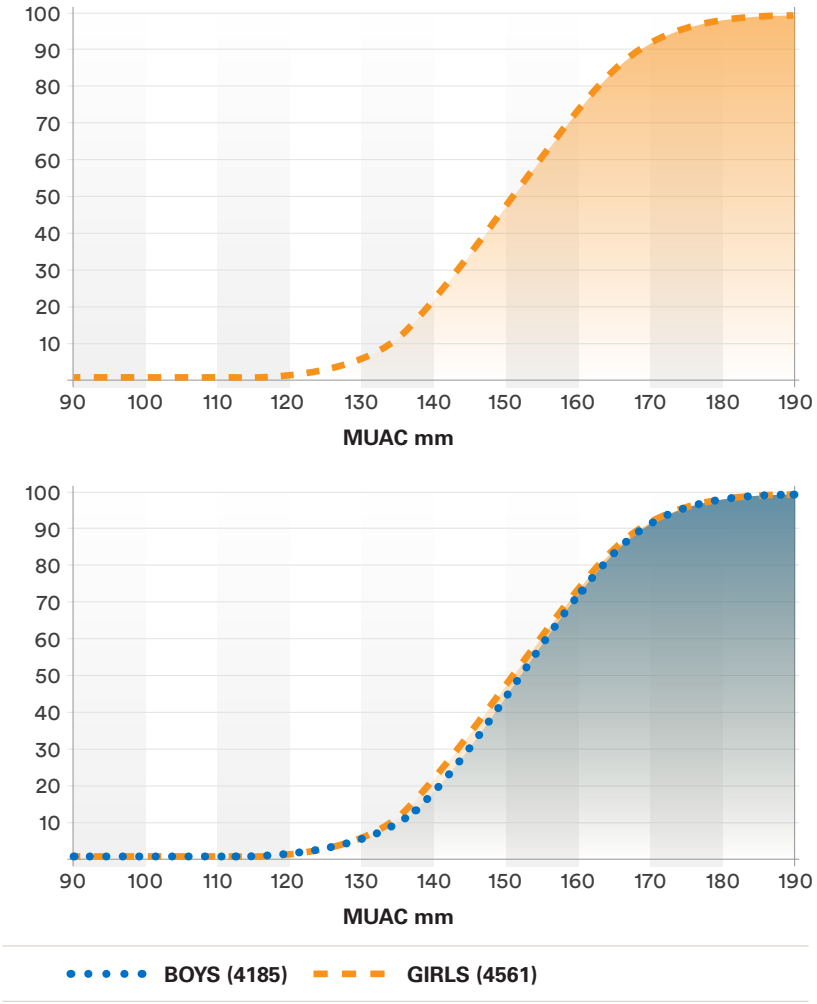
6.2.2 Prevalence of acute malnutrition based on mid upper arm circumference

As shown in **Table 11**, the national prevalence of global acute malnutrition based on MUAC (<125mm) and Oedema was **2.7 per cent** (95 per cent CI: 2.3-3.1), moderate acute malnutrition based on MUAC (MUAC≥115mm and ≤125 mm, and no Oedema) was 1.6 per cent (95 per cent CI: 1.3-2.0) and of severe acute malnutrition (MUAC<115mm and Oedema) was 1.0 per cent (95 per cent CI: 0.8-1.3). Acute malnutrition by MUAC (<125 mm/Oedema) was equally distributed among boys (2.3 per cent; 95 per cent CI: 1.9-2.8) and girls (3.0 per cent: 95 per cent CI: 2.5-3.6).

Table 11: Prevalence of acute malnutrition based on mid-upper arm circumference cut off's (and Oedema) and by sex

	All n = 8748	Boys n = 4235	Girls n = 4513
Prevalence of global malnutrition – GAM MUAC (< 125 mm and/or Oedema)	(233) 2.7 % (2.3 - 3.1 95% CI)	(97) 2.3 % (1.9 - 2.8 95% CI)	(136) 3.0 % (2.5 - 3.6 95% CI)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no Oedema)	(143) 1.6 % (1.3 - 2.0 95% CI)	(59) 1.4 % (1.1 - 1.8 95% CI)	(84) 1.9 % (1.5 - 2.4 95% CI)
Prevalence of severe malnutrition (< 115 mm and/or Oedema)	(90) 1.0 % (0.8 - 1.3 95% CI)	(38) 0.9 % (0.7 - 1.2 95% CI)	(52) 1.2 % (0.9 - 1.5 95% CI)

Figure 8: Cumulative distributions of wasting based on MUAC, SLNNS 2021



The national cumulative distribution of MUAC shows a sigmoid curve characteristic of a normally distributed population sample with a mean MUAC of 151.6 mm and a standard deviation of 13.7 mm (see **Figure 8**). The design effect of 1.58 for MUAC<125 mm indicates a low degree of heterogeneity in the distribution of wasted children in the districts and clusters.

The prevalence of acute malnutrition based on MUAC ranged from 1.2 per cent (95 per cent CI: 0.4-3.6) in Kambia to 5.2 per cent (95 per cent CI: 2.9-9.3) in WA-Urban. **Table 12** shows the distribution of acute malnutrition based on MUAC by the district.

Table 12: Prevalence of global, moderate and severe acute malnutrition in children (6-59 months) based on mid upper arm circumference by district

Province	District	Global Acute Malnutrition (MUAC<125 mm and/or Oedema)				Moderate Acute Malnutrition (MUAC≥115 mm and ≤-125 mm and no Oedema)			Severe Acute Malnutrition (SAM) (MUAC<115mm and/or Oedema)		
		N	n	%	95% CI	n	%	95% CI	n	%	95% CI
Eastern	Kailahun	480	17	3.5	2.2-5.7	9	1.9	0.9-3.7	8	1.7	0.9-3.0
	Kenema	599	27	4.5	3.0-6.7	17	2.8	1.8-4.6	10	1.7	1.0-2.9
	Kono	527	9	1.7	0.7-3.9	5	0.9	0.3-3.2	4	0.8	0.2-2.5
Northern	Bombali	564	9	1.6	0.8-3.0	4	0.7	0.2-2.3	5	0.9	0.4-2.0
	Falaba	407	7	1.7	0.8-3.6	3	0.7	0.2-2.2	4	1.0	0.3-2.8
	Koinadugu	539	21	3.9	2.2-6.9	10	1.9	0.9-3.6	11	2.0	1.0-4.2
	Tonkolili	626	8	1.3	0.6-2.7	6	1.0	0.4-2.4	2	0.3	0.1-1.3
N. Western	Kambia	497	6	1.2	0.4-3.6	5	1.0	0.3-3.6	1	0.2	0.0-1.5
	Karene	558	11	2.0	1.0-4.0	5	0.9	0.4-2.0	6	1.1	0.4-3.0
	Port Loko	428	15	3.5	1.6-7.6	12	2.8	1.3-5.9	3	0.7	0.2-3.0
Southern	Bo	567	10	1.8	0.9-3.4	6	1.1	0.5-2.3	4	0.7	0.3-1.9
	Bonthe	476	14	2.9	1.6-5.5	11	2.3	1.2-4.4	3	0.6	0.2-1.9
	Moyamba	487	11	2.3	1.3-3.9	7	1.4	0.6-3.2	4	0.8	0.3-2.1
	Pujehun	625	12	1.9	1.0-3.8	6	1.0	0.4-2.4	6	1.0	0.3-2.6
Western	WA-Rural	485	11	2.3	1.0-5.0	8	1.6	0.7-4.1	3	0.6	0.2-1.9
	WA-Slums	452	22	4.9	2.7-8.5	13	2.9	1.3-6.3	9	2.0	1.0-3.8
	WA-Urban	421	22	5.2	2.9-9.3	15	3.6	1.5-8.3	7	1.7	0.8-3.3
National		**8748**	**233**	**2.7**	**2.3-3.1**	**143**	**1.6**	**1.3-2.0**	**90**	**1.0**	**0.8-1.3**

© UNICEF/Sierra Leone/2022

Table 13 shows the national prevalence of acute malnutrition based on MUAC by age. Again, a higher proportion of the younger children aged 6-29 months were acutely malnourished using MUAC ($p<0.05$) than the older counterparts (30-59 months).

Table 13: Prevalence of acute malnutrition by age, based on mid upper arm circumference cut-offs and Oedema

		Severe wasting (<115 mm)		Moderate wasting (>=115 mm and <125 mm)		Normal (>=125 mm)		Oedema	
Age (mo)	N	n	%	n	%	n	%	n	%
6-17	2044	26	1.3	83	4.1	1934	94.6	7	0.3
18-29	2037	6	0.3	46	2.3	1984	97.4	16	0.8
30-41	2169	2	0.1	8	0.4	2159	99.5	13	0.6
42-53	1974	6	0.3	6	0.3	1962	99.4	11	0.6
54-59	524	2	0.4	1	0.2	521	99.4	2	0.4
Total	**8748**	**42**	**0.5**	**144**	**1.6**	**8560**	**97.9**	**49**	**0.6**

6.2.2.1 Age disaggregated levels of wasting in children 6-59 months based on WAz-scores

Age disaggregated analysis of global acute malnutrition (GAM) shows that the prevalence of wasting among the younger children in the breastfeeding age (6-23 months) of 6.9 per cent (95 per cent CI: 6.0-8.0). This was significantly higher than the prevalence among the older children aged 24-59 months ($p<0.05$) at 4.3 per cent (95 per cent CI: 3.7-4.9), indicating the higher relative risk of sub-optimal IYCF practices to child undernutrition. As shown in **Table 14**, the SAM prevalence of 1.0 per cent (95 per cent CI: 0.7-1.5) among the breastfeeding age(6-23 months) was, however, similar among the older children with a SAM rate of 1.0 per cent (95 per cent CI: 0.7-1.3). In the breastfeeding age group (6-23 months), the GAM rate (8.4 per cent vs 5.6 per cent) was significantly higher among boys than among girls ($p<0.05$).

Table 14: Age disaggregated wasting among 6-23 months and 24-59 months

Age group	Sex	N	Global Acute Malnutrition (WHZ<-2 and/or Oedema)			Severe Acute Malnutrition (WHZ<-3 and/or Oedema)		
			n	%	95% CI	n	%	95% CI
6-23 months	All	2782	193	6.9	6.0-8.0	29	1.0	0.7-1.5
	Boys	1345	113	8.4	7.0-10.0	13	1.0	0.6-1.7
	Girls	1347	80	5.6	4.5-6.9	16	1.1	0.7-1.8
24-59 months	All	5677	244	4.3	3.7-4.9	55	1.0	0.7-1.3
	Boys	2747	120	4.4	3.6-5.2	21	0.8	0.5-1.2
	Girls	2930	124	4.2	3.5-5.1	34	1.2	0.8-1.6

6.2.2.2 Age disaggregated levels of wasting in children 6-59 months based on MUAC

Based on the MUAC cut-off (**Table 15**), the prevalence of GAM and SAM were 5.4 per cent (95 per cent CI: 4.5-6.4) and 1.3 per cent (95 per cent CI: 1.0-1.8), respectively, among the 6-23 months and was similarly higher than GAM and SAM rates of 1.3 per cent (95 per cent CI: 1.1-1.7) and 0.9 per cent (95 per cent CI: 0.7-1.2) among the 24–59-month-old ($p<0.05$).

Table 15: Age disaggregated wasting (based on mid upper arm circumference) among 6-23 months and 24-59 months

Age group	Sex	N	Global Acute Malnutrition (MUAC<125 and/or Oedema)			Severe Acute Malnutrition (MUAC<115 and/or Oedema)		
			n	%	95% CI	n	%	95% CI
6-23 months	All	2874	154	5.4	4.5-6.4	38	1.3	1.0-1.8
	Boys	1393	65	4.7	3.6-5.9	16	1.1	0.7-1.8
	Girls	1481	89	6.0	4.8-7.4	22	1.5	1.0-2.2
24-59 months	All	5874	79	1.3	1.1-1.7	52	0.9	0.7-1.2
	Boys	2842	32	1.1	0.8-1.6	22	0.8	0.5-1.2
	Girls	3032	47	1.6	1.2-2.1	30	1.0	0.7-1.4

In all the districts, the prevalence of acute malnutrition by MUAC was lower than that of weight-for-height z-scores.

6.2.3 Prevalence of combined GAM and SAM based on WHZ and MUAC and or/Oedema cut off

The national prevalence of combined Global Acute Malnutrition (cGAM), defined as WHZ<-2 and MUAC<125 mm, and Oedema was 6.6 per cent (95 per cent CI: 5.9-7.2). The combined Severe Acute Malnutrition (cSAM) defined as WHZ<-3 and MUAC<115 mm and Oedema was 1.4 per cent (95 per cent CI: 1.2-1.7), rates higher than respective acute malnutrition based either on weight-for-height z-scores or MUAC alone **(see Table 16)**.

Table 16: Prevalence of combined global acute malnutrition and severe acute malnutrition based on weight-for-height z-scores and mid upper arm circumference cut-offs by sex*

	All n = 8749	Boys n = 4235	Girls n = 4514
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or Oedema)	(574) 6.6 % (5.9 - 7.2 95% CI)	(293) 6.9 % (6.1 - 7.8 95% CI)	(281) 6.2 % (5.5 - 7.1 95% CI)
Prevalence of combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or Oedema	(126) 1.4 % (1.2 - 1.7 95% CI)	(58) 1.4 % (1.1 - 1.8 95% CI)	(68) 1.5 % (1.2 - 1.9 95% CI)

*With SMART or WHO flags a missing MUAC/WHZ or not plausible WHZ value is considered as normal when the other value is available.

6.2.4 Prevalence of Underweight based on Weight-for-Age z-scores (WAZ)

6.2.4.1 Prevalence of national underweight based on weight-for-age z-scores (WAZ) by age and sex

The national prevalence of children underweight was **11.0 per cent** (95 per cent CI: 10.1-12.0), with 8.9 per cent (95 per cent CI: 8.1-9.7) moderately underweight and 2.2 per cent (95 per cent CI: 1.8-2.6) severely underweight (**Table 17**). The level of underweight was equally distributed (p>0.05) among boys (11.7 per cent; 95 per cent CI: 10.6-12.9and girls (10.4 per cent; 95 per cent CI: 9.3-11.7). **Table 18** shows the national distribution of underweight by age, and **Figure 9** shows the national distributions of WAZ-scores.

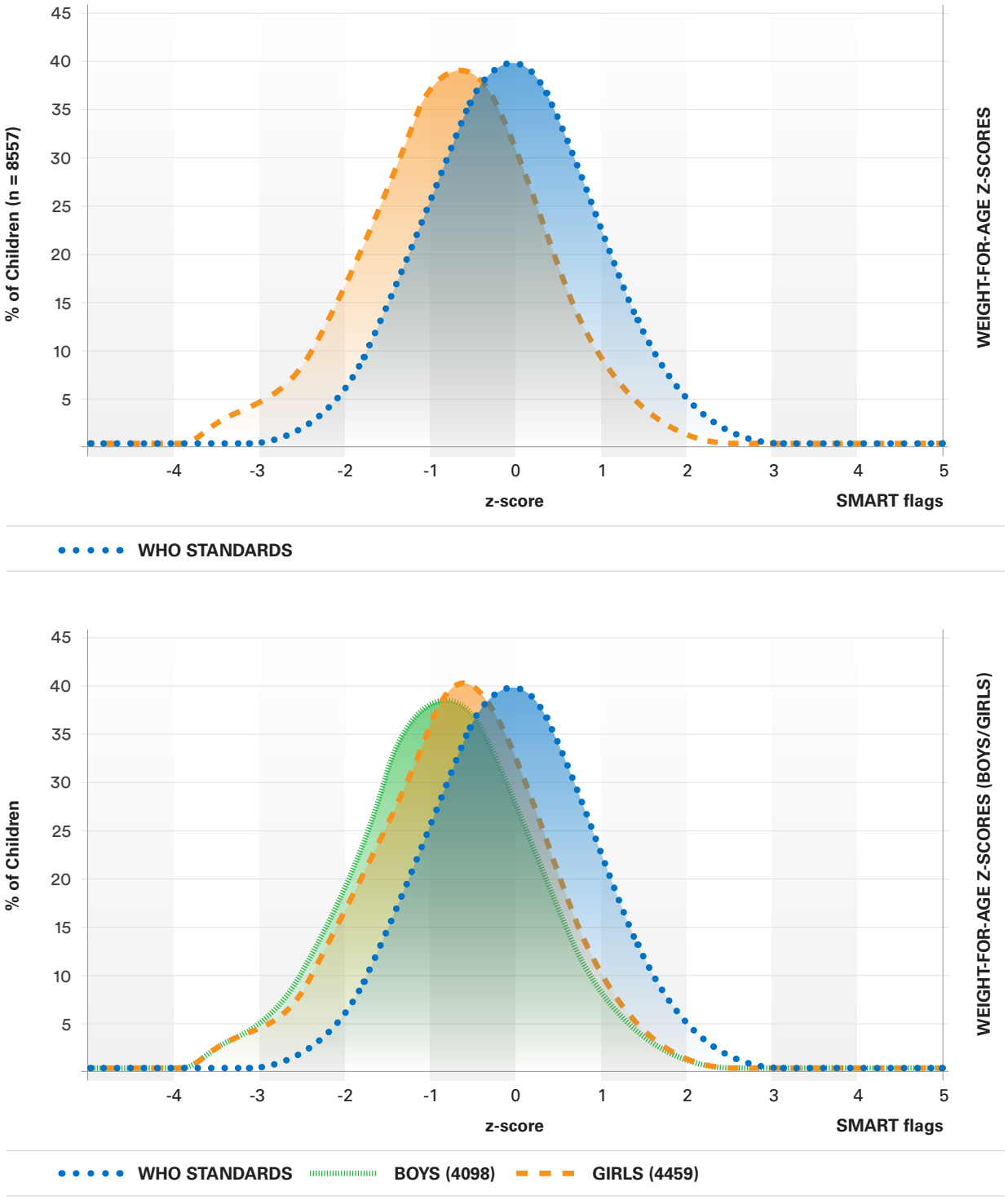
Table 17: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 8560	Boys n = 4145	Girls n = 4415
Prevalence of underweight (<-2 z-score)	(944) 11.0 % (10.1 - 12.0 95% CI)	(484) 11.7 % (10.6 - 12.9 95% CI)	(460) 10.4 % (9.3 - 11.7 95% CI)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(759) 8.9 % (8.1 - 9.7 95% CI)	(389) 9.4 % (8.4 - 10.5 95% CI)	(370) 8.4 % (7.4 - 9.4 95% CI)
Prevalence of severe underweight (<-3 z-score)	(185) 2.2 % (1.8 - 2.6 95% CI)	(95) 2.3 % (1.9 - 2.8 95% CI)	(90) 2.0 % (1.6 - 2.6 95% CI)

Table 18: Prevalence of underweight by age, based on weight-for-age z-scores

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z-score)		Oedema	
Age (mo)	Total No.	n	%	n	%	n	%	n	%
6-17	1980	49	2.5	185	9.3	1746	88.2	7	0.4
18-29	1983	61	3.1	226	11.4	1696	85.5	16	0.8
30-41	2134	46	2.2	169	7.9	1919	89.9	13	0.6
42-53	1947	25	1.3	135	6.9	1787	91.8	11	0.6
54-59	516	4	0.8	44	8.5	468	90.7	2	0.4
Total	**8560**	**185**	**2.2**	**759**	**8.9**	**7616**	**89.0**	**49**	**0.6**

Figure 9: Distributions of weight-for-age z-scores in children 6-59 months, SLNNS 2017



As shown in **Table 19**, the prevalence of underweight by district ranged from 7.6 per cent (95 per cent CI: 5.0-11.3) in Bo to 19.3 per cent (95 per cent CI: 15.4-23.9) in Kenema district.

Table 19: Prevalence of national, moderate and severe underweight in children (6-59 months) based on weight-for-age z-scores by district

Province	District	Global Underweight (WAZ<-2)				Moderate Underweight (-3≤WAZ≤-2)			Severe Underweight (WAZ<-3)		
		N	n	%	95% CI	n	%	95% CI	n	%	95% CI
Eastern	Kailahun	468	62	13.2	10.3-17.0	47	10.1	7.2-13.9	15	3.2	2.0-5.0
	Kenema	576	111	19.3	15.4-23.9	87	15.1	12.1-18.7	24	4.2	2.6-6.7
	Kono	522	42	8.0	5.5-11.7	39	7.5	5.1-10.9	3	0.6	0.2-1.8
Northern	Bombali	552	44	8.0	5.6-11.3	35	6.3	4.1-9.7	9	1.6	0.9-3.1
	Falaba	400	41	10.3	7.1-14.5	31	7.8	5.1-11.6	10	2.5	1.5-4.1
	Koinadugu	515	58	11.3	8.7-14.5	44	8.5	6.1-11.9	14	2.7	1.6-4.5
	Tonkolili	616	71	11.5	8.9-14.8	58	9.4	7.3-12.1	13	2.1	1.2-3.6
N. Western	Kambia	503	56	11.1	8.0-15.4	43	8.5	6.0-12.0	13	2.6	1.4-4.9
	Karene	547	56	10.2	7.1-14.6	48	8.8	5.9-12.8	8	1.5	0.6-3.7
	Port Loko	418	37	8.9	6.0-12.8	22	5.2	2.9-9.2	8	1.9	0.7-4.8
Southern	Bo	565	43	7.6	5.0-11.3	36	6.4	4.2-9.5	7	1.2	0.5-2.8
	Bonthe	471	48	10.2	6.9-14.8	33	7.0	4.7-10.2	15	3.2	1.6-6.1
	Moyamba	480	59	12.3	9.2-16.3	50	10.4	7.7-13.9	9	1.9	1.0-3.6
	Pujehun	613	62	10.1	7.1-14.2	57	9.3	6.4-13.3	5	0.8	0.3-2.3
Western	WA-Rural	480	48	10.0	6.6-14.8	43	9.0	5.8-13.5	5	1.0	0.4-2.4
	WA-Slums	431	59	13.7	8.1-22.1	42	9.7	6.1-15.3	17	3.9	1.9-7.9
	WA-Urban	413	51	12.3	6.4-22.4	37	9.0	4.9-15.8	14	3.4	1.2-9.0
National		**8560**	**943**	**11.0**	**10.1-12.0**	**758**	**8.9**	**8.1-9.7**	**183**	**2.1**	**1.8-2.5**

6.2.4.2 Age disaggregated levels of underweight based on weight-for-age z-scores

Analysis of age disaggregated underweight levels shows that the prevalence of underweight among the younger children (6-23 months) at 12.4 per cent (95 per cent CI: 11.0-13.9) was higher than the prevalence among the older children aged 24-59 months at 10.3 per cent (95 per cent CI: 9.3-11.4), though not statistically significant. The SAM prevalence of 2.5 per cent (95 per cent CI: 2.0-3.2) among the younger children was also slightly higher than among the older children at 2.0 per cent (95 per cent CI: 1.6-2.5), indicating a potential higher vulnerability of this age group to undernutrition. In both younger and older age groups, global underweight and severe underweight rates were equally distributed among boys and girls **(see Table 20)**.

© UNICEF/Sierra Leone/2022

Table 20: Age disaggregated underweight among 6-23 months and 24-59 months

Age group	Sex	N	Global Underweight (WAZ<-2)			Severe Underweight (WAZ<-3)		
			n	%	95% CI	n	%	95% CI
6-23 months	All	2777	344	12.4	11.0-13.9	69	2.5	2.0-3.2
	Boys	1350	189	14.0	12.1-16.1	42	3.1	2.3-4.2
	Girls	1427	155	10.9	9.2-12.8	27	1.9	1.3-2.8
24-59 months	All	5784	596	10.3	9.3-11.4	113	2.0	1.6-2.5
	Boys	2793	292	10.5	9.2-11.8	50	1.8	1.3-2.4
	Girls	2991	304	10.2	8.9-11.6	63	2.1	1.6-2.8

6.2.5 Prevalence of stunting based on height-for-age z-scores

6.2.5.1 Prevalence of National Stunting based on Height-for-Age z-scores (HAZ) by age and sex

The national prevalence of stunting (HAZ<-2) was **26.2 per cent** (95 per cent CI: 25.0-27.5), with 19.5 per cent (95 per cent CI: 18.5-20.6) moderately stunted and 6.7 per cent (95 per cent CI: 6.1-7.4) severely stunted (see **Table 21**). A higher percentage of boys (29.2 per cent; 95 per cent CI: 27.6-30.9) than girls (23.4 per cent; 95 per cent CI: 21.9-25.0) were stunted ($p<0.05$).Stunting levels are, however, distributed equally among the younger (6-29 months) and older (30-59 months) age groups at 25.8 per cent (95 per cent CI: 24.1-27.5) and 26.5 per cent (95 per cent CI: 24.9-28.1). **Table 22** shows the national distribution of stunting by the child's age, and **Figure 10** shows the national distributions of HAz-scores.

Table 21: Prevalence of stunting based on height-for-age z-scores and sex

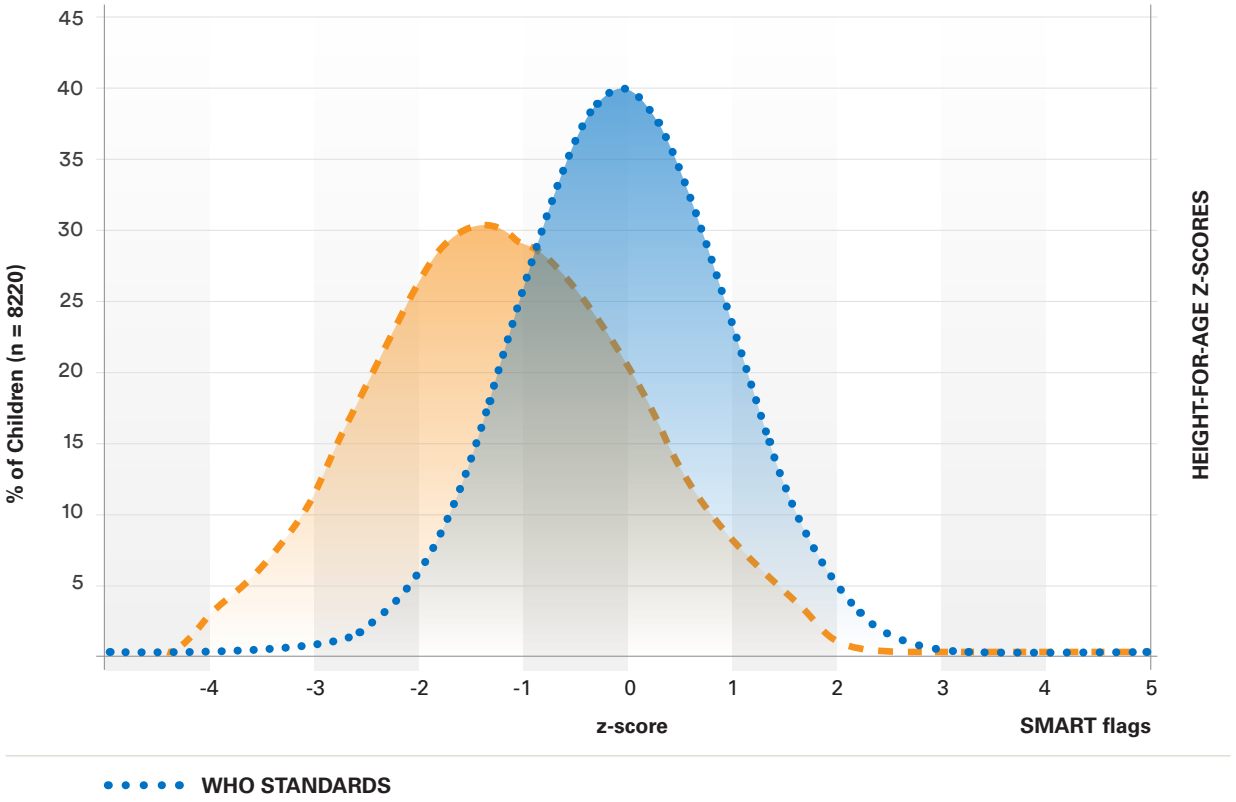
	All n = 8220	Boys n = 3993	Girls n = 4227
Prevalence of stunting (<-2 z-score)	(2157) 26.2 % (25.0 - 27.5 95% CI)	(1167) 29.2 % (27.6 - 30.9 95% CI)	(990) 23.4 % (21.9 - 25.0 95% CI)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(1605) 19.5 % (18.5 - 20.6 95% CI)	(843) 21.1 % (19.8 - 22.5 95% CI)	(762) 18.0 % (16.8 - 19.3 95% CI)
Prevalence of severe stunting (<-3 z-score)	(552) 6.7 % (6.1 - 7.4 95% CI)	(324) 8.1 % (7.2 - 9.1 95% CI)	(228) 5.4 % (4.7 - 6.2 95% CI)

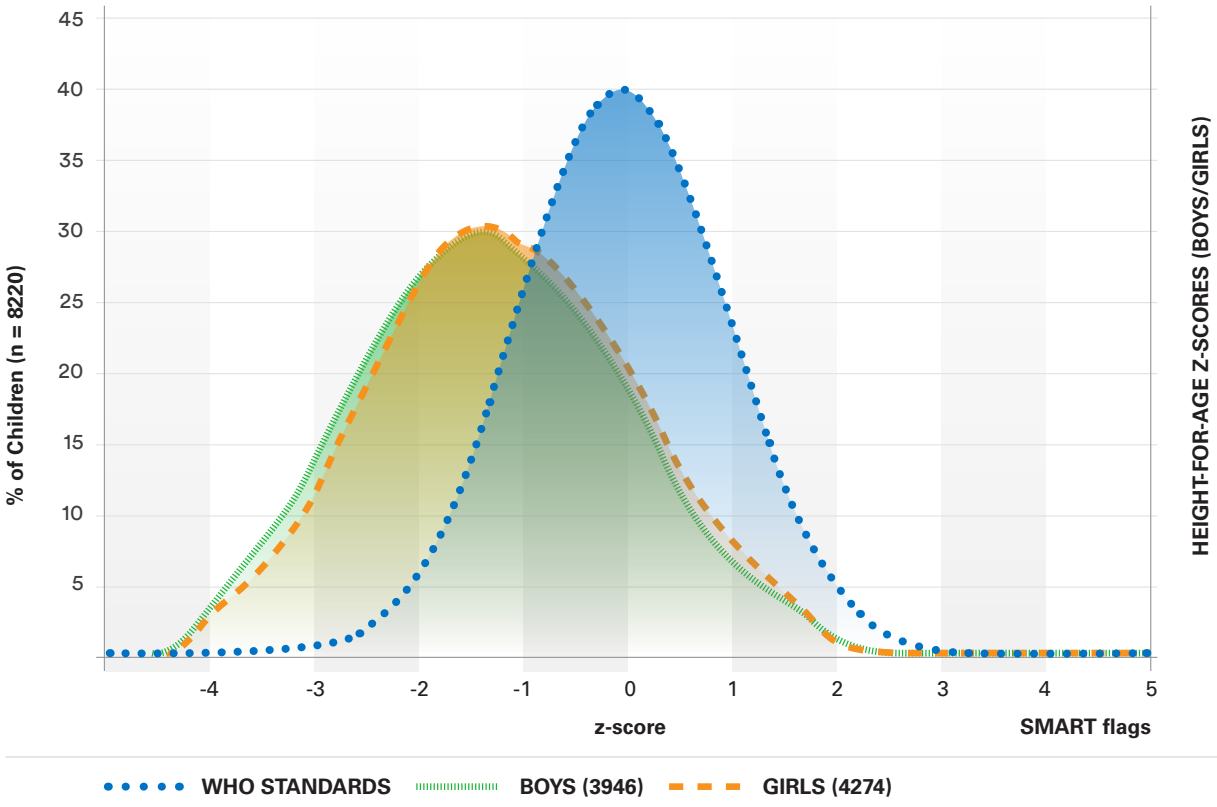
Table 22: National prevalence of stunting by age based on height-for-age z-scores

		Severe Stunting (<-3 z-score)		Moderate Stunting (>= -3 and <-2 z-score)		Normal (> = -2 z-score)	
Age (mo)	Total No.	No.	%	No.	%	No.	%
6-17	1848	105	5.7	294	15.9	1449	78.4
18-29	1888	199	10.5	388	20.6	1301	68.9
30-41	2068	129	6.2	438	21.2	1501	72.6
42-53	1904	96	5.0	381	20.0	1427	74.9
54-59	512	23	4.5	104	20.3	385	75.2
Total	**8220**	**552**	**6.7**	**1605**	**19.5**	**6063**	**73.8**

The HAZ curves are shifted to the left, showing a poorer stunting level in Sierra Leone compared to the WHO (2006) international reference population **(see Figure 10).**

Figure 10: Distributions of height-for age z-scores in children 6-59 Months, SLNNS 2021





The prevalence of stunting ranged from the lowest of 20.3 per cent (95 per cent CI: 16.1-25.3) in Western Area Urban and 20.6 per cent (95 per cent CI: 15.4-27.0) in Western Area Slums. The stunting rates go above 30 per cent in four districts – Kailahun, Tonkolili, and Koinadugu with the highest stunting prevalence of 32.9 per cent (95 per cent CI: 28.7-37.4) reported in the Kenema district (see **Figure 11**).

Figure 11: Stunting (HAZ<-2) Rates by District/Domain

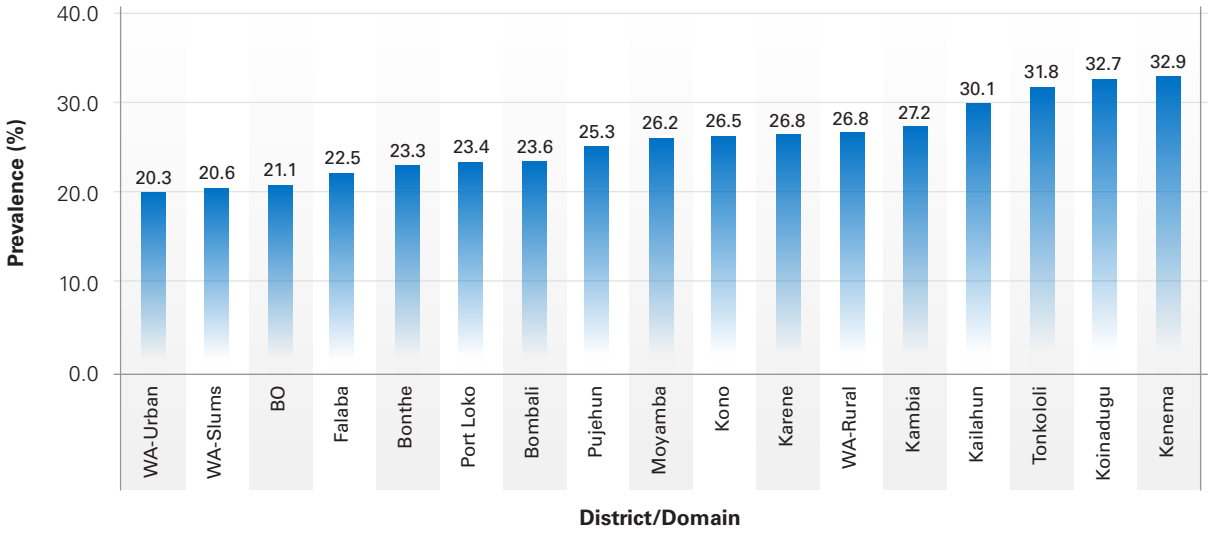


Table 23 presents the prevalence of stunting rates by type (global, moderate, and severe stunting) and district or domain.

