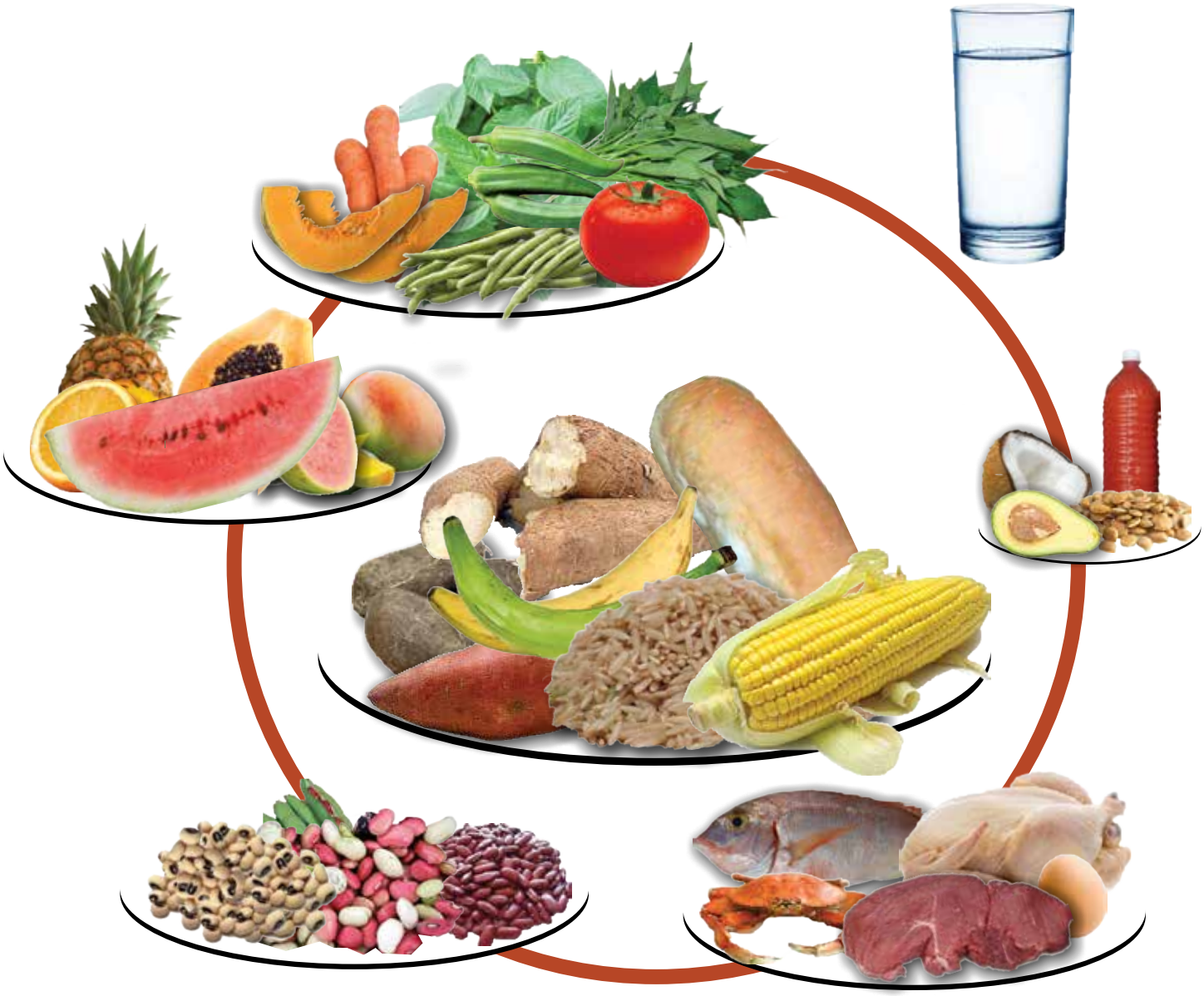
SIERRA LEONE
FOOD-BASED DIETARY GUIDELINES FOR HEALTHY EATING



Food and Agriculture Organization of the United Nations

German Ministry of Food, Agriculture and Consumer Protection

FOREWORD

With the increased global, regional and national focus on nutrition-sensitive agricultural practices as key to improving nutrition outcomes, the Government of Sierra Leone has recognized the importance of developing and implementing national food-based dietary guidelines. The dietary guidelines are an important tool for improving healthy eating patterns among the people of Sierra Leone and contribute to achieving the broader vision of the National Food and Nutrition Security Policy, and thus to the Agenda for Prosperity, the national roadmap to becoming a middle-income country by 2030.

Adequate and proper nutrition is the foundation for optimal health and development. More than ever, it is becoming increasingly important to undertake sustained and effective actions that will reduce malnutrition in Sierra Leone through coherent nutrition-sensitive interventions. With 2030 earmarked for the achievement of the Sustainable Development Goals (SDGs), emphasis must be placed on delivering nutrition actions that will yield greater results and impact. The National Food-Based Dietary Guidelines (NFBDGs) are of prime importance in achieving improved nutritional status. Looking at the trends in nutritional status in Sierra Leone, there have been marked improvements in nutritional indicators related to undernutrition, despite its continued persistence. However, overweight and diet-related non-communicable diseases are on the rise, posing an additional burden on health service delivery. To cope with the double burden of undernutrition and over nutrition, the outcomes must be determined by nutrition-specific and nutrition-sensitive actions. These Food-Based Dietary Guidelines (FBDGs) are thus a critical part of national efforts to end malnutrition.

The challenge ahead is to implement the dietary guidelines for behaviour change to address all forms of malnutrition. Based on the process recommended by the Food and Agriculture Organization of the United Nations and the World Health Organization, the development of the National Food-Based Dietary Guidelines is a critical part of efforts to prevent and manage undernutrition, overnutrition and diet-related nutritional disorders. The dietary guidelines provide a framework for policy advice in planning nutritionally adequate, safe and affordable dietary practices. They are detailed and inclusive and take into account the dietary expectations, gender sensitivity and cultural realities of Sierra Leone's diverse communities. Furthermore, the Guidelines are designed to influence not only individual food choices but also provide coherent policy guidance on the production of nutrient-dense foods, social protection programmes, school meals, nutrition standards, health and agriculture interventions that involve the commitment of diverse sectors influencing the health and nutritional well-being of the nation. The Guidelines will certainly play a great role in improving Sierra Leonean eating patterns in the years to come.

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The Government of Sierra Leone is grateful to all those who contributed to the development process by ensuring that messages contained in the Food-Based Dietary Guidelines are country-specific, achievable, understandable, culturally-sensitive and evidence-based. Special thanks go to the key line ministries of Agriculture, Forestry and Food Security; Ministry of Health and Sanitation, in particular, the Directorate of Food and Nutrition, as well as the Ministry of Education, Science and Technology. Task force members comprised prominent experts in nutrition, health and food security from MAFFS, MOHS, MEST; the Scaling up Nutrition, SUN Secretariat; UN organizations, including FAO, UNICEF, UNWOMEN, WHO and the WFP; donor communities including Irish Aid; academia such as Njala University; and various international NGOs i.e. HKI, IMC/SNAP, WHH and national NGOs, i.e. Focus 1000 and FANSI.

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LIST OF ACCRONYMS

ANC	Ante natal care
BMI	Body Mass Index
CVD	Cardiovascular diseases
CFSVA	Comprehensive Food Security and Vulnerability Analysis
DRNCDs	Diet -Related Non Communicable Diseases
ESN	Nutrition and Food Systems Division (FAO)
EVD	Ebola Virus Disease
FAO	Food and Agriculture Organization of the United Nations
FBDGs	Food Based Dietary Guidelines
FG	Food Guide
FNSIP	Food and Nutrition Security Implementation Plan
GI	Glycaemic Index
H/A	Height for Age
HKI	Hellen Keller International
IDA	Iron Deficiency Anaemia
IDD	Iodine Deficiency Disorder
IFAS	Iron Folate Acid Supplementation
LBW	Low Birth Weight
MAFFS	Ministry of Agriculture, Forestry and Food Security
M&E	Monitoring and evaluation
MEST	Ministry of Education, Science and Technology
MOHS	Ministry of Health and Sanitation
NCD	Non Communicable Disease
NFBDG	National Food Based Dietary Guideline
NGO	Non-Governmental Organizations
ORT	Oral Rehydration Therapy
PLHIV	People Living with HIV
SLNFBDG	Sierra Leonean National Food -Based Dietary Guideline
SLFG	Sierra Leone Food Guide
SLNNS	Sierra Leone Nutrition Survey
SLWoFF	Sierra Leone Women Farmers' Forum
SNAP	Sustainable Nutrition and Agriculture Programme
SUN	Scaling up Nutrition
T2DM	Type 2 Diabetes Mellitus
TB	Tuberculosis
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme
USI	Universal Salt Iodization
VAD	Vitamin A Deficiency
W/A	Weight for Age
W/H	Weight for Height
WHH	Welthungerhilfe
WFP	World Food Programme
WIAN	Women in Agriculture and Nutrition
WHO	World Health Organization

DEFINITION OF TERM

Absorb	The ability of body tissues to take up water and other substances (like nutrients). Nutrients from digested food are absorbed from the intestine into the blood
Access to food	The ability to access food physically, economically and socially, at individual or household level.
Acute malnutrition	Recent, severe weight loss as a result of acute food deprivation with or without illness; it refers to wasting and/or nutritional oedema.
Amino acids	Molecules from which proteins are built and to which they are broken down when digested.
Anaemia	Anaemia is a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet the needs of the body.
Antinutrients	Naturally occurring compounds in foods such as poisons (e.g. cyanide in unprocessed, bitter cassava), or substances that interfere with digestion, absorption or use of nutrients in the body (e.g. phytates and tannins).
Balanced diet	A diet that provides an adequate amount and variety of foods in the right proportions to meet a person's nutrient needs for a healthy, active life.
Bioavailability	The proportion of the nutrient content of a food that can be digested, absorbed and used by the body.
Body mass index	A ratio of weight-for-height commonly used to classify underweight, normal weight, overweight and obesity in adults.
Chronic malnutrition	An abnormal physiological condition caused by chronic deficiencies or imbalances in one or more nutrients. This condition may result in impaired physical and/or mental development.
Chronic undernutrition	An abnormal physiological condition whereby individuals do not consume sufficient food to meet dietary energy and nutrient requirements over a prolonged period of time
Clean & safe water	Water that is acceptable for human consumption and other domestic purposes, such as food preparation and bathing.
Communicable disease	A disease that can be transmitted from one person to another or from an animal to a person.
Complementary feeding	Giving foods (complementary foods) in addition to breastmilk to young children, recommended to start at the age of 6 months.
Dietary diversity	A measure of the variety of food from different food groups consumed over a reference period.
Dietary energy requirement	The amount of energy required (from food) to maintain all physiological processes consistent with a healthy active lifestyle.
Dietary energy supply	Food available for human consumption, expressed in kilocalories per person per day (kcal/person/day).
Food	Substances (including drinks) of plant or animal origin that contain nutrients and energy and that are intended for human consumption.
Food-Based Dietary Guidelines	Tool to translate nutritional recommendations into messages about foods and diet and may take into consideration other aspects related to eating and well-being. In order to have an impact on eating behaviour, it is recommended that Food-Based Dietary Guidelines be used by different sectors such as governments to guide agriculture, health, food security and nutrition policies and programmes; or and by the food industry to guide product formulation.
Food Guide	A Food Guide is a visual tool that supports communication and education based on the Food-Based Dietary Guidelines.

Food and nutrition security	This is a state that exists when all people at all times have physical, social and economic access to food of sufficient quantity in calories and quality in terms of variety, diversity, nutrient content and safety to meet their dietary needs and food preferences for an active and healthy life. These conditions must be coupled with a sanitary environment, adequate health, education and care.
Fortified foods	Foods to which extra nutrients have been added; this should be based on a public health need rather than just for marketing purposes. These may also be called enriched foods.
Guidelines for Healthy Eating	The Sierra Leone Food-Based Dietary Guidelines are called Sierra Leone's Guidelines for Healthy Eating
Hay box	An insulated container in which a pot of heated food that requires a long cooking time is placed. This reduces the cooking time, thus saving fuel.
Health	A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.
Health promotion	The process of enabling people to increase control over, and improve their health.
Healthy eating plan	A diet that provides the foods that supply the correct amounts of nutrients needed for health.
Hunger	A state of not having enough to eat to meet energy requirements. Can also be described as an uncomfortable or painful sensation caused by insufficient food consumption.
Iodized salt	Commercial table salt to which iodine has been added.
Kilocalorie/kilojoule	The unit in which the amount of energy in food is measured. The metric unit is the kilojoule (kJ). One kilocalorie is equivalent to 4.18 kJ.
Low birth weight	It is defined as weight at birth of less than 2 500 g (up to and including 2 499 g) irrespective of gestational age.
Macronutrients	The components of the diet (carbohydrates, proteins and fats) needed by the body in large amounts for normal physiological function, measured in grams.
Malnutrition	An abnormal physiological condition caused by deficiencies, excesses or imbalances in energy and/or nutrients necessary for an active, healthy life.
Micronutrient**s**	Vitamins, minerals and certain other substances that is required in small amounts (milligrams or micrograms) by the body for normal physiological and metabolic function
Micronutrient-rich foods	Foods with a high micronutrient content with respect to its mass or volume
Non-communicable diseases	Diseases that are not transmitted from one person to another, the risk factors for many of these medical conditions are related to lifestyle factors e.g. Type 2 diabetes, cardiovascular disease and some cancers.
Nutrient	A part of a food that the body absorbs and uses for energy, growth, tissue repair, functioning of the body systems and protection from disease.
Nutrient-dense food	Food with a high content of nutrients with respect to mass or volume.
Nutrition	The study of foods, diets and the body's use of nutrients, as well as food-related behaviours and factors that influence these.
Nutrition education	Refers to promoting healthy eating habits. Any combination of educational strategies, accompanied by and contributing to an enabling environment, which together facilitate voluntary adoption of food choices and other food and nutrition-related behaviours conducive to health and well-being. The goal of nutrition education is to reinforce specific nutrition-related practices or behaviours to change habits that contribute to poor health. People are given help to learn new information about nutrition and to develop the attitudes, skills and confidence that they need to improve their nutrition practices.

Nutritional status	The physiological state of an individual that results from the relationship between nutrient intake, requirements and the body's ability to digest, absorb and utilize these nutrients.
Nutrition-specific	Interventions or programmes that are designed primarily to address immediate determinants of nutrition and development such as adequate food and nutrient intake, treatment of acute malnutrition, caregiving practices and reducing the burden of infectious diseases.
Nutrition-sensitive	Interventions or programmes that are designed to address the underlying determinants of child nutrition and include household food security, adequate care giving for mothers and children, through access to health care services and sanitation; at the household and community levels. They involve multisectoral approaches to achieving optimal nutrition outcomes.
Obesity	A condition characterized by excessive accumulation of fat in the adipose tissue. An adult body mass index >30 is classified as obese. Obesity is associated with risk of illnesses including death.
Oedema	An accumulation of excessive amount of fluids in the cells and tissues. The swelling can occur in one particular part of the body or may be generalized. It is most often seen in the legs and arms.
Overnutrition	A result of excessive food intake relative to dietary nutrient requirements.
Overweight	An adult body mass index >25–30, this is considered too high for the person's height.
Severe acute malnutrition	A very low weight-for-height (below -3 z-scores of the median World Health Organization growth standards), by visible severe wasting, or by the presence of nutritional oedema.
Stunting	Low height-for-age, reflecting a sustained past episode or episodes of inadequate food intake.
Undernutrition	The outcome of insufficient food intake and/or repeated infectious disease. It includes being underweight for one's age, too short for one's age (stunted), dangerously thin for one's height (wasted) and deficient in vitamins and minerals (micronutrient malnutrition).
Wasting	This is a type of undernutrition, children or adults will have a low weight-for-height; generally, the result of weight loss associated with a recent period of acute food deprivation, prolonged hunger or disease.

SECTION ONE

1.0 BACKGROUND AND CONTEXT

1.1 Introduction

Agriculture is the mainstay of Sierra Leone's economy and an important source of livelihood for about 70 percent of the population residing in rural areas[1]. Despite agriculture's potential to contribute to improving the population's health and nutritional status, many people do not benefit from the production and consumption of diverse nutrient-dense foods. Presently, 49.8 percent of the population has been classified as food insecure and there is overdependence on the consumption of staples, notably rice and cassava[2].

Sierra Leone is not self-sufficient in food production and remains highly dependent on food imports, the availability of which is determined by global prices. For example, the country is a net importer of milled rice, leaving poor households extremely vulnerable to international price fluctuations. According to the State of Food Security in Sierra Leone in 2015[3], households spend a significant portion of their income on food and fuel, accounting for half of total household expenditure. Any price hikes therefore have a detrimental impact on the ability of poor households to purchase nutritious foods.

Foods commonly consumed in Sierra Leone include rice, cassava, palm oil, groundnuts, fish and other seafood, green leafy vegetables and beans. Rice is the staple food crop consumed throughout the year countrywide on a daily basis by the rich and poor alike. Cassava is consumed in the form of *gari*. Consumption of other food groups, especially fruits and vegetables, is not common and mostly depends on households' purchasing power. Many families cannot afford to regularly consume diverse diets. This has far-reaching implications for nutritional well-being, especially of vulnerable population groups such as pregnant and lactating women and children under five years old.

1.1.1 Nutrition Situation in Sierra Leone

1.1.1.1 Nutritional status

Addressing undernutrition is never easy due to its complex and multifaceted nature. It is becoming increasingly clear that efforts to end malnutrition require multisectoral interventions with strong sectoral coordination. The Food and Nutrition Security Implementation Plan was developed to translate policy directions into implementable priority actions and interventions.

Malnutrition in the form of undernutrition remains a significant contributor to infant and child morbidity and mortality in Sierra Leone and is attributable to a complex set of factors, such as inadequate food intake and poor choices of food, as well as various underlying factors at the household, community and macro levels. Overall, undernutrition in Sierra Leone is manifested by high levels of stunting, underweight and wasting rates among children under five years old. Although the Government of Sierra Leone has made tremendous commitments through the Agenda for Prosperity, undernutrition remains an issue of national concern. The 2014 Sierra Leone National Nutrition Survey (SLNS)[4], which offers the most recent data on nutritional status of children under five, indicates that 28.8 percent are stunted according to the

1 International Labor Organization, Sierra Leone 2014 Labor force Survey
2 State of Food Security in Sierra Leone, Post Ebola: Comprehensive Food Security Vulnerability. 2015. World Food Programme (WFP)-Ministry of Agriculture, Forestry and Food Security (MAFFS)-Food and Agriculture Organization of the United Nations (FAO)
3 State of Food Security in Sierra Leone, Post Ebola: Comprehensive Food Security Vulnerability. 2015. WFP-MAFFS-FAO
4 Sierra Leone National Nutrition Survey (2014), Ministry of Health and Sanitation (MOHS), United Nations Children's Fund (UNICEF); Irish Aid

2006 World Health Organization (WHO) standards, while 12.9 percent are underweight and 4.7 percent, wasted. See Table 1 for a trends analysis.

Table 1: Stunting, underweight and wasting trends for children < 5 year old children in Sierra Leone

Year/Source	Stunting (%)	Underweight (%)	Wasting (%)
Multiple indicator cluster surveys (MICS), 2005	40	30	9
SLNS, 2008	36	21.1	10.2
SMART, 2010	34.1	18.7	6.9
National Nutrition Survey, 2014	28.8	12.9	4.7
Global WHO classifications, 2012	Low is <20%, Medium is 20-29%, High is 30-39% and Very high (critical) >=40%	Low is<10% Medium is 10-19% High is 20-29%) Very high is >=30	Low is <5%, Medium is 5-9%, High is 10-14% Very high is >=15%

Looking at stunting and wasting since 2005, it's clear that the country has managed to reduce the rates of stunting and underweight (from very high to medium in 2014) and wasting (from very high and to low). While progress towards reducing stunting and underweight is evident, more needs to be done to achieve the 20% threshold set by WHO and WHA global targets by 2025 to improve maternal, infant and young child nutrition[5]

Micronutrient status remains a major nutritional challenge as shown by data from the Sierra Leone Micronutrient Survey (SLMS, 2015)[6], which was conducted for the first time in the country. Micronutrient deficiency disorders of iron deficiency anaemia, Vitamin A, iodine and folate deficiencies continue to pose public health concerns.

Table 2: Micronutrient Deficiency in Sierra Leone

Indicators	Children 6–59 months	Pregnant women	Non-pregnant women
Prevalence of anaemia	76.3%	70%	44.8 %
Iron deficiency	5.2%	-	8.3 %
Vitamin A deficiency	17%	-	2.1 %
Folate deficiency	-	-	79.2 %
B deficiency	-	-	0.5 %
Urinary iodine concentration	-	175.8 µg/L	203.3 µg/L: non-lactating 175.6 µg/L: lactating
Households with adequately iodized salt			81 %

In the meantime, overweight and obesity are emerging issues of public health concern. Anecdotal reports have revealed a sizeable adult population that exhibits high body mass index (BMI) levels. According to the 2014 Sierra Leone Nutrition Survey (SLNS, the national prevalence for overweight is 2.2 percent.

5 http://www.who.int/nutrition/topics/global targets policybrief overview.pdf

6 Sierra Leone Micronutrient Survey: MOHS, UNICEF, World Health Organization (WHO and Helen Keller International (HKI), (2015).

These rates are on the rise among women of reproductive age and the prevalence is established at 16.7 percent.

Hospital reports further reveal that Sierra Leone is experiencing an upsurge of non-communicable diseases (NCDs) such as hypertension and diabetes, with increasing admission rates of patients with these conditions in hospitals across the country. These conditions have dietary implications and available scientific evidence shows that nutrition plays a major role in preventing and managing diet-related non-communicable public health conditions[7].

For this reason, an understanding of the country's nutritional situation was critical to informing the development of these dietary guidelines. The Food-Based Dietary Guidelines (FBDGs) are thus aligned to the country's nutritional challenges.

1.1.2 Nutrition-Sensitive Considerations of the FBDGs

Increased attention is being paid to addressing the double burden of malnutrition by incorporating nutrition objectives into agriculture sector plans, policies and strategies. The commitment of different sectors, including the agriculture sector, to addressing malnutrition is evolving. Ensuring that nutrition has a place throughout the entire food system value chain is now vital, i.e. through the production of diverse nutrient-rich foods, proper harvesting techniques that retain the nutrient content of foods from the farm to the table; and effective food storage, processing and marketing to maximize the nutritional benefits. Also vital are food preparation and consumption patterns that yield optimal nutritional outcomes. In this regard, making agriculture more sensitive to nutrition is one such strategy being advocated by the FBDGs.

The FBDGs have therefore been developed as an educational tool for influencing nutritional outcomes. The dietary guidelines are aimed towards improving knowledge and skills on healthy eating patterns. They also have a role to play in the development and implementation of food and nutrition-related policy and programmes, such as in agriculture, trade and industry and education. It is important to recognize that the process of developing the FBDGs was initiated by FAO to ensure that nutrition-sensitive messages are linked to agriculture along the food production value chain. These messages are specific to addressing the nutritional needs of the population in Sierra Leone and have been standardized for use to improve healthy eating patterns.

1.2 Visions and Objectives

The FBDGs are an educational and advocacy tool to be used in the implementation of the current and future Sierra Leone Food and Nutrition Security Implementation Plans. The dietary guidelines are aligned to the vision, goals and objectives of the national food and nutrition security policies and plans.

1.2.1 Vision

A healthy and well-nourished population with communities and families that are well informed and empowered to take appropriate actions about their healthy eating patterns.

7 Diet, nutrition and prevention of chronic diseases. Joint WHO/Food and Agriculture Organization of the United Nations (FAO) expert consultation. Geneva, 2003

1.2.2 General Objective

To improve the nutritional status of the population, especially infants and young children, pregnant and lactating women and other vulnerable groups in Sierra Leone.

1.2.2.1 Specific objectives relevant to nutrition education

The National Food and Nutrition Security Implementation Plan (2013–2017)[8] have eight specific objectives, four of which are aligned to the FBDGs. These include: advocacy for policy designers on nutritional improvements; promotion of adequate household food and nutrition security with regard to quality, quantity and safety considerations; promotion of appropriate feeding practices; and prevention of diet-related diseases.

1.3 Rationale and Scope of the Food Based Dietary Guidelines

In Sierra Leone, challenges to reducing malnutrition are well acknowledged and there is an overwhelming body of literature to demonstrate that malnutrition is a major public health challenge. Chronic undernutrition and micronutrient malnutrition remain issues of national concern, while the incidence of overweight, obesity and NCDs are on the increase. The cyclical relationship between undernutrition and infectious diseases is also well recognized.

The FBDGs are therefore an educational tool highlighting the importance of healthy diets by providing relevant messages essential for optimal nutrition outcomes. It offers a sterling opportunity to improve nutrition education for the Sierra Leonean population on the importance of healthy eating. Importantly, the Guidelines:

- promote the production and consumption of diverse nutrient-dense foods that are locally available, including locally produced or sourced foods from plants and animals;
- recognize the importance of nutrition sensitivity throughout the food system value chain by ensuring diversity of nutrients in locally produced foods;
- promote market access for nutritious foods, notably micronutrient-rich leafy and other vegetables, beans, seeds, varied whole grains, nuts and fruit, hence the importance of marketplace for ensuring dietary improvements;
- promote storage, processing and preservation of food commodities to minimize wastage and maximize seasonal availability and curtail food losses;
- promote food safety, hygienic handling practices and sanitation to minimize spread of disease and infection;
- are useful tools for training community-based agriculture extension workers and other cadres of extension workers on good nutritional practices including producing, processing, marketing, preparing and consuming nutritious foods;
- are designed to inform all cadres of nutrition and health workers i.e. programming and practitioners, policy, health practitioners, teachers, academia & research on dietary diversification and linkages between nutrition and other sectors;

8 National Food and Nutrition Security Implementation Plan (2013-2017): MOHS, MAFFS

- are instrumental for related health and nutrition education of school children on healthy eating patterns and will influence curricular development for healthy eating; &
- are critical to informing the agricultural policy landscape on promotion of production of diverse nutrient-rich foods for improved nutritional status.

1.4 Guiding Principles

The FBDGs are based on the following guiding principles:

Science-based: The messages contained in the dietary guidelines are based on sound scientific knowledge related to food and nutrition[9] [10]

Nutritional and health status: These dietary guidelines are guided by existing Sierra Leonean nutritional indicators, e.g. stunting, wasting, underweight, micronutrient deficiencies, overweight and diet-related communicable diseases.

Patterns of food intake: The FBDGs are guided by the prevailing Sierra Leonean food intake patterns and not consumption patterns from other countries.

Cultural acceptability: The FBDGs have been developed taking into consideration the country's cultural context based on the prevailing patterns of food intake and food habits.

Practicality: The FBDGs have been designed to be practical for use by the general public. The foods recommended in the dietary guidelines are locally available and accessible to most households but are equally designed to be used by people with different nutritional needs within Sierra Leonean households.

User-friendly: The information contained in the FBDGs is user friendly. The dietary guidelines are written in simple language and words that may be misunderstood such as "little", "sparingly" or "use in moderation" have been tested for ease of understanding. Visuals are also clear and have been confirmed by consumer research. In addition, the messages have been designed and tested to ensure simplicity and ease of understanding by the general public.

Food-based: The FBDGs are grounded on food-based requirements rather than nutrient-specific considerations.

Gender sensitivity: The national FBDGs embrace gender considerations in messaging. All the messages are gender inclusive.

Nutrition-sensitive messaging: All the FBDGs messages recognize the importance of dietary diversity along the food system value chain. None of the messages can be achieved without linking nutrition to agriculture, health and other sectors relevant to nutrition, hence the nutrition sensitivity of the dietary guidelines.

9 World Declaration and Plan of Action for Nutrition. 1992. FAO/WHO

10 www.who.int/nutrition/icn_world declaration plan of action1992/en/

SECTION TWO

2. PROCESS OF DEVELOPING THE FOOD BASED DIETARY GUIDELINES

An independent consultant provided technical direction in the drafting of the FBDGs, under the overall supervision of the FAO Chief Technical Adviser and FAO Representative in Sierra Leone and the technical guidance of the Nutrition Unit of FAO's Nutrition and Food Systems Division in Rome. The consultant worked in collaboration with the Ministries of Agriculture, Forestry and Food Security (MAFFS) and Health and Sanitation (MOHS), as well as other key stakeholders in the country.

The development process comprised the following key steps:

Task force formation: The formation of a National Task Force comprising representatives from Ministries of Agriculture, Forestry and Food Security (MAFFS); Health and Sanitation (MOHS) and other key stakeholders addressing food and nutrition issues in the country. Their roles and responsibilities involved confirming the Terms of Reference to ensure relevance and appropriateness of the FBDGs to the country's needs.

Data collection: The process involved data collection, analysis, interpretation and compilation, including desk reviews to understand the health and nutrition situation in the country to ensure that the FBDGs are informed by these conditions. This was followed by individual discussions with community members and observations in local markets and the street food stalls to determine dietary patterns and practices.

Workshop on content identification: A workshop was organized on the proposed development process among taskforce members and initial topics to design the FBDGs were identified and included: foods commonly consumed, foods infrequently consumed yet useful for the diet, typical Sierra Leonean consumption patterns, eating plans and how to improve the nutritional value of Sierra Leonean foods. Other issues included: identification of public health concerns in the country with nutritional implications. Additional discussions included designs for the Food Guide (FG).

Research: HKI was identified to conduct consumer research to test understanding of the proposed dietary guidelines and recommend changes where necessary. The research ensured that messages contained in the dietary guidelines were acceptable and feasible. It further tested the validity of the messages and findings. These research results provided information for guiding the quality of the FBDGs.

Trainer of Trainers Workshop: During the workshop, the findings of the consumer research were validated and key stakeholders trained on the use of the FBDGs. The target audience for the workshop included districts nutritionists, MAFFS officers and home economics teachers, as well as key nutrition partners. The findings were shared in a retreat of task force members.

Meetings: A series of meetings was held with MAFFS and MOHS to discuss graphic materials that would be used for the FBDGs and Food Guide, proposed messages and implementation plan for food, nutrition and health education. Other meetings involved agreements on changes to current eating patterns. Additional meetings were held with MEST (home economics department) to discuss possible inclusion of FBDGs approach to nutrition in the revised primary school curriculum.

Development of training manual: This was done to meet the expectations of the FBDGs. All these different stages led to the initial development of a training manual that was used in pre-testing the FBDGs.

Validation workshop: The draft FBDGs were validated in a national workshop and the results incorporated into the follow-up version of the dietary guidelines.

Graphic design: This involved identifying a graphic designer who incorporated Sierra Leonean foods using real food pictures that represent the Sierra Leonean foods. Inputs from the food pictures were provided by the MOHS.

Final editorial and review: The entire document underwent several reviews by the task force members (MOHS, WHO, the Scaling Up Nutrition [SUN] Initiative); the Chief Technical Adviser at FAO Sierra Leone, the MAFFS Nutrition Officer; the Lead Technical Officer and Nutrition Officers at ESN in FAO headquarters and the consultant. All corrections were incorporated into the final document. The document was shared with ESN team/Technical Cooperation Department for editorial correctness and clearance prior to being accepted, printed and launched as an acceptable document in a national forum.

SECTION THREE

3. THE SIERRA LEONE GUIDELINES FOR HEALTHY EATING & THE FOOD GUIDE

Providing food-based dietary guidelines for different sets of populations is challenging. These dietary guidelines have been developed to serve as comprehensive guidance on healthy eating for the general public in Sierra Leone. Additional information is provided in the appendices for targeted population groups, such as pregnant and lactating mothers, infants and young children, school-aged children and adolescents based on the healthy eating guidelines for Sierra Leone.

3.1 The Food Guide & Food Groups

3.1.1 Understanding the Food Guide and Food Groups

A food-based approach was used in developing these FBDGs. Foods can be divided into food groups based on the key nutrients they supply e.g. animal-based foods are referred to as the protein group, which includes; meat, fish, poultry, milk and eggs. The protein group also includes plant foods that have protein content and relatively high content of fibre, including pulses, legumes, soya and nuts. These food groups are used to facilitate meal planning and nutrition education. Food groups are defined by the key nutrients they contain.

- Different countries use different food groups according to local eating habits and preferences and the number of food groups used varies from one country to another. In practice, when foods included in food groups for a country are described, they should first consider the main purpose of the nutrients that are in these food groups.

The Sierra Leone Food Based Dietary Guidelines incorporate the following information:

- While, protein foods are recognized as an important component of diets, increased attention has been paid to micronutrient-rich foods such as iron, vitamin A and iodine, given that they have been consumed in inadequate amounts.
- While, nuts and seeds are frequently grouped together with food group on ‘meats, fish and chicken as they contain protein, these foods have very different nutrient profiles and subsequently have been grouped differently in these FBDGs.
- Fruits and vegetables have been listed as separate food groups with separate recommendations regarding their daily intake. They have been classified according to whether or not they are good sources of Vitamin A. This allows for easier education on the consumption of Vitamin A-rich foods in light of micronutrient deficiencies of Vitamin A, including iron-rich foods. Affordability and seasonality issues have been taken into account, especially with regard to consumption of fruits and vegetables.
- Fats and oils are increasingly being recognized, primarily for their role in absorption of beta-carotene. This is an important consideration for nutrition education on meal planning.

The food groups used in the Sierra Leone FBDGs and the Food Guide were agreed upon by the task force during the compilation process. The current eating patterns and adaptation to these food groups were considered as well as nutrient deficiencies, all of which have been addressed in the FBDGs to improve nutrition and health status in the country.

3.1.3 Sierra Leonean Guidelines for Healthy Eating (GHE)

The Sierra Leonean Guidelines for Healthy Eating (GHE) offer recommendations on types of foods (using food groups) to eat and provide nutrition information that will assist people to achieve optimal nutritional status. The six food groups identified in the FBDGs for use in Sierra Leone have been classified as follows:

Six food groups:

- Grains (with emphasis on whole grains), roots and tubers
- Vegetables and dark green leafy vegetables
- Fruits (these are listed separately according to the food guide)
- Beans, peas and lentils
- Fish, poultry, meat, milk and eggs
- Oil, nuts and seeds

Other foods:

- **Sugar and foods made with refined sugar*
- **Iodized Salt*
- **Water*

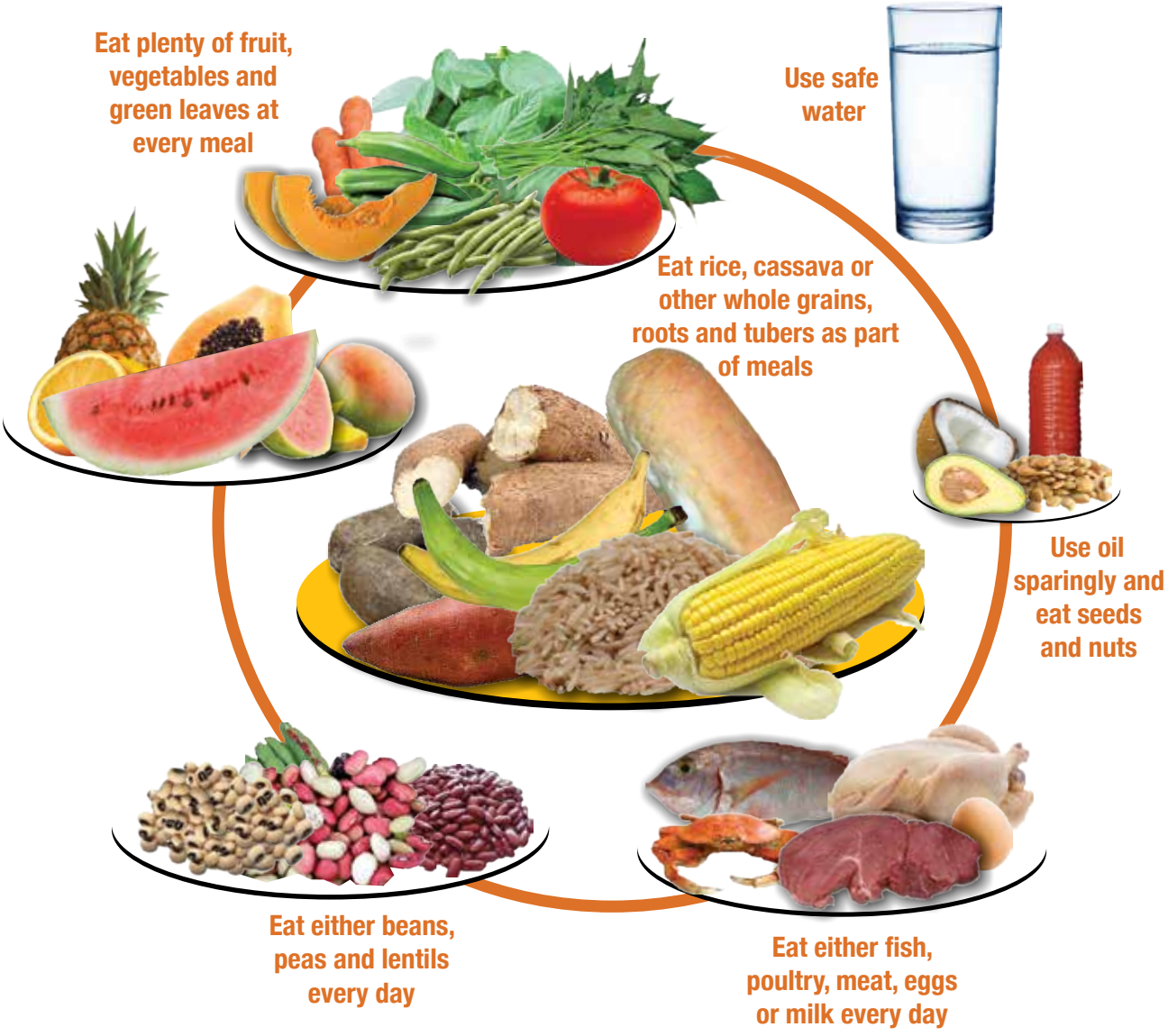
Note that sugar, salt and water are marked as * given that they are not classical food groups although they have a strategic position in the FBDGs. For instance, water is not a food group, but a compound essential for life. It is vital for absorption of foods and maintenance of body temperature.