Table 23: Prevalence of national, moderate and severe stunting in children (6-59 months) based on HAz-scores by District

Province	District	Global Stunting (HAZ<-2)				Moderate Stunting (-3≤HAZ≤-2)			Severe Stunting (HAZ<-3)		
		N	n	%	95% CI	n	%	95% CI	n	%	95% CI
Eastern	Kailahun	448	135	30.1	25.8-34.9	99	22.1	18.4-26.2	36	8.0	5.7-11.1
	Kenema	553	182	32.9	28.7-37.4	114	20.6	17.5-24.1	68	12.3	9.2-16.3
	Kono	491	130	26.5	22.8-30.5	105	21.4	17.4-25.9	25	5.1	3.5-7.4
Northern	Bombali	539	127	23.6	17.7-30.6	94	17.4	12.8-23.3	33	6.1	3.7-10.0
	Falaba	364	82	22.5	17.0-29.2	67	18.4	13.7-24.2	15	4.1	2.6-6.4
	Koinadugu	486	159	32.7	27.2-38.8	114	23.5	19.0-28.5	45	9.3	6.8-12.5
	Tonkolili	579	184	31.8	25.9-38.3	124	21.4	17.2-26.4	60	10.4	7.9-13.5
N. Western	Kambia	486	132	27.2	21.6-33.5	99	20.4	15.9-25.7	33	6.8	4.2-10.7
	Karene	527	141	26.8	21.8-32.3	107	20.3	16.3-25.0	34	6.5	4.3-9.6
	Port Loko	418	98	23.4	18.2-29.7	78	18.7	14.5-23.6	20	4.8	2.9-7.8
Southern	Bo	555	117	21.1	16.8-26.1	94	17.0	13.3-21.4	23	4.1	2.6-6.5
	Bonthe	443	103	23.3	18.3-29.0	75	16.9	13.0-21.7	28	6.3	4.3-9.2
	Moyamba	461	121	26.2	21.9-31.1	88	19.1	15.8-22.9	33	7.2	4.8-10.4
	Pujehun	588	149	25.3	21.0-30.2	116	19.7	16.2-23.8	33	5.6	4.0-7.8
Western	WA-Rural	471	126	26.8	22.6-31.4	104	22.1	18.5-26.2	22	4.7	3.0-7.2
	WA-Slums	423	87	20.6	15.4-27.0	67	15.8	11.2-21.9	20	4.7	2.9-7.7
	WA-Urban	399	81	20.3	16.1-25.3	28	6.9	4.3-10.9	20	5.0	2.8-8.8
National		**8220**	**2157**	**26.2**	**25.0-27.5**	**1605**	**19.5**	**18.5-20.6**	**553**	**6.7**	**6.1-7.4**

6.2.5.2 Age disaggregated levels of stunting based on height-for-age z-scores

The prevalence of stunting was 24.8 per cent (95 per cent CI: 22.9-26.7), with severe stunting of 6.5 per cent (95 per cent CI: 5.6-7.7) among the younger children in the breastfeeding age (6-23 months) and was slightly higher among the older children aged 24-59 months (see **Table 24**). The prevalence of stunting and severe stunting was 26.9 per cent (95 per cent CI: 25.4-28.4) and 6.8 per cent (95 per cent CI: 6.0-7.6), respectively. However, the difference was not statistically significant. It is important to note that stunting is cumulative, and if not prevented in the first two years of life (first 1000 days), the effects are irreversible, thus likely to be higher in later years. However, the stunting (HAZ<-2) rate was significantly more prevalent among boys (30.0 per cent; 95 per cent CI: 27.4-32.7) than among girls (19.7 per cent; 95 per cent CI: 17.5-22.2) in the breastfeeding (6-23 months) age group ($p<0.05$) but equally distributed among the older (24-59 months) age group.

Table 24: Age disaggregated stunting rates among 6-23 months and 24-59 months

Age group	Sex	N	Stunting (HAZ<-2)			Severe Stunting (HAZ<-3)		
			n	%	95% CI	n	%	95% CI
6-23 months	All	2618	648	24.8	22.9-26.7	171	6.5	5.6-7.7
	Boys	1280	384	30.0	27.4-32.7	115	9.0	7.5-10.8
	Girls	1338	264	19.7	17.5-22.2	56	4.2	3.2-5.5
24-59 months	All	5618	1509	26.9	25.4-28.4	381	6.8	6.0-7.6
	Boys	2711	778	28.7	26.8-30.7	204	7.5	6.5-8.7
	Girls	2907	731	25.1	23.3-27.1	177	6.1	5.2-7.2

6.2.6 Prevalence of overweight of children (6-59) based on weight-for-age z-scores

The national prevalence of overweight (WHZ>2) in children 6-59 months was 2.0 per cent (95 per cent CI: 1.7-2.4), with zero severe overweight recorded (**Table 25**). This rate could be high if the WHO flags exclusion criterion were used. Due to high flags (extreme or missing values) arising from many wrong measurements, the analysis used the SMAFT exclusion criterion for measuring flags. **Table 26** shows the national prevalence of overweight among children under-five. The prevalence of overweight was equally distributed among the boys (2.0 per cent; 95 per cent CI: 1.6-2.5) and girls (2.0 per cent; 95 per cent CI: 1.6-2.6per cent) assessed. Similarly, the distribution of overweight was even among the younger (6-29 months) and the older (30-59 months) age groups at 1.2 per cent and 0.9 per cent, respectively.

Table 25: National prevalence of overweight based on weight for height cut-offs and by sex (no Oedema)

	All n = 8459	Boys n = 4093	Girls n = 4366
Prevalence of overweight (WHZ > 2)	(172) 2.0 % (1.7 - 2.4 95% C.I.)	(83) 2.0 % (1.6 - 2.5 95% C.I.)	(89) 2.0 % (1.6 - 2.6 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

Table 26: National prevalence of overweight by age based on weight-for-height z-scores

		Overweight (WHZ>2)		Severe Overweight (WHZ>3)	
Age (mo)	Total No.	No.	%	No.	%
6-17	1977	37	1.9	0	0.0
18-29	1949	44	2.3	0	0.0
30-41	2105	43	2.0	0	0.0
42-53	1912	44	2.3	0	0.0
54-59	516	4	0.8	0	0.0
Total	**8459**	**172**	**2.0**	**0**	**0.0**

Table 27 shows the distribution of the sample statistics for the survey. The mean z-scores for wasting (WHZ), underweight (WAZ) and stunting (HAZ) were -0.15±1.05; -0.72±1.04 and -0.16±1.23, respectively, all indicating a poorer nutrition situation compared to WHO reference population. The standard deviations are within the acceptable range of 0.8-1.2 for WHZ (SD=1.05) and WAZ (SD=1.04) but, as expected, higher (1.23) for HAZ.

Table 27: Mean z-scores, design effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score<-2)	z-scores not available*	z-scores out of range
Weight-for-Height	8410	-0.15±1.05	1.48	80	265
Weight-for-Age	8560	-0.72±1.04	2.01	53	142
Height-for-Age	8220	-1.16±1.23	1.72	7	528

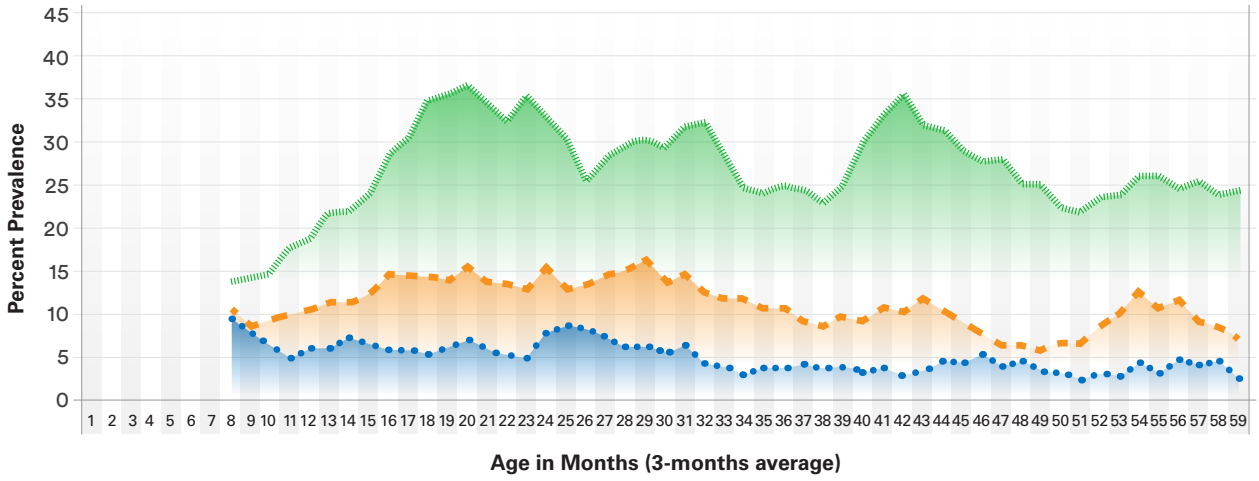
* Contains for WHZ and WAZ the children with edema.

6.2.7 Trends of acute malnutrition over child's age in months

Figure 12 shows malnutrition trends by the age of the child in months, demonstrating which age bands are more critical regarding risks of malnutrition—stunting increases until it peaks around 19-21 months and 40-42 months of age. Underweight increases less and reaches its peak earlier in age (between 12 and 24 months). The prevalence of global acute malnutrition based on WHZ shows a corresponding decreasing trend from 24 months onwards.

A child's future is determined by the quality of nutrition in the early stages of life, specifically during the first 1,000 days. This period – which spreads from conception to the child's second birthday – is a critical window during which the brain and body grow rapidly. The damage is often irreversible if children do not get the right nutrients during this period. So good nutrition is essential to lay the foundation for healthy cognitive and physical development.

Figure 12: Trends of wasting, underweight and stunting by age in months (plotted values are smoothed by a moving average of three months)



6.3 Adolescent and maternal health and nutrition

6.3.1 Demographic distribution of adolescents and women of reproductive age assessed

A total of 21,727 adolescents (girls and boys) and women of reproductive age (AWRA) were assessed; 3489 were adolescent girls with a mean age of 12.1 (±1.44) years, 4941 were adolescent boys with mean age of 14.1 years (±2.8) years, and 13297 were women of mean age of 27.4 (±8.48) years. About one quarter (25.3 per cent) of the 13297 women aged 15-49 years assessed nationally were pregnant or lactating (**Table 26**), while 1.8 per cent of the assessed adolescent girls (10-14 years) were pregnant or lactating. Therefore, 20.4 per cent were pregnant/lactating (PL) of the assessed adolescent girls and women of reproductive age. **Table 28** summarises the demographic distribution of adolescents and women assessed.

Table 28: Demographic distribution of adolescents and women assessed by district

District	Demographic group of AWRA							Physiological Status of Adolescent girls and WRA				
	Adolescent girls (10-14 yrs)		Adolescent boys (10-19 yrs)		WRA (15-49 yrs)		Total	Not PL		PLW		Total
	n	%	n	%	n	%	N	n	%	n	%	N
Kailahun	119	13.1	165	18.2	621	68.6	905	553	74.7	187	25.3	740
Kenema	203	15.8	298	23.2	786	61.1	1287	725	73.3	264	26.7	989
Kono	246	19.1	293	22.7	750	58.2	1289	781	78.4	215	21.6	996
Bombali	243	16.8	387	26.7	820	56.6	1450	844	79.4	219	20.6	1063
Falaba	150	16.4	185	20.2	582	63.5	917	617	84.3	115	15.7	732
Koinadugu	251	17.1	344	23.5	870	59.4	1465	940	83.9	181	16.1	1121
Tonkolili	222	15.0	353	23.9	904	61.1	1479	875	77.7	251	22.3	1126
Kambia	156	15.4	199	19.7	657	64.9	1012	652	80.2	161	19.8	813
Karene	249	17.4	372	26.1	807	56.5	1428	827	78.3	229	21.7	1056
Port Loko	118	12.6	177	18.9	642	68.5	937	588	77.4	172	22.6	760
Bo	244	16.4	385	25.9	858	57.7	1487	868	78.8	234	21.2	1102
Bonthe	124	12.6	170	17.3	687	70.0	981	616	76.0	195	24.0	811
Moyamba	132	12.5	215	20.3	711	67.2	1058	648	76.9	195	23.1	843
Pujehun	297	18.3	422	26.0	901	55.6	1620	928	77.5	270	22.5	1198
WA-Rural	232	17.2	285	21.1	832	61.7	1349	885	83.2	179	16.8	1064
WA-Slums	212	14.4	325	22.1	933	63.5	1470	941	82.2	204	17.8	1145
WA-Urban	291	18.3	366	23.0	936	58.8	1593	1075	87.6	152	12.4	1227
Total	**3489**	**16.1**	**4941**	**22.7**	**13297**	**61.2**	**21727**	**13363**	**79.6**	**3423**	**20.4**	**16786**

6.3.2 Acute malnutrition by mid upper arm circumference among adolescent girls, adolescent boys and women of reproductive age

The national prevalence of global acute malnutrition using MUAC (MUAC<185 mm) among adolescent girls (10-14 years) was 12.4 per cent, with severe wasting (MUAC<160 mm) rate of 1.9 per cent. Prevalence of GAM MUAC in girls varied from the lowest in Port Loko (6.8 per cent) to the highest in Kailahun (23.5per cent). The prevalence of undernutrition based on MUAC among the WRA was 1.8 per cent, 0.3 per cent severely **(Table 29)**.

Table 29: Acute malnutrition by mid upper arm circumference in adolescents and women by district

District	Adolescent Girls (10-14 yrs)					All WRA (15-49 yrs)				
	GAM MUAC		SAM MUAC		Total	GAM MUAC		SAM MUAC		Total
	n	%	n	%	N	n	%	n	%	N
Kailahun	33	23.5	9	6.7	139	19	2.6	6	0.8	725
Kenema	67	21.7	17	5.4	309	56	4.7	14	1.1	1196
Kono	22	9.3	2	0.8	231	8	1.2	2	0.3	704
Bombali	26	10.7	2	0.8	247	11	1.3	3	0.4	833
Falaba	7	9.3	1	0.7	75	4	1.6	1	0.3	289
Koinadugu	17	13.9	4	3.6	119	11	2.8	3	0.8	409
Tonkolili	32	8.6	7	1.8	378	14	0.9	2	0.1	1536
Kambia	12	9.7	1	0.6	125	9	1.7	1	0.2	529
Karene	26	15.1	0	0.0	172	12	2.1	2	0.4	567
Port Loko	13	6.8	3	1.7	187	21	2.0	2	0.2	1019
Bo	57	16.0	1	0.4	357	16	1.3	3	0.2	1254
Bonthe	8	12.9	3	4.0	63	7	2.0	3	0.7	348
Moyamba	10	8.3	3	2.3	119	13	2.0	0	0.0	639
Pujehun	34	16.8	5	2.7	202	7	1.1	1	0.2	611
WA-Rural	14	6.9	3	1.3	208	6	0.8	1	0.1	745
WA-Slums	29	13.7	3	1.4	211	11	1.2	2	0.2	917
WA-Urban	69	10.0	10	1.4	696	31	1.4	2	0.1	2227
Total*	**476**	**12.4**	**73**	**1.9**	**3838**	**256**	**1.8**	**47**	**0.3**	**14550**

*Weighted analysis for aggregated national rates

However, the prevalence of global acute malnutrition using MUAC (MUAC<185 mm) among reconstituted adolescent girls (10-19 years) was 8.5 per cent, with severe wasting (MUAC<160 mm) rate of 1.4 per cent (**Table 30**). Prevalence of GAM MUAC in adolescent girls (10-19 years) varied from the lowest in WA-Rural (4.8 per cent) to the highest in Kenema (16.3 per cent).

Among the assessed adolescent boys (10-19 years), the global and severe acute malnutrition using MUAC was 10.7 per cent and 1.0 per cent, respectively. The GAM MUAC among adolescent boys (10-19 years) ranged from 6.1 per cent in Kambia to 23.6 per cent in Kailahun **(see Table 30):**

Table 30: Acute malnutrition based on mid upper arm circumference among reconstituted adolescent groups

District	Adolescent boys (10-19 years)					Adolescent Girls (10-19 years)				
	GAM MUAC		SAM MUAC		Total	GAM MUAC		SAM MUAC		Total
	n	%	n	%	N	n	%	n	%	N
Kailahun	46	23.6	11	5.5	193	42	14.9	12	4.1	282
Kenema	79	17.4	9	2.0	453	91	16.3	27	4.9	560
Kono	24	8.6	0	0.0	275	24	6.0	3	0.7	394
Bombali	32	8.0	1	0.3	394	30	7.0	2	0.5	423
Falaba	12	13.0		0.5	92	9	6.7	1	0.7	134
Koinadugu	21	13.2	2	1.5	161	20	9.7	5	2.3	204
Tonkolili	48	8.0	2	0.3	599	37	5.1	7	0.9	732
Kambia	10	6.1	1	0.5	160	16	7.4	2	0.7	217
Karene	16	6.2	1	0.3	261	31	9.9	1	0.2	313
Port Loko	24	8.5	5	1.7	279	24	6.3	3	0.8	379
Bo	77	13.8	3	0.5	563	64	10.2	4	0.7	628
Bonthe	8	9.5	1	0.6	86	9	7.6	3	2.5	121
Moyamba	24	12.6	3	1.4	192	16	7.3	3	1.2	220
Pujehun	29	10.0	2	0.7	287	37	11.2	5	1.6	335
WA-Rural	17	6.7	1	0.4	256	17	4.8	3	0.8	356
WA-Slums	38	11.9	7	2.2	318	34	8.5	4	1.0	402
WA-Urban	77	8.8	7	0.8	866	79	7.1	12	1.1	1113
Total	**580**	**10.7**	**55**	**1.0**	**5433**	**580**	**8.5**	**96**	**1.4**	**6813**

These were disaggregated by physiological status; global acute malnutrition by MUAC (MUAC<230 mm) among pregnant and lactating women (PLW) was **5.5 per cent**. Those with severe acute malnutrition (MUAC<210 mm) of 0.9 per cent; while among the non-pregnant and lactating women (15-49 years), GAM MUAC (MUAC<185 mm) and SAMMUC (MUAC<160 mm) were much lower at 0.5 per cent and 0.2 per cent respectively (**Table 31**). Among the PLWs, the prevalence of acute malnutrition (MUAC<23 cm) varied from 1.9 per cent in Pujehun to 11.4 per cent in Kenema.

Table 31: Acute malnutrition by mid upper arm circumference among pregnant and non-pregnant women (15-49 years)

District	Pregnant/Lactating WRA					Non-pregnant/lactating WRA				
	GAM MUAC		SAM MUAC		Total	GAM MUAC		SAM MUAC		Total
	n	%	n	%	N	n	%	n	%	N
Kailahun	16	7.7	4	1.6	213	2	0.5	2	0.5	512
Kenema	44	11.4	8	2.0	388	12	1.5	6	0.8	808
Kono	6	2.9	0	0.0	197	3	0.6	2	0.4	507
Bombali	9	4.1	2	0.9	222	2	0.3	1	0.2	612
Falaba	2	3.5	1	0.9	57	2	1.1	1	0.2	232
Koinadugu	3	4.0	1	1.7	83	8	2.5	2	0.6	326
Tonkolili	12	2.9	0	0.0	416	2	0.2	2	0.2	1121
Kambia	6	4.4	0	0.0	129	3	0.8	1	0.2	400
Karene	11	6.8	1	0.9	154	1	0.3	1	0.2	413
Port Loko	19	7.1	0	0.0	270	2	0.2	2	0.2	749
Bo	13	3.9	0	0.0	341	3	0.3	3	0.3	913
Bonthe	5	5.2	1	1.0	97	2	0.8	2	0.6	251
Moyamba	11	6.2	0	0.0	175	2	0.4	0	0.0	464
Pujehun	3	1.9	0	0.0	180	3	0.8	1	0.3	431
WA-Rural	4	2.3	0	0.0	158	3	0.5	1	0.2	587
WA-Slums	9	4.5	1	0.5	199	2	0.3	1	0.1	718
WA-Urban	26	7.5	2	0.7	352	5	0.3	0	0.0	1876
Total*	**199**	**5.5**	**21**	**0.6**	**3630**	**57**	**0.5**	**26**	**0.2**	**10921**

*Weighted analysis for aggregated national rates

6.3.3 Nutrition status by body mass index among adolescent girls, adolescent boys and women of reproductive age

The national prevalence of underweight (BMI<18.5) and severe underweight (BMI<16.0) among the assessed adolescent girls (10-14 years) was 2.4 per cent and 0.6 per cent, respectively. Furthermore, 0.7 per cent and 0.1 per cent were overweight and obese, respectively. The highest underweight in girls was reported in Moyamba (5.3 per cent) and Port Loko (5.2 per cent); however, the lowest underweight rates were reported in Tonkolili, Karene and Koinadugu (<1.0 per cent) districts (see **Table 32**). When reconstituted to include the 10-19 years, the adolescent girl demographic group has a national prevalence of underweight (BMI<18.5) and severe underweight (BMI<16.0) among the assessed adolescent girls (10-14 years) is 5.9 per cent and 1.0 per cent, respectively. However, the prevalence of overweight and obese is 3.6 per cent and 0.6 per cent, respectively (see **Table 33**).

Table 32: Nutrition status by **body mass index** (Kg/m2) among adolescent girls (10-14 yrs)

District	Malnutrition by BMI-non-pregnant Girls (10-14 yrs)										
	Severe Underweight		Underweight		Healthy		Overweight		Obese		Total
	n	%	n	%	n	%	n	%	n	%	N
Kailahun	0	0.0	6	4.4	127	95.6	0	0.0	0	0.0	133
Kenema	0	0.0	9	3.1	285	96.4	2	0.5	0	0.0	295
Kono	0	0.0	5	2.1	219	96.7	2	0.8	1	0.4	227
Bombali	1	0.4	4	1.7	240	97.5	1	0.4	0	0.0	246
Falaba	1	1.3	3	4.7	68	91.3	1	2.0	1	0.7	74
Koinadugu	3	2.8	1	0.8	111	95.9	1	0.4	0	0.0	116
Tonkolili	2	0.5	0	0.0	364	99.5	0	0.0	0	0.0	366
Kambia	0	0.0	3	2.6	120	96.8	1	0.6	0	0.0	124
Karene	1	0.4	1	0.8	163	98.3	1	0.4	0	0.0	166
Port Loko	0	0.0	10	5.2	175	94.8	0	0.0	0	0.0	184
Bo	4	1.2	6	1.6	343	96.7	1	0.4	0	0.0	355
Bonthe	1	1.7	1	1.7	57	93.3	2	3.3	0	0.0	61
Moyamba	1	0.8	6	5.3	111	93.9	0	0.0	0	0.0	119
Pujehun	0	0.0	2	1.0	196	99.0	0	0.0	0	0.0	198
WA-Rural	0	0.0	3	1.3	202	98.3	1	0.4	0	0.0	206
WA-Slums	3	1.4	8	3.8	197	93.4	3	1.4	0	0.0	211
WA-Urban	7	1.0	24	3.5	641	93.7	10	1.4	2	0.3	684
Total*	**24**	**0.6**	**92**	**2.4**	**3621**	**96.1**	**25**	**0.7**	**4**	**0.1**	**3766**

*Weighted analysis for aggregated national rates

Table 33: Nutrition status by **body mass index** (Kg/m2) among reconstituted adolescent girls (10-19 yrs)

District	Malnutrition by BMI-non-pregnant Girls (10-19 yrs)										
	Severe Underweight		Underweight		Healthy		Overweight		Obese		Total
	n	%	n	%	n	%	n	%	n	%	N
Kailahun	1	0.5	12	5.2	205	91.6	6	2.6	0	0.0	223
Kenema	2	0.3	21	4.3	447	91.0	21	4.3	0	0.0	492
Kono	3	0.8	17	4.6	331	90.3	13	3.6	3	0.8	367
Bombali	2	0.5	21	5.4	351	89.1	17	4.4	2	0.5	394
Falaba	1	1.2	11	8.7	109	86.2	4	3.2	1	.8	126
Koinadugu	4	2.2	12	6.2	168	87.9	7	3.5		0.2	191
Tonkolili	2	0.3	41	6.1	613	91.8	10	1.5	2	0.3	668
Kambia	1	0.4	14	6.9	178	88.7	8	4.0	0	0.0	200
Karene	3	1.0	14	4.9	258	90.4	7	2.5	4	1.2	285
Port Loko	5	1.4	33	9.8	297	87.0	5	1.4	2	0.5	341
Bo	9	1.5	19	3.2	544	92.3	15	2.5	3	0.5	589
Bonthe	2	1.4	6	5.7	89	83.4	8	7.1	3	2.4	107
Moyamba	3	1.4	17	8.7	173	87.7	4	2.3	0	0.0	197
Pujehun	1	0.2	8	2.6	293	95.4	5	1.5	1	0.2	308
WA-Rural	3	0.8	20	5.8	304	89.4	12	3.4	2	0.5	340
WA-Slums	7	1.8	37	9.7	311	81.2	24	6.3	4	1.0	383
WA-Urban	19	1.8	67	6.2	926	85.2	62	5.7	14	1.3	1086
Total	**66**	**1.0**	**370**	**5.9**	**5596**	**88.9**	**228**	**3.6**	**39**	**0.6**	**6297**

Table 34: Nutrition status by body mass index (Kg/m2) among adolescent boys (10-19 yrs)

District	Malnutrition by BMI - Boys (10-19 yrs)										
	Severe Underweight		Underweight		Healthy		Overweight		Obese		Total
	n	%	n	%	n	%	n	%	n	%	N
Kailahun	1	0.6	8	4.2	179	92.7	5	2.4	0	0.0	193
Kenema	6	1.3	5	1.0	434	95.6	9	2.0	0	0.0	453
Kono	1	0.3	11	4.1	258	93.8	5	1.7	0	0.0	275
Bombali	6	1.6	7	1.8	380	96.4	1	0.3	0	0.0	394
Falaba	4	4.3	7	7.6	81	87.6	1	0.5	0	0.0	92
Koinadugu	5	2.9	5	3.2	151	93.8	0	0.0	0	0.0	161
Tonkolili	5	0.9	15	2.6	572	96.0	3	0.6	0	0.0	596
Kambia	0	0.0	5	3.0	155	96.5	1	0.5	0	0.0	161
Karene	1	0.5	6	2.2	254	97.3	0	0.0	0	0.0	261
Port Loko	3	1.1	16	5.6	262	93.2	0	0.0	0	0.0	281
Bo	9	1.6	7	1.3	545	96.9	1	0.3	0	0.0	563
Bonthe	2	1.8	3	2.9	78	90.6	4	4.7	0	0.0	86
Moyamba	0	0.0	6	3.3	185	95.8	2	0.9	0	0.0	193
Pujehun	1	0.5	7	2.4	277	96.7	1	0.5	0	0.0	287
WA-Rural	4	1.8	5	2.1	245	95.8	1	0.4	0	0.0	256
WA-Slums	11	3.5	19	6.0	287	90.3	1	0.3	0	0.0	318
WA-Urban	19	2.2	26	3.0	809	93.4	12	1.4	0	0.0	866
Total*	**79**	**1.5**	**159**	**2.9**	**5150**	**94.8**	**47**	**0.9**	**0**	**0.0**	**5435**

*Weighted analysis for aggregated national rates

Among the assessed non-pregnant women of reproductive age (15 to 49 years), the national prevalence of underweight (BMI<18.5) and severe underweight (BMI<16.0) was 4.8 per cent and 0.6 per cent, respectively. However, the overweight and obesity rates were high at 21.4 per cent respectively and 8.5 per cent, respectively,

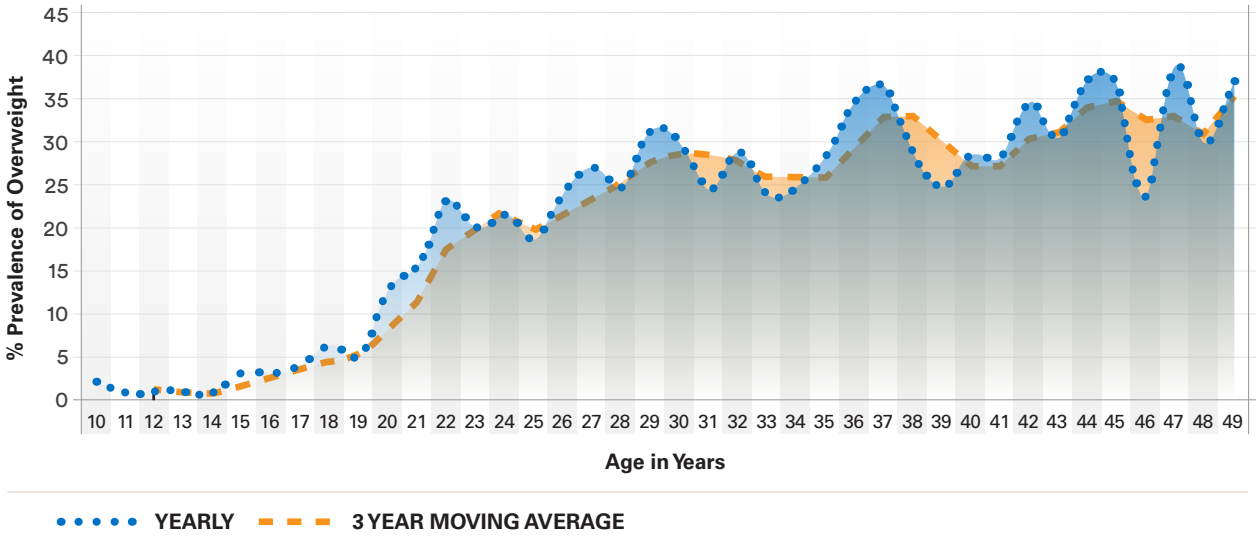
indicating the country's double burden of malnutrition. The levels of underweight in WRA ranged from 2.1 per cent in Kenema to 7.6 per cent in Koinadugu; while overweight ranged from 15.5 per cent in Tonkolili to 27.8 per cent in Western Area Urban; and other obesity ranged from 5.0 per cent in Pujehun to 15.2 per cent in the Western Area Slums population **(see Table 35).**

Table 35: Nutrition status by **body mass index** (Kg/m2) among non-pregnant women (15-49 yrs)

District	Malnutrition by BMI-non pregnant women (15-49 yrs)										
	Severe Underweight		Underweight		Healthy		Overweight		Obese		Total
	n	%	n	%	n	%	n	%	n	%	N
Kailahun	5	0.9	19	3.6	349	68.1	113	22.1	27	5.2	513
Kenema	5	0.6	17	2.1	537	66.5	190	23.5	59	7.3	808
Kono	8	1.5	26	5.2	324	64.0	106	21.0	42	8.3	507
Bombali	1	0.2	35	5.6	409	66.8	119	19.4	49	8.0	613
Falaba	3	1.3	15	6.4	154	66.1	42	18.2	18	7.9	232
Koinadugu	4	1.3	24	7.4	222	67.8	58	17.7	19	5.8	327
Tonkolili	2	0.2	73	6.5	811	72.2	174	15.5	63	5.6	1122
Kambia	1	0.2	23	5.6	282	70.4	71	17.7	24	6.0	400
Karene	2	0.5	26	6.3	281	68.0	74	17.9	30	7.3	413
Port Loko	5	0.6	49	6.6	506	67.6	143	19.1	46	6.1	749
Bo	4	0.5	26	2.9	609	66.7	208	22.7	66	7.2	913
Bonthe	1	0.2	11	4.4	150	59.9	63	25.2	26	10.3	251
Moyamba	3	0.6	27	5.8	298	64.3	102	22.1	33	7.2	464
Pujehun	1	0.3	11	2.5	313	72.5	85	19.7	22	5.0	432
WA-Rural	4	0.6	24	4.1	391	66.6	118	20.2	50	8.5	588
WA-Slums	9	1.3	49	6.8	404	56.2	148	20.6	109	15.2	719
WA-Urban	12	0.6	69	3.7	1026	54.7	522	27.8	246	13.1	1876
Total	**68**	**0.6**	**524**	**4.8**	**7068**	**64.7**	**2337**	**21.4**	**930**	**8.5**	**10928**

Further analysis shows that overweight tends to pick from below 5 per cent in teenage, increases rapidly to around 30 per cent at age 28-30 years and peaks above 35 per cent after 45 years **(see Figure 13).**

Figure 13: Trends of overweight by age among adolescents and women of reproductive age



6.3.4 Dietary diversity among adolescent girls, adolescent boys and women (15-49 years)

The dietary consumption pattern was characterized by the most frequent intake of foods from grains among the assessed adolescent girls (98.9 per cent), adolescent boys (99.1 per cent), and WRA (98.7). This is followed by meat, poultry & fish products (86.7 per cent, 87.9 per cent and 87.8 per cent in girls, boys and WRA respectively), and dark green leafy vegetables (83.9 per cent, 85.6 per cent and 84.8 per cent in girls, boys and WRA respectively) food groups in a 24-hour recall. Eggs (17.8 per cent, 17.9 per cent and 19.3 per cent in girls, boys and WRA, respectively) are the least frequently consumed, followed by dairy products (23.1 per cent, 22.0 per cent and 23.1 per cent in girls, boys and WRA respectively), and other fruits (28.8 per cent, 30.1 per cent and 30.1 per cent in girls, boys and WRA respectively). The consumption pattern is similar for all the three assessed demographic groups of adolescent girls (see **Table 36**), adolescent boys **(see Table 37)** and women of reproductive age **(see Table 38).**

Table 36: Consumption pattern for different food groups among adolescent girls (10-14 yrs)