3.2 The Food Guide

3.2.1 Introduction

The Sierra Leone Food Guide (FG) provides a visual representation of the food groups used in the FBDGs. It helps people to understand and remember the key messages of the FBDGs. The foods illustrated in the food guide are locally available and acceptable to the general population. The Sierra Leonean Food Guide comprises six food groups. These foods are not arranged according to portion sizes, but are classified according to their availability and accessibility. They represent what should be eaten from each food group at least once a day. The Food Guide for Healthy Eating does not represent a typical Sierra Leonean plate but rather, foods available in the country.

Figure 1: Picture above showing different food groups in Sierra Leone



3.2.2 Understanding portions and servings: what's the difference?

Do we know how much we are eating at any one time in terms of adequate calories? It is hard to know whether what we are eating is the right portion size and serving to meet our nutritional needs. These FBDGs provide an explanation of the differences between portion and serving size. These two terms are often used interchangeably, yet mean different things.

A portion is how much food one choses to eat at any one time. A portion can be big, medium or small. To maintain body weight, it is recommended that attention be paid to the portion size of foods consumed. Wrong portion sizes can contribute to excess weight, especially of foods that add extra calories such as sugars and fats. We tend to be attracted to adding these extra portions to our plates. The portion size of some plates may be enough for two or three people. Each portion is measured in terms of calorie content.

A serving, on the other hand, is the recommended amount of food that one needs to eat to fulfil the recommended dietary requirements. It is the unit used as a base for recommendations on what portion should be eaten at any given time.

Below is an example of food guide servings by food type

BOX 1: EXAMPLE OF FOOD GUIDE SERVINGS BY FOOD TYPE	
Food Type	What counts as a serving?
Vegetables	1 cup of cooked leafy vegetables 1 cup raw vegetables (size of a fist) 1 cup of raw vegetable salads
Fruits	One medium-sized fruit (size of a baseball) One cup of fruit juice
Grains	1 slice of bread Half a cup of cooked rice
Meats, fish poultry, eggs	Cooked meat (size of a palm) Cooked fish (size of a palm) Piece of liver (size of a matchbox) 1 chicken wing 1 egg
Nuts, seeds	2 tablespoons peanut butter 2 tablespoons seeds Half a cup of shelled groundnuts
Beans and lentils	Half a cup cooked beans/lentils
Fats and oils	1 tablespoon vegetable oil 1 tablespoon regular oil e.g. palm oil

3.3 Guideline on eating a variety of foods

What does eating a variety of foods mean?

Eating diverse foods is an internationally accepted recommendation for healthy eating. The guidelines to “Eat a variety of foods” encourages people to consume mixed meals, i.e. meals containing foods from different food groups, as well as to increase variety by eating different foods within each food group.

The terms ‘dietary diversity’, ‘dietary variety’, ‘dietary quality’ and ‘nutrient adequacy’ are often used interchangeably to describe the variety in the diet of a person or of a population group. Dietary diversity and dietary variety refer to the number of food groups or foods that are eaten daily.

Key Message:
Eat a variety of foods

Importance of dietary diversity

A healthy eating plan (a diversified diet) contains energy, macro and micronutrients and water to meet daily requirements. When these conditions are sustainably met, the person can be considered food and nutrition secure. Household food security is thus influenced by dietary diversity. If diversity is inadequate then food insecurity is present. When people follow a monotonous diet, e.g. overconsumption of rice or cassava, this is frequently based on a limited number of starchy foods, and different types of foods may not be eaten or may be excluded from the diet. People who eat varied foods are likely to meet their nutrient requirements compared with those who consume monotonous diets. The FBDGs have thus emphasized consumption of diverse diets.

There are two messages within these FBDGs to help people include a variety of foods in their eating plans: These are to:

1. Include food groups from at least four food groups each day. Note that these food groups are illustrated in the food guide above.

2. While the dietary guidelines recommends that you should eat different foods from the six food groups **remember** that eating a variety of foods is determined by what is locally grown or what is locally available in the markets. Different foods can be produced at home to increase variety, while foods such as millet and sorghum can be introduced to provide alternatives to rice and cassava.

What are mixed meals?

Meals that contain a variety of foods are called mixed meals. They should be eaten at least twice a day. When people choose a variety of foods and eat them in several mixed meals each day, they are likely to get all the nutrients they need.

BOX 2: TIPS TO EATING A VARIETY OF FOODS

1. As varied foods are consumed, these foods should as much as possible be low in added sugars, salts and fats.

2. Grow a variety of vegetables, fruit and beans in your home garden.

Indicators that a family has a healthy eating plan based on the recommendation to “Eat a variety of foods” are presented below:

BOX 3: INDICATORS ON HEALTHY EATING

- Adults eat 2 – 3 good mixed meals a day and children and those with extra nutrient needs should eat 3 – 4 mixed meals as well as extra meals and nutritious snacks (young children, pregnant and lactating women, very active adolescents and adults).
- The family should eat a variety of foods from each food group and during the course of the day, foods from different food groups.
- Family members with high energy needs should eat extra food from the starchy food group and the oils group.
- All family members should eat foods from the fruit, vegetables and dark green leafy vegetables in the recommended amounts of 2 – 3 cups a day. This includes school age children and adults.
- Foods that are eaten in between meals (as snacks) should be nutritious choices rather than commercially produced foods or drinks with few vitamins and minerals.

3.4 Guidelines on consumption of fish, poultry, meat, milk and eggs

What you need to know about animal-based foods:

In Sierra Leone, there is a relatively low consumption of these foods, with the exception of fish which is consumed by nearly 80 percent of the population.

Examples of foods in this food group:

All types of fish and seafood, e.g. lobsters, oysters, snails; meats including bush meat, liver from animals such as cows, sheep and goats; meat from chickens, ducks and other poultry and poultry products e.g. eggs; milk and milk products (but not butter and cream due to their high fat content).

Nutritional benefits of animal-based foods:

These foods provide a variety of macro and micronutrients. They contain protein and fat in varying amounts. Of these foods, only milk has carbohydrates in the form of lactose. Micronutrients contributed by these food groups include vitamin B12, riboflavin, vitamin A, iron and zinc. Milk and milk products are also good sources of calcium.

Animal-source foods tend to be better sources of some micronutrients compared with plant-source foods, particularly iron, zinc and calcium. The FBDGs thus recommend an intake of iron-rich foods, e.g. haem iron derived from red meat, bush meat, poultry and fish although non-haem iron obtained from leafy vegetables and legumes have also been recommended under appropriate headings.

Fish is categorized as one of the best sources of proteins. The flesh of fish protein is easily digested and absorbable while fish are the highest source of Omega 3 fatty acids which are heart friendly and vital for brain development. Fish also have a high percentage of edible flesh, with little wastage[11]. The contribution of fish to the supply of protein and micronutrients is therefore important in Sierra Leone. Animal-based foods are also a valuable source of micronutrients for people with high needs of specific nutrients,

11 ftp://ftp.fao.org/FI/SOMI/Rohana_Aquaculture_fisheries_nutrition.pdf

especially iron for pregnant women and children under two years of age. Protein from these foods contains all the essential amino acids in the right proportions.

Key Message:
Eat either fish, poultry, meat, milk or eggs every day

Role in promoting optimal nutrition and well-being

Overconsumption of animal-based foods from this group is linked to a number of non-communicable diseases (NCDs), such as obesity, cardiovascular diseases and some cancers. However, when used in recommended amounts, these foods provide essential nutrients that help to promote optimal nutritional status. The quantity of saturated fat in meat, meat products and poultry is potentially a contributor to NCDs and people should be encouraged to limit consumption of the fat from these foods.

Consumer research conducted in Sierra Leone in 2014 on eating patterns revealed the high cost of animal-sourced foods as a constraint to their consumption. Eggs were noted as the most accessible food item, with meat and milk being the least likely to be afforded. Many participants reported that pregnant women should stop eating some of these foods due to cultural belief systems, e.g. the child of a mother who eats eggs during her pregnancy 'will become a thief'. Sociocultural messages such as these are barriers to nutrition education and must be overcome through use of FBDGs so that important health and nutrition messages are accepted.

Some important messages to consider when consuming foods from this food group

The foods in this group provide different nutrients, some of which are not found in many other foods (e.g. iron and zinc). When these foods are available and affordable, the family should first allocate a portion to those family members with special nutrition needs, including pregnant, lactating women and young children from six months to five years old.

Caution on highly processed meats/fish

Processed foods are products with salt, vinegar and sugar added to a natural food. Processed meat/fish is for instance preserved in salt, smoked or cured and is a modified version of raw meat/fish. The purpose of processing is to increase the shelf life of natural food. Processing also improves flavour so as to make food more palatable. Processed meats, e.g. bacon, also contain nitrates which interfere with the body's ability to process sugar, thus increasing risks of diabetes. Processed meats are also loaded with high levels of sodium, a contributor to hypertension.

Use of processed foods, including processed meats, is not recommended in these FBDGs. This is because processing alters the nutrient profiles of these foods, thus compromising the nutrient composition. This renders processed foods less nutritious.

Safety of animal-based foods

Consumption of safe animal-based foods deserves careful attention. The following information illustrates food safety and hygiene considerations in preparing and consuming animal-based products.

BOX 4:HOW TO ENSURE THE SAFETY OF ANIMAL SOURCE FOODS

1. *Raw fish, poultry, meat, eggs and milk can be infected with many different types of germs (pathogens) that can cause people to be sick. These pathogens are destroyed when these foods are cooked, as they are destroyed by heat. Fresh milk must be heated.*
2. *Infection of humans with worms from foods is traditionally associated with eating raw or undercooked food e.g. infected pork. Cook food to destroy pathogens.*
3. *Hygiene in food preparation and storage is important for preventing disease. Relatively small amounts of bacteria can cause illness in people; just one drop of juice from a raw contaminated chicken/meat can be fatal.*
4. *Bush meat could be infected with pathogens, an example of this is Ebola virus. Ebola is not generally spread through food, but people who hunt and butcher an infected animal may contract the disease. They may then pass the disease to other people.*
5. *All meat products from wild animals should be well cooked.*
6. *It is important to heed government warnings to avoid these foods.*

3.5 Guidelines on consumption of rice, cassava, other whole grains, roots or tubers

Sierra Leonean's dietary intake remains predominantly staple-based, which is not conducive for addressing undernutrition. There is an overdependence on rice, with a local adage that: *"a rice-less meal is no meal at all".* Eating starchy foods helps to make people feel full and thus provide satisfaction for a longer time. However, this in itself is not healthy. A typical Sierra Leonean diet comprises rice, palm oil, fish, cassava and chili and this pattern has remained unchanged for many years[12].

The FBDGs have grouped a number of staple foods, grains, roots and tubers available in the country. The foods in this group provide most of the energy in the diet and are relatively affordable, as well as being widely available. They often make up the largest part of the meal. For best practice, they should be served with foods from other food groups to improve dietary variety and hence dietary adequacy.

The purpose of the recommendation is to confirm the current eating practice and promote the use of a variety of minimally processed, traditional and indigenous foods. This message must be communicated to encourage the public to add sufficient quantities of foods from other food groups to starchy staples. Note that starchy food is only ***part*** of the meal and should not be treated as the main meal.

Key Message:
Eat rice, cassava or other whole grains, roots and tubers as part of meals

Examples of starchy staples

Staples that are available in Sierra Leone include: cassava and products, e.g. *gari*, *foofoo*; rice, maize, wheat flour, fula bread, yams, sweet potatoes, plantain, millet, sorghum and parboiled rice. Parboiling rice

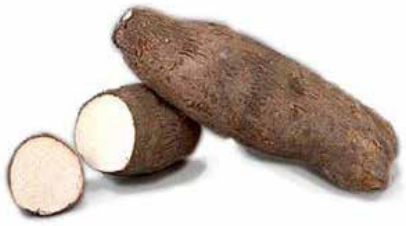
12 Nutrition Sensitivity of Agriculture and Food Policies. A synthesis of Eight Country Case Studies: Sierra Leone Country Case Study. United Nations Standing Committee on Nutrition/UNSCN/WHO, 2014. Geneva http://www.unscn.org/files/Publications/Country_Case_Studies/UNSCN_Synthesis_Report_March_16_finalppdf

is a common practice, yet the majority of rice consumed is white polished rice. Parboiled rice is partially boiled in the husk and the process includes soaking, steaming and drying. Parboiling rice releases nutrients from bran to the endosperm, thus improving its nutritional profile. Consumption of parboiled rice should be promoted as it is nutritionally superior to polished rice.

Starchy foods such as roots and tubers (e.g. cassava, sweet potatoes, yam, and cocoyam) and starchy fruit (plantain, unripe bananas and breadfruit) are also good sources of fibre and some micronutrients. They are used to make porridges or processed into foods such as *foofoo* or *gari*. It is always recommended that whole grain staples are consumed such as parboiled rice, minimally processed sorghum and millet. Refined grains, for example polished rice and flour, do not contain many nutrients or fibre compared with whole grains that contain bran and germ, all of which are high in Vitamins B and E.

What are whole grains?

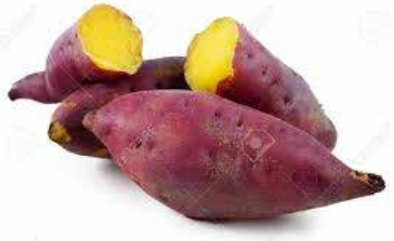
Whole grains are staples that have not been processed or have been minimally processed before they are consumed. They are grains from cereals that, after milling, (if milled) naturally contain all the components of the original unprocessed whole kernel; namely endosperm, bran and germ. Whole grains contain more nutrients than refined grains. They take longer to digest and so provide energy to the body over a longer period. Examples are brown rice, brown or whole wheat flour and bread, whole sorghum, whole millet, corn on the cob and minimally refined maize. Wholegrain cereals (e.g. parboiled rice, millet and sorghum) are also sources of fibre and some micronutrients. In Sierra Leone, parboiled rice is an example of wholegrain cereal whose consumption is increasingly becoming limited in many households. Remember that these staple foods are only a **part** of the meal and that the foods that accompany them or are served with them are important.



An example of a portion of rice is: one half cup of rice or one half cup of millet or sorghum all of which is equivalent to 70 calories.

Role of starchy staples in optimal nutrition and well-being

The foods in this food group constitute the main sources of energy in the diet. These foods contribute relatively small quantities of other nutrients in addition to starch when viewed per 100g of product. These foods, rich in dietary fibre, promote bowel function. Whole grain cereals have a higher fibre and micronutrient content compared with those that are refined. When the nutrient content is viewed in terms of the amount eaten during the day, the contribution to overall intake is important.



Nutrition advice

The nutrition community in Sierra Leone faces a challenge in coming decades to encourage people to use minimally processed starchy foods as their staple foods. Evidence from the consumer study has shown that over time with affluence, people are increasingly attracted to consumption of refined and processed starchy foods, such as polished rice, white bread, commercial breakfast cereals and refined grains compared with whole grains.

3.6 Guidelines on consumption of fruits, vegetables and dark green leafy vegetables

The aim of this recommendation is to encourage the Sierra Leonean population to recognize the essential role of foods from these groups: fruits and vegetables and dark green leafy vegetables. The instruction is to “Eat” and to encourage consumption of these micronutrient-rich foods at each meal, so as to increase the quantity consumed. With these types of food (i.e. fruits, vegetables and dark green leafy vegetables), information can be given to choose the foods that are available at any given time as well as those that are affordable.

The main message therefore lies in support to improve the micronutrient status of the population. This is in view of the fact that Vitamin A Deficiency (VAD) and Iron Deficiency Anaemia (IDA) among children are noted as some of the micronutrient deficiencies to be addressed. The foods that supply vitamin A (in the form of beta-carotene) are locally available, acceptable and affordable.

Nutrition information about these foods

Nutritionally, these groups of foods are generally recognized as low in energy with the exception of foods such as bananas and avocado. But they are comparatively high in micronutrients. On the whole, vegetables and dark green leafy vegetables are more micronutrient dense and thus their promotion in dietary guidelines is important.