District	Grains, white roots & tubers [A+B]		Pulses [C]		Nuts and seeds [D]		Dairy [E]		Meat, poultry & fish [F+G+H]		Eggs [I]		Dark green leafy vegetables [J]		Other vitamin-A-rich fruits and vegetables [K+L]		Other vegetables [M]		Other fruits [N]		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Bo	349	98.4	114	32.1	253	71.2	96	27.2	345	97.1	73	20.6	326	91.8	257	72.4	234	65.8	118	33.3	355
Bombali	246	99.6	100	40.3	167	67.5	37	14.8	224	90.5	49	19.8	221	89.3	140	56.8	128	51.9	60	24.3	247
Bonthe	61	97.6	28	45.2	31	50.0	7	11.3	48	76.6	10	15.3	55	87.9	43	67.7	31	50.0	22	35.5	63
Falaba	74	99.3	28	37.3	40	54.0	8	10.7	49	66.0	6	8.7	48	64.7	33	44.0	32	42.7	10	13.3	75
Kailahun	137	98.3	43	31.1	76	54.6	13	9.2	116	83.2	18	12.6	125	89.9	85	61.3	72	52.1	37	26.9	139
Kambia	126	100	50	39.7	78	62.2	17	13.5	92	73.1	9	7.1	115	91.0	98	77.6	99	78.8	66	52.6	126
Karene	172	98.4	79	45.4	97	55.4	29	16.5	158	90.4	22	12.9	164	93.6	89	50.6	95	54.2	59	33.7	175
Kenema	304	98.5	122	39.4	205	66.5	38	12.3	266	86.2	59	19.2	278	90.1	196	63.5	192	62.1	91	29.6	309
Koinadugu	118	99.2	48	40.2	77	64.5	11	9.2	81	68.1	6	5.2	77	65.3	58	48.6	55	46.2	17	14.7	119
Kono	230	99.6	99	42.7	134	58.1	35	15.0	199	86.2	37	15.9	202	87.4	150	65.0	139	60.2	93	40.2	231
Moyamba	119	100	57	47.7	63	53.0	14	12.1	94	79.5	14	12.1	109	91.7	91	76.5	92	77.3	44	37.1	119
Port Loko	187	100	89	47.5	111	59.3	24	12.7	152	81.4	29	15.3	168	89.8	156	83.1	152	81.4	98	52.5	187
Pujehun	200	99.7	75	37.5	150	74.7	25	12.5	191	94.9	30	14.9	186	92.6	168	83.8	153	76.0	74	36.8	201
Tonkolili	375	99.1	160	42.3	215	56.8	78	20.7	342	90.5	82	21.6	317	83.8	245	64.9	225	59.5	136	36.0	378
WA-Rural	207	99.6	98	47.0	141	67.7	71	34.1	196	94.0	63	30.2	176	84.5	132	63.4	134	64.2	64	30.6	208
WA-Slums	209	99.5	85	40.5	153	72.9	91	43.3	172	81.9	51	24.3	154	73.3	104	49.5	121	57.6	25	11.9	210
WA-Urban	682	97.9	246	35.4	459	66.0	294	42.3	603	86.6	124	17.9	498	71.5	285	40.9	450	64.6	89	12.7	696
Total	**3797**	**98.9**	**1521**	**39.6**	**2451**	**63.9**	**888**	**23.1**	**3329**	**86.7**	**682**	**17.8**	**3219**	**83.9**	**2330**	**60.7**	**2404**	**62.6**	**1105**	**28.8**	**3838**

Table 37: Consumption pattern for different food groups among adolescent boys (10-19 yrs)

District	Grains, white roots & tubers [A+B]		Pulses [C]		Nuts and seeds [D]		Dairy [E]		Meat, poultry & fish [F+G+H]		Eggs [I]		Dark green leafy vegetables [J]		Other vitamin-A-rich fruits and vegetables [K+L]		Other vegetables [M]		Other fruits [N]		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Bo	561	99.7	208	36.9	411	73.0	121	21.6	539	95.8	102	18.2	516	91.7	424	75.3	412	73.2	181	32.2	563
Bombali	392	99.5	154	39.0	251	63.8	68	17.3	351	89.1	77	19.6	361	91.7	232	58.9	187	47.5	102	25.8	394
Bonthe	86	99.4	42	48.2	44	51.2	7	8.2	72	83.5	14	16.5	75	87.6	60	69.4	51	58.8	30	34.7	86
Falaba	91	98.9	36	39.5	53	57.3	11	11.9	60	64.9	4	4.9	65	70.8	41	44.3	41	44.9	12	13.5	92
Kailahun	189	98.2	62	32.1	101	52.1	18	9.1	168	87.3	23	12.1	157	81.2	113	58.8	111	57.6	57	29.7	193
Kambia	161	100	70	43.7	112	69.8	19	11.6	125	77.9	18	11.1	143	88.9	126	78.4	123	76.9	85	52.8	161
Karene	260	99.5	91	34.7	161	61.6	36	13.7	214	82.0	41	15.9	231	88.4	142	54.3	112	43.0	103	39.5	262
Kenema	449	99.0	167	36.9	248	54.7	91	20.1	434	95.6	114	25.2	391	86.2	286	63.1	286	63.1	132	29.2	453
Koinadugu	160	98.5	60	37.2	111	68.0	17	10.2	111	68.6	12	7.6	103	63.4	67	41.3	69	42.4	21	13.1	162
Kono	275	100	115	41.6	164	59.4	41	15.0	241	87.4	53	19.1	242	87.7	183	66.6	165	60.1	87	31.7	275
Moyamba	192	99.5	92	47.4	118	60.9	7	3.7	152	78.6	20	10.2	170	87.9	146	75.3	140	72.6	83	42.8	193
Port Loko	278	98.9	156	55.4	183	65.0	35	12.4	237	84.2	33	11.9	265	94.4	235	83.6	233	83.1	165	58.8	281
Pujehun	285	99.5	134	46.9	216	75.4	41	14.2	274	95.7	37	12.8	256	89.3	242	84.6	226	78.9	113	39.6	287
Tonkolili	591	98.3	324	53.8	371	61.8	94	15.6	530	88.1	141	23.5	542	90.1	380	63.2	366	60.9	271	45.0	601
WA-Rural	252	98.6	100	38.9	157	61.4	83	32.6	249	97.5	80	31.2	209	81.8	164	64.2	155	60.7	74	28.8	256
WA-Slums	316	98.8	140	43.8	224	70.0	128	40.0	262	81.9	75	23.4	231	72.2	149	46.6	171	53.4	45	14.1	320
WA-Urban	866	98.9	297	33.9	586	66.9	385	44.0	775	88.5	132	15.0	713	81.4	440	50.3	548	62.6	81	9.3	876
Total	**5405**	**99.1**	**2246**	**41.2**	**3509**	**64.3**	**1202**	**22.0**	**4795**	**87.9**	**978**	**17.9**	**4670**	**85.6**	**3430**	**62.9**	**3399**	**62.3**	**1644**	**30.1**	**5454**

Table 38: Consumption pattern for different food groups among all women of reproductive age (15-49 yrs)

District	Grains, white roots & tubers [A+B]		Pulses [C]		Nuts and seeds [D]		Dairy [E]		Meat, poultry & fish [F+G+H]		Eggs [I]		Dark green leafy vegetables [J]		Other vitamin-A-rich fruits and vegetables [K+L]		Other vegetables [M]		Other fruits [N]		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Bo	1244	99.3	495	39.6	887	70.8	295	23.6	1185	94.6	286	22.9	1139	90.9	963	76.9	905	72.2	466	37.2	1253
Bombali	828	99.4	344	41.3	555	66.5	147	17.6	738	88.5	150	17.9	767	92.1	478	57.4	402	48.2	207	24.8	833
Bonthe	342	98.4	136	39.0	151	43.5	23	6.7	272	78.2	55	15.7	300	86.2	239	68.6	168	48.3	103	29.5	348
Falaba	287	99.0	119	41.1	172	59.3	38	13.2	193	66.7	26	8.9	210	72.5	122	42.1	118	40.5	46	15.8	290
Kailahun	711	98.1	266	36.8	422	58.2	71	9.8	624	86.1	101	13.9	633	87.4	473	65.3	438	60.5	283	39.0	725
Kambia	527	99.4	225	42.5	332	62.6	75	14.2	437	82.5	56	10.7	491	92.7	433	81.6	427	80.5	245	46.1	530
Karene	563	99.4	223	39.3	340	60.0	100	17.6	501	88.3	82	14.5	520	91.8	300	53.0	269	47.5	194	34.2	567
Kenema	1184	99.0	470	39.3	749	62.6	173	14.5	1096	91.6	196	16.4	1090	91.1	752	62.8	730	61.1	358	29.9	1196
Koinadugu	404	98.4	156	38.0	265	64.6	47	11.4	287	69.9	35	8.5	267	65.1	186	45.2	176	42.8	46	11.3	410
Kono	701	99.5	299	42.4	429	60.8	124	17.6	635	90.0	148	20.9	623	88.4	494	70.0	415	58.8	277	39.3	705
Moyamba	636	99.6	271	42.3	350	54.7	37	5.8	519	81.2	69	10.8	552	86.4	480	75.1	466	72.9	235	36.8	639
Port Loko	1002	98.3	519	50.9	640	62.8	154	15.1	818	80.2	162	15.9	952	93.5	859	84.3	844	82.9	506	49.7	1019
Pujehun	608	99.3	251	41.0	462	75.6	96	15.8	579	94.6	90	14.7	559	91.3	493	80.6	469	76.7	249	40.7	612
Tonkolili	1506	97.9	732	47.6	976	63.5	347	22.6	1408	91.6	409	26.6	1361	88.5	1053	68.4	935	60.8	717	46.6	1538
WA-Rural	725	97.1	337	45.1	469	62.9	270	36.2	718	96.2	227	30.4	602	80.6	491	65.7	462	61.9	244	32.7	747
WA-Slums	907	98.2	448	48.5	664	71.9	404	43.7	807	87.3	262	28.4	626	67.7	430	46.5	505	54.7	150	16.2	924
WA-Urban	2206	98.8	816	36.5	1414	63.3	957	42.9	1969	88.2	464	20.8	1658	74.3	1060	47.5	1414	63.3	323	14.5	2232
Total	**14380**	**98.7**	**6107**	**41.9**	**9276**	**63.7**	**3360**	**23.1**	**12784**	**87.8**	**2817**	**19.3**	**12351**	**84.8**	**9304**	**63.9**	**9143**	**62.8**	**4649**	**31.9**	**14568**

There was no significant difference in the consumption pattern of different food groups or dietary diversity between the pregnant or lactating and non-pregnant groups of WRA. **Table 39** shows the consumption pattern among pregnant or lactating WRA, while **Table 40** shows consumption patterns among assessed non-pregnant or lactating WRA.

Table 39: Consumption pattern for different food groups among pregnant/lactating women of reproductive age (15-49 yrs)

District	Grains, white roots & tubers [A+B]		Pulses [C]		Nuts and seeds [D]		Dairy [E]		Meat, poultry & fish [F+G+H]		Eggs [I]		Dark green leafy vegetables [J]		Other vitamin-A-rich fruits and vegetables [K+L]		Other vegetables [M]		Other fruits [N]		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Kailahun	208	97.8	60	28.0	125	58.8	23	11.0	180	84.6	47	22.0	191	89.6	143	67.0	125	58.8	54	25.3	213
Kenema	387	99.6	140	36.1	268	69.0	55	14.1	341	87.8	47	12.2	356	91.8	234	60.4	239	61.6	107	27.5	388
Kono	196	99.5	96	48.6	127	64.3	42	21.4	180	91.0	59	30.0	176	89.0	152	77.1	118	59.5	97	49.0	197
Bombali	221	99.5	78	35.3	157	70.6	37	16.5	182	82.1	42	18.8	209	94.0	142	64.2	109	49.1	69	31.2	222
Falaba	55	97.4	20	35.1	33	57.9	10	17.5	39	69.3	6	11.4	41	71.9	19	34.2	24	42.1	11	20.2	57
Koinadugu	82	98.3	23	27.3	53	63.6	9	11.4	54	64.8	9	10.2	51	61.9	27	32.4	32	38.1	8	9.7	83
Tonkolili	409	98.4	189	45.5	295	70.9	90	21.7	356	85.7	131	31.6	361	86.9	313	75.4	250	60.2	209	50.4	416
Kambia	128	99.4	67	51.9	88	68.1	19	15.0	97	75.0	13	10.0	119	92.5	115	89.4	116	90.0	74	57.5	129
Karene	154	100.0	59	38.4	98	63.9	20	12.8	129	83.6	25	16.4	143	93.2	82	53.4	70	45.2	64	41.6	154
Port Loko	264	97.6	138	51.2	159	58.8	44	16.5	208	77.1	41	15.3	249	92.4	254	94.1	240	88.8	135	50.0	270
Bo	338	99.6	126	37.1	238	70.3	76	22.4	333	98.3	72	21.1	310	91.4	235	69.4	231	68.1	99	29.3	339
Bonthe	96	99.5	41	41.9	44	45.0	6	6.3	82	84.3	16	16.8	83	85.3	70	72.3	49	50.3	27	28.3	97
Moyamba	175	100.0	75	43.1	102	58.5	8	4.6	139	79.5	13	7.2	155	88.7	146	83.1	142	81.0	67	38.5	175
Pujehun	179	99.6	61	34.0	146	81.1	26	14.3	173	96.2	21	11.7	165	91.7	140	77.7	143	79.6	56	31.3	180
WA-Rural	154	97.7	57	36.4	95	60.2	56	35.2	154	97.7	43	27.3	128	81.2	94	59.7	94	59.7	45	28.4	158
WA-Slums	197	98.0	79	39.3	145	72.1	85	42.3	177	88.1	49	24.4	154	76.6	108	53.7	125	62.2	22	10.9	201
WA-Urban	342	97.9	103	29.5	218	62.3	132	37.7	301	86.3	48	13.7	246	70.5	177	50.7	199	56.8	31	8.9	349
Total	**3585**	**98.8**	**1412**	**38.9**	**2390**	**65.9**	**738**	**20.4**	**3125**	**86.1**	**682**	**18.8**	**3138**	**86.5**	**2453**	**67.6**	**2304**	**63.5**	**1177**	**32.4**	**3628**

Table 40: Consumption pattern for different food groups among non-pregnant/lactating women of reproductive age (15-49 yrs)

District	Grains, white roots & tubers [A+B]		Pulses [C]		Nuts and seeds [D]		Dairy [E]		Meat, poultry & fish [F+G+H]		Eggs [I]		Dark green leafy vegetables [J]		Other vitamin-A-rich fruits and vegetables [K+L]		Other vegetables [M]		Other fruits [N]		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Kailahun	503	98.2	207	40.4	297	58.0	48	9.4	444	86.8	54	10.5	443	86.5	331	64.6	313	61.2	229	44.7	512
Kenema	797	98.7	330	40.9	481	59.5	119	14.7	755	93.4	149	18.5	733	90.8	517	64.0	492	60.8	251	31.1	808
Kono	505	99.4	203	40.0	302	59.4	82	16.1	455	89.6	88	17.4	447	88.1	341	67.2	297	58.5	180	35.6	508
Bombali	607	99.3	266	43.4	398	65.1	110	18.0	556	90.8	108	17.6	559	91.3	336	54.9	293	47.9	137	22.5	612
Falaba	232	99.4	99	42.5	139	59.6	28	12.2	154	66.0	19	8.3	169	72.6	103	44.0	94	40.2	34	14.7	233
Koinadugu	322	98.4	133	40.7	212	64.8	37	11.4	233	71.1	26	8.1	216	65.9	159	48.5	144	44.0	38	11.7	327
Tonkolili	1097	97.7	543	48.4	681	60.7	257	22.9	1053	93.8	278	24.7	1000	89.1	739	65.9	685	61.0	508	45.2	1122
Kambia	399	99.4	158	39.4	244	60.8	56	13.9	341	84.9	44	10.9	372	92.8	317	79.1	311	77.5	170	42.5	401
Karene	409	99.1	164	39.7	242	58.6	80	19.4	372	90.1	57	13.8	377	91.3	218	52.8	200	48.4	130	31.5	413
Port Loko	738	98.5	381	50.8	481	64.2	110	14.6	610	81.4	121	16.1	703	93.9	605	80.7	605	80.7	371	49.6	749
Bo	906	99.2	370	40.5	649	71.0	219	24.0	852	93.3	215	23.5	829	90.7	728	79.7	674	73.8	367	40.2	913
Bonthe	246	98.0	95	37.9	108	42.9	17	6.9	190	75.8	38	15.3	217	86.5	169	67.1	120	47.6	75	30.0	251
Moyamba	461	99.4	195	42.1	247	53.3	29	6.2	379	81.8	57	12.2	396	85.5	334	72.1	324	69.8	168	36.2	464
Pujehun	428	99.2	189	43.9	316	73.3	71	16.4	405	93.9	69	15.9	394	91.2	353	81.8	326	75.5	193	44.7	432
WA-Rural	571	97.0	279	47.4	374	63.6	214	36.4	564	95.7	184	31.3	474	80.5	397	67.4	368	62.5	199	33.8	589
WA-Slums	710	98.2	369	51.0	519	71.8	319	44.1	630	87.1	213	29.5	472	65.3	322	44.5	380	52.6	128	17.7	723
WA-Urban	1864	99.0	713	37.9	1196	63.5	825	43.8	1668	88.6	416	22.1	1412	75.0	883	46.9	1215	64.5	292	15.5	1883
Total	**10795**	**98.7**	**4695**	**42.9**	**6886**	**62.9**	**2621**	**24.0**	**9659**	**88.3**	**2136**	**19.5**	**9213**	**84.2**	**6851**	**62.6**	**6838**	**62.5**	**3472**	**31.7**	**10940**

Substantial consumption of other unhealthy foods – savoury and fried snacks, sweets and sugar-sweetened beverages were reported among the adolescent girls (26.1 per cent, 31.6 per cent and 26.4per cent, respectively); among the adolescent boys

(26.0per cent, 29.4 per cent and 27.0per cent respectively) and WRA (23.8 per cent, 23.5per cent and 25.2 per cent respectively). The consumption of red palm oil was also high among adolescent girls (88.5 per cent), adolescent boys (87.2 per cent), and WRA (88.0 per cent). Red palm oil is extremely high in retinol – a form of vitamin A and is available in most regions of Sierra Leone.

These are usually nutrient-poor and energy-dense (empty calories), and high consumption of these foods has been associated with health risk factors (unhealthy outcomes) in several studies and meta-analyses, including overweight and obesity (Malik et al., 2013; Xi et al., 2015). The consumption of the unhealthy food groups among adolescent girls, boys and WRA is presented in **Table 41**, **Table 42**, and **Table 43**, respectively.

Table 41: Consumption pattern for unhealthy food categories among adolescent girls (10-14 years)

District	Insects		Red Palm		Oils & Fats		Savoury (Fries)		Sweets		Sweet beverages		Condiments		Other beverages		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Kailahun	15	10.9	131	94.1	39	27.7	44	31.9	49	35.3	21	15.1	69	49.6	7	5.0	139
Kenema	27	8.9	289	93.6	114	36.9	78	25.1	149	48.3	73	23.6	178	57.6	18	5.9	309
Kono	16	6.9	212	91.9	115	49.6	58	25.2	91	39.4	57	24.8	133	57.3	27	11.8	231
Bombali	26	10.7	221	89.3	97	39.1	44	17.7	64	25.9	51	20.6	124	50.2	33	13.2	247
Falaba	3	4.7	49	66.0	13	17.3	12	16.0	16	21.3	10	14.0	34	45.3	2	3.3	75
Koinadugu	9	7.6	86	72.5	20	17.1	23	19.1	20	17.1	19	15.9	61	51.4	6	5.2	119
Tonkolili	58	15.3	344	91.0	165	43.7	119	31.5	129	34.2	73	19.4	232	61.3	51	13.5	378
Kambia	4	3.2	115	91.7	18	14.1	13	10.3	6	5.1	10	7.7	19	15.4	6	4.5	126
Karene	12	6.8	157	90.0	64	36.5	35	20.1	41	23.3	24	13.7	78	44.6	15	8.4	175
Port Loko	5	2.5	179	95.8	19	10.2	16	8.5	8	4.2	3	1.7	32	16.9	8	4.2	187
Bo	45	12.7	343	96.3	151	42.2	98	27.5	158	44.3	89	25.0	206	57.8	28	7.8	357
Bonthe	6	9.7	52	83.1	12	19.4	6	9.7	6	9.7	5	7.3	10	16.1	2	2.4	63
Moyamba	7	6.1	100	84.1	17	14.4	9	7.6	5	4.5	4	3.8	21	17.4	5	4.5	119
Pujehun	31	15.5	191	94.6	64	31.6	50	24.9	70	34.7	20	10.1	105	51.9	19	9.4	202
WA-Rural	29	13.8	187	89.7	109	52.2	75	36.2	88	42.2	71	34.1	125	59.9	28	13.4	208
WA-Slums	30	14.2	165	77.8	135	64.0	71	33.6	72	34.1	118	55.9	96	45.5	9	4.3	211
WA-Urban	84	12.0	579	83.2	388	55.7	251	36.1	239	34.4	366	52.6	469	67.4	53	7.6	696
Total	**408**	**10.6**	**3402**	**88.5**	**1538**	**40.0**	**1003**	**26.1**	**1213**	**31.6**	**1015**	**26.4**	**1990**	**51.8**	**316**	**8.2**	**3841**

Table 42: Consumption pattern for unhealthy food categories among adolescent boys (10-19 years)

District	Insects		Red Palm		Oils & Fats		Savoury (Fries)		Sweets		Sweet beverages		Condiments		Other beverages		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Kailahun	21	10.9	182	94.5	64	33.3	69	35.8	75	38.8	44	23.0	113	58.8	8	4.2	193
Kenema	107	23.5	408	89.9	151	33.2	169	37.2	193	42.6	143	31.5	239	52.7	68	15.1	453
Kono	9	3.4	258	93.5	115	41.6	81	29.4	105	38.2	72	26.3	167	60.8	17	6.1	275
Bombali	46	11.6	345	87.6	159	40.3	85	21.7	86	22.0	81	20.7	168	42.6	52	13.2	394
Falaba	4	4.9	71	76.8	18	20.0	23	24.9	26	28.6	14	15.1	51	55.1	4	4.3	92
Koinadugu	6	3.8	112	68.9	39	24.3	35	21.7	22	13.8	25	15.5	73	45.5	13	8.2	161
Tonkolili	95	16.0	555	92.4	237	39.6	198	33.0	216	36.2	138	23.1	341	57.0	135	22.5	598
Kambia	8	5.0	148	92.5	22	13.6	12	7.5	4	2.5	4	2.5	20	12.6	9	5.5	161
Karene	28	10.8	234	89.5	105	40.3	70	26.6	68	26.1	39	15.1	110	42.2	22	8.3	262
Port Loko	6	2.3	260	92.7	40	14.1	32	11.3	11	4.0	5	1.7	52	18.6	11	4.0	281
Bo	83	14.8	525	93.2	248	44.2	140	24.9	227	40.3	152	27.0	320	56.9	32	5.7	563
Bonthe	6	6.5	66	76.5	16	18.2	11	12.4	8	8.8	4	4.1	12	14.1	1	1.2	86
Moyamba	9	4.7	156	80.9	22	11.2	7	3.7	4	2.3	4	1.9	28	14.4	3	1.4	193
Pujehun	48	16.6	268	93.4	94	32.7	58	20.4	94	32.7	38	13.3	146	50.9	24	8.5	287
WA-Rural	32	12.6	230	89.8	136	53.0	96	37.5	94	36.8	91	35.4	160	62.5	38	14.7	256
WA-Slums	36	11.3	250	76.9	201	63.0	92	28.8	107	33.5	173	54.2	146	45.8	39	12.2	319
WA-Urban	103	11.8	694	79.2	490	56.5	239	27.5	256	29.5	443	51.0	512	59.0	91	10.5	868
Total	**648**	**11.9**	**4762**	**87.2**	**2156**	**39.6**	**1417**	**26.0**	**1598**	**29.4**	**1470**	**27.0**	**2659**	**48.9**	**567**	**10.4**	**5441**

Table 43: Consumption pattern for unhealthy food categories among women (15-49 years)

District	Insects		Red Palm		Oils & Fats		Savoury (Fries)		Sweets		Sweet beverages		Condiments		Other beverages		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Kailahun	90	12.4	674	92.9	143	19.6	186	25.6	185	25.4	123	16.9	392	53.9	30	4.2	726
Kenema	167	14.0	1114	93.1	434	36.3	275	23.0	353	29.5	240	20.1	697	58.3	96	8.0	1196
Kono	27	3.9	651	92.3	306	43.3	227	32.1	220	31.2	195	27.6	462	65.5	86	12.3	705
Bombali	80	9.6	742	88.9	323	38.7	164	19.6	191	22.9	190	22.8	377	45.2	92	11.0	834

District	Insects		Red Palm		Oils & Fats		Savoury (Fries)		Sweets		Sweet beverages		Condiments		Other beverages		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Falaba	12	4.1	223	76.8	62	21.5	54	18.8	46	16.0	38	13.1	136	47.0	11	4.0	290
Koinadugu	35	8.6	291	70.8	98	23.9	81	19.7	55	13.3	57	13.8	195	47.5	13	3.1	410
Tonkolili	272	17.7	1419	92.1	715	46.5	480	31.2	519	33.7	351	22.8	969	62.9	252	16.4	1540
Kambia	14	2.6	484	91.3	88	16.6	33	6.2	27	5.2	27	5.2	98	18.4	17	3.2	530
Karene	52	9.2	509	89.7	209	36.9	144	25.4	145	25.5	112	19.8	276	48.6	48	8.4	567
Port Loko	27	2.6	956	93.8	94	9.2	106	10.4	56	5.5	19	1.9	211	20.7	30	3.0	1019
Bo	174	13.9	1172	93.5	560	44.6	374	29.8	377	30.1	362	28.9	753	60.0	137	11.0	1254
Bonthe	36	10.5	284	81.7	57	16.3	30	8.6	26	7.4	17	4.8	71	20.4	7	2.0	348
Moyamba	33	5.2	544	85.1	101	15.8	42	6.6	32	5.1	26	4.1	128	20.0	9	1.4	639
Pujehun	90	14.8	569	93.0	221	36.2	131	21.4	168	27.5	78	12.8	325	53.2	45	7.4	612
WA-Rural	110	14.8	667	89.3	431	57.8	258	34.5	239	32.0	271	36.3	446	59.8	118	15.9	746
WA-Slums	167	18.1	714	76.5	544	58.9	283	30.7	247	26.8	484	52.4	453	49.1	134	14.5	923
WA-Urban	397	17.8	1828	81.6	1335	59.9	603	27.0	538	24.1	1074	48.2	1366	61.3	285	12.8	2230
Total	**1786**	**12.3**	**12839**	**88.0**	**5720**	**39.3**	**3471**	**23.8**	**3425**	**23.5**	**3665**	**25.2**	**7354**	**50.5**	**1412**	**9.7**	**14569**

Minimum dietary diversity for adolescents and women

Based on dietary diversity scores from 10 food groups, the mean dietary diversity score (MDDS-W) was 5.7±1.8 food groups and 5.8±1.9 food groups among adolescent girls (10-14 years and WRA, respectively (see **Table 39**). The proportion of assessed adolescent girls (10-14 years) and WRA meeting the minimum dietary diversity were 72.0 per cent and 74.2 per cent, respectively (**Table 44**). The proportion meeting minimum dietary diversity was; however, lower (<50 per cent) in the northern districts of Koinadugu (45.8 per cent, and 46.5 per cent among adolescent girls and WRA, respectively) and Falaba (44.7 per cent and 48.5 per cent among adolescent girls and WRA respectively).

Table 44: Proportion consuming minimum dietary diversity and mean dietary diversity scores among adolescent girls and WRA

District	Girls (10-14 yrs)					Women (15-49 yrs)				
	n	%	MDDS	SD	N	n	%	MDDS	SD	N
Kailahun	83	59.7	5.2	±1.9	139	490	67.6	5.6	±1.9	725
Kenema	219	70.9	5.7	±1.9	309	855	71.5	5.7	±1.8	1196
Kono	177	76.4	5.7	±1.7	231	556	78.8	5.9	±1.7	705
Bombali	184	74.5	5.6	±1.6	247	593	71.2	5.5	±1.6	833
Falaba	33	44.7	4.4	±2.2	75	141	48.5	4.6	±2.1	290
Koinadugu	54	45.8	4.6	±1.9	119	191	46.5	4.6	±2.0	410
Tonkolili	272	72.1	5.8	±1.9	378	1243	80.8	6.1	±1.7	1538
Kambia	102	81.4	6.0	±1.6	126	443	83.6	6.1	±1.7	530
Karene	123	70.3	5.5	±1.7	175	387	68.4	5.5	±1.7	567
Port Loko	152	81.4	6.2	±2.0	187	848	83.2	6.3	±1.9	1019
Bo	270	76.1	6.1	±1.9	355	995	79.5	6.3	±1.9	1253
Bonthe	40	62.9	5.4	±2.2	63	201	57.8	5.1	±2.0	348
Moyamba	91	76.5	5.9	±1.8	119	480	75.1	5.7	±1.8	639
Pujehun	166	82.8	6.2	±1.6	201	524	85.7	6.3	±1.6	612
WA-Rural	170	81.5	6.2	±1.9	208	575	77.0	6.1	±2.0	747
WA-Slums	152	72.4	5.6	±1.6	210	648	70.1	5.6	±1.9	924
WA-Urban	474	68.0	5.4	±1.7	696	1636	73.3	5.5	±1.8	2232
Total	**2763**	**72.0**	**5.7**	**±1.8**	**3838**	**10807**	**74.2**	**5.8**	**±1.9**	**14568**

When adolescent age was reconstituted for adolescent girls to 10-19 years to synchronize with adolescent boys' group, the mean dietary diversity score (MDDS) remained at 5.7 ±1.8 food groups among both adolescent girls (10-19 years) and adolescent boys (10-19 years) respectively (**Table 45**). The proportion of assessed adolescent girls and boys (10-19 years) meeting the minimum dietary diversity remained the same at 74.0 per cent and 73.6 per cent, respectively **(Table 45).**

Table 45: Proportion consuming minimum dietary diversity and mean dietary diversity scores among adolescent girls (10-19 years) and adolescent boys (10-19 years)

District	MDD for Girls (10-19 yrs)					MDD for Boys (10-19 yrs)				
	n	%	MDDS	SD	N	n	%	MDDS	SD	N
Kailahun	187	66.4	5.5	±1.9	282	116	60.0	5.2	±1.9	193
Kenema	405	72.3	5.7	±1.8	560	335	73.8	5.7	±1.8	453
Kono	308	78.3	5.9	±1.7	394	208	75.4	5.7	±1.8	275
Bombali	306	72.4	5.6	±1.6	423	278	70.5	5.5	±1.6	394
Falaba	60	45.1	4.5	±2.2	134	42	45.9	4.5	±2.0	92
Koinadugu	94	46.1	4.5	±2.0	204	71	43.9	4.5	±2.0	162
Tonkolili	576	78.6	6.0	±1.7	732	467	77.6	6.0	±1.7	601
Kambia	184	84.1	6.1	±1.7	219	128	79.9	6.1	±1.7	161
Karene	223	70.6	5.5	±1.7	316	168	64.2	5.3	±1.7	262
Port Loko	314	82.8	6.2	±2.0	379	238	84.7	6.5	±1.9	281
Bo	507	80.9	6.3	±1.9	627	438	77.9	6.2	±1.8	563
Bonthe	71	59.2	5.2	±2.2	121	56	65.3	5.6	±2.0	86
Moyamba	171	77.6	5.8	±1.8	220	155	80.0	5.8	±1.8	193
Pujehun	291	86.8	6.4	±1.6	335	251	87.7	6.4	±1.5	287
WA-Rural	287	80.6	6.2	±1.9	356	192	75.1	6.0	±1.9	256
WA-Slums	285	70.9	5.5	±1.7	402	220	68.8	5.4	±1.8	320
WA-Urban	775	69.4	5.4	±1.7	1117	653	74.6	5.5	±1.5	876
Total	**5045**	**74.0**	**5.7**	**±1.8**	**6821**	**4016**	**73.6**	**5.7**	**±1.8**	**5454**

Minimum meal frequency for adolescents and women

Nutrition experts recommend eating three small, balanced meals and two snacks daily for an optimal healthy lifestyle. Fewer meals may lead to undernutrition, and more meals may lead to harmful outcomes such as for overweight and obesity.

Nationally, only 19.6 per cent, 19.4 per cent, 19.7 per cent and 19.9 per cent of the assessed adolescent girls 10-14 years (**Table 46**), adolescent girls 10-19 years (**Table 47**), adolescent boys (**Table 48**) and women of reproductive age (**Table 49)** had at least 5 meals per day (including snacks) respectively. The mean number of meals taken in the previous 24 hours was 3.7±1.5, 3.6±1.3, 3.6±1.4, and 3.6±1.5 among adolescent girls (10-14 years), girls (10-19 years), adolescent boys and WRA respectively.