Dark green leafy vegetables, yellow and orange vegetables and fruits are important contributors of beta-carotene in the diet. The beta-carotene from plant foods is converted to vitamin A after absorption. This nutrient is lacking in the diets of many people in the country. The absorption is enhanced if the meal containing the beta-carotene rich food contains fat, or if fat is added to such Vitamin A-rich food.

Importance of fruits, vegetables and dark green leafy vegetables

Fruit, vegetables and dark green leafy vegetables are important in that they aid digestion, enhance skin, build body immunity and aid in preventing disease.

As much as possible, they should be eaten when in season. In Sierra Leone, these foods are grown but more often sold than consumed. The trend should be to grow first for household consumption and sell the surplus. The reverse is however evident.

Examples of good sources of vitamin A

In Sierra Leone, commonly available fruits and vegetables that are rich sources of Vitamin A include: dark green leafy vegetables e.g. cassava leaves, sweet potato leaves, carrots, pumpkins and other dark yellow vegetables, mangoes and papaya. Vegetables and dark green leafy vegetables that are vitamin A rich should be served with a meal that has some oil, nuts or seeds in it; if need be, add a little oil to the cooked vegetable. This helps the body to use the vitamin A.

Examples of other types of fruit and vegetables

These include garden eggs, onions**,** okra, oranges, apples, bitter balls, pineapples and bananas. Citrus fruit, e.g. grapefruits and lime are also available as well as fresh tomatoes all of which are high in vitamin C, and when eaten with foods containing iron will enhance the absorption of the iron e.g. spinach, okra, etc.

Key Message:
Eat plenty of fruits, vegetables especially green leaves at every meal

Some foods in these food groups contribute significant amounts of folate, especially when they are eaten in recommended amounts; namely dark green leafy vegetables and citrus fruit. Folate deficiency is notable in Sierra Leone among pregnant women, and hence they are given folate supplements during antenatal visits.

What does "*plenty*" mean with reference to consumption of foods in these food groups?

Eating "*plenty"* implies eating some of these foods at every meal. At least half a cup of cooked vegetables or dark green leafy vegetables or a piece of fruit should be eaten at each meal. *"It is best if at least a cup of vegetables or dark green leafy vegetables is eaten at each meal".* Fruits can be enjoyed when they are in season and can also be eaten with or in between meals. Some examples of locally available fruits include oranges, mangoes, guava, watermelon, pineapple, star fruit, plums, berries and a whole range of wild fruits; while dark green leafy vegetables include potato and cassava leaves, okra and carrots (see food pictures in Appendix 7).

BOX 5: REASONS FOR EATING PLENTY OF FRUIT, VEGETABLES AND DARK GREEN LEAFY VEGETABLES

1. *Starchy foods alone do not provide all the nutrients that the body needs.*
2. *Fruit, vegetables and dark green leafy vegetables are good sources of important micronutrients that help to keep the body healthy and prevent disease occurrence.*
3. *When one type of fruit or vegetable is not available or is expensive, another can be selected from those in season.*
4. *Vitamin A helps the immune system and helps to keep eyes healthy. Eating any one of the foods that provide vitamin A every day is essential for good health.*
5. *Foods rich in vitamin C help the body to absorb iron from food; it is good to eat these foods at most meals as small amounts of iron are found in many foods. Examples are tomatoes, cabbage, oranges, lime, lemon, tangerines, grapefruits, grapes, mangoes and pineapple.*
6. *Fruit and vegetables have fibre (roughage) and this helps the bowel to function properly.*
7. *People who are overweight should eat more fruits, vegetables, dark green leafy vegetables and less starchy foods.*

Taking care of the vitamins in food

Fresh fruit and raw vegetables usually contain more vitamins than cooked or processed types. Here are some tips to help you prepare and cook your fruit, vegetables and dark green leafy vegetables without losing too many nutrients:

1. Prepare your fruit, vegetables and dark green leafy vegetables just before starting to cook.
2. Cook/steam vegetables, especially dark green leafy vegetables, for just long enough to make them tender.
3. Use the water that vegetables and dark green leafy vegetables are cooked in for a sauce or for soup.
4. Eat fresh when in season.

Portion and servings: How much should one consume in a plate?

Sample portion sizes for fruits includes: one grapefruit, a small orange, one cup of cubed watermelon, one small apple, half a cup of carrots. Note that dark green leafy vegetables, e.g. cassava and potato leaves, cucumbers, tomatoes, okra, can be eaten in any amount.

Role in promotion of optimal nutrition and well-being

Increasing the consumption of these foods will increase the intake of vitamins and minerals. These are currently being consumed in the country but at very low levels e.g. Vitamin A and iron-rich foods. Production and consumption of all types of fruit and vegetables should be intensified and should not be ignored in nutrition education campaigns in favour of only those that supply Vitamin A.

Nutritional advice

WHO recommends 480 g of these foods per day for school aged children and 600 g per day for adults. This quantity is believed to provide sufficient micronutrients and fibre, particularly vitamin A, C, E, folate and potassium. Increasing the quantity and variety of foods that are eaten from these food groups will improve dietary diversity and hence nutrient adequacy.

Some vegetables are acceptable eaten raw, but it is best to cook others to make them more digestible and palatable. Fruit is mostly eaten raw, but can be eaten cooked or dried. Most of the nutrients are preserved in vegetables and fruits that have been cooked, dried or frozen, if this is done following recommended methods. Beta-carotene for instance is more easily absorbed when vegetables have been lightly cooked or steamed e.g. carrots.

3.7 Guidelines on consumption of pulses and legumes

Pulses include lentils, beans, peas and chickpeas and are a critical part of the food basket. They are an important source of plant-based proteins and should be eaten as part of a healthy diet. Eating foods from this group on a daily basis contributes to the supply of nutrients needed to support immune function and help people recover from disease. A variety of foods in this group are produced and eaten in Sierra Leone and various programmes are underway to support production of additional foods in this group such as soya beans.

Key Message:
Eat either beans, peas and lentils every day

Nutrition information

Legumes are plants with seed pods that split into two halves. These include green beans, peas, chickpeas, peanuts, soy beans, dry beans, broad beans, black-eyed beans, multicolour beans, pigeon peas, cowpeas and lentils. Green beans and peas are also legumes, but are often considered vegetables because of the way they are used in cooking.

This food group is well known for its contribution to protein intake, but they are often overlooked with regard to the other nutrients they supply, such as starch, fibre, vitamins and minerals. When used in meals with grains they provide complementary proteins. They are economical sources of proteins and are valuable additions to mixed meals to improve the overall nutrient content of a meal.

During the research by HKI in 2015, affordability of foods in this food group was mentioned as one constraint to their widespread consumption in the country. The health benefits of these foods as a source of protein during pregnancy were recognized. However, one barrier related to cultural influence suggested that lactating women should not eat beans until after three months, as was traditionally done given the flatulence (bloating and producing gas) caused by eating beans. The time that it takes to cook them is lengthy and costly when firewood is hard to find, it was established.

Role in environmental sustainability

These foods have important nitrogen-fixing qualities needed for enhancing soil fertility, hence they have a positive impact on the sustainable environment in the context of the changing climatic conditions.

Nutritional advice

Advice to eat these foods daily, whether or not animal-source protein foods are eaten recognizes the nutrients provided by these foods that are not found in animal-source protein foods. It also recognizes the role their consumption plays in preventing undernutrition and NCDs.

Portion and servings: How much should one consume in a plate?

Half a cup of beans or lentils has been recommended as appropriate.

BOX 6: TIPS FOR COOKING DRY BEANS

1. Before cooking, sort the beans and remove broken beans, grit stones or any unwanted materials.

2. Soak overnight in cold water to soften the beans.

3. Drain soaking water and place in cooking pot with plenty of fresh water. Bring to the boil and boil for 5 minutes, keep the lid tight on the pot.

4. Place in a hay box (see below) for two to six hours (longer for larger beans), this will reduce the total cooking time.

5. Remove from hay box and place on stove, simmer until the beans are soft. Drain if needed.

6. Only add salt during the last five minutes of cooking.

7. Eating foods from this group can cause digestive discomfort, especially for people who are not used to eating them regularly. This is called flatulence i.e. accumulation of gas in the stomach or digestive tract. Flatulence includes symptoms such as bloating, cramps or passing gas. It is usually reduced when these foods are eaten on a regular basis and when prepared using ginger and turmeric as spices. Note that soaking overnight before cooking also reduces flatulence.

8. Cook beans very well before eating to help prevent this discomfort.

Use of hay box for saving fuel in meal preparation

It is recommended to use a hay box given the long time it takes to cook beans to reduce fuel consumption.

How to make your own hay box

- Take a big cardboard box or crate. Fill it with balls of newspaper or hay.
- After the beans have boiled for five minutes, take the pot with the lid on from the stove and wrap in an old blanket.
- Place the wrapped up pot in the box, cover with more balls of paper.
- Seal up any gaps to keep the heat in. Leave for about 5 hours.
- Remove from the box and boil again until hot and done. Drain if needed.

3.8 Guidelines on use of oils, seeds and nuts

These dietary guidelines communicate a message to ensure adequate intake of oils, seeds and nuts but caution against the overconsumption of oils, a dietary habit that can contribute to obesity and NCDs. The inclusion of seeds and nuts as contributors to body lipids is useful as they are nutrient dense and are commonly produced locally e.g. groundnuts, cashew nuts, watermelon and sesame seeds.

The term *"in moderation"* used in this guide recognizes that the total quantity of oil and oil-rich foods recommended is quantified in lay terms as a few tablespoons.

Key Message:
Use oil in moderation and eat seeds and nuts

Nutritional Information

The foods included in this food group are of plant and animal origin and supply essential fat to the diet. Oils used in Sierra Leone are mostly those that are produced locally, e.g. palm oil, groundnut oil or coconut oil. Seeds and nuts e.g. groundnuts and potentially more tree nuts are widely available and are consumed in greater amounts thus contributing micronutrients and lipids to the diet. Commercial vegetable oil is also used but predominantly in urban areas.

Is oil essential in the diet?

Oils provide the body with energy. They help the body to absorb some nutrients (e.g. vitamin A). Some oils such as fish oils also help in the development of the brain and are therefore important for young children. Vegetable oils, seeds and nuts are healthy types of oil.

Why must these foods be used in moderation?

These foods are essential in the diet but when people eat too much oil (or fat from animal foods) they risk gaining too much weight. High intake of fats and oils also increases their risk of having high levels of fat in the blood, which can cause cholesterol or heart disease.

Caution:

Too much fat is devastating and so are deep fried foods e.g. fish, chicken, chips and plantains. People should ensure that they eat fewer fats by avoiding deep fried foods, or only eating them occasionally in moderation.

Foods with invisible fat

Some foods have high level of fats that cannot be seen, e.g. deep fried foods such as chicken, potato chips, plantains or deep fried fish. Eating these foods regularly can lead to overconsumption of calories, overweight and obesity and chronic diseases such as heart diseases. Even healthy foods like nuts and avocados have small amounts of fats and oils that we cannot see. Therefore, the key to a healthy diet is to eat foods with moderate amount of fat and learn how to prepare foods with less or without extra fat/oil.

Portion and servings: How much fats and oils should one consume in a plate?

1 teaspoon of oil is equivalent to 45 calories.

BOX 7: TIPS ON HOW TO USE OILS
1. Use only 1-2 teaspoons of oil per person when preparing mixed dishes or sauces.
2. Strain excess oil from deep fried cooked foods before serving.
3. Save some of the nuts and seeds that you grow for the family to use rather than selling everything.
4. Use fresh oil for cooking, oil that has been re-heated many times is dangerous to health.
5. Use enough nuts and seeds per person in mixed dishes, each person should have enough to fill their palm.

Role in promotion of optimal nutrition and well-being

Dietary fats are a concentrated source of energy, hence have the potential to contribute to excess energy in the diet and in the long term will contribute to weight gain. However, their role beyond that of being a source of energy must not be forgotten. For instance, the omega-3 and omega-6 fatty acids are essential nutrients that are involved in brain development and the prevention of NCDs.

As already stated, a large percentage of Vitamin A in the diet is derived from pro-vitamin A carotenoids, especially beta-carotene, found in plant foods. Dietary fats and oils increase the absorption and digestion (bioavailability) of pro-vitamin A carotenoids. People are thus advised to consume foods high in fat modestly or to add fat to meals with beta-carotene rich plant foods e.g. serving avocado with a meal will enhance the absorption of beta-carotene.

3.9 Guidelines on use of iodized salt

The guidelines highlight the importance of using iodized salt yet limiting its use in cooking and after cooking at household level. It does not focus on the potential contribution to total sodium intake of other salt-based seasonings in processed foods, although in Sierra Leone the contribution to salt intake from salt based seasonings is on increase.

This message will need to be adapted to account for the salt contribution from these products. The FBDGs highlight the iodization of salt and education should include information on the choice of iodized salt, even if it costs a little bit more.

Information about use of iodized salt

Salt (sodium chloride) is used as a seasoning ingredient in foods and as a preservative in some foods (e.g. dried fish). There are other sodium salts that are used in the food industry, e.g. sodium nitrate and monosodium glutamate but sodium chloride is the major source of sodium in the diet.

Key Message:
Use iodized salt, but use it in moderation

In industrialized countries, processed foods contribute as much as 75 percent of total dietary sodium intake. Use of processed foods in Sierra Leone is growing, especially in urban areas as the nutrition transition progresses. Examples of high salt products used in seasoning are beef cubes, magi and seasoning powders.

Recommended salt intake

WHO and the United Nations Children's Fund (UNICEF, 1994) recommended Universal Salt Iodization (USI) as the main strategy to achieve the elimination of Iodine Deficiency Disorder. These policies are compatible, cost-effective and of great public health benefit. According to the recent micronutrient survey, salt iodization in Sierra Leone is at 81 percent, with the goal of reaching 95 percent in the next five years.

According to WHO, recommended intake of 1 500 mg of sodium is three-quarter teaspoons of salt per day, while 2 300 mg amounts to one teaspoon of salt per day. Most people today are eating much more salt than one teaspoon per day and most of it is from processed foods.

Use iodized salt, but use it in moderation

People like the taste of salt. It has been used in cooking for centuries. People need salt in their diets but other seasonings without salt can also be used to add flavour such as pepper, garlic, ginger and herbs.

Iodized salt

Iodized salt has the essential nutrient iodine added to it during the fortification process. Iodine is important for the development of the brain. Iodized salt is a better choice than plain salt or locally produced salt. In Sierra Leone, there are still pockets of communities in some coastal districts who use raw salt. This should be discouraged.

Role of salt in promoting optimal nutrition and well-being

An increase in salt intake leads to an increase in blood pressure, while a decreased salt intake lowers blood pressure in adults, with or without hypertension. Blood pressure is a risk factor for cardiovascular disease, chronic heart disease, stroke and kidney disease. Hypertension is increasingly contributing to the burden of disease in Sierra Leone, according to medical reports.

Hypertension also increases when people have lower physical activity levels, higher levels of obesity, excessive alcohol intake and a poor diet. Nutrition education to manage hypertension should not only focus on sodium use but also on dietary diversification.

A deficiency of sodium in the body is not just diet related but can be a result of clinical conditions such as vomiting and/or diarrhoea.

Salt has been widely used as a food vehicle for iodine fortification internationally. If salt is adequately iodized, then the recommended levels of salt intake will provide sufficient iodine.

See recommendations to overcome excessive salt intake below:

BOX 8: RECOMMENDATIONS TO OVERCOME SALT INTAKE CHALLENGES

1. The use of natural flavourings, seasonings and condiments in food preparation and for seasoning, e.g. herbs, pepper, onions, garlic, ginger, lime, orange and salt-free spices should be encouraged.

2. Grow herbs and spices in the backyard garden.

3. Consumers should purchase unsalted snacks, e.g. peanuts, by reading salt labels.

4. Avoid addition of salt at the table as you risk over-salting food.

5. Add salt towards the end of the cooking to retain iodine.

The consumer research in Sierra Leone (2015) showed that there is a need for further education especially with regard to the importance of iodized salt, given that it costs more than locally produced salt. However, iodized salt was not available in all markets, making limited accessibility a barrier to consumption

3.10 Guidelines on use of sugars, foods and drinks made with sugar

Information about sugars

Sugar in the diet comes from several sources: (a) from most types of fruits, vegetables, and milk products, and (b) refined sugars which are added to drinks, cakes, sweets and soft drinks. Added sugars in the diet could be those added to processed foods by the manufacturer, e.g. high sugary food includes soft drinks such as carbonated drinks, sweets, ice cream, jams, biscuits, chocolate, cakes, homemade fruit juice and tea. These FBDGs recommend limiting the inclusion of added sugars and sweetened drinks, as they are potentially a major contributor of sugar intake.

Key Message:
Use sugars and foods and drinks made with sugar in moderation

Sugar and obesity

The possible role of sugar in contributing to excessive weight gain has focused mainly on the role of sugar sweetened beverages (SSBs) including carbonated drinks, fruit juices and sweetened milk drinks. The intake of added sugars and sugar sweetened beverages has been established as a contributor to excess energy intake and a determinant of body weight. Sugar is not more harmful than other carbohydrates, but rather is more likely to be over-consumed.

Portion and servings: How much should one consume in a plate?

One teaspoon of sugar or one teaspoon of honey is equivalent to 20 calories.

BOX 9: NUTRITIONAL ADVICE ON SUGAR INTAKE

1. *The WHO Guideline (2015) recommends that adults and children reduce their daily intake of sugars to less than 10 percent of their total energy intake from added sugars. A further reduction to below 5 percent or 25 g (6 teaspoon) per day would provide additional health benefits.*

2. *A 300 ml bottle of commercial carbonated soft drink has about 25 g of sugar and an equivalent amount of pure fruit juice (even if labelled no added sugar) may have up to 35 g of sugar.*

Sugar and tooth decay

Eating sugar and other fermentable carbohydrates such as cakes, biscuits and drinks may be a risk factor for the development of tooth decay. The bacteria in the mouth ferment the sugar or starch and release acid. This acid wears down the enamel of the tooth and a hole or cavity may form. The risk is greatest when the sugar or starch is eaten often as the tooth is exposed to acid often. However, the risk

of acidity in the tooth is reduced when the teeth are cleaned well, preferably twice a day with fluoride toothpaste. Cleaning the teeth removes bacteria and fluoride helps to strengthen the teeth.

Babies and young children must never be given a drinking bottle with sweetened drinks (including milk), especially as they are going to sleep. The sugar remains in their mouth and they can develop very severe tooth decay.

Caution on use of refined sugar

Refined sugar is added to foods to make them taste sweet. This can be added to drinks such as tea, soft drinks or fruit juice, baked goods like cakes and biscuits and to jam or pudding.

People who eat a lot of sugar or sweetened foods instead of good mixed meals may not get enough vitamins as refined sugar has no micronutrients. People who eat a lot of sugar and sweetened foods as well as meals may gain weight if they take more food energy than they need.

3.11 Guidelines on use of safe water

Almost every part of the body contains water. However, the body loses water during the day and night. This water must be replaced by water and other drinks every day. People can live without food for some time, but will die if they do not have water. When a person does not drink enough water, their body will become dry inside, this is called dehydration. Feeling thirsty is a signal that the body is already dehydrated.

BOX 10: IMPORTANCE OF WATER TO THE BODY

Water serves many roles in the functioning of the body, these include:

1. *Water transports nutrients to cells, waste from cells and functional substances such as hormones and enzymes.*
2. *Many substances dissolve or are suspended in water and so react to form new compounds. This facilitates the excretion of waste products and toxins in urine.*
3. *Water combines with other molecules to form lubricating fluids for joints, mucous to lubricate the digestive and genitourinary tracts, saliva and secretions in the digestive tract.*
4. *Water absorbs heat so helps to regulate body temperature by absorbing heat and releasing it through production and evaporation of perspiration.*
5. *Water cushions organs from damage.*

Water is lost from the body through:

- ✓ Urination
- ✓ Perspiration
- ✓ Respiration
- ✓ Defecation
- ✓ Moisture lost from the eyes

Daily recommendation of water intake

The general recommendation for safe daily water intake is about 8–10 glasses of water. Some water is provided from foods, this contribution to total water needs is excluded from this recommended daily quantity. In comparison to the requirements for adults, infants and young children need more fluid per kilogram of body weight. The amount of water needed varies by age for instance; about 1.3 litres per day is needed for children aged 1–3 years and 1.7 litres per /day for children aged 4–8 years. Ideally, 8–10 glasses of water are needed per day for adults (https://www.nap.edu/read/10925/chapter/6#147)

When to increase water intake

People need to drink more safe water on some occasions, e.g. when the weather is very hot, when they are very active, when women are breastfeeding or when there are additional losses (e.g. from diarrhoea or fever). Thirst is an indication that a person is already dehydrated; waiting for a thirst signal to have something to drink is not a healthy habit. Access to sufficient water is essential for life and water should be safe for human consumption.

Health problems associated with use of unsafe water

No one can live without water. To be healthy people need enough safe water. Water is not safe when germs and worms from people and animal waste (urine and faeces) get in it. The germs and worms can be passed through the water or from one person to another causing many health problems and affecting a whole community. Chemicals from agriculture, industry and mining and dumping rubbish (litter) can also make water unsafe and cause illnesses such as skin rashes, cancer and other health related problems.

Enough water is as important as safe water

Not having enough safe water for drinking, cooking and washing can lead to sickness. This is especially true when there is not enough safe water for people to wash their hands after they have been to the toilet and before they cook and eat. A shortage of water for personal hygiene can lead to infections of the eyes and skin.

Prevent dehydration caused by diarrhoea

The most common sign of diarrhoea is frequent, liquid or runny stools. The person may also have fever, tummy cramps and vomiting. Diarrhoea must be treated by giving plenty of liquids and food. Diarrhoea caused by some illnesses may also need medicine.

Many people die from diarrhoea because they become dehydrated, people of any age can become dehydrated but it is most dangerous for young children and old people.

Give people with diarrhoea lots of liquids i.e. thin soup, thin porridge or Oral Rehydration Solution.

Oral Rehydration Salts do not cure diarrhoea but help prevent dehydration.

Ways to make water safe at home

Making water safe to drink is one of the best ways to prevent diarrhoea and disease. Water from any source should be treated to eliminate germs. Just because clear water flows from pipes, tanks, or wells does not mean it is not contaminated or does not need treatment.

There are many ways to filter water to make it safer. If the water is not clear first let the water settle to allow dirt, solids and parasites to fall to the bottom of the containers. Pour the water through the filter. After water has been filtered it should be cleaned with chlorine, boiling or using sunlight.

SECTION FOUR

4. RECOMMENDATIONS ON COMPLEMENTARY STRATEGIES FOR HEALTHY LIVING

This section examines complementary strategies for healthy living. These were identified by the task force as essential to achievement of the recommendations in the Sierra Leonean dietary guidelines. Consuming healthy and diverse foods is not sufficient but should be accompanied by other critical requirements such as: physical activity, food safety and hand washing. Caution is also placed on alcohol consumption; oral hygiene; environmental sanitation; indoor clean air and ventilation.

4.1 Guidelines on food safety

Food safety involves a number of activities such as food handling, storage and preparation in a manner that prevents food-borne illnesses. All households need to be vigilant in keeping their food and water supply safe to avoid potentially severe health hazards. Food is easily contaminated by germs, which are all around us. Germs are very small living things and cannot be seen with the naked eye. Bacteria, viruses, yeasts, moulds and parasites are all types of germs. Germs cause sickness in humans.

Germs are everywhere, but are mostly found in:

- Human and animal faeces
- Soil and water
- Pets, mice, insects and pests
- Domestic and farm animals
- People's mouth, nose, bowels, fingernails, hair and skin

Germs cause illness when many of them enter the body. Some germs are transmitted through the air (e.g. germs that cause colds or tuberculosis can be spread when people cough or sneeze). Other germs enter the body by the mouth through food, water, dirty hands or dirty utensils used for preparing food.

The foods we buy from markets and those that that we harvest from the farm also have germs and need to be thoroughly cleaned to remove the germs before cooking, including when eaten raw, especially fruits and vegetables**.** Germs multiply very quickly when conditions are favourable e.g. they multiply under moist conditions and multiply very quickly under warm temperatures.

Other causes of food-borne illness

People can get sick when there are dangerous chemicals in their food. This can be from a container that had been used for chemicals and used for food or water. It can also be from food eaten on a regular basis that is contaminated with environmental pollutants (polluted water or soil). Some toxins are produced in nature, e.g. aflatoxins are produced by moulds growing on foods such as peanuts and maize.

Importance of food safety

Food safety involves handling, storage, and preparation of food to prevent infection and ensure that the food consumed retains nutrients for a healthy diet.

Key Message:
Protect the quality and safety of your food

Unsafe food that is exposed to dirt and germs is a major cause of diseases such as diarrhoea which can be life threatening. Diarrhoeal diseases make it hard for the body to utilize the nutrients. Unsafe foods mean that the body doesn't get the nutrients it needs for optimal health and well-being. Unsafe foods lead to poor nutrition. Food contamination with heavy metals or toxins can also cause long-term health problems and the consequences can be fatal. It is therefore recommended that everyone consume safe foods and drink clean and safe water. Clean and safe food is important because organisms that contaminate food not only cause diarrhoea but also destroy the nutrients in the food.

Ways to prevent germs from causing sickness

- Good personal hygiene
- Everyone should try to prevent the spread of germs by:
    - Washing your hands with soap as many times as possible during the day
    - Covering your mouth when you cough or sneeze.
    - Keeping the house or environment clean to stop the spread of germs

Ensuring safe complementary feeding for babies and children

Preventing the spread of germs in food is especially important when food is prepared and given to babies and young children. Breastmilk provides immune protection to babies and young children as it contains immunological properties produced in their mother's body to fight infection. A baby has an immature immune system and is not able to fight all the dangerous micro-organisms (germs) that may be found in food and the environment.

Their gastrointestinal tracts are also immature and are more likely to be affected by these micro-organisms. Contamination of foods and drinks by micro-organisms is a major cause of diarrhoea, which is common in babies aged 6 to 12 months. Safe preparation and storage of food can prevent contamination and reduce the risk of diarrhoea.

Steps to keep foods safer

The actions to keep food safe are described in five key messages below.

1. Be clean: wash hands before handling food and during preparation. Wash hands after visiting the toilet; keep kitchen areas clean from insects, pests and animals.
2. Separate raw foods from cooked foods and store foods in covered containers.

3. Cook food thoroughly especially meats, poultry, eggs and seafood. Always remember to reheat cooked food thoroughly.
4. Keep food at safe temperatures. Do not leave cooked food at room temperatures for more than 2 hours. This is because micro-organisms multiply very fast at room temperatures.
5. Use safe water and raw materials. Treat water to make it safe. Use simple measures such as peeling vegetables, to reduce risk to contamination.

4.2 Guidelines on hand washing

Hands are the most common way that people spread bacteria and disease. It is important for people to wash their hands regularly, but it is not enough just to use only water. Washing hands with soap and clean water is important to prevent the spread of germs.

Correct and frequent washing of hands can help prevent the episode of infections, diarrhoea, respiratory diseases and cholera. Adults and children must wash their hands following the recommended procedure, especially:

- Before handling, preparing and cooking food;
- Before eating (young children must have their hands washed for them);
- After using the toilet;
- After cleaning and changing a baby's nappy and
- After caring for the sick.

Key Message:
Wash your hands before cooking, eating and feeding the child

People are more likely to wash their hands as recommended when hand washing facilities are available. Hand washing stations such as tipy taps should be close to where people cook and eat and should be available near toilets.

4.3 Guidelines on physical activity and exercise

To be healthy people need to be active most days of the week. Being active means doing things to move the muscles of the body. This includes all forms of physical activities, for example walking, sweeping, working in the fields, skipping using a rope, playing active games like soccer, washing clothes, washing the house, cleaning the compound, farm-work, dancing, etc.

It is now well established that lower activity levels predispose people to obesity and overweight and excess weight is associated with numerous health conditions including heart disease, diabetes and cancers. To reverse obesity and overweight, proper nutrition and physical exercise are recommended. It is always important to keep the body active by burning excess calories to sustain healthy body weight.

Regular exercise is one of the best ways of maintaining good health. Physical activity also helps in maintaining body weight, and boosts self-confidence and esteem.

Reasons physical activity is important for health

Physical activity is important for health and well-being because it:

- increases the blood supply to the heart and other muscles;
- reduces the risks to heart disease, stroke, high blood pressure, diabetes and osteoporosis;
- keeps a host of other diseases at bay;
- keeps body weight in check;
- reduces risk of cognitive dysfunction in older adults;
- burns energy and so helps to maintain a healthy body weight;
- strengthens bones and reduces the risk of developing osteoporosis later in life;
- builds strength and flexibility and
- helps with relaxation and relieves anxiety and stress, boosts mood and improves sleep.

Key Message:
Be physically active

Regular exercise is a key component for acquiring and/or maintaining a healthy weight. All that is needed is a 30-minute walk for 5 days a week. It does not have to be intensive. You can engage in physical activities that you find interesting like dance, walking and running.

4.4 Guidelines on environmental health and sanitation

A good home is not just a building for shelter, it is a healthy habitat. Unfortunately, many people live in environments not conducive for good health, thus predisposing them to ill health and disease. When people move from rural areas to towns, standard of housing may change, e.g. they will live in overcrowded settlements that put their health at risk.

Key Message:
Keep your environment clean

Aspects of housing that should be considered to make the environment healthy include:

- managing air flow (ventilation) to ensure clean air in the house;
- keeping bedding clean and dry; regular cleaning and airing bedding materials in the sun helps get rid of dust and germs;
- fuels used for cooking should not cause harm to health and the pollution they produce should be removed from the house by good ventilation or design of the stove;
- pests such as cockroaches and rats live where there is food for them to eat and place to hide, they carry germs that cause illnesses, so the conditions that attract pests must be well managed:
- the house must be swept to get rid of food particles and dark corners where pests can reside;
- clean and dry surfaces where food is prepared after every cooking and eating &
- keep household waste in covered containers and ensure regular disposal.

4.5 Guidelines on use of clean air and ventilation

Indoor air pollution is caused when people burn wood, charcoal or crop waste for cooking. If the house does not have good ventilation, smoke fills the house and as a result, the harmful gases in the smoke can cause breathing problems and other illnesses.

Concentrated air in indoor environments puts children and women at risk of respiratory diseases including TB, asthma, pneumonia or bronchitis. Millions of populations in rural areas and even some urban slums prepare meals using charcoal and wood. Charcoal used as a source of fuel indoors with poor ventilation produces carbon monoxide which can cause serious health problems, e.g. headaches and dizziness to death if the house is poorly ventilated. Majority of households in rural areas and urban slums use charcoal and fuelwood in food preparation. Women and children are mostly exposed to harmful effects of the cooking smoke.

Families should improve their indoor air quality through better ventilation and the use of improved stoves that help in smoke removal and reduce indoor air.

Tobacco smoking is also harmful to both the smoker and people who are exposed to the cigarette smoke. Health problems from smoking include coughs, bronchitis and other respiratory diseases and diseases of the lungs. People should be encouraged not to start smoking and to stop smoking if they have started.

Passive smoking, or second-hand smoke, is equally harmful. This refers to inhaling of the smoke from a cigarette, cigar and pipe of others, especially by a non-smoker in an enclosed area. Such involuntary

smoking involves inhaling carcinogens and other toxic components that are present in second-hand tobacco smoke. It occurs when tobacco smoke permeates any environment, causing its inhalation by people within that environment. Keep away from an environment where others smoke to lessen risks of nicotine contamination and other related health hazards, such as lung cancers.

Waste disposal

Socio-cultural behaviours regarding liquid waste disposal (human and animal urine and faeces, dirty water from washing, etc.) vary in different communities. Some practices have existed for a long time and people may be reluctant to change e.g. urination in open spaces. However, even traditional practices must change if they are harmful to health and spread of disease.

Faeces and urine from children, adults and animals are home to billions of bacteria, many of which are harmful. Communities who invest in safe ways to dispose of faeces and urine in latrines help to prevent the spread of disease.

Solid waste that accumulates in piles or behind buildings can provide breeding places for rodents, cockroaches and flies. Waste can be disposed of by burning, burying or using it to make compost. Types of solid waste include vegetable peelings, left-over food, paper, tins, plastics and bottles. Communities also have to dispose of waste materials such as old cars, car tyres and broken furniture or appliances.

4.6 Guidelines on oral hygiene

Tooth decay is a disease caused by bacteria in the mouth that ferment sugars and starches from foods. It is one of the most widespread diseases in the world. However, like many diseases, it can be easily prevented.

To understand how cavities form in the teeth, it is helpful to understand what happens in the mouth. Everyone has micro-organisms living in their mouths. Millions of bacteria live in a sticky mass that forms continuously, called plaque. It is most noticeable when the teeth have not been cleaned well.

Key Message:
Clean your teeth and your mouth twice a day

When people eat or drink certain kinds of food or liquid, the bacteria in the plaque live on the food, releasing acid as they consume the food. If this acid is produced many times a day, over time, it weakens the tooth's enamel, eventually creating a hole, called a cavity, which will get bigger and deeper if not treated and start to cause pain.

Reasons for maintaining oral hygiene

Maintaining good oral hygiene is critical to keep teeth healthy. A healthy tooth enables one to feel confident, enjoy eating and speak with ease. There are many reasons to keep our teeth clean and healthy, including:

- Ability to chew food for good nutrition;
- Avoid toothache and discomfort;
- A fresh and healthy mouth;
- Clean teeth, free of debris; and
- Confidence when smiling.

How should you keep your teeth strong and healthy?

To keep teeth healthy, people must prevent cavities from forming by taking the measures outlined below.

For children:

Children can develop tooth decay before they even start schooling. This means that dental care must start as early as the appearance of the first tooth, e.g. at six months.

- During this age, use soft clean cloth to wipe a child's teeth after eating.
- From the age of two, teach the child how to brush their teeth with a very soft toothbrush, or locally made toothbrush, as long as good hygiene is practiced.
- Some people give babies milk with sugar in a baby bottle, which the baby drinks slowly over a long period and may fall asleep with the bottle in their mouth. They also give children sweets, biscuits, candies, etc.

Key Message:
Too much fluoride at this age leads to white spots on teeth. For children use a peas sized drop of toothpaste on the brush.

These can cause tooth decay, which can be very severe. Such tooth decay looks ugly, is painful and will affect the child's speech and development of permanent teeth.

Tips for oral health for the general population

- Daily preventive care is strongly recommended. Clean the teeth thoroughly by brushing them twice a day as this removes most of the bacteria that live in plaque. The fewer bacteria, the less likely that a cavity will form. Cleaning the teeth also removes particles of food, which prevents the bacteria from producing acid in the mouth after meals.

Key Message:
Almost all tooth decay can be prevented with oral hygiene and good nutrition. This will lead to a lifetime of healthy teeth and thus stop the costly and worrisome stress and pain in a lifetime.

- The single biggest advance in oral care is the use of fluoride, which strengthens the enamel, thus making teeth less likely to decay. Fluoride toothpaste should be used to clean the teeth. Fluoride is a mineral that helps to repair the damage to teeth caused by acid and helps protect teeth against new cavities.

- The foods that bacteria use are sugars and some starches that can be fermented in the mouth. When someone often eats foods with sugars, the bacteria have many opportunities to produce acid and cavities are more likely to develop. The foods that are most likely to promote tooth decay are those that are eaten often, especially if they remain in the mouth for a long time, such as sucking sweets. (Put bullet point on this sentence)
    - Sugary drinks such as carbonated drinks e.g. soft drinks, sweets, stays on the tooth surface for a long time, thus in the long run puts one at risk of poor oral health.
    - Limit intake of beverages such as coffee and alcohol. Taken in excess these will contribute to too much phosphorous which depletes calcium levels.
    - Limit intake of beverages containing additives such as corn syrup and food dye which causes teeth to appear dull and discoloured.
    - Choose beverages, e.g. dairy products such as milk, yoghurt, cheese, which strengthen teeth and drink lots of water that hydrates the body.
    - Avoid smoking: tobacco contributes to stained teeth and subjects one to the risk of oral cancer.
- Clean the tongue by cleaning its surface daily to remove the bacteria on the rougher surface. Lack of cleaning the tongue results in poor breath.
- Eat diverse and nutrient-dense foods: healthy diets are essential for the growth and development of strong and healthy teeth throughout the lifespan. This includes consumption of grains, tubers, legumes; nuts and seeds; vegetables and fruits as well as animal-based products such as dairy products, just as has been recommended by the Food Guide.