Table 46: Minimum meal frequency for adolescent girls (10-14 years) by district

District	No (< 3 meals)		Medium (3-4 Meals)		High (5 or more meals)		Mean Number of Meals		Total
	n	%	n	%	n	%	Mean	SD	N
Kailahun	42	30.3	72	52.1	25	17.6	3.4	±1.5	139
Kenema	97	31.5	157	50.7	55	17.7	3.5	±1.7	309
Kono	21	8.9	177	76.4	34	14.6	3.6	±1.0	231
Bombali	20	8.2	219	88.5	8	3.3	3.2	±0.8	247
Falaba	14	19.3	48	64.0	12	16.7	3.2	±1.3	75
Koinadugu	13	10.8	91	76.5	15	12.7	3.2	±1.0	119
Tonkolili	26	6.8	307	81.1	46	12.2	3.5	±0.9	378
Kambia	56	44.9	54	42.9	15	12.2	2.9	±1.6	126
Karene	11	6.0	157	89.6	8	4.4	3.4	±0.8	175
Port Loko	40	21.2	122	65.3	25	13.6	3.1	±1.3	187
Bo	91	25.4	194	54.5	72	20.1	3.7	±1.5	357
Bonthe	36	57.3	19	29.8	8	12.9	2.8	±1.3	63
Moyamba	60	50.8	42	35.6	16	13.6	3.0	±1.4	119
Pujehun	52	25.6	123	60.9	27	13.5	3.6	±1.5	202
WA-Rural	18	8.6	152	72.8	39	18.5	3.8	±1.4	208
WA-Slums	0	0.0	134	63.5	77	36.5	4.4	±1.6	211
WA-Urban	7	1.0	419	60.1	270	38.8	4.6	±1.7	696
Total	**603**	**15.7**	**2485**	**64.7**	**752**	**19.6**	**3.7**	**±1.5**	**3841**

Table 47: Minimum meal frequency for adolescent girls (10-19 years) by district

District	No (< 3 meals)		Medium (3-4 Meals)		High (5 or more meals)		Mean Number of Meals		Total
	n	%	n	%	n	%	Mean	SD	N
Kailahun	92	32.8	131	46.5	58	20.7	3.4	±1.6	282
Kenema	157	28.0	265	47.3	138	24.7	3.5	±1.4	560
Kono	38	9.5	296	75.2	60	15.3	3.6	±1.0	394
Bombali	34	7.9	379	89.4	11	2.6	3.2	±0.6	423
Falaba	26	19.8	85	63.4	22	16.8	3.3	±1.2	134
Koinadugu	27	13.2	148	72.5	29	14.4	3.4	±1.0	204
Tonkolili	53	7.2	606	82.8	73	10.0	3.5	±0.8	732
Kambia	91	41.7	104	47.6	23	10.7	2.9	±1.3	219
Karene	18	5.6	282	89.3	16	5.1	3.4	±0.7	316
Port Loko	78	20.5	259	68.2	43	11.3	3.2	±1.2	379
Bo	134	21.4	364	57.9	130	20.7	3.5	±1.3	628
Bonthe	69	57.1	37	31.1	14	11.8	2.8	±1.3	121
Moyamba	109	49.4	84	38.4	27	12.2	2.9	±1.3	220
Pujehun	82	24.5	207	61.7	46	13.8	3.4	±1.2	335
WA-Rural	30	8.3	259	72.8	67	18.9	3.7	±1.2	356
WA-Slums	1	0.2	251	62.4	150	37.3	4.3	±1.4	402
WA-Urban	10	0.9	694	62.2	412	36.9	4.5	±1.4	1115
Total	**1047**	**15.4**	**4451**	**65.3**	**1322**	**19.4**	**3.6**	**±1.3**	**6820**

Table 48: Minimum meal frequency for adolescent boys (10-19 years) by district

District	No (< 3 meals)		Medium (3-4 Meals)		High (5 or more meals)		Mean Number of Meals		Total
	n	%	n	%	n	%	Mean	SD	N
Kailahun	55	28.5	83	43.0	55	28.5	3.6	±1.6	193
Kenema	134	29.5	158	34.9	161	35.6	3.9	±1.8	453
Kono	28	10.3	213	77.7	33	12.0	3.7	±1.2	275
Bombali	40	10.1	340	86.3	14	3.6	3.3	±0.8	394
Falaba	13	14.6	66	71.4	13	14.1	3.4	±1.2	92
Koinadugu	19	12.1	111	69.1	30	18.8	3.4	±1.1	161
Tonkolili	29	4.8	504	84.3	65	10.8	3.4	±0.9	598
Kambia	78	48.7	66	41.2	16	10.1	2.9	±1.5	161
Karene	18	7.0	235	89.8	8	3.2	3.3	±0.7	262
Port Loko	71	25.4	186	66.1	24	8.5	3.1	±1.2	281
Bo	151	26.8	319	56.6	94	16.6	3.5	±1.4	563
Bonthe	48	55.9	28	32.4	10	11.8	2.7	±1.4	86
Moyamba	95	49.3	75	38.6	23	12.1	2.8	±1.2	193
Pujehun	73	25.6	176	61.4	37	13.0	3.5	±1.4	287
WA-Rural	21	8.1	183	71.6	52	20.4	3.9	±1.4	256
WA-Slums	2	0.6	201	63.0	116	36.4	4.3	±1.6	319
WA-Urban	17	1.9	534	61.4	318	36.6	4.4	±1.5	868
Total	**893**	**16.4**	**3477**	**63.9**	**1070**	**19.7**	**3.6**	**±1.4**	**5440**

Table 49: Minimum meal frequency for WRA (15-49 yrs) by district

District	No (< 3 meals)		Medium (3-4 Meals)		High (5 or more meals)		Mean Number of Meals		Total
	n	%	n	%	n	%	Mean	SD	N
Kailahun	217	30.0	360	49.7	147	20.3	3.5	±1.7	725
Kenema	388	32.4	545	45.5	263	22.0	3.4	±1.6	1196
Kono	64	9.1	519	73.6	122	17.3	3.5	±1.1	705
Bombali	77	9.3	730	87.4	27	3.3	3.2	±0.7	834
Falaba	66	22.7	176	60.9	47	16.4	3.3	±1.2	290
Koinadugu	63	15.3	293	71.5	54	13.1	3.3	±1.2	409
Tonkolili	82	5.3	1340	87.1	118	7.6	3.5	±1.0	1540
Kambia	249	47.0	206	38.8	75	14.2	2.9	±1.4	530
Karene	36	6.3	508	89.6	23	4.1	3.3	±0.8	567
Port Loko	273	26.8	600	58.9	146	14.3	3.2	±1.4	1019
Bo	227	18.1	735	58.6	292	23.3	3.6	±1.6	1254
Bonthe	190	54.8	102	29.3	55	15.9	3.1	±1.6	347
Moyamba	327	51.2	200	31.4	111	17.4	3.1	±1.5	639
Pujehun	141	23.0	375	61.4	96	15.6	3.5	±1.5	612
WA-Rural	44	5.9	504	67.6	197	26.5	3.9	±1.5	746
WA-Slums	6	0.7	573	62.2	342	37.1	4.3	±1.5	921
WA-Urban	24	1.1	1419	63.6	787	35.3	4.4	±1.7	2230
Total	**2474**	**17.0**	**9186**	**63.1**	**2904**	**19.9**	**3.6**	**±1.5**	**14564**

6.4 Mortality results

The crude death rate (CDR) was **0.14** (95 per cent CI: 0.11-0.18) and the under-five mortality rate (U5DR) was **0.29** (95 per cent CI; 0.20-0.44) (**Table 50**). Both CDR and U5DR rates nationally and by the district are below the SPHERE *alert* thresholds of 1/10,000/day and 2/10,000/day, respectively. The design effects for CDR and U5DR were 1.36 and 1.24, respectively, indicating little inter-cluster variations (clustering of deaths) in the population. Illnesses were the main cause of mortality among U5s (69.9 per cent). Injuries contributed least to mortality, while 15.1 per cent of the deaths were of unknown cause to the respondents.

Table 50: Mortality rates SLNNS 2021

District	Crude Death Rate (deaths/10,000/day)				Under five Death Rate (U5 deaths/10,000/day)		
	N	CDR	95% CI	DEFF	U5DR	95% CI	DEFF
Kailahun	616	0.17	0.05-0.59	1.42	0.21	0.03-1.65	1.03
Kenema	693	0.18	0.09-0.39	1.00	0.00	-	1.00
Kono	594	0.17	0.07-0.43	1.00	0.22	0.03-1.65	1.00
Bombali	529	0.14	0.05-0.41	1.24	0.62	0.18-2.04	1.35
Falaba	593	0.12	0.04-0.38	1.00	0.19	0.03-1.48	1.00
Koinadugu	655	0.12	0.03-0.39	1.39	0.16	0.02-1.16	1.00
Tonkolili	634	0.07	0.02-0.27	1.00	0.00	-	1.00
Kambia	607	0.12	0.03-0.41	1.45	0.46	0.10-2.07	1.63
Karene	532	0.10	0.03-0.31	1.00	0.33	0.08-1.42	1.00
Port Loko	578	0.23	0.09-0.56	1.31	0.70	0.26-1.87	1.00
Pujehun	654	0.08	0.01-0.61	2.91	0.00	-	1.00
Bonthe	629	0.12	0.03-0.54	1.54	0.22	0.03-1.66	1.00
Bo	627	0.14	0.05-0.39	1.28	0.47	0.15-1.48	1.00
Moyamba	673	0.25	0.11-0.56	1.25	0.29	0.07-1.23	1.00
WA-Rural	687	0.16	0.05-0.49	1.84	0.43	0.10-1.85	1.55
WA-Slums	626	0.09	0.03-0.27	1.00	0.16	0.02-1.19	1.00
WA-Urban	674	0.20	0.06-0.67	2.69	0.77	0.14-4.20	3.50
National	**10601**	**0.14**	**0.11-0.18**	**1.36**	**0.29**	**0.20-0.44**	**1.24**

6.5 Children's morbidity

The national prevalence of retrospective child morbidity was 12.3 per cent in the 14-day recall. The prevalence varied from 4.7 per cent in Koinadugu to 23.7 per cent in Kono district, reporting children getting ill 14 days before the survey (**Table 51**). Overall, the most reported illnesses were fever 8.0 per cent), cough (3.8 per cent) and diarrhoea (1.7 per cent), contributing to 64.8 per cent, 31.2per cent and 13.5per cent, respectively of the morbidity burden in the assessed children. Other illnesses reported included skin infections and eye infections, contributing to 7.6 per cent and 1.8 per cent of the illnesses, respectively. The morbidity incidences could be underreported/underestimated given that the prevalence is generally lower than the DHS 2019 levels of 17 per cent, 2 per cent, and 7 per cent for fever, cough/ARI, and diarrhoea, respectively. It is important to note that the survey was conducted during the COVID-19 pandemic, and these illnesses are part of the main symptoms experienced by suspected COVID-19 cases.

Table 51: Prevalence of reported common child illnesses by district

	Child got ill			Type of illness										
				Fever		Cough		Diarrhoea		Skin infection		Eye Infection		Total
	n	%	N	n	%	n	%	n	%	n	%	n	%	N
Kailahun	116	20.5	566	83	14.7	34	6.0	9	1.7	4	0.6	1	0.2	566
Kenema	116	12.6	916	87	9.5	38	4.2	6	0.7	9	1.0	0	0.0	916
Kono	120	23.7	509	68	13.3	39	7.8	24	4.8	12	2.4	2	0.4	509
Bombali	76	13.2	580	36	6.1	28	4.9	10	1.8	9	1.6	4	0.7	580
Falaba	13	6.6	204	11	5.4	2	1.2	0	0.0	0	0.0	0	0.0	204
Koinadugu	12	4.7	259	9	3.3	3	1.3	1	0.5		0.2	0	0.0	259
Tonkolili	218	20.2	1080	109	10.1	61	5.7	53	4.9	20	1.9	9	0.8	1080
Kambia	40	9.7	414	34	8.2	19	4.5	6	1.4	4	1.0	0	0.0	414
Karene	58	14.7	397	25	6.2	21	5.3	11	2.7	6	1.4	1	0.2	397
Port Loko	41	6.1	679	33	4.9	10	1.4	5	0.7	5	0.7	0	0.0	679
Bo	82	9.7	840	45	5.4	32	3.8	1	0.2	3	0.3	1	0.2	840
Bonthe	26	10.8	244	18	7.5	8	3.1	1	0.4	2	0.8	0	0.0	244
Moyamba	41	9.4	438	32	7.4	7	1.6	2	.4	2	0.4	0	0.0	438
Pujehun	45	10.3	433	30	6.9	15	3.4	1	0.3	2	0.5	0	0.0	433
WA-Rural	42	9.7	436	30	6.8	13	3.1	4	0.8	2	0.4	0	0.0	436
WA-Slums	60	13.2	455	52	11.4	19	4.2	20	4.4	6	1.3	3	0.7	455
WA-Urban	55	5.4	1014	53	5.2	12	1.2	2	0.2	2	0.2	0	0.0	1014
Total	**1163**	**12.3**	**9464**	**753**	**8.0**	**362**	**3.8**	**157**	**1.7**	**88**	**0.9**	**21**	**0.2**	**9464**

Most child illnesses were treated at public health facilities, especially Community Health Centers (CHC) or Community Health Posts (CHP), at 63.1 per cent. Some children sought treatment in government hospitals (9.4 per cent) or private hospitals and clinics (2.1 per cent). Yet, others were treated by field workers and CHWs (13.4 per cent), at the pharmacies (10.3 per cent) or by traditional practitioners (4.4 per cent). **Table 52** shows the type of health facilities or services sought for child illnesses by

district and nationally. No treatment or health services from any health providers were sought for a few (4.3 per cent) children who fell ill. Reasons given include because the illness was not serious (61.4 per cent), the health facility is far away and the lack of transport (28.0 per cent), lack of money (25.2 per cent) or fear of COVID-19 (7.2 per cent).

Table 52: Health facility where treatment services are sought for children (6-59 months) by the district

	None		Government Hospital		CHC/CHP		CHWs		Private Hospital		Traditional Practitioners		Pharmacy		Other HPs		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Bo	1	1.8	12	14.3	60	73.2	4	5.4	0	0.0	1	1.8	4	5.4	3	3.6	82
Bombali	1	1.3	12	16.0	34	44.0	18	24.0	4	5.3	9	12.0	3	4.0	1	1.3	76
Bonthe	1	1.9	2	5.8	13	48.1	2	7.7	1	3.8	3	11.5	4	15.4	1	3.8	26
Falaba		3.7	5	37.0	6	44.4	1	7.4	0	0.0	1	7.4	1	11.1	1	7.4	13
Kailahun	1	1.0	6	5.1	96	82.8	11	9.1	0	0.0	8	7.1	7	6.1	1	1.0	116
Kambia	2	4.0	1	2.0	30	74.0	4	10.0	0	0.0	9	22.0	1	2.0	1	2.0	40
Karene	3	4.8	2	3.6	34	59.0	17	28.9	0	0.0	2	3.6	4	7.2	1	1.2	58
Kenema	0	0.0	8	6.6	102	88.2	8	6.6	2	1.3	6	5.3	6	5.3	2	1.3	116
Koinadugu		3.8	5	42.3	5	38.5	1	7.7		3.8	0	0.0	3	23.1		3.8	12
Kono	7	5.5	6	4.7	73	60.9	14	11.7	3	2.3	4	3.1	6	4.7	3	2.3	120
Moyamba	0	0.0	0	0.0	36	87.0	1	2.2	1	2.2	2	4.3	0	0.0	2	4.3	41
Port Loko	11	26.9	0	0.0	27	65.4	3	7.7	0	0.0	0	0.0	2	3.8	2	3.8	41
Pujehun	1	3.0	5	10.6	37	81.8	2	4.5	0	0.0	2	4.5	2	4.5	0	0.0	45
Tonkolili	17	7.8	20	9.4	121	55.5	43	19.5	0	0.0	3	1.6	5	2.3	5	2.3	218
WA-Rural	0	0.0	4	8.5	22	53.2	6	14.9	7	17.0	0	0.0	11	25.5	0	0.0	42
WA-Slums	2	3.3	9	15.0	27	45.0	16	26.7	4	6.7	0	0.0	27	45.0	1	1.7	60
WA-Urban	2	4.3	14	26.1	12	21.7	5	8.7	2	4.3	0	0.0	33	60.9	2	4.3	55
Total	**50**	**4.3**	**110**	**9.4**	**734**	**63.1**	**156**	**13.4**	**24**	**2.1**	**51**	**4.4**	**120**	**10.3**	**25**	**2.2**	**1163**

6.6 Health programmes coverage

The national coverage for vitamin A supplementation among children 6-59 months was 93.9 per cent, above the SPHERE recommended 80 per cent, and 91.6 per cent of the assessed children (12-59 months) had been dewormed in the preceding 6 months (see **Table 53**). It is worth noting that the SMART survey was conducted just one month after the last round of mass Vitamin A supplementation and deworming, and the results reflect the current coverage. Previous post-event coverage surveys performed within the recommended one month have all shown deworming coverage well over 85 per cent. Furthermore, 80.5 per cent of the assessed (6-59 months) children had slept under treated mosquito nets; and 97.9 per cent of children (12-35 months) had received at least one dosage of measles vaccine **(see Table 53).**

Table 53: Health programmes coverage in children (6-59 months) by district

	Children 6-59 months with (who had)							Children 12-59 months			Children 9-59 months		
	EPI_Card		Vit A Suppl		Slept under net		Total	Dewormed			Any dose of Measles Vaccine		
	n	%	n	%	n	%	N	n	%	N	n	%	N
Kailahun	468	83.5	531	94.8	483	86.2	560	486	94.8	513	526	98.0	536
Kenema	784	86.0	829	91.0	807	88.5	911	705	87.9	802	823	96.4	854
Kono	385	77.0	484	97.0	440	88.1	499	428	94.0	455	466	97.8	477
Bombali	497	86.4	477	83.0	413	71.9	575	423	84.2	503	510	94.9	537
Falaba	157	77.4	189	93.4	165	81.3	203	141	77.7	181	183	94.8	193
Koinadugu	143	55.7	237	92.6	198	77.5	256	202	88.0	229	241	97.9	246
Tonkolili	879	82.4	1020	95.7	879	82.4	1066	870	91.6	950	988	97.8	1010
Kambia	395	96.5	405	98.8	316	77.0	410	358	97.4	367	378	99.2	382
Karene	319	81.4	353	90.0	271	69.2	392	302	85.1	354	361	96.8	373
Port Loko	648	95.6	657	97.0	476	70.3	678	576	94.0	613	624	96.6	646
Bo	754	90.5	794	95.3	735	88.2	833	700	93.0	753	769	96.3	798
Bonthe	223	92.6	235	97.3	195	80.9	241	213	97.7	218	228	99.8	228
Moyamba	415	94.9	432	98.8	289	66.1	438	374	96.3	388	407	99.6	409

	Children 6-59 months with (who had)							Children 12-59 months			Children 9-59 months		
	EPI_Card		Vit A Suppl		Slept under net		Total	Dewormed			Any dose of Measles Vaccine		
	n	%	N	%	n	%	N	n	%	N	n	%	N
Pujehun	383	90.2	399	93.9	388	91.4	424	339	90.2	375	386	97.9	394
WA-Rural	393	90.5	406	93.4	338	77.9	434	372	95.2	390	405	99.3	407
WA-Slums	355	78.4	436	96.2	390	86.1	453	373	92.3	404	420	98.6	426
WA-Urban	780	77.3	931	92.2	770	76.3	1010	811	91.9	883	909	97.9	928
Total	**7977**	**85.0**	**8814**	**93.9**	**7554**	**80.5**	**9384**	**7671**	**91.6**	**8379**	**8624**	**97.5**	**8845**

The national coverage for vitamin A supplementation among children 12-35 months was 95.0 per cent, and 97.9 per cent of the assessed children (12-35 months) had received at least the first dose of measles vaccine (see **Table 54**).

Table 54: Vitamin A supplementation and measles vaccination among children 12-35 months by district

	Vitamin A supplementation (12-35 Months)			Measles vaccination (12-35 months)									
				Once with card		Twice with card		Once, by recall		Twice, by recall		Any dose		
	n	%	N	n	%	n	%	n	%	n	%			N
Kailahun	283	95.3	297	180	60.6	78	26.4	28	9.4	4	1.2	290	97.7	297
Kenema	388	94.4	411	195	47.4	167	40.7	26	6.3	11	2.6	399	97.0	411
Kono	216	97.5	222	74	33.5	107	48.3	18	8.1	19	8.5	218	98.3	222
Bombali	201	85.0	237	97	40.8	103	43.3	17	7.3	15	6.4	232	97.9	237
Falaba	83	95.4	87	20	22.9	37	42.3	19	22.3	8	9.7	85	97.1	87
Koinadugu	98	93.7	105	23	21.6	34	32.9	30	28.8	15	14.0	102	97.3	105
Tonkolili	473	96.9	489	189	38.7	227	46.3	34	7.0	32	6.6	482	98.6	489
Kambia	181	99.6	182	62	34.2	111	60.9	2	1.3	3	1.8	178	98.2	182
Karene	167	93.3	179	56	31.5	89	49.6	12	6.7	17	9.4	174	97.2	179
Port Loko	316	96.6	327	110	33.5	198	60.7	3	1.0	3	1.0	314	96.1	327

	Vitamin A supplementation (12-35 Months)			Measles vaccination (12-35 months)									
				Once with card		Twice with card		Once, by recall		Twice, by recall		Any dose		
	n	%	N	n	%	n	%	n	%	n	%			N
Bo	365	95.4	383	224	58.4	115	30.2	25	6.5	10	2.7	374	97.7	383
Bonthe	111	98.2	113	36	31.8	70	62.3	2	1.8	5	4.0	113	100.0	113
Moyamba	206	99.1	208	75	36.4	120	57.6	5	2.6	5	2.6	206	99.1	208
Pujehun	172	94.8	182	112	61.6	54	29.9	10	5.2	4	2.2	180	98.9	182
WA-Rural	190	95.1	200	90	44.8	87	43.5	16	8.1	5	2.7	198	99.1	200
WA-Slums	190	96.4	197	89	45.2	56	28.4	32	16.2	16	8.1	193	98.0	197
WA-Urban	354	90.8	390	189	48.5	122	31.3	53	13.5	19	4.9	383	98.2	390
Total	**3996**	**95.0**	**4207**	**1820**	**43.3**	**1776**	**42.2**	**333**	**7.9**	**192**	**4.6**	**4121**	**97.9**	**4207**

Disaggregated by age, vitamin A supplementation coverage was equally high at 95.7 per cent among the children 12-23 months of age and 94.2 per cent among the children 24-35 months of age (see **Table 55**).

Among the children 12-23 months, 97.8 per cent had received at least the first dose of the measles vaccine, while 60.3 per cent of children 24-35 months had received the two recommended doses either by card or recall (see **Table 55**).

Table 55: Vitamin-A supplementation and measles vaccination among children 12-23 months and 24-35 months by district

	Vitamin A supplement (12-23 months)			Vitamin A supplement (24-35 months)			At least 1st dose of measles vaccine (12-23 months)			2nd measles dose (24-35 months)		
	n	%	N	n	%	N	n	%	N	n	%	N
Kailahun	154	95.7	161	177	93.8	189	157	97.1	161	92	48.8	189
Kenema	193	95.5	202	94	81.4	115	196	97.0	202	69	60.2	115
Kono	108	97.5	111	65	97.7	67	109	98.3	111	53	79.5	67
Bombali	108	88.3	122	42	96.6	43	118	96.7	122	26	60.9	43
Falaba	41	94.3	44	129	94.8	136	42	95.5	44	48	35.3	136
Koinadugu	50	92.1	54	100	99.2	101	51	94.7	54	77	76.0	101

	Vitamin A supplement (12-23 months)			Vitamin A supplement (24-35 months)			At least 1st dose of measles vaccine (12-23 months)			2nd measles dose (24-35 months)		
	n	%	N	n	%	N	n	%	N	n	%	N
Tonkolili	237	97.9	242	77	91.6	84	240	99.3	242	60	71.4	84
Kambia	81	100.0	81	195	93.4	208	81	100.0	81	110	52.6	208
Karene	90	94.8	95	49	95.4	51	91	96.3	95	32	62.0	51
Port Loko	160	98.1	164	108	97.5	111	157	96.1	164	70	62.7	111
Bo	189	97.0	194	112	99.2	113	189	97.0	194	95	84.1	113
Bonthe	46	98.9	46	156	95.1	164	46	100.0	46	144	88.3	164
Moyamba	93	99.0	94	85	93.3	91	93	99.0	94	41	44.8	91
Pujehun	88	96.3	91	237	95.9	247	90	98.5	91	153	62.1	247
WA-Rural	100	95.7	104	91	94.4	96	104	100.0	104	58	60.7	96
WA-Slums	95	95.0	100	95	97.9	97	99	99.0	100	45	46.4	97
WA-Urban	182	91.6	199	172	90.0	191	194	97.6	199	96	50.0	191
Total	**2014**	**95.7**	**2104**	**1982**	**94.2**	**2103**	**2057**	**97.8**	**2104**	**1269**	**60.3**	**2103**

6.7 Infant and young child feeding practices

6.7.1 Breastfeeding practices

Among the assessed infants and young children (0-23 months), 97.7 per cent was ever-breastfed nationally, 78.1 per cent was currently breastfeeding (breastfed the previous day); 59.1 per cent were put to the breast immediately, and 30.8 per cent within the first hour of birth (89.9 per cent timely introduced to breastmilk). A few (9.7 per cent) of children aged 0-23 months were bottle-feeding (see **Table 56**).

Table 56: Breastfeeding practices among infant and young children (0-23 months) by district

District	Ever Breastfed		How long after birth child was put to breast								Breast feeding		Bottle feeding		Total
	EvBF		Immediately		<1 hr		1-24 hrs		>48 hrs		BF		BoF		
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Kailahun	252	98.2	159	61.8	61	23.6	32	12.3	4	1.4	203	79.1	28	10.9	257
Kenema	399	98.5	224	55.3	135	33.5	40	9.8	5	1.1	313	77.4	35	8.6	405
Kono	231	97.2	141	59.3	75	31.6	20	8.3	1	0.4	186	78.3	24	10.3	238
Bombali	255	97.3	139	53.1	99	37.6	21	8.1	1	0.4	211	80.2	26	10.1	263
Falaba	77	95.7	45	56.2	26	32.7	6	7.4	1	1.9	64	79.6	8	10.5	81
Koinadugu	116	98.8	69	59.0	35	30.1	11	9.2	0	0.0	84	71.5	15	12.9	118
Tonkolili	489	97.3	303	60.3	148	29.5	41	8.1	0	0.0	419	83.4	72	14.2	502
Kambia	204	98.4	123	59.1	63	30.4	19	8.9	2	1.2	160	77.0	19	8.9	207
Karene	183	95.6	105	54.9	56	28.9	28	14.7	3	1.5	156	81.3	23	12.1	192
Port Loko	364	99.1	202	55.0	141	38.5	19	5.2	2	0.4	292	79.7	33	9.1	367
Bo	396	97.8	247	61.0	113	27.8	35	8.7	7	1.8	303	74.7	39	9.7	405
Bonthe	104	98.1	65	61.4	30	28.1	10	9.0	1	0.5	85	79.5	17	15.7	106
Moyamba	225	97.3	125	54.1	79	34.2	22	9.7	0	0.0	179	77.4	14	6.2	231
Pujehun	198	98.0	113	55.9	69	34.0	18	8.8	1	0.3	157	77.8	14	6.7	202
WA-Rural	217	98.0	131	59.1	64	28.7	24	10.9	1	0.4	162	73.3	13	6.1	222
WA-Slums	247	97.2	166	65.4	67	26.4	19	7.5	1	0.4	195	76.8	30	11.8	254
WA-Urban	517	99.1	345	66.1	146	28.0	29	5.5	0	0.0	402	77.1	31	6.0	522
Total	**4475**	**97.9**	**2702**	**59.1**	**1407**	**30.8**	**392**	**8.6**	**29**	**0.6**	**3571**	**78.1**	**443**	**9.7**	**4570**

Nationally, 89.4 per cent of assessed children 0-23 months were initiated early to breastfeeding (EIBF), and 52.7 per cent of children 0-5 months were exclusively breastfed (EBF). However, 53.1 per cent of the children continued breastfeeding (CBF) at 23 months. **Table 57** shows the district's prevalence of exclusive and continued breastfeeding, even though some districts' disaggregated sample sizes are small. So interpretation at the national level is more meaningful.

Table 57: Exclusive and continued breastfeeding indicators

District	Prelacteals (0-23 months)		Early Initiation of Breastfeeding			Exclusive Breastfeeding (0-5 months)			Continued BF at 23 Months		
			EIBF		Total	BF			CBF		
	n	%	n	%	N	n	%	N	N	%	N
Kailahun	50	19.5	229	89.1	257	34	49.2	69	83	64.0	130
Kenema	70	17.3	355	87.6	405	78	52.6	148	99	57.0	173
Kono	33	13.8	203	85.4	238	44	54.7	81	58	54.9	106
Bombali	71	27.1	243	92.6	263	47	57.5	81	71	59.8	119
Falaba	15	19.1	72	88.9	81	17	61.4	28	22	59.5	37
Koinadugu	19	16.1	106	90.4	118	11	40.0	28	20	43.9	46
Tonkolili	72	14.2	448	89.2	502	44	31.7	140	100	46.1	218
Kambia	36	17.1	187	90.3	207	36	56.2	65	47	50.4	93
Karene	35	18.3	171	89.0	192	31	47.3	65	41	50.0	82
Port Loko	52	14.3	332	90.5	367	48	42.9	111	84	57.0	148
Bo	67	16.6	371	91.7	405	67	56.8	118	91	50.0	181
Bonthe	26	24.8	96	90.0	106	19	54.3	35	29	55.8	53
Moyamba	40	17.5	217	94.2	231	33	46.8	71	47	46.0	102
Pujehun	41	20.5	178	88.2	202	37	55.1	67	46	56.2	82
WA-Rural	23	10.5	194	87.4	222	41	64.8	64	55	55.0	100
WA-Slums	57	22.4	221	87.0	254	45	57.7	78	57	48.3	118
WA-Urban	89	17.0	462	88.5	522	110	68.7	160	127	52.5	242
Total	**798**	**17.5**	**4085**	**89.4**	**4570**	**743**	**52.7**	**1410**	**1077**	**53.1**	**2029**

6.7.2 Introduction to complementary foods and feeding frequency

The prevalence of timely introduction of complementary (solid, semi-solid or soft) foods among 6-8 months was 60.2 per cent (see **Table 58**).On average, children (6-23 months) are fed on solid, semi-solid, or soft foods twice (2.1±1.9 times) in a day, including once (0.8±1.7 times) on milk feeds (see Table 58). The mean number of food groups consumed by children aged 6-23 months was 3.1 (±1.7) nationally out of a total of 8 food groups and varied from 2.4) food groups in Port Loko (±1.2) and Tonkolili (±1.4) to a mean of 4.1 (±1.9) food groups in Kono.

Table 58: Complementary feeding and child dietary diversity by district

	Introduction of solid, semi-solid or soft foods (6-8 months)			Meal Frequency and Food Groups (6-23 months)						
	ISSSF		Total	Milk Feed Frequency		Feeding/Meal Frequency		Child Food Groups		Total
	n	%	N	Mean	SD	Mean	SD	Mean	SD	N
Kailahun	9	61.5	15	0.7	1.7	2.3	1.7	3.6	1.7	187
Kenema	17	61.1	27	0.3	1.3	1.6	1.5	3.2	1.6	256
Kono	8	57.1	13	1.1	1.6	2.7	2.2	4.1	1.9	156
Bombali	7	43.8	16	0.5	1.5	2.2	1.8	3.1	1.7	178
Falaba	5	76.9	6	0.7	1.5	2.0	1.6	3.5	1.6	52
Koinadugu	6	41.9	15	0.9	1.6	2.2	1.5	2.8	1.5	88
Tonkolili	39	76.7	51	0.5	1.2	2.1	1.8	2.4	1.4	363
Kambia	10	59.1	18	0.5	1.3	2.2	1.8	2.7	1.2	141
Karene	8	48.0	18	0.6	1.4	1.8	1.6	3.4	1.6	125
Port Loko	17	47.8	37	0.7	1.7	2.2	2.3	2.4	1.2	252
Bo	13	45.0	29	0.6	1.3	2.0	1.7	2.7	1.3	281
Bonthe	4	53.3	8	0.6	1.2	2.3	1.9	2.8	1.5	71
Moyamba	14	59.3	24	0.2	0.9	1.7	1.6	3.0	1.5	159
Pujehun	8	50.0	16	0.6	1.5	2.1	1.7	3.9	1.9	131
WA-Rural	13	58.3	22	1.5	2.4	2.4	2.2	3.3	1.8	158
WA-Slums	15	71.4	21	1.6	2.4	2.2	2.5	2.6	1.4	174
WA-Urban	33	77.8	43	1.2	2.3	1.9	2.3	2.5	1.3	361
Total	**228**	**60.2**	**379**	**0.8**	**1.7**	**2.1**	**1.9**	**3.1**	**1.7**	**3134**

6.7.3 Child meal frequency dietary diversity among children (6-23 months)

The proportion of children meeting minimum meal frequency for their specific ages was 33.0 per cent nationally and varied by district ranging from 17.3 per cent in Kenema to 43.4 per cent in the Port Loko district. The proportion of children meeting minimum dietary diversity for their breastfeeding status was only 22.9 per cent nationally and varied by district ranging from 8.6 per cent in Koinadugu and WA-Urban to 47.6 per cent in Kono (see **Table 59**).

The proportion of children meeting the minimum acceptable diet (MAD)[11] was very low, at only 4.9 per cent, indicating poor feeding practices for children 6-23 months (see **Table 59**).

Table 59: Proportion of children 6-23 months meeting Minimum Dietary Diversity and Meal Frequency

	Minimum Meal Frequency		Minimum Dietary Diversity		Minimum Acceptable Diet		Total
	n	%	n	%	n	%	N
Kailahun	63	33.7	64	34.4	12	6.2	187
Kenema	44	17.3	68	26.8	6	2.4	256
Kono	55	35.5	74	47.6	32	20.5	156
Bombali	57	32.0	55	30.9	10	5.7	178
Falaba	18	34.3	6	11.4	2	3.8	52
Koinadugu	30	34.2	8	8.6		0.5	88
Tonkolili	140	38.5	152	41.8	32	8.9	363
Kambia	52	37.1	14	9.7	1	0.6	141
Karene	34	27.5	33	26.4	6	4.5	125
Port Loko	110	43.4	38	15.1	10	3.8	252
Bo	98	34.9	64	22.9	9	3.1	281
Bonthe	24	34.3	10	13.6	0	0.0	71
Moyamba	58	36.2	15	9.6	1	0.6	159
Pujehun	38	29.0	28	21.2	3	2.1	131
WA-Rural	60	38.1	41	26.1	10	6.2	158
WA-Slums	60	34.5	17	9.8	12	6.9	174
WA-Urban	91	25.2	31	8.6	10	2.6	361
Total*	**1033**	**33.0**	**718**	**22.9**	**155**	**4.9**	**3134**

11 MAD is an indicator that combines information on both minimum dietary diversity and minimum meal frequency, with the extra requirement that non-breastfed children should have received milk at least twice on the previous day.

Table 60 shows the diversity and consumption of the various food groups assessed children (6-23) months old by district and nationally. Most of the child's diet comprises the staple grains, roots & tubers in all the districts, with consumption ranging from 87.1 per cent in Bonthe to 98.1 per cent in Port Loko. Consumption of other food groups is low (below 50 per cent) nationally and across most districts.

Table 60: Consumption of different food groups among children (6-23 months) by district

	Consumption of the 8 different food groups for children 6-23 months																				
	Breastmilk		Grains, roots & tubers		Legumes & nuts		Dairy products		Meats, poultry, fish		Eggs		Vit A rich fruits & vegetables		Other fruits & vegetables		Total	
	n	per cent	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N	
Kailahun	136	72.0	173	91.9	21	11.3	34	18.0	105	55.9	28	14.9	101	53.4	78	41.6	188	
Kenema	166	64.5	230	89.3	26	10.1	29	11.2	114	44.4	37	14.2	116	45.0	99	38.5	257	
Kono	105	67.1	144	91.6	34	21.7	64	40.7	82	52.1	38	24.1	95	60.5	81	51.5	157	
Bombali	129	71.3	174	96.1	24	13.5	46	25.3	84	46.6	28	15.8	92	50.6	63	34.8	181	
Falaba	36	68.6	47	89.5	5	10.5	9	17.1	11	21.9	1	2.9	13	25.7	4	8.6	52	
Koinadugu	56	63.0	84	93.7	10	11.6	16	18.0	21	23.3	2	2.1	17	18.5	11	12.7	89	
Tonkolili	281	77.5	344	94.8	94	25.9	72	19.7	181	49.8	78	21.7	209	57.7	165	45.5	363	
Kambia	96	67.2	134	93.8	2	1.7	26	18.1	55	38.4	4	2.9	40	27.7	26	18.1	143	
Karene	91	72.2	117	92.8	15	12.4	25	19.4	65	51.7	13	10.1	73	57.8	36	28.3	127	
Port Loko	181	70.8	251	98.1	8	3.1	63	24.8	102	39.8	3	1.3	73	28.6	37	14.3	256	
Bo	186	64.8	259	90.3	31	10.7	47	16.3	130	45.4	38	13.3	123	42.9	86	30.1	286	
Bonthe	50	70.0	62	87.1	6	7.9	19	26.4	29	40.7	4	5.8	16	22.1	14	20.0	71	
Moyamba	109	68.0	144	89.9	4	2.3	31	19.1	78	48.9	3	1.7	33	20.8	23	14.6	160	
Pujehun	90	66.8	124	92.0	11	8.1	10	7.5	62	45.7	10	7.1	57	42.2	43	32.2	135	
WA-Rural	99	62.5	150	94.9	10	6.2	57	35.8	62	39.2	37	23.3	60	38.1	40	25.6	158	
WA-Slums	119	67.6	163	92.6	15	8.5	64	36.4	29	16.5	17	9.7	36	20.5	22	12.5	176	
WA-Urban	242	66.9	340	94.0	29	8.0	100	27.8	48	13.2	41	11.3	57	15.9	45	12.6	361	
Total	**2171**	**68.7**	**2938**	**93.0**	**345**	**11.0**	**710**	**22.5**	**1258**	**39.8**	**381**	**12.1**	**1210**	**38.3**	**875**	**27.7**	**3160**	

The consumption of protein source foods was generally poor among children, including animal source foods was generally poor, especially legumes, nuts & seeds (11.0 per cent), eggs (12.1 per cent), and animal flesh - meat, poultry, and fish products (39.8 per cent). Consumption of Vitamin A-rich foods - yellow- or orange-coloured fruits & vegetables (38.3 per cent) as was for other fruits & vegetables (27.7 per cent) was similarly poor (see **Figure 13**).