SECTION FIVE

5. THE IMPLEMENTATION PROCESS

5.1 The FBDGs Implementation Strategy

Development of the FBDGs is an important step, but implementing them is another. Beyond the recommendations outlined, how should the FBDGs be implemented to improve diets among Sierra Leonean populations? How can these recommendations be translated into effective and tangible actions that will make a difference in the lives of the populace? For these guidelines to be implemented effectively, it follows that there must be a focus on a number of activities, as outlined below;

Policy communication:

The message to "*eat a variety of foods"* has policy implications for the production of diverse nutrient-rich foods. The lack of nutrient-rich foods is a barrier to implementing these dietary guidelines. Unless these foods are available and accessible, the implementation of these dietary guidelines is unlikely to be successful. The dietary guidelines therefore offer a prime opportunity to inform the policy landscape on agricultural practices required to support the production of nutrient-dense diverse fruits and vegetables as well as animal based products along the food system value chain e.g. processing, storage, distribution and marketing of foods. The dietary guidelines will certainly need to be communicated to policy-makers. Policy communication will also take the form of policy briefs, as well as incorporating the FBDGs key messages and recommendations into country policies, programmes and plans for agriculture, food security, nutrition, health and social protection policies.

Advocacy:

Raising the profile of the FBDGs in the political agenda through continued sensitization on the importance of healthy eating patterns in the country is vital. Intense advocacy will increase the visibility of the FBDGs at the highest political level to ensure multisectoral coherent actions and geographical coverage.

Intensified advocacy will increase the commitment of policy-makers and development partners to increase resource allocation for up-scaling the implementation of the Sierra Leone FBDGs as well as the human resource capacity to implement the FBDGs, within existing and/or upcoming policies and programmes.

Given that some recommendations have cost implications, especially the production of fruits and vegetables, small livestock and poultry, policy advocacy is required on seed subsidies to facilitate availability and accessibility of nutrient-rich fruits and vegetables. At present, these foods are very expensive. Ensuring adequate supply of such nutrient-rich foods will make them less costly.

Multisectoral responses:

These FBDGs have laid the foundation for multisectoral actions to improve the healthy eating patterns along the food system value chain by different actors. The recommendations of the FBDGs cannot be implemented alone but require partnerships involving relevant line ministries e.g. health, agriculture, education, social protection, gender, water and sanitation. The private sector, for example the food industry, also has a critical role to play, as do development partners, civil service organizations and local communities.

The nutrition sensitivity of the dietary guidelines recognizes multisectoral synergies, e.g. what can agriculture, education, health, social protection, food industry, civil service organizations, do to promote production and access to diverse and healthy foods? Multi-stakeholder partnerships are one way of ensuring sustainable healthy eating patterns.

Communicating and educating about the FBDGs

Development of a communication and education strategy for the FBDGs: It is important to bear in mind that messages alone will not necessarily result in improved nutritional status, given the complex nature of malnutrition. Messages are just one element of the wider implementation process. Food consumption patterns are influenced by a range of socio-economic factors, e.g. level of education, knowledge, motivation and skills on nutrition, individual food preferences, income, food prices, beliefs about foods, religion, culture, adverts on TV and radio on processed foods, all of which influence food consumption patterns. How then can FBDGs be communicated effectively?

1. Use of information, education and communication (IEC) materials:
   The FBDGs are should not be implemented as a stand-alone document; they should be accompanied by other complementary materials to support dissemination, education and overall implementation efforts. The following resource materials are useful to raise awareness of the FBDGs i.e. Job aids, brochures, newsletters and pamphlets. The FBDGs should also be communicated through appropriate media and communication channels, including supportive policy environments. But whatever communication channel is used (radio, TV, newspapers, etc.), they need to interpret the key messages accurately to effectively reach, inform, communicate and educate all constituencies involved in disseminating and adopting the FBDGs, including policy-makers, nutritionists, health practitioners, teachers, agriculture extension workers and the general public.

2. Media:
   This is an effective channel for communicating the messages contained in the FBDGs. When a message is communicated repeatedly, via different media, often the impact is more substantial in terms of awareness raising among a wide and diverse audience and sectors.

3. Use of radio, television, songs, etc.:
   Various media such as radio talks, TV adverts, video shows and songs composed in both local languages on air with key messages drawn from the FBDG and translated into different Sierra Leonean languages are important communication/dissemination outlets. Radios are low-cost and affordable with wide geographical coverage.

4. Print media:
   Use will be made of journalists to write about specific FBDGs messages, with the technical support of nutritionists to ensure accuracy of the messages and avoid misinterpretation. Leaflets, if used, will require technical guidance by nutritionists to avoid conflicting messages.

5. The role of health practitioners
   Health practitioners and nutritionists need to incorporate the recommendations of the FBDGs into their daily work lives, in the health facilities, in the clinics and advise those they interact with routinely on essentials of healthy foods. They must serve as change agents and be advocates in communicating the key messages in the dietary guidelines.

Development of targeted messages:

Given that the FBDGs are detailed and target the general public, they can be adapted in various settings including health facilities e.g. hospitals, households/communities, universities, schools, churches/ mosques, the armed forces, the media etc.

Targeted messages can be developed from this common set of guidelines to communicate to a diverse audience such as targeted booklets for health professionals, pregnant and lactating mothers, NCDs, etc. This is to ensure that each category is reached with a specific message.

When developing these materials, it will be important to consider using behaviour-based techniques rather than knowledge-based techniques, which means that the information provided should tell not only the audience what to do but also how to do it. This approach considers "motivational" aspects (why is this recommendation important for the targeted audience) as well as "facilitation to act" aspects (how to apply the recommendations in their real context). This will make a difference in the use and adoption of the materials.

Note that specific dietary guidance for infants and young children under five years old is available in other publications of the MOHS/UNICEF. But most importantly, these FBDGs are subject to revisions to capture emerging issues in society. A five year revision is recommended.

Adoption into the school curriculum:

The recommendations form the basis of nutrition education curriculum for pre-schools and primary schools. Efforts ought to be made to ensure incorporation of FBDGs into the school curriculum using age appropriate, practical and behaviour-based approaches. This is because school children can be agents of change to influence healthy eating habits for their families and prepare the next generation for healthy eating.

- School gardens:
  School-based programmes can play an important role in promoting lifelong healthy eating patterns. Incorporating the messages through adequate pedagogical strategies into the curriculum of pre- and primary schools will enable pupils to grow knowing and appreciating the value of foods they consume, and most importantly understanding how to act to become healthy, well-educated and productive citizens who contribute to a sustainable society. One example of a practical, learning-by-doing strategy is using school gardens to teach children about key aspects of the Sierra Leone FBDGs in connection with food, health and the environment.

- Role in lifelong education:
  FBDGs have the propensity to improve dietary practices that affect young people's health, nutritional status, growth and intellectual development. Unhealthy eating habits developed in a child's early years can contribute to both undernutrition and overnutrition.

- In-service training:
  When promoting FBDGs in school programmes, parental involvement, in-service training of teachers and inclusion of the dietary guidelines in to school curricula are all crucial considerations during the implementation phase.

- Role in outreach:
  By enabling school children to adopt healthy eating practices, schools can help the nation meet the objective of promoting health and optimal nutrition. Schools have a wider outreach and provide an excellent opportunity to practice healthy eating. In addition, human resource personnel are available within schools for in-service training on the FBDGs.

Capacity building workshops to disseminate FBDGs

Re-orienting implementing partners and a wide range of nutrition partners including government policy-makers, civil society organizations involved in nutrition, agriculture, education, social protection, WASH, gender, etc. through capacity building workshops is critical to ensure wide coverage on uptake, adoption, implementation and sustainability of the national FBDGs. Government line ministries, in particular, must pay greater attention to promoting their use, adoption and implementation of dietary guidelines.

In-service training for various stakeholders is anticipated, including health practitioners; lecturers in the faculties of agriculture, education and primary school teachers; doctors, food industry is required to enable them deliver quality strategies and messages related to the Sierra Leone FBDGs.

5.2 Monitoring and evaluating FBDGs

Regular monitoring of the FBDGs is required and involves developing the monitoring and evaluation (M&E) framework including indicators and measurement tools. For process evaluation, the purpose of M&E is to assess the extent to which the FBDGs for healthy eating have been disseminated and implemented as planned in terms of reach, efficacy, adoption and quality of implementation. For outcome evaluation, it will be important to create indicators aligned with the FBDG dissemination/implementation plan for Sierra Leone to either measure mediators of behavioural change (e.g. awareness, attitudes, practices) and/or behaviours related to improved individual food choices, increased access and availability of healthy foods, improved agricultural practices, and/or improved dietary quality of food assistance programmes. The M&E information will assist in improving the delivery of the FBDG key messages and their respective implementation within existing and/or new food, nutrition, health and agriculture-related policies and programmes.

What will be monitored during the implementation of the FBDGs?

The following table is a combination of indicators for measuring outcome and process indicators at individual, environmental and policy levels in terms of the scope, efficacy, adoption and implementation of the Sierra Leone FBDGs.

Table 3: What to Monitor in FBDGs

Term/Level	Individual consumer	Environmental Setting	Sectors & Policies
Short term	-Awareness, knowledge and skills to choose a healthy diet according to the Sierra Leone FBDGs	-Exposure of Sierra Leone FBDGs messages and Food Guide -Incorporation into school curricula and/or training materials for teachers and/or health agriculture extension staff	- # and type of community and national partners using the Sierra Leone FBDGs -Increased advertising of messages in the Sierra Leone FBDGs
Medium term	-Adherence to the recommendations of the FBDGs & messages (i.e. changes in cooking behaviour, food choices, eating patterns)	-Adoption and use of Sierra Leone FBDGs in institutions; by nutrition partners -Changed demand for foods in households and families Changed eating patterns by households and communities	-Changed food and nutrition policies and regulations using Sierra Leone FBDGs -Agriculture/Social Protection and health activities to support the Sierra Leone FBDGs & its recommendations
Long Term	Health and nutrition indicators (e.g. body mass index, risk to malnutrition, risk to chronic diseases)	-Changes in access and availability of healthy foods	-Improved agricultural, nutrition and health policies and practices in accordance with the Sierra Leone FBDGs Increased production of nutrient dense fruits and vegetables by households -Improved quality of food provided by food assistance programs

Source: Adapted from Levin et al 2015.[13]

It is important to measure and evaluate the effectiveness of FBDGs. The M&E results are critical to improve the subsequent guidelines and their implementation.

13 Citation: Levine E., Abbatangelo-Gray J., Mobley A.R., McLaughlin G.R., Herzog J. Evaluating MyPlate: An Expanded Framework Using Traditional and Nontraditional Metrics for Assessing Health Communication Campaigns. J Nutr Educ Behav 2012:44(4):S2-S12.

SECTION SIX

6. CONCLUSION

The FBDGs provide great potential to improve eating patterns if effectively implemented through nutrition-sensitive approaches. They provide a link between nutrition and agriculture especially with respect to food value chain considerations from the farm to the table. The FBDG offers a prime opportunity to inform policies and programmes on food availability, access, stability and utilisation. Besides it provides guidance for nutrition education and its inclusion into the schooling curriculum for a healthy generation that will be equipped with healthy food choices. Implementing the FBDGs offers an opportunity for ensuring healthy eating patterns in the country.

The FBDGs have been developed with recommendations regarding eating diverse dietary patterns including: consumption of plenty of fruits and vegetables; diverse staples and wholegrains; animal and plant based proteins; and nuts and seeds. They also lay emphasis on choosing foods with low levels of saturated fats, salts and sugars. The Food Guide has provided positive messages needed for healthy diets.

The FBDGs have far-reaching implications for nutrition in the life span and for improved nutrition outcomes throughout the life circle. They have the propensity to reduce the double burden of malnutrition as well as reductions in the rising incidents of the non-communicable diseases.

It is in this context that the FBDGs offers a sterling opportunity to provide nutrition-sensitive guidance to multiple stakeholders in communicating messages on healthy eating patterns required for making significant contributions to nutritional improvements in Sierra Leone.

APPENDICES:

ANNEX 1: Nutrition before and during pregnancy and lactation (maternal nutrition)

The nutritional status of a woman before and during her pregnancy has an effect on the health of her baby, when he/she is born and when he/she is older. For this reason, adolescent girls and women need to eat well throughout their lives, but especially when they are planning to have a baby, are pregnant or are breastfeeding. Eating healthy and a variety of foods will help the baby receive the adequate nutrients required for adequate growth and development.

Women who practice good eating plans are likely to:

- Stay active and healthy during pregnancy
- Have healthy babies
- Be able to breastfeed successfully

Women are more likely to be well nourished if they:

- Were born with healthy birth weights, and were well fed as they grew up
- Eat well most of the time, especially during pregnancy and lactation
- Take medicines when prescribed, including micronutrient supplements (vitamins and minerals)
- Are not overworked, especially during pregnancy
- Are protected from domestic violence and abuse

Weight gain during pregnancy:

Weight gained during pregnancy affects the baby's weight. Women who gain little weight are more likely to have low birth weight babies i.e. <2 500 g. On the other hand, women who gain too much weight are more likely to have premature babies, i.e. pre-term babies born before 37 weeks of pregnancy. Eating too much during pregnancy is also a cause for concern. If a woman gains too much weight during pregnancy, she is at an increased risk of complications such as high blood pressure and caesarean section. Complications may occur during delivery and her baby may be at risk of later obesity. The woman may battle to lose the weight she gained during her pregnancy and later become obese.

A healthy well-nourished woman should gain at least 10–14 kgs during pregnancy to increase chances of delivering a full-term baby weighing at least 3 kgs. This translates to an average monthly weight gain of 1.7 kgs.

Nutrition during pregnancy and lactation:

Some of the weight gained during pregnancy is necessary fat tissue, which provides an energy store during breastfeeding. A breastfeeding woman should continue to follow a healthy eating plan according to the recommended dietary guidelines by the Sierra Leonean FBDG. If a woman has a healthy body weight, she should eat extra food to supply the energy to produce breastmilk. Overweight or obese women do not need to eat extra food, as their bodies will draw from the existing fat stores.

Good nutrition during pregnancy means that a woman:

- ✓ Has enough of all the key nutrients, such as vitamins and minerals
- ✓ Does not have excess amounts of some nutrients, such as energy and salt
- ✓ Has the correct amount of food energy to support healthy weight gain
- ✓ Ensures that all her food and drinking water are safe, clean and uncontaminated
- ✓ Does not take in any dangerous products such as alcohol, illegal drugs, non-prescribed medicines or supplements.

It is therefore recommended that during pregnancy a woman should eat healthy foods such as fresh fruits, green leafy vegetables, beans as well as fish, meats, pulses, nuts and seeds and wholegrain staples. She should also drink plenty of water throughout the day, and perform regular exercises such as walking, as recommended by the health service provider. On the contrary she should avoid foods that are high in saturated fats, sugars and salts.

What are the dangers of undernutrition before, during and after pregnancy?

If a woman is undernourished before she is pregnant she is at risk of complications and a difficult labour. Undernutrition during pregnancy, due to insufficient intake of food and essential nutrients, can cause the baby to be born with a low birth weight or be born prematurely. Low birth weight and premature babies have a higher risk of illness when they are babies and young children. They have a higher risk of developing long-term diseases such as diabetes or heart disease as adults than do babies with a healthy body weight.

Use of alcohol and smoking

Pregnant women should not drink any alcohol, including beer and wine, including commercial and homemade brews and spirits throughout their pregnancy and while breastfeeding. Women who are pregnant, or those who are contemplating becoming pregnant, should avoid alcohol. Smoking or use “snuff”, *colanuts* or pica (clay) must also be avoided at all costs.

Adherence to the food based dietary guidelines

The special nutritional needs of pregnant women can be satisfied by following the dietary guidelines for healthy eating. If all her food choices supply good nutrition, she will get all the necessary nutrients. A woman who is overweight when she becomes pregnant should eat healthy meals, but should not go on a slimming diet.

Guidelines on micronutrient supplementation during pregnancy:

Iron folate supplementation: All pregnant women in the country should take their daily dose of iron-folate supplements according to the country’s health policy on antenatal care.

Why folate supplementation during pregnancy?

Folate deficiency is lack of folic acid in the blood. It is a risk factor for anaemia, a condition commonly found during pregnancy. It is a cause for neural tube defects, i.e. the baby's spinal cord and brain may not be well developed, when folate deficient prior to pregnancy and during the first 3 weeks. To reduce maternal anaemia, risks to low birth weight, neural tube defects and to improve overall pregnancy outcomes, a combined iron folate supplementation is recommended from the time the mother becomes pregnant to the time of delivery.

Iron-folate supplementation should be taken according to national health guidelines as prescribed by the health facility. All women of child-bearing age should be encouraged to eat foods that are good sources of folic acid such as dark green leafy vegetables, beans and lentils.

Iron deficiency anaemia: Iron deficiency results from an inadequate intake of iron, especially in the context of blood loss due to menstruation, increased needs due to pregnancy and inadequate absorption due to gastrointestinal damage (e.g. due to helminth infections). Also, the bioavailability of dietary iron is lower from plant than animal foods. Its absorption is however increased when foods with vitamin C (fresh fruit and vegetables) are eaten with the iron-rich foods.

Vitamin C intake is also important consideration, but is destroyed by heat, thus overcooked vegetables may not have much vitamin C. Need to educate pregnant women on good preparation techniques that will conserve the vitamins.

Vitamin A: Vitamin A is recommended for prevention of maternal morbidity, mortality and night blindness. During pregnancy, Vitamin A rich foods are important for the health of the mother as well as health and development of the foetus, Vitamin A is essential for the maintenance of maternal eye health and night vision. Dietary sources of pro-vitamin A include vegetables such as carrots, papaya, and red palm oil. Also, animal rich foods such as fish oils, milk, yoghurt, and liver.