Figure 14 summarizes the national rates for key IYCF indicators.

Figure 14: Chart showing consumption pattern for different food groups by children 6-23 months

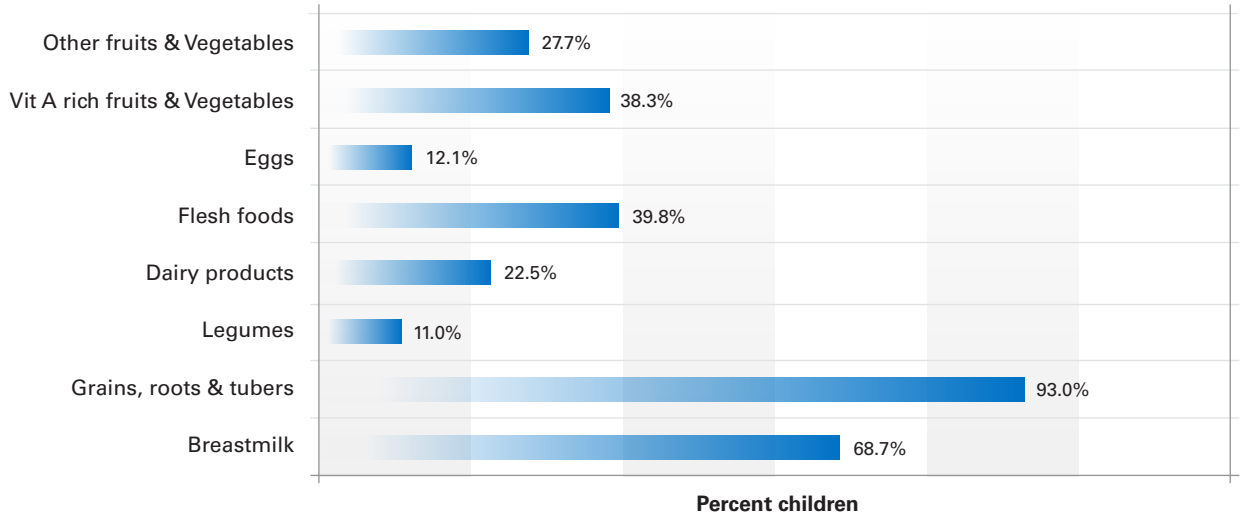
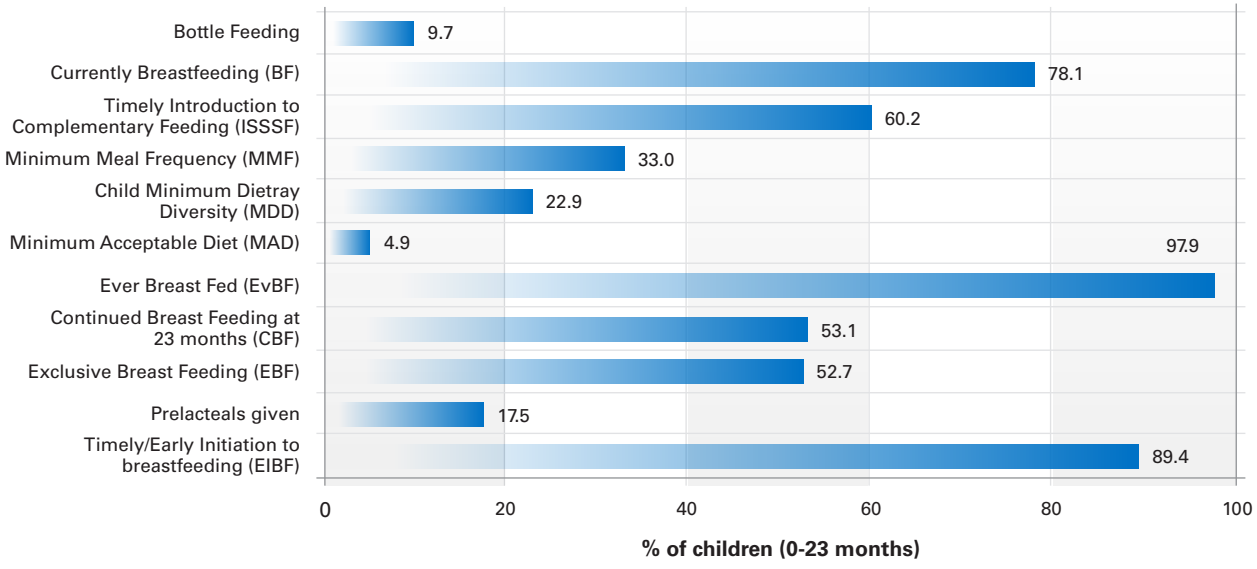


Figure 15: National rates for key infant and young child feeding indicators – SLNNS 2021



6.7.4 Unhealthy food consumption among children 6–23 months

The consumption of sweet foods such as chocolates, candies, pastries, cakes, cookies, biscuits, or frozen treats like ice cream and popsicles was 11.7 per cent; while the consumption of fries such as chips, crisps, puffs, French fries, fried dough, and instant noodles among children 6-23 months was 6.7 per cent (see **Table 61**).

Table 61: Unhealthy food consumption among children 6-23 months by district

	Unhealthy food consumption (UFC) for children 6-23 months				
	Sweet foods		Fries		Total
	n	%	n	%	N
Kailahun	63	33.5	28	14.9	188
Kenema	46	17.8	33	13.0	257
Kono	37	23.4	12	7.8	157
Bombali	19	10.7	13	7.3	181
Falaba	4	8.6	2	3.8	52
Koinadugu	4	4.8	3	3.2	89
Tonkolili	43	11.7	15	4.2	363
Kambia	2	1.7	1	0.6	143
Karene	10	7.8	8	6.1	127
Port Loko	10	3.7	5	1.9	256
Bo	41	14.3	31	10.7	286
Bonthe	2	2.1	1	0.7	71
Moyamba	2	1.1	2	1.1	160
Pujehun	18	13.1	7	5.0	135
WA-Rural	23	14.8	17	10.8	158
WA-Slums	25	14.2	14	8.0	176
WA-Urban	22	6.0	22	6.0	361
Total	**370**	**11.7**	**213**	**6.7**	**3160**

Higher intakes of commercially prepared food products and other unhealthy foods that are energy-dense, nutrient-poor, and high in salt, sugar, saturated and trans-fatty acids, added sugars, fats, salt, or refined carbohydrates, have been associated with increased obesity risk and stunting among children.

These foods contribute no nutrients other than energy and may displace more nutritious foods or limit the intake of essential vitamins and minerals (WHO, 2003; WHO, 2005). For instance, unhealthy snack food and beverage consumption have recently been associated with a higher risk of nutrient inadequacy and lower length-for-age among one-year-olds (Pries et al., 2019).

6.8 Water, sanitation and hygiene (WASH)

6.8.1 Water access and quality

At the time of the survey – during the rainy season, most households reportedly drew their drinking water from protected sources (see **Table 55**). This includes boreholes (32.9 per cent), household connections or public standpipes (22.6 per cent) and protected shallow wells (13.6 per cent) considered to be safe (75.8 per cent). Many other households, however, draw their drinking water from unprotected sources such as rivers/streams/dams (20.5 per cent), shallow open wells (3.0 per cent) or rainwater (see **Table 62**).

Table 62: Households' main source of drinking water by district

	Main source of drinking water																		
	Borehole/ tube well		Protected shallow well		Open shallow well		Protected spring		River/ stream/ spring/dam		HH connection/ Public standpipe		Tanker/ truck/cart		Bottle/ sachet water		Rainwater		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Kailahun	395	55.0	74	10.2	19	2.6	1	0.2	120	16.7	105	14.6	0	0.0	2	0.3	2	0.3	719
Kenema	548	51.9	157	14.8	6	0.6	2	0.1	163	15.4	170	16.1	5	0.4	5	0.4	2	0.1	1056
Kono	196	34.7	105	18.7	9	1.7	5	0.8	101	17.8	139	24.7	1	0.2	6	1.0	3	0.5	564
Bombali	198	36.1	60	10.9	5	0.9	11	2.0	162	29.4	95	17.2	1	0.2	12	2.2	5	0.9	549
Falaba	44	14.7	15	5.0	59	19.9	1	0.5	154	51.6	23	7.8	0	0.0	0	0.0	1	0.5	299
Koinadugu	44	14.1	68	21.7	64	20.6		0.2	89	28.6	46	14.7	0	0.0	0	0.0		0.2	312
Tonkolili	301	27.7	191	17.6	54	5.0	48	4.4	264	24.3	211	19.4	0	0.0	3	0.3	14	1.3	1087
Kambia	203	38.0	107	20.0	20	3.8	1	0.2	182	34.2	17	3.2	0	0.0	2	0.5	1	0.2	533
Karene	84	22.3	67	17.8	1	0.4	1	0.2	165	43.4	56	14.8	0	0.0	1	0.4	3	0.7	379
Port Loko	502	52.5	140	14.6	2	0.2	2	0.2	267	27.9	37	3.8	2	0.2	5	0.5	2	0.2	956
Bo	398	41.3	156	16.3	4	0.5	0	0.0	127	13.2	248	25.8	0	0.0	23	2.4	4	0.5	962
Bonthe	199	62.0	17	5.2	13	3.9	0	0.0	92	28.7	1	0.2	0	0.0	0	0.0	0	0.0	321
Moyamba	157	25.8	120	19.6	6	1.0	1	0.1	306	50.2	17	2.8	0	0.0	0	0.0	2	0.3	608
Pujehun	228	50.9	15	3.3	5	1.1	0	0.0	107	23.9	92	20.5	0	0.0	0	0.0	1	0.3	448
WA-Rural	182	29.0	159	25.3	12	1.9	9	1.4	2	0.3	212	33.7	2	0.3	51	8.1	0	0.0	628
WA-Slums	59	9.3	34	5.4	4	0.6	0	0.0	11	1.7	378	59.7	6	0.9	137	21.6	4	0.6	633
WA-Urban	105	6.5	108	6.7	69	4.3	0	0.0	81	5.0	787	48.8	7	0.4	445	27.6	10	0.6	1613
Total	**3843**	**32.9**	**1591**	**13.6**	**354**	**3.0**	**81**	**0.7**	**2393**	**20.5**	**2634**	**22.6**	**23**	**0.2**	**693**	**5.9**	**54**	**0.5**	**11666**

The majority have access to safe water sources (75.8 per cent), and it takes less than 30 minutes to fetch water (return trip including queuing/waiting) as recommended by SPHERE (69.2 per cent). The majority (98.8 per cent) of the assessed households reported taking drinking water treated both at the source and the household, and 86.9 per cent reported the drinking water had been appropriately treated by chlorination (see **Table 63**). Although the survey was conducted during the rainy season when water is available in the main water points or sources, this finding may be overestimated (from how the enumerators asked the question). However, reports from the WASH sector have reported a very low percentage of water treatment at the household level.

Table 63: Household's access to drinking water and water use

	Household has access to safe water source		HHs taking recommended time to access water (<=30 mins)		Households Treatment of Drinking Water				HHs meeting optimal water use		Total
					Any Water Treatment		Appropriate water treatment				
	n	%	n	%	n	%	n	%	n	%	N
Kailahun	577	80.3	444	61.8	716	99.7	705	98.0	415	57.7	719
Kenema	881	83.4	756	71.6	1051	99.6	934	88.5	692	65.6	1056
Kono	450	79.8	401	71.2	556	98.5	511	90.7	356	63.2	564
Bombali	376	68.5	496	90.2	542	98.7	492	89.6	265	48.1	549
Falaba	84	28.0	222	74.3	296	99.0	228	76.3	224	75.0	299
Koinadugu	158	50.6	263	84.2	308	98.9	254	81.4	212	67.9	312
Tonkolili	754	69.4	853	78.5	1051	96.7	1000	92.0	623	57.4	1087
Kambia	329	61.8	329	61.8	528	99.1	505	94.8	254	47.7	533
Karene	210	55.5	295	77.9	373	98.5	322	85.0	220	58.1	379
Port Loko	684	71.6	544	57.0	951	99.5	900	94.2	621	65.0	956
Bo	826	85.9	595	61.9	956	99.4	856	89.1	741	77.1	962
Bonthe	216	67.4	220	68.6	321	99.8	315	98.1	190	59.1	321
Moyamba	295	48.4	386	63.5	606	99.6	577	94.8	293	48.2	608
Pujehun	335	74.7	253	56.5	445	99.4	407	90.8	306	68.2	448
WA-Rural	613	97.6	406	64.6	616	98.0	428	68.1	489	77.9	628
WA-Slums	608	96.1	533	84.2	618	97.6	490	77.4	523	82.6	633

	Household has access to safe water source		HHs taking recommended time to access water (<=30 mins)		Households Treatment of Drinking Water				HHs meeting optimal water use		Total
					Any Water Treatment		Appropriate water treatment				
	n	%	n	%	n	%	n	%	n	%	N
WA-Urban	1445	89.6	1069	66.3	1591	98.7	1208	74.9	1323	82.0	1613
Total	**8842**	**75.8**	**8067**	**69.2**	**11525**	**98.8**	**10133**	**86.9**	**7746**	**66.4**	**11666**

All people should have safe and equitable access to enough water for drinking and personal & domestic hygiene, excluding water for washing clothes. Based on the size of the household, most 66.4 per cent). The assessed households met the recommended average water requirement for drinking, cooking, and personal hygiene of 15 litres/person/day in any household (SPHERE, 2011). However, distance to the water source, the time it takes to fetch water, including queuing time, and the number of water collecting and storage containers may limit access to enough water for household use. This is among the remaining 38.6 per cent of households that do not meet the daily minimum water requirement (see **Table 63**).

6.9.2 Access to sanitation facilities

Nearly two-thirds (62.6 per cent) of the assessed households nationally reported having access to sanitation facilities (latrine or toilet). Access to latrines was highest in WA-rural (89.7 per cent), WA-Urban (88.6 per cent) and Kenema (84.9 per cent) districts (see Table 64). Another 25.4 per cent used hole/bucket, while the remaining used open defecation in the bush (18.4 per cent) or open fields (7.2 per cent).

Table 64: Households' access to sanitation facilities

	Bush		Open Field		Hole/bucket		Latrine		Total
	n	%	n	%	n	%	n	%	N
Kailahun	139	19.7	36	5.1	105	14.9	475	67.1	707
Kenema	120	11.5	21	2.0	99	9.5	887	84.9	1045
Kono	60	11.1	22	4.0	183	33.7	352	64.7	543
Bombali	135	24.9	10	1.9	114	20.9	382	70.1	544
Falaba	72	24.5	5	1.9	145	49.4	129	44.1	293
Koinadugu	61	20.1	10	3.4	168	55.3	133	43.8	303
Tonkolili	215	20.6	80	7.7	356	34.1	625	59.9	1044

	Bush		Open Field		Hole/bucket		Latrine		Total
	n	%	n	%	n	%	N	%	N
Kambia	170	32.3	123	23.2	165	31.3	207	39.3	528
Karene	101	27.0	18	4.9	115	30.6	253	67.5	375
Port Loko	348	36.6	213	22.4	470	49.4	181	19.0	951
Bo	222	23.3	1	0.2	104	10.9	699	73.3	953
Bonthe	95	29.8	68	21.3	115	36.3	90	28.3	318
Moyamba	244	40.5	197	32.6	197	32.6	95	15.8	604
Pujehun	127	28.8	18	4.2	62	14.0	298	67.6	441
WA-Rural	3	0.4	0	0.0	87	13.9	561	89.7	625
WA-Slums	3	0.5	3	0.5	230	37.3	412	66.9	616
WA-Urban	2	0.2	2	0.2	201	12.6	1412	88.6	1593
Total	**2118**	**18.4**	**829**	**7.2**	**2915**	**25.4**	**7190**	**62.6**	**11484**

6.9.3 Hygiene practices

Most households have their members wash hands with running water after defecation (97.4 per cent) or before eating (90.1 per cent). However, less than half of the assessed households reportedly have their members wash their hands before cooking (21.6 per cent) and, where applicable, before feeding the baby (11.1 per cent), with the rates varying from district to district (see **Table 65**). Slightly more than half (53.8) of the assessed households reported using soap while washing hands. However, only 12.2 per cent of the households had their members consistently wash their hands at all three critical times (after defecation, before eating and before cooking/preparing food).

Table 65: Household's handwashing practices by district

	Handwashing & Hygiene Practices														
	After defecation		Before cooking		Before eating		Before feeding baby		Any other times		Handwashing at critical times		Handwashing with soap		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N
Kailahun	714	99.3	188	26.2	656	91.2	81	11.2	691	96.1	118	16.4	262	36.4	719
Kenema	1032	97.7	309	29.3	998	94.5	155	14.7	1012	95.8	195	18.4	566	53.6	1056
Kono	522	92.5	161	28.5	518	91.8	118	21.0	516	91.5	79	14.0	363	64.3	564
Bombali	539	98.1	168	30.6	483	88.0	54	9.8	478	87.0	88	15.9	317	57.8	549
Falaba	283	94.8	15	5.0	221	74.0	10	3.3	238	79.6	2	0.8	141	47.1	299
Koinadugu	302	96.8	16	5.0	231	74.2	11	3.6	257	82.4	5	1.5	122	39.1	312
Tonkolili	1037	95.5	363	33.4	904	83.2	208	19.1	887	81.7	165	15.2	639	58.8	1087
Kambia	529	99.4	45	8.5	504	94.5	15	2.7	528	99.1	10	1.8	185	34.7	533
Karene	370	97.8	134	35.4	341	90.0	67	17.6	333	87.9	68	18.0	238	62.9	379
Port Loko	954	99.8	83	8.6	925	96.8	30	3.2	937	98.0	33	3.5	273	28.6	956
Bo	925	96.2	297	30.9	855	88.9	183	19.0	877	91.2	216	22.5	405	42.1	962
Bonthe	311	96.8	17	5.2	284	88.3	19	6.0	299	93.2	2	0.5	134	41.6	321
Moyamba	598	98.2	31	5.2	587	96.5	28	4.6	599	98.4	10	1.6	138	22.7	608
Pujehun	427	95.3	137	30.6	405	90.3	90	20.0	419	93.5	88	19.5	190	42.4	448
WA-Rural	625	99.6	177	28.1	547	87.0	84	13.4	555	88.3	99	15.7	448	71.3	628
WA-Slums	619	97.8	120	19.0	582	91.9	55	8.7	590	93.2	67	10.6	487	76.9	633
WA-Urban	1572	97.5	263	16.3	1471	91.2	86	5.3	1502	93.2	182	11.3	1371	85.0	1613
Total	**11360**	**97.4**	**2523**	**21.6**	**10512**	**90.1**	**1294**	**11.1**	**10717**	**91.9**	**1426**	**12.2**	**6278**	**53.8**	**11666**

7.

DISCUSSION

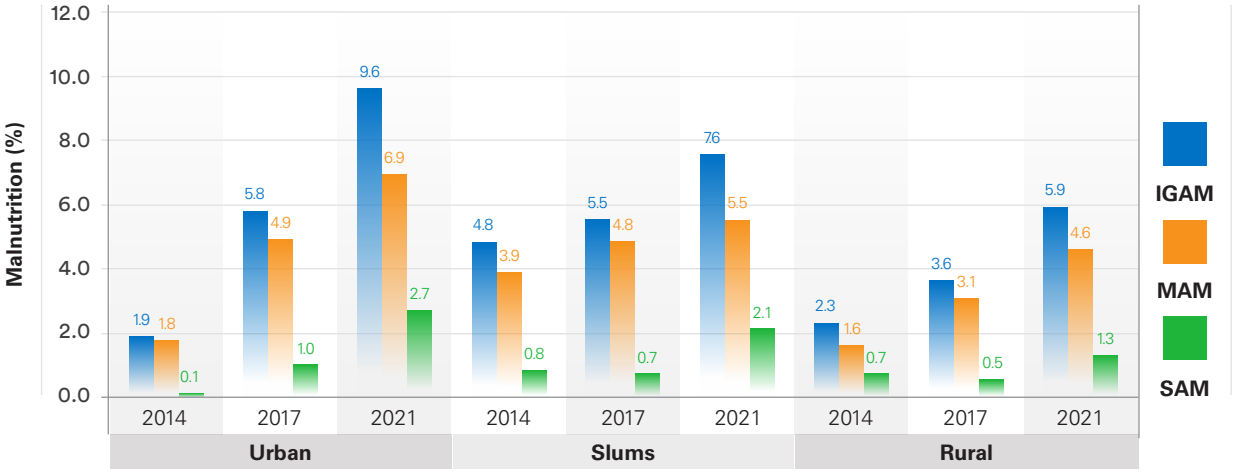
7.1 Nutrition situation

7.1.1 Current prevalence of malnutrition

The prevalence of global acute malnutrition (GAM) rate of 5.2 per cent (**95 per cent** CI: 4.7-5.8), moderate acute malnutrition of **4.2 per cent** (95 per cent CI: 3.7-4.7), and severe acute malnutrition (SAM) rate (WHZ<-3 or Oedema) of **1.0 per cent** (95 per cent CI: 0.8-1.3) in the Sierra Leone National Nutrition Survey 2021. This indicates a ***poor*** nutrition situation phase (GAM rate of 5.0-9.9 per cent) of malnutrition in the country's population according to WHO (2006) classification (see Table 59) and ***medium*** according to UNICEF (2008) classification (see **Table 66**). The national prevalence of acute malnutrition using MUAC was 12.4 per cent (95 per cent CI: 10.9-13.9), 10.7 per cent (95 per cent CI: 9.5-11.9), and 1.8 per cent (95 per cent CI: 1.4-2.1) among adolescent girls, adolescent boys and WRA respectively; further the wasting prevalence was 5.5 per cent (95 per cent CI: 4.5-6.5) among pregnant/lactating women. The national prevalence of acute malnutrition/underweight (BMI<18.5 kg/m2) was 2.4 per cent (95 per cent CI: 1.8-3.1), 2.9 per cent (95 per cent CI: 2.3-3.5), and 4.8 per cent (95 per cent CI: 4.3-5.3) among adolescent girls, adolescent boys and WRA respectively. The prevalence of overweight and obesity was 0.7 per cent and 0.1 per cent, respectively, in adolescent girls; 0.9 per cent and 0.0 per cent, respectively, in adolescent boys; and very high at 21.4 per cent and 8.5 per cent, respectively, among the assessed WRA, indicating the double burden of malnutrition in the general population.

When compared to the immediate past assessment of 2017, the results indicate the situation has not changed from the *poor* phase with respective GAM, MAM, and SAM rates of 5.1 per cent (95 per cent CI: 4.6-5.6), 4.0 per cent (95 per cent CI: 3.6-4.5) and 1.0 per cent (95 per cent CI: 0.8-1.3). Although the national prevalence did not change, steady deterioration was observed in the Western Area districts of Urban, Slums and Rural domains, where GAM rates changed from 5.8per cent (95 per cent CI: 4.1-8.1), 5.5 per cent (95 per cent CI: 3.6-8.2) and 3.6 per cent (95 per cent CI: 2.2-5.9) in 2017 to 9.6 per cent (95 per cent CI: 6.1-14.8), 7.6 per cent (95 per cent CI: 5.2-11.1), and 5.9 per cent (95 per cent CI: 3.7-9.3) respectively (**Figure 16**). It is remarkable to note that the Western Area and indeed the Urban areas of the country have since 2017 experienced multiple shocks with devastating effects. These include crowding from rapid rural-Urban migration, food shortage, loss of income and employment from COVID-19, mudslides and landslides, floods, and watery diarrhoea outbreaks, besides Ebola outbreak in the past decade. The increase of acute malnutrition in those areas with a predominant cash economy may correspond to the sudden increase in income poverty due to sudden shocks such as COVID-19.

Figure 16: Changes in acute malnutrition in Western Area domains (2014-2021)



Significant increases in GAM rates were also noted in Bonthe (from 4.1 per cent to 6.5 per cent) and Pujehun (from 4.8 per cent to 5.6 per cent) from acceptable or low nutrition in 2017 to poor or medium nutrition situation in 2021. However, Koinadugu (from 5.7 per cent to 4.3 per cent), Bombali (from 5.9 per cent to 4.3 per cent) and Tonkolili (from 5.5 per cent to 4.8 per cent) recorded an improvement in nutrition situation from poor/medium (GAM rate of 5-9.9) to acceptable/low (GAM rates of <5 per cent) levels. The remaining districts showed no significant change in phase or GAM rates.

Most districts in the southern province (such as Bonthe, Pujehun) and eastern provinces (such as Kailahun and Kenema) that had poor or deteriorated acute nutrition (GAM 5-9.9 per cent) were also reported to have poor food insecurity (>60 per cent). This is in the most recent comprehensive food security and vulnerability assessment (CFSVA 2020). However, this is not the case for the Falaba and Karene districts of Northern Province, where high levels of food insecurity were reported but have low GAM rates in the SLNNS 2021. Similarly, WA districts also reported low levels of food insecurity (<30 per cent) in the CFSVA but had the highest rates of GAM (6-10 per cent).

Table 66: WHO classification of severity of malnutrition in a community

WHO Classification of severity of malnutrition in a community			
Type of Malnutrition	**Prevalence cut-off**	**Mean z-scores**	**Severity of Malnutrition**
Prevalence of Global Acute Malnutrition (WHZ<-2 and/or Oedema)	<5%	>-0.40	Acceptable
	5.0-9.9%	-0.40-0.69	Poor
	10.0-14.9%	-0.70-0.99	Serious
	>=15%	<-1.00	Critical
Prevalence of Underweight (WAZ<-2)	<10%	-	Low (Acceptable)
	10.0-19.9%	-	Medium (Poor)
	20.0-29.9%	-	High (Serious)
	>=30%	-	Very high (Critical)
Prevalence of Stunting (HAZ<-2)	<20%	-	Low (Acceptable)
	20.0-29.9%	-	Medium (Poor)
	30.0-39.9%	-	High (Serious)
	>=40%	-	Very high (Critical)

Table 67: UNICEF 2018 classification for severity of malnutrition by prevalence among children under-five[12]

Prevalence of Wasting (WHZ)	Prevalence of Stunting (HAZ)	Prevalence of Overweight (WAZ)	Label
<2.5%	<2.5%	<2.5%	**Very low**
2.5-<5%	2.5-<10%	2.5-<5%	**Low**
5-<10%	10-<20%	5-<10%	**Medium**
10-<15%	20-<30%	10-<15%	**High**
≥15%	≥30%	≥15%	**Very High**

According to the UNICEF framework, malnutrition may result from inadequate food intake or a recent episode of illness. Wasting, the main indicator of acute malnutrition, occurs because of recent rapid weight loss or a failure to gain weight within a relatively short period. Wasting occurs more commonly in children under five years old, often during the stage when complementary foods are being introduced. Children are more susceptible to infectious diseases, explaining why acute malnutrition

12 WHO Cut-off Points and Summary Statistics www.who.int/nutgrowthdb/about/introduction/en/index5.html

was (p<0.05) higher among the younger (6-29 months) than the older children (30-59 months) and the breastfeeding age than the non-breastfeeding age. The younger age group includes the critical breastfeeding age (6-23.9 months), during which the child experiences multiple challenges regarding the quality and quantity of food consumed and frequent infections resulting from poor feeding practices and conditions.

Recovery from wasting is relatively quick once optimal feeding, health, and care are restored. Wasting occurs because of deficiencies in macronutrients (fat, carbohydrate, and protein) and some micronutrients (vitamins and minerals). When combined with bilateral Oedema (which presents as swelling in both feet), an essential indicator for determining the presence of Severe Acute Malnutrition or kwashiorkor, the Global Acute Malnutrition prevalence is a universal measure of the severity of malnutrition and the health of a community. Oedema results from excessive extracellular fluid accumulation because of severe nutritional deficiencies and is a serious cause for concern. The prevalence of combined Global Acute Malnutrition (cGAM) was identified by low WHZ, presence of Oedema and low MUAC as WHZ<-2 and MUAC<125 mm, and Oedema was higher (6.6per cent; CI: 5.9-7.2) than the prevalence of GAM (WHZ and Oedema) alone (5.2 per cent; 95 per cent CI: 4.7-5.8) or MUAC and Oedema alone (2.7 per cent; 95 per cent CI: 2.3-3.1), indicating that more cases can be identified using both criteria. All children identified with bilateral Oedema and or low MUAC were referred immediately for their management and treatment at the nearest health facility using a referral form or slip (**Annex H**). Forty-nine cases were identified during the SLNNS 2021 since the presence of bilateral Oedema is classified as severe malnutrition.

Stunting, an indicator of chronic malnutrition refers to linear growth retardation and cumulative growth deficits in children. It reflects the failure to grow in stature, which occurs because of inadequate nutrition over a longer period. Stunting – especially stunting of children below five years of age – is thus a stronger indicator of hunger and endemic poverty than underweight[13]. Stunting is common in areas of low food security, and acute malnutrition is instigated by economic and agricultural production, lack of access to diversified diets, consumption of insufficient essential nutrients, and health-related factors. The national prevalence of global stunting (HAZ<-2) of **26.2 per cent** (95 per cent CI: 25.0-27.5), with 19.5 per cent (95 per cent CI: 18.5-20.6) moderate and 6.7 per cent (95 per cent CI: 6.1-7.4) severely stunting indicates *poor* or *high* situation of chronic malnutrition according to WHO/UNICEF Classifications respectively. There was a significant improvement (reduction in stunting rate) from the 2017 findings of **31.3 per cent** (95 per cent CI: 30.0-32.6); 21.3 per cent (95 per cent CI: 20.3-22.3) moderate, and 10.0 per cent (95 per cent CI: 9.2-10.7) for global, moderate, and severe stunting respectively. The consequences of stunting can be looked at in the short term in terms of mortality from infections, in particular, pneumonia, malaria, and diarrhoea. In the medium term, cognitive, education and behavioural aspects of child development, and in the long term, the risk of poor health and lower attainment of socio-economic productivity throughout a lifetime are irreversible.

7.1.2 Trends of malnutrition

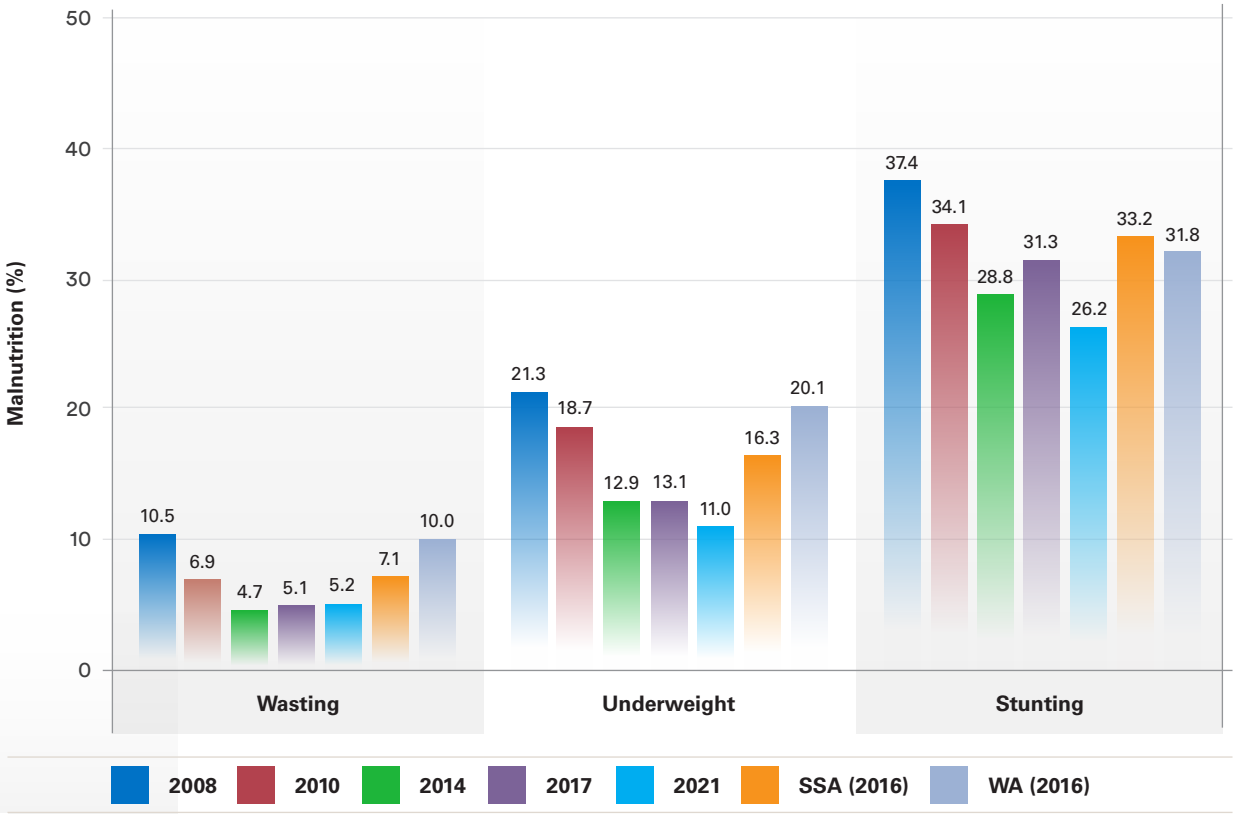
The analysis of trends in the prevalence of malnutrition has generally shown a decrease (see **Figure 16**) in acute and chronic (stunting) since 2008. The rates are also better than the regional prevalence in Sub-Saharan Africa (SSA) and West Africa (WA) subregions, as shown in **Figure 15**. A meta-analysis of child malnutrition from 10-year demographic and health surveys (2006-2016) in 32 countries of Sub-Saharan Africa (SSA) reported regional and subregional wasting prevalence of 7.1 per cent (95 per cent CI: 6.0-8.2) and 10.0 per cent (95 per cent CI: 8.1-11.9) in SSA and WA respectively;

13 The Nutrition Challenge in Sub-Saharan Africa, Regional Bureau for Africa, UNDP 2012.

stunting prevalence of 33.2 per cent (95 per cent CI: 30.4-36.1) and 31.8 per cent (95 per cent CI: 28.1-35.5); and underweight prevalence of 16.3 per cent (95 per cent CI: 12.8-19.9) and 20.1 per cent (95 per cent CI: 15.9-24.4) in SSA and WA respectively (Akombi et al., 2017).

The gender differential levels observed in the results with a higher prevalence of chronic malnutrition seen in boys compared to girls cannot be explained by this single survey. They would require further study on causal analysis and Knowledge, Attitude and Practices (KAP) analysis for any preferential treatment or exposure of the boy child at this critical age (6-59 months).

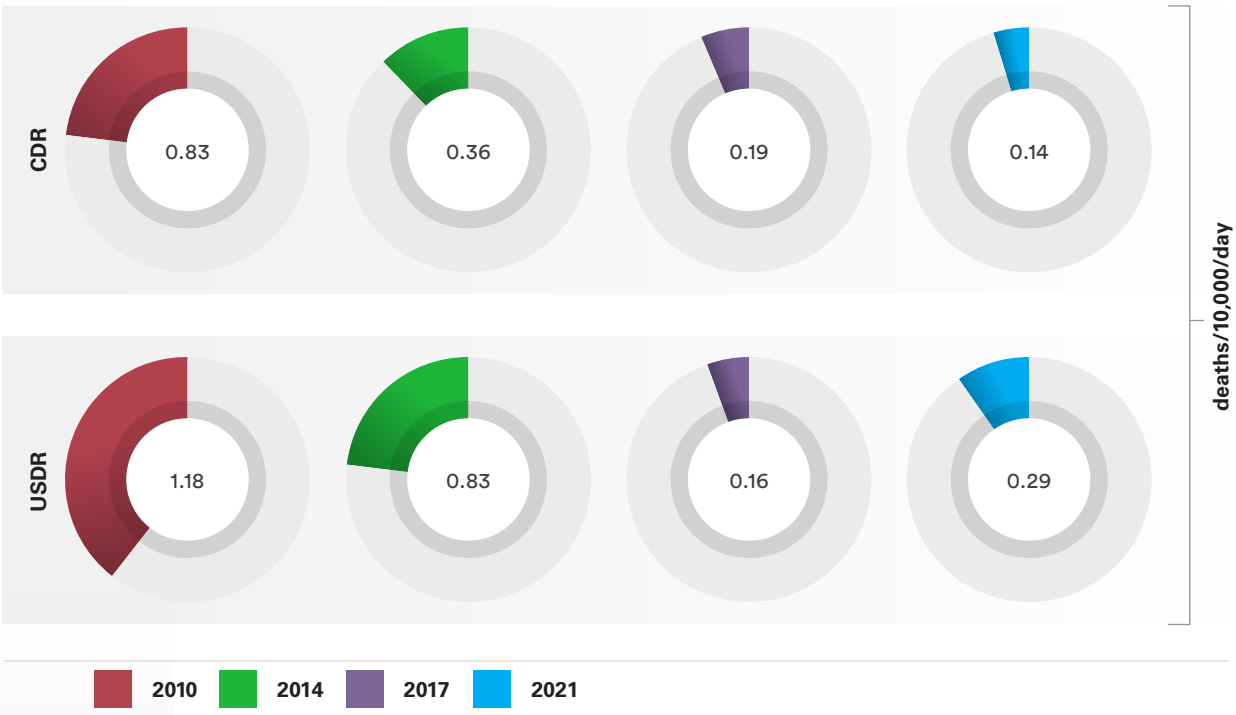
Figure 17: Trends in levels of malnutrition in Sierra Leone (SLNNS 2021) compared with regional levels



7.2 Death rates

The retrospective crude and under-five death rates of **0.14** (95 per cent CI: 0.11-0.18) and **0.29** (95 per cent CI: 0.20-0.44) are below the SPHERE *alert* thresholds of 1/10,000/day and 2/10,000/day respectively. The findings indicate a stable situation from the CDR of 0.19 deaths/10,000/day and U5DR of 0.16 under five deaths/10,000/day reported in SLNNS 2017 and the 2010 rates of 0.83 (95 per cent CI: 0.75-0.91) and 1.18 (95 per cent CI: 1.03-1.35) for CDR and U5DR respectively. Most deaths by the recall were caused by illnesses (69.9 per cent) and occurred in their last residences (75.3 per cent). **Figure 18** shows that mortality rates have remained within the SPHERE acceptable thresholds since 2010.

Figure 18: Trends in mortality rates (2010-2021) in Sierra Leone



7.3 Infant and young child feeding practices

Breastfeeding is a widespread practice among the population, with nearly all the assessed children 0-23 months ever breastfed (97.9 per cent), 89.4 per cent timely initiated early breastfeeding, and 78.1 per cent still breastfeeding at the time of the survey, although only 52.7 per cent of 0-6 months breastfed exclusively. Cumulative evidence suggests that infants who receive mixed feeding (foods and liquids in addition to breast milk) before they are six months are nearly three times more likely to die than those exclusively breastfed (Sanker et al., 2015). Exclusive breastfeeding protects against diarrhoea, lower respiratory infections, ear infections, childhood overweight, and obesity (Victora et al., 2016). The breastfeeding rate drops steadily with age; only 53.1 per cent of continued breastfeeding at 23months. Breastfeeding guarantees food and fluid security in infants for the first six months and provides active immune protection. There is, however, a significant variation in rates of breastfeeding indicators and some districts, especially Western Area Urban, Moyamba, Bonthe and Tonkolili, would require more effort to promote optimum breastfeeding benefits.

Complementary foods are still introduced to many children (39.8 per cent) prematurely before six months or late after six months. This is contrary to the WHO's recommendation that mothers exclusively breastfeed their children (give an infant no other liquids or foods apart from breast milk up until six months of age). Early introduction to complementary foods or

failing to exclusively breastfeed a child exposes the child to unhygienic feeding conditions and increases their vulnerability to infection and other illnesses. However, the late introduction of solid and semisolid foods denies the child the extra caloric and nutrient requirements required for child growth and vitality besides breastmilk beyond six months old. This is especially a greater risk in the congested Slums and Urban and rural environments in some districts such as Bonthe, Moyamba, Falaba, Koinadugu and Port Loko, where access to sanitation facilities and safe drinking water is poor. In these districts, regular handwashing with soap is not universally practised making the children more vulnerable to diarrheal infections.

More than three-quarters of the children do not receive a diversified diet (minimum dietary diversity), with poor monotonous diets reported widely in all the districts but most particularly in Koinadugu, Falaba, Port Loko, Bonthe and Pujehun. More than two-thirds of the children (6 -24 months) assessed do not meet the recommended minimum meal frequency for their age and breastfeeding status, and few (38.3 per cent) are fed on vitamin-A-rich foods. Most importantly, very few children 6-23 months are fed a diversified diet at the right frequency (the prevalence of minimum acceptable diet is only 4.9 per cent).

Poor breastfeeding and complementary feeding habits expose children to morbidity, malnutrition and even death. The rates of acute and chronic malnutrition higher among the breastfeeding age indicate the effect of sub-optimal IYCF practices among the population.

7.4 Possible factors associated with malnutrition in Sierra Leone

In Sierra Leone, like many other developing countries in the region, and based on the UNICEF conceptual framework of malnutrition, morbidity and dietary intake remain the immediate causes of malnutrition underlain by food insecurity, poor maternal and childcare (including poor diversity and quality of diet and inadequate child feeding) and poor or unhygienic environment. Morbidity and malnutrition have an interchangeable cause-effect relationship and may result in the mortality of affected groups in the population.

Illness and infection affect nutrition by reducing appetite for adequate food intake and the metabolism and utilization of the nutrients already ingested into the body. Frequent illnesses were reported in nearly one in every eight assessed children from one or more communicable childhood diseases (e.g., fever, cough, diarrhoea, among others). This is detected in the two weeks before the assessment is a possible contributive factor to the poor nutrition situation. MoHS also enlists malaria and pneumonia as the commonly reported causes of morbidity in health facilities during the rainy season. Morbidity levels are aggravated by the poor WASH conditions in many parts of the country, characterized by poor access to safe drinking water, lack of sanitation facilities and poor hand-washing practices at critical times.

Inadequate food consumption directly results in nutrient intake deficits and contributes significantly to poor nutrition. Many food insecure households may not consume sufficient food in terms of quantity and variety of nutrients for health and vitality. Although this survey did not include food security indicators, dietary diversity and IYCF analysis reported high consumption of bland, starchy staple diets. However, poor consumption of iron-rich animal source foods such as milk, meat, and eggs by households across the districts, and very few (4.9 per cent) children eat the minimum acceptable diet that meets both diversity (quality) and frequency (quantity) of the diet. In addition, increasing consumption of unhealthy food and snacks among adolescents and women is likely to be contributing to increasing levels of overweight and obesity, especially in Urban areas.

8.

CONCLUSIONS & RECOMMENDATIONS

8.1 Conclusions

In conclusion, the nutrition situation in the country is *poor*, with global acute malnutrition (GAM) rate of **5.2 per cent** (95 per cent CI: 4.7-5.8), underweight of **11.0 per cent** (95 per cent CI: 10.1-12.0) and stunting rate of **26.2 per cent** (95 per cent CI: 25.0-27.5). The crude and under-five mortality rates of **0.14** (95 per cent CI: 0.11-0.18) and **0.29** (95 per cent CI: 0.20-0.44) remain below the SPHERE *alert* levels. Although the levels of both wasting and stunting have shown an improving trend in the previous national surveys, the current survey has mixed findings. There are stagnated wasting levels but reduced stunting levels considered from s*erious/very high* phase (>30 per cent) to *poor/high* (20-29.9 per cent) chronic malnutrition according to WHO/UNICEF Classification. These current rates were equivalent to 58,380 wasted children, 123,497 underweight children and 294,147 stunted children, respectively, in 2021, considering a total population of 7,534,883 persons and an under-five population of 1,122,698 children.

Although the national prevalence did not change, the deteriorating trend of acute malnutrition observed in the Western Area districts of Urban, Slums and Rural domains and nutrition programming need to focus on the WA and other Urban areas. The country's Urban areas have experienced multiple shocks in the immediate and medium past, including rapid rural-Urban migration, unemployment, food inaccessibility due to COVID-19, mudslides and landslides, and floods.

The existence of under and over-nutrition in children, adolescent girls and boys, and women of reproductive age indicates the emerging double burden and complexity of malnutrition in the country. Concerning this phenomenon of the double burden of nutrition is the substantial consumption of unhealthy foods – savoury and fried snacks, sweets and sugar-sweetened beverages reported among adolescent girls (>25 per cent); among adolescent boys (>25 per cent) and WRA (>20 per cent). There is also low consumption of eggs in the diets; further studies would need to find reasons for this. The national prevalence of overweight and obesity based on BMI of non-pregnant and lactating women is particularly worrying, especially in Western districts, and requires timely intervention.

Key underlying factors affecting the nutritional status of the children, i.e., morbidity, food insecurity, poor childcare, lack of safe drinking water and limited sanitation and hygiene facilities, remain key risk factors. However, it is important to note that malnutrition is multifaceted and chronic malnutrition is hinged on the basal socio-economic, education and cultural structures. The unmet target of reducing the prevalence of stunting from 25.7 per cent to 11.7 per cent by 2020 as per Nutrition for Growth (N4G), commitments that GoSL undertook in 2013 required continued concerted and integrated efforts among all the relevant sectors in the country. Similarly, by 2025, the internationally agreed targets on stunting and wasting in children under-five years and addressing the nutritional needs of adolescent girls, pregnant and lactating women, and older persons as part of the 2030 Agenda for Sustainable Development require renewed commitments and comprehensive stunting reduction strategies.

8.2 Recommendations

The **country's poor/medium acute nutrition and serious and high chronic nutrition are attributed to multiple** interrelated factors that call for continued integrated interventions. These efforts should address both immediate needs and develop long-term strategies to enhance access to public health services; support to sustain livelihood systems and social protection mechanisms. Specific recommendations include:

Immediate Interventions

- Maintain interventions to prevent all forms of malnutrition, including wasting and stunting. Maintain nutrition programmes for rehabilitation of acutely malnourished children through sustained active case finding and early detection, continued self-referrals through scale-up of the Family MUAC approach, and capacity building of the existing CHC, CHP and MCHP staff and the community (CHW/MSG networks) to manage and treat acutely malnourished children. Improve treatment services, especially MAM services and quality of care, especially in Western Area domains (rural, Urban and Slums), Bonthe and Pujehun.
- Treatment of acute malnutrition among WRA, especially the pregnant and lactating women, treats wasting among WRA and contributes to preventing low birth among newborns. This, considering that wasting is highest among children under 18 months, and low birth weight is a possible contributing factor to child malnutrition, especially if breastfeeding practices in the first 6 months.
- Facilitate sharing of experience and best practices across districts and replicate the practices from districts that have had a good impact on other districts.
- Intensify supportive supervision with a focus on mentoring HW staff on the correct use of anthropometric tools, collection and recording and maintaining MUAC and weight-for-height z-scores for admissions for maximum identification of malnutrition cases. Encourage caregivers to take their children for regular growth monitoring programme (GMP) services and self-referral through the Family MUAC approach.
- Implement the strategy developed from the qualitative assessment for IYCF in the country.
- Based on the Nutrition Strategy 2020-2030, with emphasis on a systems approach, integrate social protection schemes to improve household food security among vulnerable groups (e.g., promoting backyard gardening and livestock keeping) with health and nutrition education and counselling activities on good IYCF practices. This can be done through media targeting caregivers to promote exclusive breastfeeding, appropriate young child feeding, diet diversification and meal frequency, and improvements in household hygiene. This includes health-seeking behaviours and practices through women support groups within the communities advocating for optimal IYCF. Continued health education to sensitize the community on the domestic treatment of drinking water and proper disposal of human faecal waste to avoid contamination of water sources is encouraged.
- Introduce social protection interventions, particularly for the Urban poor whose livelihood depends on cash incomes. Promote care practices or 'parenting' for Urban and rural households differently and with particular attention to those children who do not live with biological parents.

© UNICEF/Sierra Leone/2022

- Improve and popularize adequate consumption of locally available foods using the complimentary food recipe book.
- Scale up the BFHI activities.

Long term Interventions

- Implementation of the proven interventions based on the outcomes of operational research, such as social protection measures and nutrition-sensitive livelihood/agricultural interventions (Bhutta et al., 2015).
- Evidence creation: an in-depth analysis of adolescent dietary practices and influencers (including the environment – food market and parenting arrangement); a formative study on overweight and obesity – dietary practices, lifestyle (including physical activity). Conduct a qualitative study to understand the factors, barriers and promoters affecting adolescent malnutrition.
- Implement programmes for managing and preventing the emerging overweight and obesity in adolescents and adults, such as behaviour change communication (BCC) for adopting and maintaining lifestyle behaviours that contribute to dietary intake and physical activity. It is critical to strengthen nutrition counselling within the ANC package considering the high prevalence of overweight among pregnant women. Design nutrition programs incorporating adolescents in schools, religious institutions, colleges and communities; use FBDs, and agricultural clubs. Advocate for National surveys to investigate the prevalence of anaemia among adolescent girls. Incorporate practice-based nutrition education in the school curriculum.

- Review policies relating to nutrition and dietary diversity based on the new evidence presented by the SMART survey. More specifically, the survey data should be used in the process of reviewing the Nutrition for Growth (N4G) targets to pave the way for integrated multisectoral and multistakeholder coordination to address undernutrition in Sierra Leone.
- Improve the policy environment to promote and deliver IYCF practices and services by ensuring the availability of legislation on the Regulation of the Marketing of breast milk substitutes. Implementation/roll out of the Infant feeding policy and the breastfeeding Act.
- In-depth analysis of operational research to assess feasibility and cost-effectiveness of nutrition-sensitive cash transfer programme, nutrition-sensitive livelihood and agriculture programme (incl. family farming), school health and nutrition interventions (such as nutrition education with practicum – agriculture and food preparation).
- Develop strategies for; Urban nutrition and adolescent nutrition for Sierra Leone.
- Strengthen the national nutrition surveillance system (including family MUAC assessments linked to health facilities) with emergency response mechanisms and triggers in integration with HMIS to monitor the nutrition trends better and implement nutrition-sensitive and nutrition-specific programmes. Given the prevailing COVID-19 situation and recurrent food deficit during hunger gap periods, encourage partners to support periodic annual rapid SMART or LQAS surveys in specific intervention districts, especially during the lean seasons, to provide timely data for monitoring and any early warning signs. Continue the 3-year periodic national nutrition SMART surveys to provide data in between 3-year periodic full SMART surveys on the nutrition situation and assess the progress toward global, regional, and national commitments to eliminate hunger in the country.
- The communities are to be trained on sanitation and maintenance of the water systems to address the issues of limited access to safe water. Sanitary facilities, including building latrines provision at the household level in settled populations or strategic locations in the bomas and villages for appropriate disposal of human excretal waste. This should be coupled with an awareness of the need to use such facilities.
- Assessing WASH indicators during the peak of rainy seasons is not sufficient. The next survey questions should differentiate WASH sources/facilities during both dry and rainy seasons.

9.
ANNEXES

Annex A: Household Composition & Demography Tool

DEMOGRAPHY & MORTALITY QUESTIONNAIRE

DATE OF INTERVIEW: [D][D]/[M][M]/ [Y][Y]				GPS Coord: _____					
REGION:		DISTRICT:		NAME OF INTERVIEWER:					
CHIEFDOM				VILLAGE:					
CLUSTER NO. [ ][ ][ ]		TEAM NO. [ ][ ]		HHNO [ ][ ]					
7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	7.10
No.	**Name**	**Sex** (M/F)	**Age** (years)	**Joined on or after:**	**Left on or after:**	**Born on or after:**	**Died on or after:**	**Cause of death** **1** = unknown **2** = injury **3** = illness	**Location of death** **1** = current location **2** = during migration **3** = in place of last residence **4** = other, specify
				27/04/2021					
				(Start date of the recall period - DD, MM, 2021)					
a) List all the people that slept in this household last night.									
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
b) List all the people that slept in this household on the first night of the recall period (FILL IN DATE/EVENT) but did NOT sleep in the household last night.									
1									
2									
3									
4									
5									
6									
c) List all the people that slept in this household on the first night of the recall period but have since died.									
1									
2									
3									
4									

Date (DD/MM/YY): ...../...../..... Cluster No:..... Team No:..... Region: ..... District:..... Chiefdom: ..... Village: .....

	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10
HH NO	HH **size** (No. of people living in HH)	Is the HH head male or female? **1** = Male **2** = Female	What is the household's main **source** of drinking water? **1** = Borehole/ tube well **2** = Protected shallow well **3** = Open shallow well **4** = Protected spring **5** = River / Stream / Spring /Dam / Pond **6** = HH connection / Public Stand pipe **7** = Tanker/ Truck /Cart **8** = Bottle / Sachet water **99** = Other (specify___)	How **long** does it take the HH to collect water (including travel to and from and waiting)? **1** = <30 min **2** = >30min to <1hr **3** = >1hr to < 2hr **4** = >2hr to < 4hr **5** = >4hr	How many **20-Litre Jerricans** of water did the HH use yesterday in total (excluding water for washing clothes and for animals)? (Define how many **litres** in a container if the population use differs from Jerrican (and specify, e.g. 5-L gallon). [Then, estimate the total amount in Liters = no of containers x capacity of container]	What do you usually do to water to make it safer **before** household members drink it? **0** = Nothing **1** = Boiling **2** = Filtering with a cloth **3** = Letting it settle **4** = Water treatment chemicals / chlorine **99** = Others (Specify)	**When** do you usually **wash** your hands (List all options mentioned - Do not prompt) **0** = Never **1** = After defecating **2** = After cleaning the baby feces **3** = Before cooking **4** = Before eating **5** = Before feeding or breastfeeding the baby **6** = Before milking	**What** do you use to **wash** hands? (Choose one only) **0** = Nothing **1** = Water only **2** = Water + Soap **3** = Water + Ash/Mud/ Sand **4** = Leaves/ Plant extracts **99** = Other (specify___)	**Where** does the household usually defecate or relieve themselves (include more than one if necessary)? **1** = Undesignated open area (bush) **2** = Designated open area/ field **3** = Open Hole (Pit or bucket) **4** = Latrine (Flush or Pour flush/ Pit latrine with slab **99** = Other (specify)	**For Households that use latrine** (If 4.9 is 4): Do you share this facility with others who are not members of your Household? **0** = No **1** = Yes

Annex B: Child Anthropometry & Health Tools

ANTHROPOMETRIC & HEALTH QUESTIONNAIRE

(To be conducted in EVERY SELECTED HH with children 6-59 months).

Date (DD/MM/YY): ...../...../..... Cluster No:..... Team No:..... Region: ..... District:..... Chiefdom: .....

Village: .....

1.1	Child No. (ID)				
1.2	HH NO				
1.3	Child Name				
1.4	Sex **m** = Male **f** = Female				
1.5	Date of Birth (DD/MMYY) *If no record, go to 1.6 (and use Events Calendar)*				
1.6	Age in months				
1.7	Weght in Kg (to 1dp e.g. 13.6)				
1.8	Height in cm (to 1dp e.g. 98.1)				
1.9	Oedema **n** = No, **y** =Yes				
1.10	MUAC in cm (to 1dp e.g. 12.3)				
2.1	Has [name] received Vit. A in last 6 months (show pill)? **0** = No, **1** = Yes				
2.2	How many times has [name] ever received a measles vaccination, that is, an injection in the arm - at 9 months or older - to prevent measles? **0** = None, **1** = Once confirmed with EPI card, **2** = Twice confirmed with EPI card; **3** = Oncee, by recall (no card), **4** = Twice by recall (no card)				
2.3	Has [name] had any Illness in past 14 days? **0** = No, **1** = Yes, If no, go to 2.6				
2.4	If yes, Type of Illness **1** = Fever, **2** = Cough, **3** = Diarrhoea, **9** = Other (specify)				
2.5	If fell ill, where did you seek advice or treatment from? **0** = Not sought, **1** = Government Hospital, **2** = Community Health Centre/ Community Health Post, **3** = Field workers e.g, CHWs, **4** = Private hospital or clinic, **5** = Traditional practitioner, **6** = Pharmacy/chemist, **9** = Other (Specify)				
2.6	If no, in 2.5, why was the child (name) not taken for advice or treatment? (Select all responses mentioned), **1** = Not serious, **2** = Far away/lack of transport, **3** = Lack of money, **4** = Fear of Covid, **5** = Fear of EVD, **9** = Other, specify				
2.7	Did [name] sleep under a mosquito net (LLITN) last night?, **0** = No, **1** = Yes				
2.8	Has [name] been Dewormed in last 6 months (**12-59 months**)?, **0** = No, **1** = Yes, **9** = Don't Know				

Annex C: IYCF Tools

IYCF QUESTIONNAIRE - BREASTFEEDING

To be conducted in every selected household with children 0-23.9 months.
Some questions have special filters based on the age band of the child.

Date (DD/MM/YY): ...../...../..... Cluster No:..... Team No:..... Region: ..... District:..... Chiefdom: .....
Village: .....

Now I would like to ask you [mother/caregiver of child] more about your [child name]

Identification					INFANT AND YOUNG CHILD FEEDING (0 to 23 MONTHS)				
3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10
Child No. (ID)	HH No.	Child Name	Sex **M** = Male **F** = Female	Age in months **(0-23 months)**	Has [NAME] ever been breastfed? **0** = No **1** = Yes (If No, skip to 3.9)	How long after birth did you first put [NAME] to the breast? **1** = Immediately **2** = < 1 hour **2** = Between1 and 24 hours (within the 1st day) **3** = > 24 - <48 hours (during 2nd day) **4** = >48 hours (after 2nd day) **9** = Don't know	In the first **two** days after delivery, was [NAME] given anything other than breast milk to eat or drink, anything at all such as water, infant formula, or any other common feeds) **0** = No **1** = Yes **9** = Don't know	Was [Name] breastfed yesterday (during day or night)? **0** = No **1** = Yes	Did [Name] drink anything from a bottle with a nipple yesterday during the day or at night? **0** = No **1** = Yes

IYCF QUESTIONNAIRE - LIQUIDS

3.11 Liquids
Now I would like to ask you about liquids that [NAME] had yesterday during the day or at night. Please tell me about all drinks, whether [NAME] had them at home, or somewhere else.

Yesterday, during the day or at night, did [NAME] have any of the following liquids/foods?

A	Plain water?, **0** = No, **1** = Yes, **9** = DK				
B1	Infant formula such as Lactogen, Peak milk or Nido)?, **0** = No, **1** = Yes, **9** = DK				
B2	If yes in B1, how many times?				
C1	Milk such as tinned, powdered, or fresh animal milk?, **0** = No, **1** = Yes, **9** = DK If "no" or "DK",skip to 3..11D				
C2	If yes in C1, how many times?				
C3	If "yes" in C1: Was the milk or were any of the milk drinks a sweet or flavoured type of milk?, **0** = No, **1** = Yes, **9** = DK				
D1	Yogurt drinks or drinkable fermented milks such as buttermilk, kefir, etc? If "no" or "DK",skip to 3..11E				
D2	If Yes in D1, how many times)?				
D3	If "yes" in D1: Was the yoghurt or were any of the yoghurt drinks a sweet or flavoured type of yogurt drink?, **0** = No, **1** = Yes, **9** = DK				
E	Chocolate-flavoured drinks including those made from syrups or powders?, **0** = No, **1** = Yes, **9** = DK				
F	Fruit juice or fruit-flavoured drinks including those made from syrups or powders? (e.g. sugarcane, coconut water, palm wine/poyo or other fruit drinks)?, **0** = No, **1** = Yes, **9** = DK				
G	Sodas, malt drinks, sports drinks or energy drinks?,**0** = No, **1** = Yes, **9** = DK				
H1	Tea, coffee, or herbal drinks?, **0** = No, **1** = Yes, **9** = DK, If "no" or "DK", skip to 3.11I				
H2	If "yes" in H1: Was the drink/ Were any of these drinks sweetened?,**0** = No, **1** = Yes, **9** = DK				
I	Clear broth or clear soup?, **0** = No, **1** = Yes, **9** = DK				
J1	Any other liquids?, **0** = No, **1** = Yes, **9** = DK, If "no" or "DK", skip to 3.12				
J2	If "yes" in J1: what was the liquid or what were the liquids? ______				
J3	If "yes" in J1: Was the drink or were any of these drinks sweetened?, **0** = No, **1** = Yes, **9** = DK				

IYCF QUESTIONNAIRE - SOLID, SEMI SOLID SOFT FOODS

3.12 Foods
Now I would like to ask you about foods that [NAME] had yesterday during the day or at night. I am interested in foods your child ate whether at home or somewhere else. Please think about snacks and small meals as well as main meals. I will ask you about different types of foods, and I would like to know whether your child ate the food even if it was combined with other foods in a mixed dish.
[Please do not answer "yes" for any food or ingredient used in a small amount to add flavour to a dish].

Section	Code	Group	Question			
3.13	3.13		How many times did [NAME] eat any solid, semi-solid or soft foods yesterday during the day or night? If 7 or more times, record "7" If number of times not known, record "9"			
3.12	S2	CHECK A through R. If not a single "yes" is recorded, ask S. If at least one "yes" for 7A–7R, skip to 3.13	If "yes" probe: What kind of solid, semi-solid or soft foods did [NAME] eat? _____________ [mark food group]			
	S1		Did [NAME] eat any solid, semi-solid or soft food yesterday during the day or at night?			
	R2		If yes in R1, what was the food _____ [Mark food group if it is not yet coded 'yes']			
	R1		Any other solid, semi-solid or soft food?			
	Q	Unhealthy foods	Chips, crisps, puffs, French fries, fried dough, instant noodles, etc			
	P		Sweet foods such as chocolates, candies, pastries, cakes, cookies, biscuits, or frozen treats like ice cream and popsicles?			
	O	**Yesterday, during the day or at night, did [NAME] eat:**_______? **0** = No, **1**= Yes, **9** = DK	Hard or soft cheese such as [local examples]?, **0** = No, **1** = Yes, **9** = DK			
	N		Beans, peas, lentils, nuts , seeds, or foods from these)?			
	M		Fresh or dried fish or shellfish?			
	L		Eggs)?			
	K		Any other meat or poultry, such as beef, pork, lamb, goat, chicken,or duck?			
	J		Sausages, hot dogs/ frankfurters, ham, bacon, salami, canned meat or any other processed meat products?			
	I		Liver, kidney, heart or any other organ meat?			
	H		Any other fruits such as sweet bananas, apple, pears, dates, avocado, black berry, pineaple, orange, etc			
	G		Ripe mangoes or ripe papayas, or pumpkin, or other fruits that are yellow or orange inside?			
	F		Any other vegetables, such as cucumber, tomatoes, onions, cauliflower, cabbages, green peas or mushroom			
	E		Dark green leafy vegetables, such as cassava leaves, pumpkin leaves, potato leaves, amaranth, kales, or spinach			
	D		Plantains, white potatoes, white yams, manioc, cassava or any other starchy roots or tubers white or pale inside			
	C		Pumpkin, carrots, sweet red peppers, squash or sweet potatoes that are yellow or orange inside?			
	B		Porridge, bread, rice, noodles, pasta, or any other foods from grains?			
	A2		If "yes" in A1: How many times did [NAME] eat yogurt? If more than 7, record "7" If number of times not known, record "9"			
	A1		Yogurt, other than yogurt drinks?			
			Child No. (ID)			

Annex D: Adolescent & Women Nutrition, MDD & Meal Frequency Tools

ADOLESCENT AND MATERNAL NUTRITION QUESTIONNAIRE

List all adolescent boys (10-19 years), adolescent girls (10-14 years) and women of reproductive age (15-49 Years) in the household.

	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8
SNo	**HHNO**	**Name of Participant**	**Age** (Years)	**Sex** **1** = Male **2** = Female	**If female**, are you currently pregnant or lactating? **0** = No **1** = Yes	**Weght** in Kg (to 1dp e.g. 62.4)	**Height** in cm (to 1dp e.g. 165.2)	**MUAC** in cm (to 1 dp e.g. 24.7)

MDD-W QUESTIONNAIRE FOR ADOLESCENTS AND WRA

Yesterday, during the day or at night, did you (woman) eat any foods from any of the following food groups? [0 = No, 1 = Yes]

6.22	V	Other beverages (unsweetened tea/coffee, pickles, clear broth, alcohol, etc)?					
6.21	U	Condiments & seasonings (chillies, spices, herbs, tomato sauce/paste, flavour cubes)?					
6.20	T	Sugar-sweetened beverages (soft drinks, sweetened fruit juices and "juice drinks", chocolate drinks (milo), malt drinks, yoghurt drinks, sweet tea or coffee with sugar)					
6.19	S	Sweets (Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, jam, sweet pastries or ice cream, honey)?					
6.18	R	Savoury and fried snacks (crisps and chips, fried dough (puffpuff), other fried snacks (beans akara, cheese straw), pop corn?					
6.17	Q	Other oils and fats (Oil, fats or butter added to food or used for cooking, including vegetable oil, extracted oils from nuts or seeds, margarine (blue band), mayonnaise, shea butter, manshanu)?					
6.16	P	Red palm oil (Foods made with red palm oil, red palm nut, or red palm nut pulp sauces)					
6.15	O	Any insects and other small protein foods (Winged termite, cricket, snails, sea snails, periwinkle, African palm weevil larva, other edible insect larvae?)					
6.14	N	Other fruits (e.g. sweet bananas, apple, pears, dates, avocado, black berry, pineaple, orange, etc					
6.13	M	Other vegetables (e.g cucumber, tomatoes, onions, cauliflower, cabbages, green peas mushroom, etc)					
6.12	L	Vitamin A-rich (yellow or orange fleshed) fruits (e.g. papaya, mango, red palm, passion fruit, apricot, etc)					
6.11	K	Vitamin A-rich vegetables, roots & tubers (yellow or orange coloured - e.g pumpkin, carrots, sweet potatoes, squash, red pepper, etc)					
6.10	J	Dark green leafy vegetables (e.g. cassava leaves, pumpkin leaves, potato leaves, amaranth, kales, spinach, etc)					
7	I	Eggs					
6.8	H	Fish & Sea foods (e.g. baracuda, lobster, crayfish and crabs etc)					
6.7	G	Meat & Poutry (beef, goat, pork, chicken, game meat, etc)					
6.6	F	Organ meat (liver, kidney, heart, gizzard,etc)					
7	E	Milk & milk products (milk, yoghurt, cheese, etc)					
6.4	D	Nuts & seeds (groundnut, peanut, cashewnut, sesame, etc)					
6.3	C	Pulses (beans, soybean, peas, lentils, green grams, etc)					
6.2	B	White roots/tubers and plantains (e.g. White potatoes, white yams, cassava, arrow roots or any other foods made from white-fleshed roots or tubers, or plantains)					
6.1	A	Foods from grains (e.g. Porridge, bread, rice, pasta/noodles, maize, millet, sorghum or other foods made from grains)					
		HHNO.					
		SNo.					

MEAL FREQUENCY FOR ADOLESCENTS & WOMEN OF REPRODUCTIVE AGE

For all adolescent boys (10-19 years), adolescent girls (10-14 years) and women of reproductive age (15-49 Years) in the household.