Antenatal care clinic: All pregnant women must attend antenatal care clinic as soon as they suspect that they are pregnant.

Physical activity: Pregnant women should have some physical activity daily, but also allocate time to resting.

Safe sex: All pregnant women should practice safe sex to avoid contacting communicable diseases.

Guidelines for healthy eating for pregnant and lactating women

Nutrition during pregnancy and lactation has an impact on the health of the mother and baby.

Eat a variety of foods.

- ✓ Pregnant and lactating mothers should eat foods from at least four food groups a day and in at least two or three mixed meals a day.
- ✓ They should eat a variety of foods from within all the food groups. This is because different foods provide different nutrients needed for the growing baby.

- ✓ They should choose foods that provide good nutritional value rather than foods such as sweets, chips and carbonated drinks such as soft drinks and high-energy drinks.
- ✓ All the foods eaten should be free of germs. Food safety must be observed at all times.

Drink clean and safe water.

Water satisfies fluid needs without supplying energy. Drinking water instead of energy-containing drinks (like soft drinks, beers) helps to ensure that all the nutrients needed by the baby and the mother are obtained, without supplying too much energy. Drinking water during breastfeeding supplies fluid for the production of breastmilk. Up to about one litre extra of water is needed a day during breastfeeding. This is 8–10 glasses of fluids daily or more.

Eat rice, millet, sorghum or other whole grains, roots and tubers such as cassava, yams and sweet potatoes as part of most meals.

Commonly eaten staple foods in Sierra Leone include cassava, rice, bread, potatoes, sweet potatoes, yams, plantains, breadfruit, sorghum and millet. These foods must be part of each meal and they must be eaten with foods from other food groups, as described in the Food Guide.

In addition, pregnant women should eat one extra spoon of food from this group of foods each day, while breastfeeding women should eat an extra spoon from one of these foods at each meal. Pregnant women need to eat extra foods to supply the extra energy needs for pregnancy and lactation.

Eat plenty fruit, vegetables and green leaves at every meal.

Eat at least one portion of fruit, vegetables or leaves that provide vitamin A every day. One portion of fruit is equivalent to one medium–large fruit, e.g. mango, orange etc. while one portion of vegetables is equivalent to half a cup of each vegetable eaten. Pregnant or lactating women should aim to eat at least five portions of vegetables or fruits a day. Choose extra vegetables and leaves if fruits are expensive.

Eat dry beans, split peas, lentils and soya every day.

Pregnant and lactating women have high nutrient needs and foods in this group provide important nutrients and promote health. They should aim at eating at least half a cup of cooked beans, peas, lentils or soya at least every day.

Eating these foods daily can help to prevent or manage constipation, which can develop during pregnancy. If women are feeling constipated they must also ensure that they are drinking enough safe water every day as well as eating whole grain staples. They should also do gentle exercises as recommended by the physician. There are some recommended exercises for pregnant women.

Eat at least one of the following i.e. fish, poultry, meat, milk or eggs every day.

The foods in this group are more expensive than many other foods. If the family can only afford a limited amount of these foods, they should be allocated to pregnant and breastfeeding women and young children. Pregnant and breastfeeding women should eat at least one portion daily, but more if available. Plant protein foods are also a good complement e.g. beans, lentils and peas are also recommended if animal foods are unaffordable.

Use oil sparingly and eat seeds and nuts.

Pregnant and breastfeeding women should include good quality oil and vegetable-based oils in their daily food intake. They should aim to eat about six teaspoons of oil a day (i.e. three tablespoons) and one handful of nuts or seeds. Where palm oil is used, remember to use it in moderation, as this is saturated oil and can contribute to blood cholesterol and heart related diseases especially where one is overweight.

Use sugar and food with added sugar sparingly.

Sugar and sugar added foods and drinks with added sugar should be avoided. Sugar does not contain vitamins and minerals so do not help the health of the pregnant or breastfeeding woman. Foods and beverages made with sugar should only be used sparingly (not daily), if at all.

Use of iodized salt.

Some women are at risk of developing very high blood pressure when they are pregnant. Using salt sparingly can help to prevent this. All women of child-bearing age should use iodized salt rather than un-iodized salt. This is because iodine is needed for healthy development of their children's mental capacities.

Some seasoning products are made with salt, such as stock cubes (e.g. *maggi*) and powders (e.g. *benni*), these should also be used sparingly. Salt should not be added in the food when these products are used. These seasonings are already made with very high concentrations of salt.

Pregnant and lactating women must **use clean and safe food** that is free from natural and chemical contaminants, such as bacteria that cause food poisoning, aflatoxins and pesticides.

ANNEX 2: Feeding infants and young children

Exclusive breastfeeding from birth to six months of age and continued breastfeeding until 2 years

Importance of breastmilk

Breastmilk is the best food and drink for a baby for the first six months of life. No other food or drink, not even water, is needed during this period. This is called exclusive breastfeeding. Breastfeeding during this period is done on baby's demand. Human milk remains the best form of milk for babies. It provides all the nutrients needed for optimal growth and development for the first 6 months of a child's life. This is a period of rapid growth, especially the brain and the composition of breastmilk is ideal to meeting the growth requirements.

Breastmilk contains antibodies, antibacterial and anti-infection agents in the form of colostrum. This is the first yellowish fluid produced in the first days of a child's birth. It is very rich in proteins, minerals and vitamins and plays an important role in boosting a child's immune system.

Breastmilk is strongly advocated due to psychological, physiological and emotional attachment and bonding between mother and child. Mothers should hold their newborn babies immediately after delivery, with the baby in skin-to-skin contact with the mother. Breastfeeding should start immediately within one hour of birth.

Why exclusive breastfeeding is vital

It's recommended that breastfeeding be the normal way of providing young infants with the nutrients they need for healthy growth and development. All children must be exclusively breastfed during the first six months, and be provided by only breastmilk, not even water. Not all babies are fed this way, some families start to give their babies water, other drinks or food when they are less than six months old. This is not healthy for the baby. The water and the other foods and drinks can cause harm and they displace valuable breastmilk.

Frequent breastfeeding stimulates production of more breastmilk. The baby should be put to the breast to feed at least eight times during the day and night and on demand. Breastfeeding helps to protect babies and young children against dangerous illnesses and creates a special bond between the mother and her child. Not being breastfed can threaten a baby's health and survival. Almost every mother can breastfeed successfully with her baby at her breast. If a woman has difficulty breastfeeding her infant on the breast, expressed breastmilk can be used.

Expressed breastmilk

A woman who works away from home can continue to exclusively breastfeed her baby. She should breastfeed as often as possible while with her baby and express her breastmilk so that another caregiver can feed it to the baby in a clean and safe way when the mother is away from her child.

Although babies begin to eat food at six months of age, breastfeeding should continue for up to two years and beyond as it is an energy source, provides important nutrients and helps to protect the baby against illness.

Complementary feeding from 6-24 months of age onwards:

After six months of age, breast milk will no longer provide adequate nutrition by itself. At this stage the baby needs a variety of foods as well as breastmilk. The foods should complement the nutrients in breastmilk. This is called complementary feeding. The quality and number of solid foods are thus introduced gradually.

If a mother does not continue to breastfeed her baby, alternative milk must be provided to the baby as long as very high hygienic standards are observed. This is the stage when most children falter in growth if poor feeding patterns are introduced.

Nutritional Guidelines for Complementary Feeding

From the age of six to eight months, a child needs to eat two to three times a day and at nine months, three to four times a day, in addition to breastfeeding. Normally the first foods to be introduced in a child's diet are cereals mixed with vegetables and fruits into soft mixture, and later other protein sources like fish, eggs etc. Locally made complementary food is called pap. This is a combination of foods notably porridge different cereals and legumes e.g. Bennimix, Sierra mix etc.

Feeding time is a period of learning, love and interaction, which promotes physical, social and emotional growth and development. The parent or caregiver should talk to children during feeding.

Information on some nutrients that are important for babies and young children is given below.

Babies and children need vitamin A to help resist illness, protect their eyesight and reduce the risk of death. In areas where vitamin A deficiency is common, children between six months and five years old will receive a vitamin A supplement every six months, such as during the mother and child week campaigns.

- Babies and children need iron-rich foods to promote physical and mental abilities and to prevent anemia. These foods include fish, meat, liver, eggs and chicken.
- Iodine is an important part of both a pregnant woman's and a young child's diet, as it is critical for brain development. It is essential to prevent learning disabilities and delayed development. Iodine is obtained from iodised salt, which should be used instead of plain salt, but still used sparingly.
- Essential fatty acids are important for normal growth and development and are building blocks of cell membranes. These are found in breastmilk, fish, and seeds and nuts.

Risks to contamination

As a child's intake of food and drinks increases, the risk of diarrhoea increases considerably. Contamination of foods with germs is a major cause of diarrhoea and other illnesses that cause children to lose nutrients and energy. Good hygiene, safe water and proper handling, preparation and storage of food are crucial to prevent illnesses.

During an illness, children need additional fluids and should be encouraged to eat regular meals; breastfed infants need to breastfeed more often. After an illness, children should be offered more food than usual to replenish the energy and nourishment lost during the illness.

Severely malnourished children need special medical care. They should be taken to a health facility for nutrition assessment and treatment.

Complementary feeding message 1

- Use freshly prepared food.
- Prepare food for infants and young children and serve it to them immediately after it is prepared, as soon as it is cool enough to eat.

Complementary feeding message 2

There are times when caregivers may not be able to prepare foods just before serving it to babies and young children, especially when they have to be away for some hours. Foods used for these meals should be ones that are not easily spoiled by bacteria in a short time. Examples are: fresh fruit or avocado (sliced just before eating).

Complementary feeding key message 3

Use an open cup for giving babies and young children drinks. Feeding bottles and feeding cups with spouts are difficult to clean properly. It is advised that they are not used at all. Babies and children should learn to drink from an open cup used for expressed breast milk (where relevant) and for water or other drinks when they are introduced.

General food safety messages

Keep everything clean:

- Wash your hands each time after going to the toilet or changing a baby's nappy and working with animals.
- Wash your hands with soap before preparing food and before feeding children.
- If children hold food in their hands, also wash their hands with soap.
- Wash all surfaces and equipment used for food preparation with soap.
- Store all utensils clean and store in a clean dry surface.
- Protect kitchen areas and food from insects, pests, cockroaches, rats and animals e.g. dogs, cats.
- Wash fruits and vegetables before cooking and eating
- Boil water and fresh cow milk before consuming

Keep raw and cooked food separate to stop germs from spreading from raw to cooked food

- Raw meat, fish and chicken have a lot of germs that will be killed when the food is cooked. Keep the raw ones separate from other foods, especially food that is already cooked. This will keep the germs from the raw food getting on to the cooked food
- Thoroughly wash equipment and utensils used for raw food with soap before they are used for cooked food.

Cook food thoroughly so that germs are killed

- Cook food thoroughly especially meat, fish, eggs and chicken.
- Bring food like soup and stew to boiling stage to make sure they are hot enough to kill all the germs.
- If food that was previously cooked (e.g. leftover-"Kol res") is being served make sure that it is heated very well to kill germs that have multiplied after it was cooked

Keep food at safe temperatures to slow the growth of germs.

Bacteria multiply rapidly at warm temperatures and more slowly if food is well chilled, e.g. kept in a refrigerator that is cold enough. When food cannot be chilled, it should be freshly prepared for each meal, and eaten within two hours of preparation.

- Do not leave cooked food at room temperature for more than two hours.
- Keep cooked food hot before you serve it.
- Do not store food for longer than recommended, even in a refrigerator.

Ensure food safety always

- Use safe water or treat it to make it safe.
- Wash vegetables and fruit especially if they are to be eaten raw.
- Do not use processed food after the expiry date.
- "Safe" means water and food is free from dangerous germs and chemicals (like aflatoxins, fertilizers and herbicides).

Feeding children between the ages of two and five years (2-5 years):

Young children can eat most family foods. Their eating plans can be built around the same dietary guidelines for healthy eating as for the rest of the family, but there are also some important points to consider. Most children will be able to feed themselves, but families must continue to watch and encourage children when they are eating. Give children their own plate of food, this enables the caretaker to check how much the child is eating.

Importance of diet quality and variety

A variety of foods should be given at all times. Children do not need sweets, cakes, sugary biscuits, glucose biscuits and other sugary foods and drinks that provide few nutrients. These foods should be discouraged and should not replace good, mixed meals or nutritional snacks.

- Include foods from different food groups. Use foods from the starchy foods and vegetables group every day, use foods from at least four food groups a day.
- Give children the flesh of fish, meat, chicken, eggs or milk most days of the week. Include small amounts of oil or plant foods with oil; examples are palm oil or coconut oil, peanut paste, *benni* seeds and *egusi*.
- Give children their own plates and help them to eat if they struggle to feed themselves. Give them enough time to eat the food. Children of this age still need at least three meals and two snacks a day. Plan accordingly so that there will be food available to them during the day. If the regular family evening meal is late, feed children earlier so that they eat before they are too hungry or too sleepy.

Water intake

The healthiest drink for children is safe water. Tea reduces iron absorption from meals; if used, it should be served between meals.

Oral hygiene

- Never allow children to go to sleep with a drinking bottle; this can easily lead to tooth decay and severe long-term dental problems and bottles are often a source of dangerous germs because they are difficult to clean.
- Help children to brush their teeth twice a day. The last time they brush should be after having eaten the last food for the day, so that their mouths are clean (free from waste food) during sleeping.

Hand washing

- Encourage children to wash their hands with soap and water before eating, to reduce the risk of contamination. Supervise him/her when this is done.

ANNEX 3: Food needs of school age children (6-12 years)

This is an age group that is marked by rapid growth and intense increase in physical activity levels. It is also a period of increased appetite and food intake. In the absence of proper food, physical and mental fatigue is experienced and this has impact on their participation to concentrate during learning time. That is why their nutritional needs deserve more attention. It is for this reason that school age children must meet their caloric, energy, vitamin and vitamin needs.

Eating habits during early school age years are largely influenced by families, peer influence as well as what is promoted on radio, billboards and TV. The TV exposes children to commercial adverts that promote use of junk foods, e.g. fried foods, buggers, *shawama's* and carbonated drinks (soft drinks). Children are quick to respond to these adverts.

Television, billboards and radio influence eating choices, either in a positive and/or negative manner. Eating habits developed during these early years of life either lessens or heightens risks to chronic diseases later in adulthood. Poor eating habits thus set the stage for health problems later in life. The dietary guidelines laid out in this document are thus critical.

Nutrition-related complications

There is an increasing number of obesity and overweight cases being reported, with overweight children at risk of growing into overweight adults, who in return are at risk of developing diet-related health conditions such as hypertension, cardiovascular diseases, type 2 diabetes and some cancers. In addition, childhood obesity is associated with emotional and psychological problems e.g. low self-esteem and emotional stress. Optimal dietary practices offer an opportunity for preventing or reducing these health related occurrences.

What are some nutritional considerations?

To maintain appropriate body weight during this period, nutritional requirements involving diverse healthy eating as has been recommended in Section 3 of the food based dietary guidelines. Like other family members, children of school-going age need to have an eating plan that supplies all the necessary food group. It is recommended that children have their breakfast in the morning before they go to school. For those who have to walk long distances to get to their schools, they should carry packed food based on what is locally available in their homes to eat during the day.

Some schools provide meals or snacks to children at school. Remember that this is a complement to their daily food needs. Additionally, they should receive 2–3 nutritious meals at home. Schools should also promote healthy snacks that consist of nutrient-dense, minimally processed foods. Other nutritional considerations at school and at home should include consumption of dairy products, meat, fish, poultry, pulses, legumes and nuts. Plenty of water should be drunk, especially on hot days.

What are the consequences of poor diet during this period?

Children who are frequently hungry, who have a poor diet are likely to experience slow growth; be fatigued and thus have less energy to play, study and do physical work. They are likely to be anaemic; vitamin A- and iodine-deficient and have a poor attention span to concentrate in class. Their schooling performance is often affected.

ANNEX 4: Adolescent Nutrition

During adolescence and the onset of puberty, the need for most nutrients increases because of rapid growth. Total nutrient needs during adolescence are higher than all the other stages in the life cycle. Children grow in height and develop more muscle. Teenagers often gain half their final body weight during adolescence (10–18 years).

Nutritional needs by gender

Adolescent boys have especially high energy needs, which is why they are often hungry and eat large quantities of food. It is therefore important that healthy food choices are made to meet their high energy needs so as to reduce the risks of overweight, obesity or chronic disease in adulthood.

Girls, on the other hand, double their iron needs at onset of their menstruation. Between this period up until menopause, girls and women need much more iron than boys and men. During pregnancy, their nutrient needs get even higher. The combination of adolescent growth and pregnancy makes their nutrient needs even higher.

Special nutrient needs for adolescents

Iron: Adolescents are especially at risk of iron deficiency due to increased iron requirements. Iron deficiency anaemia is one of the commonest nutritional deficiencies. Adolescent girls are particularly at risk due to increased blood loss during menstruation. This raises the need for iron required for building their haemoglobin levels. In boys, there is increased muscle mass during their growth, which contributes to elevated iron requirements.

Increased intake of iron-rich foods are therefore important considerations. These includes intake of lean meats, liver, fish, beans, dark green leafy vegetables (potato leaves, spinach, okra, *krane-krane*) and nuts (cashew nuts, groundnuts). It is important to recognize that iron from animal-based foods, commonly known as heme iron are better absorbed compared to plant based iron i.e. non-heme iron. In addition, Vitamin C from rich fruits (lime, lemons, oranges guava) when eaten in combination with plant based iron foods will assist in iron absorption.

Calcium: Consumption of calcium rich foods is recommended during adolescence to reduce risk of osteoporosis in later years. For instance, consumption of dairy products, e.g. milk and yoghurt, are recommended at this stage. Dietary supply of calcium as well as Vitamin D and phosphorus are critical for strong bones. Physical activity is equally essential during this age to maintain body weight and build bone mass density

It is recommended that adolescents make dietary and lifestyle choices early in life to help them develop health promoting lifestyle behaviours so as to avoid diet-related NCDs that follow in adulthood.