Now, I would like you to list for me all the foods and drinks you took at different times (as meals and snacks) ***yesterday*** *during day and night (from the time you woke up in the morning until the time you went to sleep in the night, and if you woke up to eat deep in the night) Include all the meals and snacks taken at home or outside (neighbour's place, at a party/ceremony, workplace, school or restaurant).*	Meal Location	7.16	Which of these options best describes your food consumption yesterday?, **1** = Usual (I ate the same as usual), **2** = Less than usual (I ate a fewer number of meals than usual;), **3** = More than usual (I ate a a higher number of meals than usual), **9** = DK				
		7.15	Do you suffer from any acute or chronic illness that affected your eating yesterday?, **0** = No, **1** = Yes				
		7.14	If yes in 7.13, where, **1** = At neighbour's or friend's place, **2** = At a party/ ceremony, **3** = workplace, **4** = school or **5**=restaurant				
		7.13	Did you eat any of the meals or snacks outside home yesterday during day or night?, **0** = No, **1** = Yes				
	How many times did you take any of the meals including snacks during these particular occassions/times*	7.12	Total number of meals taken yesterday during day and night?				
		7.11	Deep night (12 AM to day break)? ____				
		7.10	Night (sunset to midnight)? ___				
		7.9	Evening (5 pm to sunset)? ___				
		7.8	Afternoon (midday to 5 pm)? ___				
		7.7	Morning (day break to mid-day)? ___				
		7.6	List all the foods and drinks taken yesterday, starting from the time you woke up in the morning till the time you went to sleep and deep in the night				
		7.5	**If female, Physiological Status**, **1** = Pregnant/ Lactating, **0** = Not pregnant/ lactating				
		7.4	**Sex**, **1** = Male, **2** = Female				
		7.3	**Age** (Years)				
		7.2	**Name of Participant**				
		7.1	**HHNO**				
			SNo				

Annex E: Sample of Local Events Calendar SLNNS 2021

EVENTS PER MONTH AND PER YEAR

Month	Season	2016		2017		2018		2019		2020		2021	
Jan				NY (1st)	55	NY (1st)	43	NY (1st)	31	NY (1st)	19	NY (1st)	7
Feb	Dry			Valentine	54	14th	42	14th	30		18		6
March				IWD March 8th	53	IWD March 8th; National Elections 7th	41	IWD March 8th	29	1st Covid 31st	17		5
April				Independence Day (27th)	52	Independence Day (27th)	40	Independence Day	28	Independence Day	16	Independence Day (4th) Easter	4
May				Bob Marley's Night (11th)	51	MCH Week	39	Bob Marley's Night (11th)	27	Covid Lockdown (3-5th)	15	Bob Marley's Night (11th) Eid el fitr 13th	3
June	Rainy			African Child (16th)	50	African Child (16th)	38	African Child (16th)	26	African Child (16th)	14		2
July					49		37		25		13		1
Aug				FT landslide (14th)	48	BF Week (1-7th)	36	BF Week (1-7th)	24	BF Week (1-7th)	12	BF Week (1-7th)	0
Sep		1st Flooding in FT (16th)	59		47		35		23		11		
Oct			58		46		34		22		10		
Nov	Dry		57	MCH Week	45	MCH Week	33	MCH Week	21	MCH Week	9		
Dec		Xmas; Boxing	56	W Aids Day (1st)	44	W Aids Day (1st)	32	W Aids Day (1st)	20	W Aids Day (1st)	8		

Annex F: List of Survey Team Members

Field Coordinators and Monitors			
1. Dr Tom Joseph Oguta	SMART Consultant	254-712680803	UNICEF
2. Solade Pyna-Bailey	Regional monitor	232-76624149	MoHS/DFN
3. Mutivah Kappia	Technical Assistant	232-76 791969	MoHS/DFN
4. Kadiatu Y. Fofanah	Monitor, North Eastern	232-76 713248	MoHS, Bombali
5. James P. Moriba	Monitor, Northern/ Western	232-76 810410	MoHS/DFN
6. Merian Sam Mbomah	Monitor, South Eastern	232-78 643246	MoHS/NSAHP
7. Abdulahi Kandeh	Monitor, North Eastern	232-78 940893	HKI
8. Miriam Jalloh	Monitor Western Area	232-76732330	Stat SL
FIELD SURVEY TEAMS			**STARTING DISTRICTS**
TEAM 1			
SUPERVISOR	**Abdul Rahim Sheriff**	**79634942**	**KAILAHUN**
TEAM LEADER	Hannah Y M Sandy	30269535	
MEASURER	Yayah Swarray	78882296	
ASSIST. MEASURER	Abu Bakarr Fofanah	77513991	
TEAM 2			
SUPERVISOR	**Abu Bakarr Sesay**	**76984894**	**BONTHE**
TEAM LEADER	Alfred Sylvanus Walters	76588822	
MEASURER	Adama Tarawally	88354678	
ASSIST. MEASURER	Mustapha S Lolleh	78563060	

TEAM 3			
SUPERVISOR	**Abu Bakarr Sowe**	**77544405**	**KONO**
TEAM LEADER	Alhaji Salaam Fofanah	77496324	
MEASURER	Aisha A B Kamara	76811945	
ASSIST. MEASURER	Amidu Serry	79051584	
TEAM 4			
SUPERVISOR	**Amadu Wurie Bah**	**78123469**	**FALABA**
TEAM LEADER	Ansumana Bawie Sandy	078/077281	
MEASURER	Tommy F Nyuma	78757480	
ASSIST. MEASURER	Peter M Francis	99168141	
TEAM 5			
SUPERVISOR	**Catherine R Keikula**	**78606114**	**FALABA**
TEAM LEADER	Julian Sam Suale	79011064	
MEASURER	Alimamy Koroma	88775358	
ASSIST. MEASURER	Salum Solomon	78183365	
TEAM 6			
SUPERVISOR	**Francis Massallay**	**78565785**	**BONTHE**
TEAM LEADER	Abdulrahman Tejan	76885440	
MEASURER	Neama Mando	78138218	
ASSIST. MEASURER	Ahmed Paker Kamara	78521222	
TEAM 7			
SUPERVISOR	**Francis Tommy**	**79466126**	**KAILAHUN**
TEAM LEADER	Ishmael Foday Kamara	76188512	
MEASURER	Boima Koroma	76735652	
ASSIST. MEASURER	Winifred Koroma	31990684	

TEAM 8			
SUPERVISOR	**Ibrahim Alaffia Sesay**	**79123432**	**KAILAHUN**
TEAM LEADER	Agnes Tucker	76126252	
MEASURER	Alimany Kargbo	79328025	
ASSIST. MEASURER	Osman M Kamara	77556947	
TEAM 9			
SUPERVISOR	**Idrissa Kamara**	**76238126**	**KONO**
TEAM LEADER	Isata Kabba	78180211	
MEASURER	Aloysious Wai	76760196	
ASSIST. MEASURER	Daniel L Kamara	78798579	
TEAM 10			
SUPERVISOR	**James Ngebeh**	**34933264**	**BONTHE**
TEAM LEADER	Mariama S Keita	79014718	
MEASURER	Samuel J Momoh	31458228	
ASSIST. MEASURER	Momodu L Bah	76587858	
TEAM 11			
SUPERVISOR	**Melissa Fortune**	**78585927**	**FALABA**
TEAM LEADER	Foday D Vandy	79040782	
MEASURER	David S Suale (Jr)	75427221	
ASSIST. MEASURER	Alusine I F Kamara	78366050	
TEAM 12			
SUPERVISOR	**Mohamed Issa Bangura**	**78444544**	**BONTHE**
TEAM LEADER	Santigie S Sesay	78943611	
MEASURER	Max J Yanguba	78258912	
ASSIST. MEASURER	Osman Momoh	74376995	

TEAM 13			
SUPERVISOR	**Mohamed L A Foullah**	**76929794**	**KONO**
TEAM LEADER	Sia Kema Kaku	31607068	
MEASURER	Alusine T Lavalie	76737860	
ASSIST. MEASURER	Edward Mando	79506181	
TEAM 14			
SUPERVISOR	**Mohamed Mambu Baika**	**78837038**	**KONO**
TEAM LEADER	Minkailu Massaquoi	79100384	
MEASURER	Lahai Tapema	76603771	
ASSIST. MEASURER	Kelvin Sesay	31543098	
TEAM 15			
SUPERVISOR	**Prince J S Walters**	**76143831**	**KAILAHUN**
TEAM LEADER	Baindu Ngevao	79459825	
MEASURER	Emmanuel Stevens	76102015	
ASSIST. MEASURER	David Kabo	76220726	
TEAM 16			
SUPERVISOR	**Rashid Kamara**	**76935770**	**KAILAHUN**
TEAM LEADER	Boymah A. Shaw	76278977	
MEASURER	Anthony G Saffa	78153667	
ASSIST. MEASURER	James K Senessie	78999132	
TEAM 17			
SUPERVISOR	**Salamatu Conteh**	**88860149**	**FALABA**
TEAM LEADER	Edmond Massaquoi	76798805	
MEASURER	John Tua	76375269	
ASSIST. MEASURER	Francis M Rogers	76475761	

TEAM 18			
SUPERVISOR	**Solomom Bomeh**	**76449545**	**FALABA**
TEAM LEADER	Edna Mansaray-Fomba	79267919	
MEASURER	Foday A L Sesay	77806435	
ASSIST. MEASURER	Harold Lahai	78172219	
TEAM 19			
SUPERVISOR	**Sulaiman Bah**	**75461349**	**KONO**
TEAM LEADER	Muctarr Sheriff	78336324	
MEASURER	Fatmata B Koroma	76686799	
ASSIST. MEASURER	Ibrahim Mondeh	30732635	
TEAM 20			
SUPERVISOR	**Sulaiman Massaquoi**	**78479131**	**BONTHE**
TEAM LEADER	Yankuba K Janneh	78316894	
MEASURER	Joan Moody	76439730	
ASSIST. MEASURER	Ibrahim S Mansaray	77878745	

Annex G: Roles and Responsibilities of Team Members

1. Enumerators *(Usually persons involved in nutrition, food security and health programs)*

- Ensure that only eligible children and women are surveyed (6 – 59 months for anthropometry, 0 – 23 months for IYCF, 10 – 14 years for adolescent girls, 10 – 19 years for adolescent boys, and 15 – 49 years for women of reproductive age).
- Administer mortality, anthropometry and health, IYCF, and adolescent/women nutrition questionnaires.
- Make accurate anthropometric measurements (including age, weight, height/length, oedema and MUAC).
- Record the data and answers/responses in the tablet in specified format/ questionnaires.
- Ensure that all questions have been asked and answers recorded correctly before leaving each household.
- Carry and take good care of anthropometric questionnaires/forms under them to the supervisor in good order.
- Report any problems/difficulties to the supervisor for direction/advise.

2. Team Leaders *(Usually experienced Agency or Ministry Staff, experience in previous surveys)*

- If called upon, lead the team to consequent households selected for interview.
- Help introduce the team to each new household and obtain the necessary consent.
- Take and record the temperature of each team member every morning before the interviews.
- Assist the enumerators note the correct household number to be recorded in the household questionnaire and mortality questionnaire for each visit.
- Ensure that the household questionnaires (WASH, MDD-W/A) is administered and all questions answered and entered into the tablet before leaving each household and cluster.

- Help identify, verify and record oedema, measles and death cases.
- Ensure the safety of the survey equipment and tools (especially the tablets) under their care/use.
- Ensure that good quality and reliable data is collected by their teams.

3. Supervisors *(Usually experienced Agency or Ministry Staff, experience in previous surveys)*

- Help the team in demarcating/identifying their cluster boundaries
- Explain to the village/location leaders the purpose of the survey and the methods to be used – that children, adolescent and women participants will be weighed, measured and caregivers interviewed, etc.
- Facilitate their teams have all the necessary resources for each day. Ensure availability of survey equipment and tools (including the tablets) to their teams and their return after the survey. Observes on a daily basis the conduct of the interviews and measurements and performance of the equipment and act on these reports accordingly including replacement of faulty equipment.
- Ensure that at least the predetermined number of households has been surveyed, and all questionnaires completed in each cluster.
- Check and ensure that all anthropometric measurements have been taken and entered correctly. Submit/send the finalized forms to the server when and as required.
- Ensure that both household, mortality, child, adolescent and women data/ questionnaires are correctly and completely answered/recorded before leaving each cluster according to the survey protocol.
- Help verify, and record oedema, measles, and death cases.
- Help the team in probing and obtaining accurate answers on sensitive matters such as COVID status screening, personal hygiene, etc.
- Ensure the good quality and reliable data is collected by their teams. In situations where measures are routinely making errors in taking and/or recording measurement, in manipulating children and/or equipment, and in reporting the information on the tablet, the supervisor should consult with the consultant/monitors and coordinator when necessary.
- Arrange for movement and transport of their teams during the survey.
- Identify and direct the team on cases that require follow up or revisits.
- Provides daily summary and update of progress to the Consultant/coordinators on the Cluster Control Form.

4. Regional Monitors *(must be experienced food security/ nutritionists or public health researchers)*

The SLNS 2021 will have 5 regional monitors. The monitor will in overall oversee a group of 4 – 5 teams that cover 3 – 4 districts by travelling from one district to the other. The regional monitors will:

- Be responsible for closely monitoring the work of the teams to ensure that all sampled households are visited, and eligible children, adolescents and women are included.
- Make monitoring visit to teams on regular basis to check on their work and check that the right clusters are assessed.
- Periodically return to few selected households and conduct a short re-interview of listing of household members and comparing the list with what was reported originally by the team. The main aim of such re-interviews is to uncover any deliberate distortion of age or deliberate omission of some household members by interviewers (for instance so as to reduce their workload).
- Collaborate with the survey consultant to identify and assign roles and responsibilities to other suitable members of the survey team – including reconstitution of teams and replacement of team members who are not performing well or are absent
- Provide monitoring report after field visits –- identifying challenges and mitigating measures suggested.
- Complete all exercises and/or tests given by the survey coordinator or consultant.
- Support the regular activities of the team based on feedback received from survey consultant/supervisors using data will be sent to the central server on daily basis.
- Collaborate with the survey consultant/supervisors to identify and support the team that needs reorganization/retraining support to improve the overall quality of the survey.
- Facilitate the data processing, analysis, presentation and reporting of the results.

5. National Coordinator *(DFN, MoHS Representative)*

The SLNS 2021 will comprise of 1 national coordinator, one technical assistant, and 5 regional coordinators working together with the consultant. The National Coordinator will:

- Lead in overall survey planning and implementation including calling and chairing TWG meetings, budgeting, assigning of staff, management of survey resources, seeking ethical approval, and ensuring validation of the survey.
- Provide guidance in selection/recruitment of competent regional survey monitors, and supervisors.

- With the technical assistant, ensure general availability of survey equipment, tools, and other necessary resources and logistics (including stationery, transport/fuel, data bundles and allowances) to all teams.
- With the technical assistant and the survey consultant, identify and effect changes to the survey team composition – including reconstitution/reshuffling of team and replacement of team members who are not performing to standards or abscond duty.
- Conduct monitoring visit to teams in the provinces at intervals to check on conduct and progress of the survey ad provide support and feedback to the regional monitors.

Annex H: Referral Form/Slip

Child Name: _____

Mother Name: _____

Age: _____

Sex: Female ☐ Male ☐

Height: _____ cm

Weight: _____ kg

MUAC: _____ cm

Edema: Yes ☐ No ☐

Village/Locality: _____ District: _____

Referral Center: _____ Opening Days: _____

Admission Criteria: _____

Supervisor: _____ Sign: _____

Referral Form

This slip must be cut and filled by the teams when a child should be referred to a feeding/ health center for acute malnutrition or any other health problem observed.

Child Name: _____

Mother Name: _____

Age: _____

Sex: Female ☐ Male ☐

Height: _____ cm

Weight: _____ kg

MUAC: _____ cm

Edema: Yes ☐ No ☐

Village/Locality: _____ District: _____

Referral Center: _____ Opening Days: _____

Admission Criteria: _____

Supervisor: _____ Sign: _____

Annex I: List of Selected EAs/ Clusters

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
1	Eastern	Kailahun	Dea	Dodo	Rural	891
2	Eastern	Kailahun	Jawie	Bobor	Rural	891
3	Eastern	Kailahun	Jawie	Lower Giebu	Rural	891
4	Eastern	Kailahun	Jawie	Sowa	Urban	891
6	Eastern	Kailahun	Kissi Kama	Kama Teng	Rural	891
7	Eastern	Kailahun	Kissi Teng	Bumasadu	Rural	891
8	Eastern	Kailahun	Kissi Teng	Kundu	Rural	891
9	Eastern	Kailahun	Kissi Teng	Torli	Urban	891
10	Eastern	Kailahun	Kissi Tongi	Lower Konio	Urban	891
11	Eastern	Kailahun	Kissi Tongi	Upper Konio	Rural	891
12	Eastern	Kailahun	Kissi Tongi	Upper Tongi Tingi	Rural	891
14	Eastern	Kailahun	Kpeje West	Golama	Rural	891
15	Eastern	Kailahun	Kpeje West	Kpeje Foiya	Urban	891
16	Eastern	Kailahun	Luawa	Gao	Urban	891
17	Eastern	Kailahun	Luawa	Gbela	Urban	891
18	Eastern	Kailahun	Luawa	Luawa Foguiya	Rural	891
19	Eastern	Kailahun	Luawa	Luawa Foguiya	Urban	891
20	Eastern	Kailahun	Luawa	Luawa Foguiya	Urban	891
21	Eastern	Kailahun	Luawa	Mano-Sewallu	Urban	891
22	Eastern	Kailahun	Luawa	Upper Kpombali	Urban	891
23	Eastern	Kailahun	Malema	Lower Sami	Rural	891
24	Eastern	Kailahun	Malema	Upper Sami	Rural	891
25	Eastern	Kailahun	Mandu	Levuma Jeigbla	Urban	891
26	Eastern	Kailahun	Mandu	Upper Kuiva	Rural	891
27	Eastern	Kailahun	Njaluahun	Gboo	Rural	891

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
28	Eastern	Kailahun	Njaluahun	Keimaya	Rural	891
30	Eastern	Kailahun	Njaluahun	Upper Nyawa	Rural	891
31	Eastern	Kailahun	Penguia	Kumatandu	Rural	891
32	Eastern	Kailahun	Penguia	Nimima	Rural	891
33	Eastern	Kailahun	Upper Bambara	Goleiwoma	Rural	891
35	Eastern	Kailahun	Yawei	Bendu	Urban	891
36	Eastern	Kailahun	Yawei	Kuiva Mende	Rural	891
37	Eastern	Kenema	Dama	Danyadejo	Urban	1130
38	Eastern	Kenema	Dama	Klajie	Rural	1130
39	Eastern	Kenema	Dodo	Bundoryama	Rural	1130
40	Eastern	Kenema	Gaura	Giebu	Rural	1130
41	Eastern	Kenema	Gaura	Sembehun	Rural	1130
42	Eastern	Kenema	Gorama Mende	Famanjo	Rural	1130
43	Eastern	Kenema	Gorama Mende	Kaklawa	Rural	1130
45	Eastern	Kenema	Kandu Leppiama	Sonnie	Rural	1130
46	Eastern	Kenema	Kenema City	Gbo Kakajama A-Burma	Urban	1130
47	Eastern	Kenema	Kenema City	Gbo Kakajama A-Kpayama	Urban	1130
49	Eastern	Kenema	Kenema City	Gbo Kakajama A-Njaguema	Urban	1130
50	Eastern	Kenema	Kenema City	Gbo Kakajama A-Shimbeck	Urban	1130
51	Eastern	Kenema	Kenema City	Gbo Kakajama A-Technical/ Gbongbotoh	Urban	1130
52	Eastern	Kenema	Kenema City	Gbo Kakajama A-Tilorma - Gbenderu	Urban	1130
53	Eastern	Kenema	Kenema City	Gbo Lambayama A-Gombu	Urban	1130
54	Eastern	Kenema	Kenema City	Gbo Lambayama A-Lekpetieh	Urban	1130

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
55	Eastern	Kenema	Kenema City	Gbo Lambayama A-Nyandeyama	Urban	1130
57	Eastern	Kenema	Koya	Koya Gbundohun	Rural	1130
58	Eastern	Kenema	Lower Bambara	Bonya	Rural	1130
59	Eastern	Kenema	Lower Bambara	Bonya	Urban	1130
60	Eastern	Kenema	Lower Bambara	Gboro	Rural	1130
61	Eastern	Kenema	Lower Bambara	Korjei Ngieya	Rural	1130
62	Eastern	Kenema	Lower Bambara	Nyawa	Urban	1130
63	Eastern	Kenema	Lower Bambara	Sei	Urban	1130
65	Eastern	Kenema	Niawa	Mabondor	Rural	1130
66	Eastern	Kenema	Nongowa	Dagbanya	Rural	1130
67	Eastern	Kenema	Nongowa	Gbo Lambayama B	Rural	1130
68	Eastern	Kenema	Nongowa	Kona Foiya	Rural	1130
69	Eastern	Kenema	Nongowa	Kona Kpindibu	Rural	1130
71	Eastern	Kenema	Small Bo	Gorama	Rural	1130
72	Eastern	Kenema	Small Bo	Niawa	Rural	1130
73	Eastern	Kenema	Tunkia	Giewoma	Rural	1130
74	Eastern	Kenema	Tunkia	Gorahun	Rural	1130
75	Eastern	Kenema	Wandor	Boryongor	Rural	1130
76	Eastern	Kenema	Wandor	Tongorwa	Rural	1130
77	Eastern	Kono	Fiama	Fiama	Rural	787
79	Eastern	Kono	Gbane	Mongo	Rural	787
80	Eastern	Kono	Gbense	Banfinfeh	Rural	787
81	Eastern	Kono	Gorama Kono	Bunabu	Rural	787
82	Eastern	Kono	Kamara	Dangbaidu	Rural	787
83	Eastern	Kono	Kamara	Kongofinja	Rural	787
84	Eastern	Kono	Koidu City	Gbense-Moindefeh A	Urban	787

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
85	Eastern	Kono	Koidu City	Gbense-Moindekor	Urban	787
87	Eastern	Kono	Koidu City	Gbense-Moindekor	Urban	787
88	Eastern	Kono	Koidu City	Gbense-Vaama	Urban	787
89	Eastern	Kono	Koidu City	Tankoro-Kinsey	Urban	787
90	Eastern	Kono	Koidu City	Tankoro-Lebanon	Urban	787
91	Eastern	Kono	Koidu City	Tankoro-New Sembehun	Urban	787
92	Eastern	Kono	Koidu City	Tankoro-Woafeh	Urban	787
93	Eastern	Kono	Lei	Lei	Rural	787
94	Eastern	Kono	Lei	Tingi-Kor	Rural	787
96	Eastern	Kono	Nimikoro	Bandafafeh	Rural	787
97	Eastern	Kono	Nimikoro	Gbogboafeh	Rural	787
98	Eastern	Kono	Nimikoro	Jaiama	Rural	787
99	Eastern	Kono	Nimikoro	Masayiefeh	Rural	787
100	Eastern	Kono	Nimiyama	Njagbakahun	Rural	787
101	Eastern	Kono	Nimiyama	Njaifeh	Rural	787
102	Eastern	Kono	Sandor	Bafinfeh	Rural	787
104	Eastern	Kono	Sandor	Kawafeh	Rural	787
105	Eastern	Kono	Sandor	Samgbafeh	Rural	787
106	Eastern	Kono	Sandor	Sumunjifeh	Rural	787
107	Eastern	Kono	Sandor	Yawatanda	Rural	787
108	Eastern	Kono	Soa	Kokongokuma	Rural	787
109	Eastern	Kono	Soa	Sawa Fiama	Rural	787
110	Eastern	Kono	Tankoro	Tankoro	Rural	787
111	North West	Kambia	Bramaia	Fillighunyie	Rural	576
112	North West	Kambia	Bramaia	Kanku-Bramaia	Rural	576
113	North West	Kambia	Bramaia	Teneba/Bramaia	Rural	576
114	North West	Kambia	Gbinle	Katalan	Rural	576

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
115	North West	Kambia	Gbinle	Tawuya	Rural	576
116	North West	Kambia	Khonimaka	Konta	Rural	576
117	North West	Kambia	Magbema	Kamba	Rural	576
118	North West	Kambia	Magbema	Kamba	Urban	576
119	North West	Kambia	Magbema	Kamba	Urban	576
120	North West	Kambia	Magbema	Kambia	Urban	576
121	North West	Kambia	Magbema	Kambia	Urban	576
123	North West	Kambia	Magbema	Kambia	Rural	576
124	North West	Kambia	Magbema	Kargbulor	Rural	576
125	North West	Kambia	Magbema	Robat	Urban	576
126	North West	Kambia	Magbema	Robat	Urban	576
127	North West	Kambia	Magbema	Robat	Urban	576
128	North West	Kambia	Magbema	Rokupr	Urban	576
129	North West	Kambia	Magbema	Rokupr	Urban	576
130	North West	Kambia	Magbema	Tormina	Rural	576
131	North West	Kambia	Mambolo	Mambolo	Urban	576
132	North West	Kambia	Mambolo	Mayakie	Rural	576
133	North West	Kambia	Mambolo	Rowollon	Rural	576
135	North West	Kambia	Masungbala	Nonko	Rural	576
136	North West	Kambia	Muna Thalla	Mapolon	Rural	576
137	North West	Kambia	Samu	Bubuya	Rural	576
139	North West	Kambia	Samu	Kychom	Rural	576
140	North West	Kambia	Samu	Mafufuneh	Rural	576
141	North West	Kambia	Samu	Mange	Rural	576
142	North West	Kambia	Samu	Moribaia	Rural	576
143	North West	Kambia	Samu	Rosinor	Rural	576
144	North West	Kambia	Tonko Limba	Bubuya	Rural	576
146	North West	Kambia	Tonko Limba	Kathanthineh	Rural	576

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
147	North West	Kambia	Tonko Limba	Magbonkoh	Rural	576
148	North West	Karene	Buya	Kamasundu	Rural	435
149	North West	Karene	Buya	Manungbu	Rural	435
150	North West	Karene	Dibia	Kayembor	Rural	435
152	North West	Karene	Gbanti	Gbenkfay	Rural	435
153	North West	Karene	Gbanti	Makulon	Rural	435
154	North West	Karene	Libeisaygahun/ Gbombahun	Batkanu	Rural	435
155	North West	Karene	Libeisaygahun/ Gbombahun	Mayankay	Rural	435
156	North West	Karene	Romende	Foredugu	Rural	435
157	North West	Karene	Romende	Gbaran Kamba	Rural	435
158	North West	Karene	Romende	Petifu Bana	Rural	435
159	North West	Karene	Romende	Rokel	Rural	435
161	North West	Karene	Sanda Loko	Kamalu	Rural	435
162	North West	Karene	Sanda Loko	Laminaya	Rural	435
163	North West	Karene	Sanda Loko	Makapa	Rural	435
164	North West	Karene	Sanda Loko	Rothatha	Rural	435
165	North West	Karene	Sanda Magbolontor	Gbogbodo	Rural	435
166	North West	Karene	Sanda Magbolontor	Magbolontor	Rural	435
167	North West	Karene	Sanda Tendaran	Kalangba	Rural	435
169	North West	Karene	Sanda Tendaran	Rosos	Rural	435
170	North West	Karene	Sella Limba	Kamakwie	Urban	435
171	North West	Karene	Sella Limba	Kamakwie	Urban	435
172	North West	Karene	Sella Limba	Kamankoh	Rural	435
174	North West	Karene	Sella Limba	Manonkoh	Rural	435
175	North West	Karene	Tambakha Simibungie	Simibue	Rural	435
176	North West	Karene	Tambakha Simibungie	Simibue	Rural	435

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
177	North West	Karene	Tambakha Yobangie	Moria	Rural	435
178	North West	Karene	Tambakha Yobangie	Paramount Chief	Rural	435
179	North West	Port Loko	Bakeh Loko	Falaba	Urban	1000
180	North West	Port Loko	Bakeh Loko	Kondato	Urban	1000
181	North West	Port Loko	Bakeh Loko	Malal	Rural	1000
183	North West	Port Loko	Bureh	Kambia Morie	Rural	1000
184	North West	Port Loko	Kaffu Bullom	Foronkoya	Urban	1000
185	North West	Port Loko	Kaffu Bullom	Kasongha	Urban	1000
186	North West	Port Loko	Kaffu Bullom	Kasongha	Urban	1000
187	North West	Port Loko	Kaffu Bullom	Mahera	Urban	1000
188	North West	Port Loko	Kaffu Bullom	Rosint	Rural	1000
189	North West	Port Loko	Kamasondo	Kamasondo	Rural	1000
190	North West	Port Loko	Kamasondo	Katonga	Rural	1000
191	North West	Port Loko	Kasseh	Kagbanthama	Rural	1000
192	North West	Port Loko	Koya	Fondu	Urban	1000
193	North West	Port Loko	Koya	Foredugu	Rural	1000
194	North West	Port Loko	Koya	Magbeni	Rural	1000
195	North West	Port Loko	Koya	Marefa	Rural	1000
197	North West	Port Loko	Koya	Roponka	Rural	1000
198	North West	Port Loko	Lokomasama	Gbainty	Rural	1000
199	North West	Port Loko	Lokomasama	Mapiterr	Rural	1000
200	North West	Port Loko	Lokomasama	Yurika	Rural	1000
201	North West	Port Loko	Maconteh	Kaiyeabor	Rural	1000
202	North West	Port Loko	Maforki	Fenka	Rural	1000
203	North West	Port Loko	Maforki	Komrabai-Waterloo	Rural	1000
204	North West	Port Loko	Maforki	Mapolie	Rural	1000
205	North West	Port Loko	Maforki	Moria	Rural	1000

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
206	North West	Port Loko	Makama	Malakuray	Rural	1000
207	North West	Port Loko	Marampa	Marampa A	Urban	1000
208	North West	Port Loko	Marampa	Marampa A	Urban	1000
210	North West	Port Loko	Marampa	Marampa B	Rural	1000
211	North West	Port Loko	Marampa	Petifu Madina	Rural	1000
212	North West	Port Loko	Masimera	Katick	Rural	1000
213	North West	Port Loko	Masimera	Mayola-Thatha	Rural	1000
215	North East	Bombali	Biriwa	Bumban	Rural	730
216	North East	Bombali	Biriwa	Kamabai	Rural	730
217	North East	Bombali	Biriwa	Karassa	Rural	730
218	North East	Bombali	Bombali Sebora	Kafala	Rural	730
220	North East	Bombali	Bombali Sebora	Matotoka	Rural	730
221	North East	Bombali	Bombali Siari	Konta	Rural	730
222	North East	Bombali	Gbanti	Mabanta	Urban	730
223	North East	Bombali	Gbanti	Masuba	Urban	730
224	North East	Bombali	Gbanti	Rosint	Rural	730
225	North East	Bombali	Gbendembu	Makai	Rural	730
226	North East	Bombali	Kamaranka	Matandorkoh	Rural	730
227	North East	Bombali	Magbaimba Ndorwahun	Mambiama	Rural	730
228	North East	Bombali	Makari	Mangay	Rural	730
230	North East	Bombali	Makari	Tonkoba	Rural	730
231	North East	Bombali	Makari	Yainkassa	Rural	730
232	North East	Bombali	Makeni City	Kagbaran Dokom A	Urban	730
233	North East	Bombali	Makeni City	Kagbaran Dokom A	Urban	730
234	North East	Bombali	Makeni City	Kagbaran Dokom A	Urban	730
235	North East	Bombali	Makeni City	Market Ward	Urban	730
236	North East	Bombali	Makeni City	Mayanka I Ward	Urban	730

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
238	North East	Bombali	Makeni City	Rogbaneh Ward	Urban	730
239	North East	Bombali	Makeni City	Rogbaneh Ward	Urban	730
240	North East	Bombali	Makeni City	Teko Ward	Urban	730
241	North East	Bombali	Makeni City	Wusum Ward	Urban	730
242	North East	Bombali	Mara	Manewa	Rural	730
244	North East	Bombali	N'gowahun	Masongbo	Rural	730
245	North East	Bombali	Paki Masabong	Mapaki	Rural	730
246	North East	Bombali	Paki Masabong	Rosanda	Rural	730
247	North East	Bombali	Safroko Limba	Binkolo	Rural	730
248	North East	Bombali	Safroko Limba	Kayassi	Rural	730
249	North East	Falaba	Delemandugu	Lower Deldugu	Rural	354
250	North East	Falaba	Delemandugu	Mankalia	Rural	354
252	North East	Falaba	Dembelia	Balandugu	Rural	354
253	North East	Falaba	Dembelia	Lagor	Rural	354
254	North East	Falaba	Dembelia	Sankan I	Rural	354
255	North East	Falaba	Dembelia-Sinkunia	Foraia	Rural	354
256	North East	Falaba	Dembelia-Sinkunia	Kunbulun	Rural	354
258	North East	Falaba	Dembelia-Sinkunia	Sinkunia I	Rural	354
259	North East	Falaba	Folosaba	Fissaya II	Rural	354
260	North East	Falaba	Folosaba	Kalia	Rural	354
261	North East	Falaba	Folosaba	Kamba	Rural	354
262	North East	Falaba	Kamadu Yiraia	Lower Kamadugu	Rural	354
263	North East	Falaba	Kamadu Yiraia	Yiraia	Rural	354
264	North East	Falaba	Kebelia	Ganya	Rural	354
266	North East	Falaba	Kulor Saradu	Lower Saradu	Rural	354
267	North East	Falaba	Mongo	Mongo I	Rural	354
268	North East	Falaba	Mongo	Mongo II	Rural	354

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
269	North East	Falaba	Mongo	Mongo III	Rural	354
270	North East	Falaba	Morifindugu	Morifindugu I	Rural	354
271	North East	Falaba	Morifindugu	Morifindugu II	Rural	354
272	North East	Falaba	Neya	Lower Neya I	Rural	354
273	North East	Falaba	Neya	Lower Neya I	Urban	354
274	North East	Falaba	Neya	Neya II	Rural	354
275	North East	Falaba	Neya	Upper Neya I	Rural	354
276	North East	Falaba	Nyedu	Nyedu	Rural	354
278	North East	Falaba	Sulima	Gberia-Timbako	Rural	354
279	North East	Falaba	Sulima	Kambaia	Rural	354
280	North East	Falaba	Sulima	Timbako	Rural	354
281	North East	Falaba	Wollay Barawa	Barawa	Urban	354
282	North East	Falaba	Wollay Barawa	Barawa	Rural	354
283	North East	Falaba	Wollay Barawa	Wallay	Rural	354
284	North East	Koinadugu	Diang	Darakuru	Rural	394
285	North East	Koinadugu	Diang	Darakuru	Rural	394
287	North East	Koinadugu	Diang	Kania	Urban	394
288	North East	Koinadugu	Diang	Kondembaia	Rural	394
289	North East	Koinadugu	Diang	Sokurala	Rural	394
290	North East	Koinadugu	Gbonkobon Kayaka	Gbonkobor	Rural	394
291	North East	Koinadugu	Gbonkobon Kayaka	Kayaka	Rural	394
292	North East	Koinadugu	Kalian	Kalian	Urban	394
293	North East	Koinadugu	Kalian	Kalian	Rural	394
294	North East	Koinadugu	Kalian	Kalian	Rural	394
295	North East	Koinadugu	Kalian	Kalian	Rural	394
296	North East	Koinadugu	Kamukeh	Pampakoh	Rural	394
297	North East	Koinadugu	Kasunko KaKellian	Kakallain	Rural	394

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
298	North East	Koinadugu	Kasunko KaKellian	Kasunko	Urban	394
299	North East	Koinadugu	Nieni	Nieni	Rural	394
300	North East	Koinadugu	Nieni	Nieni	Rural	394
302	North East	Koinadugu	Nieni	Seradu	Rural	394
303	North East	Koinadugu	Nieni	Seradu	Rural	394
304	North East	Koinadugu	Sengbe	Bendugu	Rural	394
305	North East	Koinadugu	Sengbe	Heremakono	Rural	394
306	North East	Koinadugu	Sengbe	Koinadugu	Rural	394
307	North East	Koinadugu	Sengbe	Yogomaia	Urban	394
308	North East	Koinadugu	Sengbe	Yogomaia	Urban	394
309	North East	Koinadugu	Tamiso	Tamiso I	Rural	394
310	North East	Koinadugu	Wara Wara Bafodia	Bafodia	Urban	394
312	North East	Koinadugu	Wara Wara Bafodia	Kamannikie	Rural	394
313	North East	Koinadugu	Wara Wara Yagala	Zone 1	Rural	394
314	North East	Koinadugu	Wara Wara Yagala	Zone 2	Rural	394
315	North East	Koinadugu	Wara Wara Yagala	Zone 3	Urban	394
316	North East	Koinadugu	Wara Wara Yagala	Zone 3	Urban	394
318	North East	Koinadugu	Wara Wara Yagala	Zone 3	Urban	394
319	North East	Koinadugu	Wara Wara Yagala	Zone 4	Rural	394
320	North East	Koinadugu	Wara Wara Yagala	Zone 6	Rural	394
321	North East	Tonkolili	Dansogoia	Bumbuna	Urban	1041
322	North East	Tonkolili	Dansogoia	Kemedugu	Rural	1041
324	North East	Tonkolili	Kalanthuba	Kakallain	Rural	1041
325	North East	Tonkolili	Kholifa Mabang	Mamanso	Rural	1041
326	North East	Tonkolili	Kholifa Mamuntha/ Mayosso	Mamuntha	Rural	1041

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
327	North East	Tonkolili	Kholifa Mamuntha/ Mayosso	Mayossoh	Rural	1041
328	North East	Tonkolili	Kholifa Rowala	Lal-Lenken	Rural	1041
329	North East	Tonkolili	Kholifa Rowala	Lal-Lenken	Rural	1041
330	North East	Tonkolili	Kholifa Rowala	Mayatha	Rural	1041
331	North East	Tonkolili	Kholifa Rowala	Old Magburaka	Urban	1041
332	North East	Tonkolili	Kunike Barina	Mamurie	Rural	1041
333	North East	Tonkolili	Kunike Folawusu	Semorkanie	Rural	1041
334	North East	Tonkolili	Kunike Folawusu	Wana	Rural	1041
335	North East	Tonkolili	Kunike Sanda	Sanda	Rural	1041
336	North East	Tonkolili	Kunike Sanda	Thamah	Rural	1041
338	North East	Tonkolili	Mayeppoh	Mayeppoh	Rural	1041
339	North East	Tonkolili	Mayeppoh	Petifu Bana	Rural	1041
340	North East	Tonkolili	Sambaya	Borowah	Rural	1041
342	North East	Tonkolili	Sambaya	Sambaya	Rural	1041
343	North East	Tonkolili	Simiria	Makelfa	Rural	1041
344	North East	Tonkolili	Tane	Makrugbeh	Rural	1041
345	North East	Tonkolili	Tane	Mathunkara	Rural	1041
346	North East	Tonkolili	Tane	Matotoka	Urban	1041
347	North East	Tonkolili	Yele	Yele Manowo	Rural	1041
348	North East	Tonkolili	Yele	Yele Manowo	Rural	1041
349	North East	Tonkolili	Yoni Mabanta	Makeni Rokefula	Rural	1041
350	North East	Tonkolili	Yoni Mabanta	Petifu	Rural	1041
352	North East	Tonkolili	Yoni Mamaila	Gaindema	Urban	1041
353	North East	Tonkolili	Yoni Mamaila	Gaindema	Urban	1041
354	North East	Tonkolili	Yoni Mamaila	Macrogba	Rural	1041
355	North East	Tonkolili	Yoni Mamaila	Masengbe	Rural	1041

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
356	North East	Tonkolili	Yoni Mamaila	Yoni	Rural	1041
357	Southern	Bo	Bagbo	Gorapon	Rural	1031
358	Southern	Bo	Bagbo	Niagorehun	Rural	1031
359	Southern	Bo	Bagbwe (Bagbe)	Kemoh	Rural	1031
360	Southern	Bo	Bo Town	East Ward-Bumpeh-Wo - Torkpoi Town	Urban	1031
361	Southern	Bo	Bo Town	East Ward-Kindia Town-Yimoh Town	Urban	1031
362	Southern	Bo	Bo Town	East Ward-Lower Samamie-Durbar ground	Urban	1031
363	Southern	Bo	Bo Town	East Ward-Messima I	Urban	1031
364	Southern	Bo	Bo Town	East Ward-Moriba Town-New site	Urban	1031
366	Southern	Bo	Bo Town	North Ward-Kissy Town-Samamie	Urban	1031
367	Southern	Bo	Bo Town	West Ward-Kandeh Town -Korwama	Urban	1031
368	Southern	Bo	Bo Town	West Ward-Moriba Town -Sewa Road	Urban	1031
369	Southern	Bo	Bo Town	West Ward-Nikibu-Bo School	Urban	1031
371	Southern	Bo	Boama	Bambawo	Rural	1031
372	Southern	Bo	Boama	Mawojeh	Rural	1031
373	Southern	Bo	Boama	Upper Pataloo	Rural	1031
374	Southern	Bo	Bongor	Tongowa	Rural	1031
375	Southern	Bo	Bumpe Ngao	Bumpe	Rural	1031
376	Southern	Bo	Bumpe Ngao	Serabu	Rural	1031
377	Southern	Bo	Bumpe Ngao	Taninahun	Rural	1031
378	Southern	Bo	Gbo	Gbo	Rural	1031

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
379	Southern	Bo	Jaiama	Upper Kama	Rural	1031
380	Southern	Bo	Kakua	Nguabu	Rural	1031
381	Southern	Bo	Kakua	Samamie	Rural	1031
382	Southern	Bo	Kakua	Sewa	Rural	1031
384	Southern	Bo	Lugbu	Kamba	Rural	1031
385	Southern	Bo	Lugbu	Yorma	Rural	1031
386	Southern	Bo	Niawa Lenga	Yalenga	Rural	1031
387	Southern	Bo	Tikonko	Morku	Rural	1031
388	Southern	Bo	Tikonko	Njagbla II	Rural	1031
390	Southern	Bo	Valunia	Deilenga	Rural	1031
391	Southern	Bo	Valunia	Lunia	Rural	1031
392	Southern	Bo	Valunia	Vanjelu	Rural	1031
393	Southern	Bo	Wonde	Upper Kargoi	Rural	1031
394	Southern	Bonthe	Bendu-Cha	Sokenteh	Rural	461
395	Southern	Bonthe	Bendu-Cha	Yallan-gbokie	Rural	461
396	Southern	Bonthe	Bonthe Urban	Bonthe Town	Urban	461
397	Southern	Bonthe	Bum	Fikie	Rural	461
398	Southern	Bonthe	Bum	Gbondubum	Rural	461
399	Southern	Bonthe	Bum	Lanje	Rural	461
400	Southern	Bonthe	Bum	Torma	Rural	461
401	Southern	Bonthe	Bum	Yawma	Rural	461
402	Southern	Bonthe	Dema	Dema	Rural	461
404	Southern	Bonthe	Imperri	Babum	Urban	461
405	Southern	Bonthe	Imperri	Babum	Urban	461
406	Southern	Bonthe	Imperri	Bapus	Rural	461
407	Southern	Bonthe	Imperri	Bigo	Rural	461
408	Southern	Bonthe	Imperri	Moimaligie	Rural	461
409	Southern	Bonthe	Jong	Basiaka	Rural	461

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
410	Southern	Bonthe	Jong	Bayengbe	Urban	461
411	Southern	Bonthe	Jong	Beyinga	Rural	461
413	Southern	Bonthe	Jong	Kumabeh-Kwe	Rural	461
414	Southern	Bonthe	Jong	Sopan-Cleveland	Rural	461
415	Southern	Bonthe	Jong	Tucker-Nyambe	Rural	461
416	Southern	Bonthe	Kpanda Kemo	Senjehun	Rural	461
417	Southern	Bonthe	Kwamebai Krim	Kpanga Koimato	Rural	461
418	Southern	Bonthe	Kwamebai Krim	Tubla	Rural	461
419	Southern	Bonthe	Nongoba Bullom	Baoma	Rural	461
421	Southern	Bonthe	Nongoba Bullom	Kessie	Rural	461
422	Southern	Bonthe	Nongoba Bullom	Salma	Rural	461
423	Southern	Bonthe	Sittia	Bamba	Rural	461
424	Southern	Bonthe	Sittia	Kamai	Rural	461
425	Southern	Bonthe	Sittia	Ngepay	Rural	461
426	Southern	Bonthe	Sittia	Sahn-Gbegu	Rural	461
428	Southern	Bonthe	Sogbeni	Pengor	Rural	461
429	Southern	Bonthe	Yawbeko	Kataway	Rural	461
430	Southern	Moyamba	Bagruwa	Benduma	Rural	616
432	Southern	Moyamba	Bagruwa	Moseilolo	Rural	616
433	Southern	Moyamba	Bumpeh	Bellentin	Rural	616
434	Southern	Moyamba	Bumpeh	Greema	Rural	616
435	Southern	Moyamba	Bumpeh	Mamu	Rural	616
436	Southern	Moyamba	Bumpeh	Mokebbie	Rural	616
438	Southern	Moyamba	Dasse	Foya Tewei	Rural	616
439	Southern	Moyamba	Dasse	Taninahun Gomoh	Rural	616
440	Southern	Moyamba	Fakunya	Kovella	Rural	616

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
441	Southern	Moyamba	Fakunya	Njawa	Rural	616
442	Southern	Moyamba	Fakunya	To-Ndambalenga	Rural	616
443	Southern	Moyamba	Kagboro	Bumpetoke	Rural	616
444	Southern	Moyamba	Kagboro	Mobeh	Rural	616
445	Southern	Moyamba	Kagboro	Moyibo	Rural	616
446	Southern	Moyamba	Kagboro	Thumba A	Rural	616
448	Southern	Moyamba	Kaiyamba	Koromboya	Urban	616
449	Southern	Moyamba	Kaiyamba	Mosoe	Rural	616
450	Southern	Moyamba	Kamajei	Kowama	Rural	616
451	Southern	Moyamba	Kamajei	Tawovehun	Rural	616
452	Southern	Moyamba	Kongbora	Mongere	Rural	616
453	Southern	Moyamba	Kori	Zone-1	Rural	616
454	Southern	Moyamba	Kori	Zone-3	Rural	616
455	Southern	Moyamba	Kori	Zone-4	Rural	616
456	Southern	Moyamba	Kori	Zone-7	Rural	616
457	Southern	Moyamba	Kowa	Njagbahun	Rural	616
458	Southern	Moyamba	Lower Banta	Gbangbatoke	Rural	616
459	Southern	Moyamba	Lower Banta	Largoh	Rural	616
460	Southern	Moyamba	Lower Banta	Ndendemoya	Rural	616
461	Southern	Moyamba	Lower Banta	Wulbange	Rural	616
463	Southern	Moyamba	Ribbi	Masarakulay	Rural	616
464	Southern	Moyamba	Ribbi	Mokera	Rural	616
465	Southern	Moyamba	Ribbi	Upper Ribbi	Rural	616
466	Southern	Moyamba	Timdale	Kebail	Rural	616
467	Southern	Moyamba	Upper Banta	Kenafallay	Rural	616
468	Southern	Pujehun	Barri	Fallay	Rural	582
469	Southern	Pujehun	Barri	Jougba	Rural	582

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
470	Southern	Pujehun	Barri	Malla	Rural	582
471	Southern	Pujehun	Barri	Sonjour II	Rural	582
472	Southern	Pujehun	Galliness	Jakema I	Rural	582
474	Southern	Pujehun	Kabonde	Kabonde	Rural	582
475	Southern	Pujehun	Kpaka	Jassende Ngoleima I	Rural	582
476	Southern	Pujehun	Kpaka	Sarbah	Rural	582
477	Southern	Pujehun	Makpele	Samagbe	Rural	582
478	Southern	Pujehun	Makpele	Selimeh	Rural	582
479	Southern	Pujehun	Makpele	Selimeh	Urban	582
480	Southern	Pujehun	Malen	Kahaimoh	Rural	582
481	Southern	Pujehun	Malen	Kemoh	Rural	582
482	Southern	Pujehun	Malen	Lower Pemba	Rural	582
483	Southern	Pujehun	Malen	Taukunor	Rural	582
484	Southern	Pujehun	Mono Sakrim	Kemoh	Rural	582
485	Southern	Pujehun	Mono Sakrim	Sowa	Rural	582
486	Southern	Pujehun	Panga	Banyande	Rural	582
488	Southern	Pujehun	Panga	Panga	Urban	582
489	Southern	Pujehun	Panga	Pessekeh	Rural	582
490	Southern	Pujehun	Panga	Setti- Yakanday	Rural	582
491	Southern	Pujehun	Panga krim	Fassei	Rural	582
492	Southern	Pujehun	Pejeh (Futa peje)	Koilenga	Rural	582
493	Southern	Pujehun	Pejeh (Futa peje)	Pejeh West	Rural	582
494	Southern	Pujehun	Perri	Gendema I	Rural	582
496	Southern	Pujehun	Perri	Mewah	Rural	582
497	Southern	Pujehun	Soro Gbema	Kemokai	Rural	582
498	Southern	Pujehun	Soro Gbema	Massaquoi I	Rural	582
499	Southern	Pujehun	Soro Gbema	Moiwebu	Rural	582

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
500	Southern	Pujehun	Soro Gbema	Zoker I	Rural	582
501	Southern	Pujehun	Sowa	Sabba I	Rural	582
502	Southern	Pujehun	Sowa	Sabba II	Rural	582
504	Southern	Pujehun	Yakemu Kpukumu	Sowonde	Rural	582
505	Western Area	WA-Rural	Koya Rural	Magbafti	Rural	700
506	Western Area	WA-Rural	Koya Rural	Malambay	Urban	700
507	Western Area	WA-Rural	Koya Rural	Malambay	Urban	700
508	Western Area	WA-Rural	Koya Rural	Malambay	Urban	700
510	Western Area	WA-Rural	Koya Rural	Newton	Urban	700
511	Western Area	WA-Rural	Mountain Rural	Gloucester	Urban	700
512	Western Area	WA-Rural	Mountain Rural	Regent	Urban	700
513	Western Area	WA-Rural	Mountain Rural	Regent	Urban	700
515	Western Area	WA-Rural	Waterloo Rural	Deep Eye Water/ Devil Hole	Urban	700
516	Western Area	WA-Rural	Waterloo Rural	Deep Eye Water/ Devil Hole	Urban	700
517	Western Area	WA-Rural	Waterloo Rural	Hastings-Yams Farm	Urban	700
518	Western Area	WA-Rural	Waterloo Rural	Jui-Grafton	Urban	700
519	Western Area	WA-Rural	Waterloo Rural	Jui-Grafton	Urban	700
520	Western Area	WA-Rural	Waterloo Rural	Rokel	Urban	700
521	Western Area	WA-Rural	Waterloo Rural	Rokel	Urban	700
523	Western Area	WA-Rural	Waterloo Rural	Waterloo Benguema	Urban	700
524	Western Area	WA-Rural	Waterloo Rural	Waterloo Lumpa	Urban	700
525	Western Area	WA-Rural	Waterloo Rural	Waterloo Lumpa	Urban	700
526	Western Area	WA-Rural	Waterloo Rural	Waterloo Lumpa	Urban	700

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
527	Western Area	WA-Rural	Waterloo Rural	Waterloo Lumpa	Urban	700
528	Western Area	WA-Rural	Waterloo Rural	Waterlooo Campbell Town	Urban	700
529	Western Area	WA-Rural	Waterloo Rural	Waterlooo Campbell Town	Urban	700
531	Western Area	WA-Rural	Waterloo Rural	Waterlooo Campbell Town	Urban	700
532	Western Area	WA-Rural	Waterloo Rural	Waterlooo Campbell Town	Urban	700
533	Western Area	WA-Rural	York Rural	Gbendembu	Urban	700
534	Western Area	WA-Rural	York Rural	Gbendembu	Urban	700
535	Western Area	WA-Rural	York Rural	Goderich-Adonkia/Milton Margai	Urban	700
536	Western Area	WA-Rural	York Rural	Goderich-Adonkia/Milton Margai	Urban	700
537	Western Area	WA-Rural	York Rural	Goderich-Adonkia/Milton Margai	Urban	700
538	Western Area	WA-Rural	York Rural	Goderich-Adonkia/Milton Margai	Urban	700
539	Western Area	WA-Rural	York Rural	Goderich-Funkia	Urban	700
540	Western Area	WA-Rural	York Rural	Hamilton	Urban	700
541	Western Area	WA-Rural	York Rural	Sattia/Tombo	Rural	700
542	Western Area	WA-Rural	York Rural	Sattia/Tombo	Urban	700
544	Western Area	WA-Rural	York Rural	York	Urban	700
545	Western Area	WA-Urban	Central I	Mountain Regent	Urban	1582
546	Western Area	WA-Urban	Central I	Sorie Town	Urban	1582
547	Western Area	WA-Urban (Slum)	Central I	Susan' s Bay	Slum	301
549	Western Area	WA-Urban (Slum)	Central I	Susan' s Bay	Slum	301

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
550	Western Area	WA-Urban (Slum)	Central I	Susan's Bay	Slum	301
551	Western Area	WA-Urban (Slum)	Central II	Connaught Hospital	Slum	301
552	Western Area	WA-Urban (Slum)	Central II	Connaught Hospital	Slum	301
553	Western Area	WA-Urban	Central II	Sanders Brook	Urban	1582
555	Western Area	WA-Urban (Slum)	East I	Cline Town	Slum	301
556	Western Area	WA-Urban (Slum)	East I	Cline Town	Slum	301
557	Western Area	WA-Urban	East I	Fourah Bay	Urban	1582
558	Western Area	WA-Urban (Slum)	East I	Kossoh Town	Slum	301
560	Western Area	WA-Urban	East II	Foulah Town	Urban	1582
561	Western Area	WA-Urban	East II	Ginger Hall	Urban	1582
562	Western Area	WA-Urban (Slum)	East II	Magazine	Slum	301
563	Western Area	WA-Urban (Slum)	East II	Magazine	Slum	301
564	Western Area	WA-Urban	East II	Quarry	Urban	1582
565	Western Area	WA-Urban	East III	Allen Town I	Urban	1582
567	Western Area	WA-Urban	East III	Congo Water II	Urban	1582
568	Western Area	WA-Urban	East III	Congo Water II	Urban	1582
569	Western Area	WA-Urban (Slum)	East III	Grass Field	Slum	301
571	Western Area	WA-Urban	East III	Jalloh Terrace	Urban	1582
572	Western Area	WA-Urban	East III	Kissy Brook II	Urban	1582
573	Western Area	WA-Urban (Slum)	East III	Kissy Bye Pass(Dock)	Slum	301
574	Western Area	WA-Urban (Slum)	East III	Kissy Bye Pass(Term)	Slum	301
575	Western Area	WA-Urban	East III	Kissy Bye Pass(Term)	Urban	1582

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
576	Western Area	WA-Urban	East III	Kissy Mess Mess	Urban	1582
577	Western Area	WA-Urban	East III	Lowcost Housing	Urban	1582
578	Western Area	WA-Urban	East III	Mamba Ridge II	Urban	1582
579	Western Area	WA-Urban	East III	Mayenkineh	Urban	1582
580	Western Area	WA-Urban (Slum)	East III	Old Warf	Slum	301
581	Western Area	WA-Urban (Slum)	East III	Old Warf	Slum	301
582	Western Area	WA-Urban (Slum)	East III	Pamuronko	Slum	301
583	Western Area	WA-Urban	East III	Pamuronko	Urban	1582
584	Western Area	WA-Urban (Slum)	East III	Portee	Slum	301
585	Western Area	WA-Urban (Slum)	East III	Portee	Slum	301
586	Western Area	WA-Urban	East III	Robis	Urban	1582
587	Western Area	WA-Urban (Slum)	East III	Rokupa	Slum	301
588	Western Area	WA-Urban (Slum)	East III	Rokupa	Slum	301
589	Western Area	WA-Urban	East III	Tasso Island	Urban	1582
590	Western Area	WA-Urban	West I	Ascension Town	Urban	1582
591	Western Area	WA-Urban (Slum)	West I	Kingtom	Slum	301
592	Western Area	WA-Urban (Slum)	West I	Kingtom	Slum	301
593	Western Area	WA-Urban (Slum)	West I	Kroo Town	Slum	301
594	Western Area	WA-Urban (Slum)	West I	Kroo Town	Slum	301
595	Western Area	WA-Urban	West I	Kroo Town	Urban	1582
596	Western Area	WA-Urban	West II	Brookfields-Congo	Urban	1582
598	Western Area	WA-Urban (Slum)	West II	CongoTown	Slum	301

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
599	Western Area	WA-Urban (Slum)	West II	CongoTown	Slum	301
600	Western Area	WA-Urban (Slum)	West II	CongoTown	Slum	301
601	Western Area	WA-Urban	West II	George Brook (Dwor	Urban	1582
602	Western Area	WA-Urban	West II	New England-Hannes	Urban	1582
603	Western Area	WA-Urban	West II	New England-Hill Cot	Urban	1582
604	Western Area	WA-Urban	West II	Sumaila Town	Urban	1582
605	Western Area	WA-Urban	West II	Tengbeh Town	Urban	1582
606	Western Area	WA-Urban (Slum)	West III	Cockerill-Aberdeen	Slum	301
607	Western Area	WA-Urban (Slum)	West III	Cockle-Bay/ Collegiate	Slum	301
608	Western Area	WA-Urban (Slum)	West III	Cockle-Bay/ Collegiate	Slum	301
610	Western Area	WA-Urban	West III	Hill Station	Urban	1582
611	Western Area	WA-Urban	West III	Juba/Kaningo	Urban	1582
613	Western Area	WA-Urban	West III	Lumley	Urban	1582
614	Western Area	WA-Urban	West III	Malama/ Kamayama	Urban	1582
615	Western Area	WA-Urban (Slum)	West III	Murray Town	Slum	301
616	Western Area	WA-Urban (Slum)	West III	Murray Town	Slum	301
617	Western Area	WA-Urban	West III	Pipeline/ Wilkinson	Urban	1582
618	Western Area	WA-Urban	West III	Wilberforce	Urban	1582
103 (RC)	Eastern	Kono	Sandor	Dangbaidu	Rural	787
122 (RC)	North West	Kambia	Magbema	Kambia	Urban	576
13 (RC)	Eastern	Kailahun	Kpeje Bongre	Manowa	Urban	891
134 (RC)	North West	Kambia	Masungbala	Benna	Rural	576
138 (RC)	North West	Kambia	Samu	Kassiri	Urban	576

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
145 (RC)	North West	Kambia	Tonko Limba	Kamassassa	Rural	576
151 (RC)	North West	Karene	Dibia	Mafonda	Rural	435
160 (RC)	North West	Karene	Safroko	Maron	Rural	435
168 (RC)	North West	Karene	Sanda Tendaran	Mateboi	Rural	435
173 (RC)	North West	Karene	Sella Limba	Magbonkoni I	Rural	435
182 (RC)	North West	Port Loko	Bakeh Loko	Sendugu	Urban	1000
196 (RC)	North West	Port Loko	Koya	Mawoma	Urban	1000
209 (RC)	North West	Port Loko	Marampa	Marampa A	Urban	1000
214 (RC)	North West	Port Loko	Masimera	Rokon/Komboya	Rural	1000
219 (RC)	North East	Bombali	Bombali Sebora	Kagbaran Dokom B	Rural	730
229 (RC)	North East	Bombali	Makari	Mankneh Bana	Rural	730
237 (RC)	North East	Bombali	Makeni City	Mayanka II Ward	Urban	730
243 (RC)	North East	Bombali	N'gowahun	Kalangba	Rural	730
251 (RC)	North East	Falaba	Delemandugu	Upper Deldugu	Rural	354
257 (RC)	North East	Falaba	Dembelia-Sinkunia	Mawundea	Rural	354
265 (RC)	North East	Falaba	Kulor Saradu	Kulor	Rural	354
277 (RC)	North East	Falaba	Sulima	Falaba I	Rural	354
286 (RC)	North East	Koinadugu	Diang	Gbenekoro	Rural	394
29 (RC)	Eastern	Kailahun	Njaluahun	Sei I	Urban	891
301 (RC)	North East	Koinadugu	Nieni	Nieni	Rural	394
311 (RC)	North East	Koinadugu	Wara Wara Bafodia	Kadanso	Rural	394
317 (RC)	North East	Koinadugu	Wara Wara Yagala	Zone 3	Urban	394
323 (RC)	North East	Tonkolili	Gbonkolenkeni/ Masankong	Upper Massakong	Rural	1041
337 (RC)	North East	Tonkolili	Malal	Malal	Rural	1041
34 (RC)	Eastern	Kailahun	Upper Bambara	Korbu	Rural	891
341 (RC)	North East	Tonkolili	Sambaya	Dayie	Rural	1041

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
351 (RC)	North East	Tonkolili	Yoni Mabanta	Ronietta	Rural	1041
365 (RC)	Southern	Bo	Bo Town	North Ward-Kissy Town-Kortubuma	Urban	1031
370 (RC)	Southern	Bo	Bo Town	West Ward-Njagboima-Coronation Field	Urban	1031
383 (RC)	Southern	Bo	Komboya	Kemoh	Rural	1031
389 (RC)	Southern	Bo	Tikonko	Seiwa	Rural	1031
403 (RC)	Southern	Bonthe	Dema	Yoh	Rural	461
412 (RC)	Southern	Bonthe	Jong	Falewuja	Rural	461
420 (RC)	Southern	Bonthe	Nongoba Bullom	Garinga	Rural	461
427 (RC)	Southern	Bonthe	Sogbeni	Bakumba	Rural	461
431 (RC)	Southern	Moyamba	Bagruwa	Kigbai	Rural	616
437 (RC)	Southern	Moyamba	Bumpeh	Samu	Rural	616
44 (RC)	Eastern	Kenema	Gorama Mende	Kualley	Rural	1130
447 (RC)	Southern	Moyamba	Kaiyamba	Angigboya	Rural	616
462 (RC)	Southern	Moyamba	Ribbi	Masanka	Rural	616
473 (RC)	Southern	Pujehun	Galliness	Kemokai	Rural	582
48 (RC)	Eastern	Kenema	Kenema City	Gbo Kakajama A-Lumbebu	Urban	1130
487 (RC)	Southern	Pujehun	Panga	Lower Kayiemba	Rural	582
495 (RC)	Southern	Pujehun	Perri	Jakema II	Rural	582
5 (RC)	Eastern	Kailahun	Jawie	Sowa	Rural	891
503 (RC)	Southern	Pujehun	Yakemu Kpukumu	Bapawa	Rural	582
509 (RC)	Western Area	WA-Rural	Koya Rural	Malambay	Urban	700
514 (RC)	Western Area	WA-Rural	Waterloo Rural	Deep Eye Water/ Devil Hole	Urban	700
522 (RC)	Western Area	WA-Rural	Waterloo Rural	Waterloo Benguema	Urban	700
530 (RC)	Western Area	WA-Rural	Waterloo Rural	Waterlooo Campbell Town	Urban	700

CLUSTER NO.	New_Prov	New_Dist	New_Chief	SECTION	URBRUR	Stratum measure/ size
543 (RC)	Western Area	WA-Rural	York Rural	Sattia/Tombo	Urban	700
548 (RC)	Western Area	WA-Urban (Slum)	Central I	Susan's Bay	Slum	301
554 (RC)	Western Area	WA-Urban (Slum)	East I	Cline Town	Slum	301
559 (RC)	Western Area	WA-Urban	East II	Foulah Town	Urban	1582
56 (RC)	Eastern	Kenema	Kenema City	Gbo Lambayama A-Reservation	Urban	1130
566 (RC)	Western Area	WA-Urban	East III	Congo Water I	Urban	1582
570 (RC)	Western Area	WA-Urban (Slum)	East III	Grass Field	Slum	301
597 (RC)	Western Area	WA-Urban	West II	Brookfields-Red Pu	Urban	1582
609 (RC)	Western Area	WA-Urban (Slum)	West III	Cockle-Bay/ Collegiate	Slum	301
612 (RC)	Western Area	WA-Urban	West III	Juba/Kaningo	Urban	1582
64 (RC)	Eastern	Kenema	Malegohun	Konjo Buiima	Urban	1130
70 (RC)	Eastern	Kenema	Simbaru	Fonde	Rural	1130
78 (RC)	Eastern	Kono	Gbane	Gbikidakor	Rural	787
86 (RC)	Eastern	Kono	Koidu City	Gbense-Moindekor	Urban	787
95 (RC)	Eastern	Kono	Nimikoro	Bafinfeh	Rural	787

10.
REFERENCES

- Akombi BJ, Agho KE, Merom D, Renzaho AM, Hall JJ (2017) Child malnutrition in sub-Saharan Africa: A meta-analysis of demographic and health surveys (2006-2016). PLoS ONE 12(5): e0177338. https://doi.org/10.1371/journal.pone.0177338
- AUC/UNECA/WFP (2013), The Cost of Hunger in Africa: Social and Economic Impact of Child Undernutrition.
- Bhutta, Zulfiqar. A., Jai K Das, Arjumand Rizvi, Michelle FGaffey, Neff Walker, Susan Horton, Patrick Webb, Anna Lartey, Robert E Black, he Lancet Nutrition Interventions Review Group, and the Maternal and Child Nutrition Study Group. 2013. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? Lancet 2013; 382: 452–77 http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736 (13)60996-4.pdf (Accessed October 30, 2017).
- Black RE, Victora CG, Walker SP et al (2013). 'Maternal and Child Nutrition: Maternal and Child Undernutrition and Overweight in Low-income and Middle-income Countries': The Lancet Series 382: 427–51.
- Care (2010), Infant and Young Child Feeding Practices, Collecting and Using Data: A Step-by-Step guide.
- FAO and FHI 360 (2016). Minimum Dietary Diversity for Women:A Guide for Measurement.Food and Agriculture Organization of the United Nations and USAID's Food and Nutrition Technical Assistance III Project (FANTA). Rome: FAO.
- GoSL/MoHS (2016).Annual Health Sector Performance Report 2016. Government of Sierra Leone Ministry of Health and Sanitation.
- Malik, V.S., Pan, A., Willett, W.C. & Hu, F.B. 2013. Sugar-sweetened beverages and weight gain in children and adults: a systematic review and meta-analysis. Am J Clin Nutr. 98(4): 1084–102. Doi: 10.3945/ajcn.113.058362.
- Ministry of Health and Sanitation Sierra Leone and UNICEF Sierra Leone (2014). Sierra Leone National Nutrition Survey 2014. Freetown, Sierra Leone.
- Ministry of Health and Sanitation Sierra Leone and UNICEF Sierra Leone (2010). Sierra Leone National Nutrition Survey 2010. Freetown, Sierra Leone.
- Onis, Mercedes de, Kathryn G. Dewey, Elaine Borghi, Adelheid W. Onyango, Monika Blössner, Bernadette Daelmans,‡ Ellen Piwoz§ and Francesco Branca. 2013. The World Health Organization's Global Target for Reducing Childhood Stunting by 2025: Rationale and Proposed ActionsMaternal and Child Nutrition (2013), 9 (Suppl. 2), pp. 6–26 http://www.cmamforum.org/pool/resources/who-globaltarget-for-reducing-childhood-stunting-by-2025-2013.pdf
- Prendergast, Andrew J. and Jean H. Humphrey. 2014. "The Stunting Syndrome in Developing Countries", Paediatrics and International Child Health, Vol. 34, No. 4, pp. 250-265. http://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC4232245&blobtype=pdf

- Pries AM, Rehman AM, Filteau S, Sharma N, Upadhyay A, Ferguson EL (2019). Unhealthy Snack Food and Beverage Consumption Is Associated with Lower Dietary Adequacy and Length-for-Age z-Scores among 12–23-Month-Olds in Kathmandu Valley, Nepal. J Nutr. 2019;149:1843–51. doi:10.1093/jn/nxz140.

- Sankar MJ, Sinha B, Chowdhury R, Bhandari N, Taneja S, Martines J, BahlR.(2015). Optimal breastfeeding practices and infant and child mortality: a systematic review and meta-analysis. Acta Paediatr. 2015;104(467):3–13.

- SMART (2006).Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology Retrieved from http://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/

- SPHERE (2011). The Sphere Project: Humanitarian Charter and Minimum Standards in Humanitarian Response; U.K.

- SL CFSVA (2015).The State of Food Security in Sierra Leone 2015.Comprehensive Food Security and Vulnerability Analysis (CFSVA). Ministry of Agriculture, Forestry and Food Security (MAFFS), the Food and Agriculture Organization (FAO) and the World Food Programme (WFP).

- SSL (2016).Sierra Leone National Population and Housing Census 2015. Statistics Sierra Leone. A.J. Momoh Street Tower Hill Freetown.

- Statistics Sierra Leone (Stats SL) and ICF. 2019. Sierra Leone Demographic and Health Survey 2019: Key Indicators. Freetown, Sierra Leone, and Rockville, Maryland, USA: Stats SL and ICF.

- SSL/ICFI (2014). 'Sierra Leone Demographic and Health Survey 2013'; Statistics Sierra Leone and ICF International: Freetown, Sierra Leone and Rockville, Maryland, USA.

- United Nations Children's Fund (UNICEF). 2013. Improving Child Nutrition: The Achievable Imperative for Global Progress (April) http://www.childinfo.org/files/NutritionReport_April2013_Final.pdf (Accessed November 13, 2017).

- Victora, Cesar Gomes, Mercedes de Onis, Pedro CuriHallal, MonikaBlossner, and Roger Shrimpton (2010). Timing of Growth Faltering: Revisiting Implications for Interventions. Pediatrics 125:e473–e480 https://www.researchgate.net/profile/Roger_Shrimpton/publication/41435284_Worldwide_Timing_of_Growth_Faltering_Revisiting_Implications_for_Interventions/links/54876caa0cf289302e2edb32.pdf (Accessed November 2, 2017).

- Victora CG, Bahl R, Barros AJ, Franca GV, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N, Rollins NC (2016). Lancet Breastfeeding Series Group. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. Lancet. 2016;387(10017):475–90.

- Victora CG, Adair L, Fall C, et al (2008). Maternal and child undernutrition: Consequences for Adult Health and Human Capital. The Lancet Series; 371: 340–57.

- WFP (November 2015). CARI Technical Guidance Note (2nd edition). Consolidated Approach to Reporting Indicators of Food Security (CARI).
- WFP (2021). Comprehensive Food Security and Vulnerability Analysis Sierra Leone 2020. World Food Programme and Ministry of Agriculture & Forestry, Sierra Leone, November-December 2020.
- World Health Organization (2015).The International Classification of Diseases 11th revision. http://www.who.int/classifications/icd/revision/en/ (accessed December 17, 2017).
- WHO (2010).Indicators for assessing infant and young child feeding practices; Part 2: Measurement. Geneva, Switzerland.
- WHO/UNICEF (2021). Indicators for assessing infant and young child feeding practices: definitions and measurement methods. Geneva: World Health Organization and the United Nations Children's Fund (UNICEF), 2021. Licence: CC BYNC-SA 3.0 IGO; https://creativecommons.org/licenses/by-nc-sa/3.0/igo
- WHO/UNICEF (2010). 'Joint Monitoring Programme for Water Supply and Sanitation and Drinking Water'; World Health Organization/United Nations Children's Fund: Geneva, Switzerland.
- WHO (2014). Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition. World Health Organization. http://apps.who.int/iris/bitstream/10665/113048/1/WHO_NMH_NHD_14.1_eng.pdf (Accessed November 13, 2017).
- WHO (2003). Guiding principles for complementary feeding of the breastfed child. Washington: Pan American Health Organization-World Health Organization; 2003. https://www.who.int/nutrition/publications/guiding_principles_compfeeding_breastfed.pdf (Accessed 31 September 2021).
- WHO (2005). Guiding principles for feeding non-breastfed children 6–24 months of age. Geneva: World Health Organization; 2005.
- Xi, B., Huang, Y., Reilly, K.H., Li, S., Zheng, R., Barrio-Lopez, M.T., Martinez-Gonzalez, M.A. & Zhou, D. 2015. Sugar-sweetened beverages and risk of hypertension and CVD: a dose-response meta-analysis. Br J Nutr. 113(5): 709–17. Doi: 10.1017/S0007114514004383.

SIERRA LEONE

NATIONAL NUTRITION SURVEY 2021