Lifestyle changes

Dietary habits affect food preferences and choices especially consumption of nutrient rich foods. Teenagers in particular develop food fads and the trend to skip meals is growing with slimming now

perceived as trendy. They therefore starve to look trendy and such slimming is sometimes bordered on being skinny. Adolescent girls are particularly concerned about their body image. This has far reaching implications on their nutritional status and wellbeing. One of the commonly skipped meal is breakfast, yet breakfast plays a very significant role in providing the required energy after a nights rest, besides breakfast contributes to concentration in school and college.

Overweight and obesity

Overweight and obesity is a growing area of concern among adolescents. Excessive weight has devastating effects on their image, emotional well-being and physical health. Causes of obesity are myriad e.g. genetic, psychological, socio-economic, biochemical or a mix of some of these. Lack of physical activity is a major contributor to obesity. The current recommendation by WHO to maintain a physically active life for adolescents is to engage in an exercise for at least 60 minutes daily.

Guidelines for optimal nutritional practices

These are the same as tips for the general population but specifically the following considerations should be put in place, i.e.

1. **Eat a variety of foods:** Variety is the spice of good health. No one food can supply all the nutrients for adolescent needs. Eat different types of foods daily for variety and enjoyment. A good mix of proteins e.g. fish, poultry (without skin), lean meats, beans, peas, soy products, and unsalted nuts and seeds is recommended.

2. **Breakfast should be the most important meal of the day:** After a long sleep, the body needs energy and foods that are high in energy are required as a good start to the day. Skipping breakfast will lead to under-concentration in schools and uncontrolled eating habits.

3. **Eat plenty of fruit, vegetables and green leaves:** These should be eaten as healthy snacks as well. They provide vitamin, mineral and fibre needs for the body. Schools and colleges should promote these rather than junk foods e.g. fried potatoes, sweets and crisps.

4. **Avoid too many fats:** While fats are needed for good health, there are bad fats whose intake should be minimized in the diet. These are called saturated fats and are found in fat dairy products e.g. butter, cheese, lard, ghee, deep pried foods e.g. fish, deep fried potato chips, fatty meats and sausages. Balance your fat consumption practices e.g. if you eat a high fatty meal e.g. fried fish, fried pancakes and fried plantains at lunch, eat a low fatty meal during dinner and other meal times.

5. **Drink plenty of water:** You need to quench your thirst with water and not carbonated drinks e.g. soft drinks, powdered fruit flavoured drinks because half your body is made up of water. Drink at least 8-10 glasses of water daily, with extra water on a hot day or after physical activity.

6. **Keep fit:** Physical fitness is important for your heart health but also for strong bones. Find out what exercises you enjoy and do it daily. Moderate physical exercise is needed to burn extra calories or else you risk excess weight gain. Exercise also has many other benefits, so is particularly important at this time of rapid growth.

ANNEX 5: Feeding children and adults during and after illness

When a child or adult is sick, or recovering from an illness, tips can be given to caregivers about feeding the person at this time. When a person is sick, their appetite may decrease and their body may not absorb and use nutrients well. Children can easily lose weight when sick and may not regain adequate weight if not fed during convalescence.

When one is sick:

- Feed slowly and patiently.
- Give mashed or soft food, especially if the person has difficulty swallowing.
- Give the person his or her favourite foods if that is all he or she can eat.
- Give small, frequent meals. The number of meals a day will depend on how many times the person is willing to eat. Feed small portions at regular intervals and as they are willing to take.
- Babies must be breastfed more often and for longer at each feed.
- In the case of diarrhoea, vomiting or a fever, give oral rehydration solution and extra water.
- Food is required during diarrhoea and any other form of illness. The food may appear to increase the volume of diarrhoea but some is being absorbed.

When the person is recovering from an illness, he/she should be encouraged by caregivers to eat to can regain the lost weight. The caregiver should;

- Be responsive to the person's requests for extra food.
- Give extra food in between meals.
- Increase the portions of meals over time.

Information about diarrhoea

Diarrhoea can cause death if the lost fluids and salts (dehydration) are not replaced in the body as soon as possible. It is not the diarrhoea that is dangerous in the short term, but the dehydration. Many episodes of diarrhoea can be harmful to health status in the long term, as nutrients and weight are lost and may not be regained.

Signs of dehydration:

- Sunken fontanel in babies
- Drinking eagerly
- Sunken eyes
- Dry lips/tongue
- Skin pinch goes back slowly

A child who does not want to drink or is lethargic should be referred to the clinic immediately.

Home management of diarrhoea:

- Breastfeed a baby more often and as long as the baby wants to breastfeed.
- If the baby is older than six months give foods as well as breast milk and the salt sugar solution, coconut or rice water.

- Give oral rehydration salts regularly. Give small amounts as often as possible if vomiting persists.
- Give five to six small meals a day.
- Give the person his favourite foods and avoid high fat or very sweet and salty foods.
- Give the person soft foods: good choices include rice, cooked vegetables without skins, peeled grated apples, bananas, scrambled egg and mashed beans, peas and lentils.

BOX 11: MAKING AN ORAL REHYDRATION SOLUTION

1. *Take one litre of clean water and boil*
2. *Add eight level teaspoons of sugar*
3. *Add half a level teaspoon of salt*
4. *Mix together and give to the child often*
5. *The mixture will not stop diarrhoea but it will help to prevent dehydration*

ANNEX 6: Nutrition for Older People

Old age is difficult to define and there is no general agreement on when one gets old. According to the United Nations, the agreed terminology is 60+ although in some contexts any age after 50 is accepted as old age. Nevertheless, nutritional considerations are very important from the age of 50+.

Healthy eating is important for the elderly period. Optimal nutrition is important for quality of life, vitality but for some reason, elderly people do not eat well as they should and this affects their well-being and vitality. As we grow older, our bodies change physiologically i.e. energy requirements decrease so are the metabolic rates coupled with physical activity. The elderly have reduced metabolic rates and they burn fewer calories compared to when they were younger.

Malnutrition in elderly can be attributed to a number of factors notably;

- ✓ Loneliness: this can be attributed to loss of younger family members as well as to destitution, abandonment and depression;
- ✓ Financial issues: poverty keeps the old from purchasing nutritious foods such as micronutrient rich vegetables and fruits as well as protein foods.
- ✓ Limited access to markets due to mobility related issues.
- ✓ Decreased appetites.

A number of physiologically related changes occur in old age. These include changes in taste, smell, vision, hearing and mobility.

Nutrition-related challenges for older people:

Changes in taste: this is one of the commonest challenges revealed by the elderly. As a result of alterations in taste, the elderly tend to eat either more salty or sugary foods.

Bone health: The elderly are prone to osteoporosis and this puts them at risk of bone fractures. Bones easily become fragile and fractures are common. Although bone health affects all elderly people, women are particularly at risk of osteoporosis after menopause and common fractures include hips, legs and wrist.

Constipation: This is common due to inadequate intake of dietary fibre and reductions in physical activity.

Dehydration: Elderly people are prone to reducing fluid intake to minimize trips to the bathroom due to mobility related issues.

Dental health: Includes risks to loss of teeth and involves restrictions to consumption of a range of nutritious but hard foods such as carrots, nuts. Good dental habits should be formed earlier in life and be continued throughout life.

Nutritional management for bone health

Diet in old age is very important. Calcium-rich foods should be consumed. These include milk and milk products; and fish such as salmon and sardines. Vitamin D-rich foods aid in absorption of calcium and taken together will reduce the incidence of fractures.

Some good sources of Vitamin D include egg yolk, whole milk, yoghurt and liver. Although the best source of vitamin D is the sun, only few minutes should be spent in the sun daily e.g. 10-30 minutes daily depending on the location. However, those suffering from skin cancer should not be exposed to the sun. Older people who are confined indoors are at an increased risk of Vitamin D deficiency.

Lack of Vitamin D can also lead to osteomalacia i.e. adult rickets leading to bone deformities and bone softening.

Nutritional management for constipation

- Increased intake of dietary fibre such as whole grain staples, vegetables, fruits and legumes;
- Increased intake of fruits and vegetables; pulses, beans and lentils;
- Plenty of fluids but water is the best fluid (6-8 glasses daily)
- Consumption of nutritious fluids e.g. fruit juices and milk should be encouraged
- Gentle exercise
- Laxatives should only be taken if prescribed by the doctor and not frequently

Table 4: Guidelines on foods to limit

Restrict salt intake	Fried foods such as meats, chicken, potato chips
Limit high fat intake	Too much salt intake can contribute to high blood pressure and heart disease. Instead foods should be flavoured with herbs and spices
Use of alcohol	Keep off alcohol

Box 12: RECOMMENDED DIETARY PATTERNS FOR THE ELDERLY

1. *Eat foods rich in Vitamins and minerals (variety of fruits and vegetables)*
2. *Focus on high fibre foods, e.g. green leafy vegetables; whole grains like rough rice, corn*
3. *Low fat milk and dairy products are preferred*
4. *Eat foods seasoned with spices and herbs*
5. *Eat naturally sweet foods, e.g. fruits and home-made fruit juices, honey*
6. *Drink small amounts of fluid throughout the day*
7. *Drink water: Water supports hydration, digestion and blood volume. Drink at least 6–8 glasses of water. As people advance in age, they may not experience thirst most of the time*
8. *Intake of folate rich foods is recommended, e.g. dark green leafy vegetables. Folate deficiency puts the old at risk of mental disorders, e.g. Alzheimer's disease. Folate-rich foods include liver, oranges, pulses and green leafy vegetables*
9. *Participate gentle exercises to improve mobility and strengthen bones*

Annex 7: Some of the diverse foods in Sierra Leone

Fruits:
E.g. Avocado, Guava, Grapefruit, Bananas, Watermelon








Vegetables:
E.g.
Potato Leaves; Aubergines, Cucumber, Crain Crain; Carrots, Pumpkins



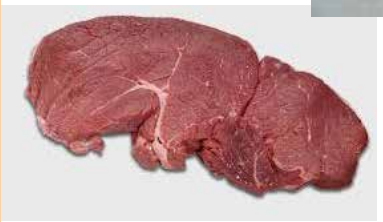







Animal Protein:
E.g. Fish, Meat, Chicken Eggs




Annex 7: Some of the diverse foods in Sierra Leone (continued)

Plant Protein: E.g. Beans, Peas and Lentils	  
Staples: E.g. Rice, Gari Flour, Sorghum, Cassava, Yams	     
Fats And Oils: E.g. Sesame Seeds; Palm Oil Seeds; Groundnuts In A Shell; Shelled Groundnuts; Palm Oil; Avocado; Coconut	       
Spices And Condiments: Eg Garlic, Ginger, Spring Onion, Lime, Pepper	     

ANNEX 8: Food Groups

Food Groups	Major Nutrient Content	Examples of foods
Grains, starchy roots and tubers	Starch, carbohydrates; some proteins (low in cassava), fibre in unrefined staples; Some Vitamins and minerals in whole grains and tubers root vegetables;	Rice, cassava, sweet potatoes, plantains, yams, bread (made from wheat flour, Maize, millet, sorghum
Fruits	Vitamin A	Mangoes, papaya, water melon
	Vitamin C; sugar in fruits in the form of fructose, glucose, sucrose; fibre; folate in citrus fruits	Grapefruits, oranges, apples, lime, pineapple, guava, citrus fruits; wild fruits; mango, papaya
Vegetables	Vitamin A; fibre; some minerals e.g. non-heme iron	Carrots, pumpkins, potato leaves, cassava leaves, spinach, tomatoes, pumpkins,
	Iron	Dark green leafy vegetables, okra
	Vitamin C	Dark green leafy vegetables, cassava & potato leaves, tomato, *brinjals*, cabbage, cucumber, okra, sweet pepper,
Meats, Fish Poultry Eggs Milk	Proteins; Fat; Some Vitamins e.g. Vitamin B12, riboflavin; Some minerals e.g. iron, zinc in meat; calcium	Beef, goat, sheep
		All fish (sea and river fish)
		Chicken
		Milk
		Eggs
Beans, peas, lentils, soya	Proteins; starch; fibre; some vitamins especially folate; some minerals; Fat (in soya beans)	Lentils; black eyed beans; multicolour beans, pigeon peas; soybeans
		Pigeon peas; soybeans
Fats & Oils	Saturated fats	Palm oil, fat meat
	Unsaturated	Vegetable oils, fish oils, seeds, nuts, coconut, avocado
	Trans fats	Some margarine, fried foods
	Vitamin A in red palm oil	

ANNEX 9: Food taboos in Sierra Leone

Food taboos in Sierra Leone with implications for healthy eating patterns:

Food type	Taboo
Meat or fish	A month after delivery, stomach will swell; child will resemble an animal; results in oedema; causes worms
Meat bone	Childs ear will discharge pus
Bush cow	Child's crying will be delayed; new borne will lie still; some thinks the child is dead and will bury; child wont cry and will be buried alive
Bush meat	Child will behave like an animal in the bush
He-goat	Toothache; child will be a prostitute; womaniser; his life will ultimately be ended buy a woman
Beef	Associated with worms
Pork	Child will look like a pig
Monkey	Child will resemble a monkey, child will have a bald head, child will convulse
Viper	Mother will die after delivery, as does mother viper
Squirrel	Child will be a thief; hernia
Chicken	A child will have convulsions
Crab	A child drools, dribbles and runny mouth
Crayfish	Allergy and vomiting
Sea food	Convulsions
Snails	Childs eyes too small; child will drool; watery mouth
Cow milk	Complicated delivery; thin breast milk; child has frequent stools
Eggs	Spontaneous abortion; stillbirth; premature birth; child's skin flakes, peels, cracks; child will steal
Imported eggs	Disrupts blood system
Eggs/fish	Big foetus; delayed walking in the child
Soup	Premature labour
Cassava	Child will defecate green stool; changes breastmilk to yellow; causes child to vomit; causes child to diarrhoea
Bread/Bulgar wheat	Fat child
Bananas	Tongue will peel; enlarged penis; delayed walking
Palm oil	Foetus too big; vomit; delayed crying;
Coconut	Child vomits
Colanuts	Child will walk too much; sucks child's blood; child has marasmus
Eggplant	Child will have big scrotum; a rash
Foo Foo	Foetus too big; fat child; delayed delivery
Gari	Fat child
Maize	Itchy skin
Plantain	Childs penis too big; sunken fontanel
Leftover Rice	Woman defecates during delivery; malaria; child's walking delayed
Uncooked rice	Childs skin stained and dirty; child covered with rice when delivered and will not be attracted to the opposite sex
Sugar cane	Delayed and difficult delivery; caesarean section
Sugar	**Pelvic pain**
Honey	Difficult labour; too much water during delivery; sunken fontanel
Okra leaves	Prevents fluid from flowing during delivery; swollen stomach
Pumpkins	Boils on child's skin; oedema during lactation
Pigeon peas	Child will have convulsions
Pepper	Skin rash; child feels pain when urinating
Lime	Difficult labour; child will have frequent stools; dizziness during labour; bleeding
Orange	Malaria; increased fluid during delivery; foetus too small; mother will have fever after delivery
Pineapple	Child skin will look like pineapple; scaly rash; sores on scalp; redness between legs
Iguana	Difficult delivery
Root Gbagba	Miscellaneous consequences

ANNEX 10: Expanded List of National Taskforce Members

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BIBLIOGRAPHY

Burgess A, Glasauer P. 2004. Family nutrition Guide. Food and Agriculture Organization.

Burgess A, Bijlsma M, Ismael C. 2009. Community nutrition. A handbook for health and development workers. Macmillan.

Diet, nutrition and the prevention of chronic disease. Report of a WHO Study Group. Geneva. WHO 1990 (WHO Technical Report Series # 79

Fats and oils in human nutrition. Report of a Joint FAO/WHO Expert Consultation. Rome. Food and Agriculture Organization (FAO Food and Nutrition Paper # 57

Food Based Dietary Guidelines for South Africa, 2013: *South African Journal of Clinical Nutrition 2013: 26(3)C (Supplement): 51-S164.* www.sajnc.co.za

Food and Agriculture Organization. 2007. Developing Food-based Dietary Guidelines. A Manual from the English-Speaking Caribbean.#

Hogson, JM. Hsu-Hage BHH, Wahlquist ML. Food variety as a quantitative descriptor of food intake. *Ecology of food and nutrition, 1994, 32:137148*

Lancet Series: Maternal and Child Nutrition. Building Momentum for Impact. *The Lancet 2013: 382 (9890) p 372.* The Lancet Series Maternal and Child Malnutrition Group

National Food and Nutrition Security Implementation plan, 2013-2017: MAFFS, MOHS,

National Nutrition Survey, 2014: MOHS, UNICEF, Irish Aid

National Ebola Recovery Strategy, 2015-2017

Sierra Leone Food and Nutrition Security Policy, 2012: MOH/MAFFS

Veldsman, Z. HC Scholfeldt & N. Hall, 2015: The role of Traditional Foods in Food Based Dietary Guidelines. IFDC Hyderabad, India.

UNICEF, WHO, UNESCO, UNFPA, UNAIDS, WFP and World Bank. 2010. Facts for life. Fourth Edition.

United States Department of Agriculture (USDA) 2011. Choose My Plate. Available at http://www.choosemyplate.gov/

Werner D. 2003. Where there is no doctor. A village health care handbook for Africa. TALC (Teaching Aids at Low Cost), Macmillan.

WFP/FAO/MAFFS (2015) Comprehensive Food Security and Vulnerability Analysis for Sierra Leone

Williams T, Moon A, Williams M. 1990. Food, environment and health. A guide for primary school teachers. World Health Organization.

WHO/FAO: Preparation and use of food based dietary guidelines. Report of a Joint FAO/WHO Consultation, Nicosia, Cyprus. Geneva 1996. Available at: www.fao.org/docrep/xo243e/xo243eoo.htm/

World Health Organisation (WHO), 2003. Diet, nutrition and prevention of chronic disease. Report of a Joint WHO/FAO Expert Consultation. WHO Technical Report #916. Geneva. WHO. Available at http://www.who.int/dietphysical_activity/publications/trs916/en/

World Health Organization. 2006. Five keys of food safety. Department of food safety, zoonoses and foodborne diseases.

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