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HEALTHY DIET

A DEFINITION FOR THE UNITED NATIONS FOOD SYSTEMS SUMMIT 2021

by

Lynnette M Neufeld, Sheryl Hendriks, Marta Hugas

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AIM OF THIS DOCUMENT

The aim of this document is to propose a definition of ***healthy diets*** and related evidence, thus permitting the alignment of terminology for the Food Systems Summit.

Diets are combinations of foods consumed by individuals of a given time. The specific combination of foods that make up healthy diets, however, is context specific and depends on many cultural, economic, and other factors. In this document, we provide a definition and an overview of approaches that have been used to translate this into food-based recommendations. We also provide a brief review to highlight evidence, gaps and controversies related to defining healthy diets. The evidence for potential solutions to making healthy diets more available, affordable, and their production environmentally sustainable is the subject of much literature (see for example references 1–5), the Action Track and Science Group papers, and is not discussed here.

DEFINITION

A healthy diet is health-promoting and disease-preventing. It provides adequacy without excess, of nutrients and health promoting substances from nutritious foods and avoids the consumption of health-harming substances.[1]

APPROACHES TO TRANSLATING HEALTHY DIET INTO SPECIFIC FOOD-BASED RECOMMENDATIONS

Moving beyond the available broad definitions to operationalizing what constitutes a healthy diet has been the source of debate in the nutrition community for decades. Innumerable definitions exist, with many similarities and several contradictions emerging over time (6). In part, the contradictions arise from diversity in the underlying health issues that the diets were intended to address. Approaches to operationalizing the broad definitions and a move to specific food-based recommendations has typically used one of three approaches: i) observing existing dietary patterns associated with a lower prevalence of specific diseases; ii) perspective approaches based on evidence related to one or several outcomes; iii) indicative approaches providing evidence-based guidance to be adapted to a specific context. Several examples of each and their related strengths and weaknesses are discussed below.

1. Some research about healthy diets has observed dietary patterns in populations where certain diseases, usually non-communicable diseases (NCDs), appear less prevalent. Dietary patterns in these population groups are studied, then tested in other contexts for their potential to promote health or prevent disease. One well-known example is the Mediterranean diet (7), which has been the topic of much research (6). There are several limitations to using such dietary patterns as the basis for recommendations, most importantly, because they do not consider all potential health outcomes. These examples do not account for local availability and the affordability of food types or the cultural traditions and acceptable of foods. Another approach has been to model optimal dietary patterns for a specific food group based on consumption and mortality data (8). But several challenges remain, including the lack of dietary data from many populations and sub-groups.
2. A second approach has been to quantify the specific dietary intake patterns associated with multiple outcomes - both human and environmental or planetary health. This dual outcome approach is not new. Principles to guide a "sustainable, healthy diet", based primarily on eating local and minimizing processed food were published as early as 1986 (9). From the start, these

1 The hyper-linked sections seek to provide further clarifications in relation to terminology and concepts. Specifically, it is important to distinguish between diets (combinations of food consumed by individuals or populations over time), and individual foods, which have characteristics that make them more, or less nutritious. Annex 1 below provides a definition of nutritious foods, and related evidence, gaps, and controversies. In Annex 2, we similarly highlight such issues in relation to food safety and the identification and management of health-harming substances in foods.

principles have received considerable criticism from the nutrition, agriculture, and food sectors (10). The recent EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems (11) provided recommendations for consumption of specific quantities of foods or groups of foods that promote human health and can be produced within planetary boundary considerations. As with earlier efforts, the EAT-Lancet Commission diet has received criticism on several fronts, including the lack of consideration of food affordability (12). The Commission however, calls for research to adapt the diet to local contexts. Future studies may provide evidence of the potential to do so.

3. Finally, the World Health Organization (WHO) has identified a series of guiding principles for healthy diets that seek to address all forms of malnutrition and related health issues. Unlike the approaches above, this indicative approach is designed to permit contextualization of recommendations to individual characteristics, cultural contexts, local foods and dietary customs (13). Building on such evidence, food-based dietary guidelines (FBDG) are intended to guide the development and revision of national food and agricultural policies. FBDGs have been developed by over 100 countries (14). The content of FBDG may vary by country or region but generally include a set of recommendations for foods, food groups, and dietary patterns that minimize the risk of deficiencies, promote health, and prevent disease in specific contexts.

CONCLUSION

This brief defines a healthy diet for the Food Systems Summit, placing human health-promotion and disease-prevention at the center. In doing so, we draw attention to food safety. Without ensuring safety, diets cannot nourish and instead will cause illness.

To inform policy and programmatic action, however this definition must be translated into specific food-based recommendations. In doing so, considerations of the sustainability of food systems, food affordability, and cultural and other preferences must be considered. There will always be tensions between the indicative or guiding principles and approaches that propose more quantified recommendations. The former leaves much room for interpretation. The latter tends to underestimate the complexities of extrapolating prescribed diets to varying age, sex, life-stage, culture, food availability, affordability, among other considerations. The FAO and WHO have now set out a series of guiding principles to achieve contextually appropriate sustainable, affordable, healthy diets (15,16) that are aligned with the guiding principles for healthy diets (#3 above) and form the basis for such actions.

We hope that this overview can help align terminology and concepts used in the Food Systems Summit concerning healthy diets and encourage readers to read Annex 1 and 2 below for further information.

ANNEX 1: DEFINING NUTRITIOUS FOODS

The distinction between diets and foods:

Over any particular period of time, an individual will eat many foods and combinations of foods. Diets are the combination of foods consumed over time, through which we achieve adequacy without excess of all nutrients (including energy). Foods that make up a healthy diet should be safe (see Annex 2), and nutritious. In this section we will explore the concept of nutritious food, and related evidence, gaps, and controversies.

A nutritious food is "one that provides beneficial nutrients (e.g., protein, vitamins, minerals, essential amino acids, essential fatty acids, dietary fibre) and minimizes potentially harmful elements (e.g. anti-nutrients, quantities of sodium, saturated fats, sugars)" (GAIN (17), drawing on definitions pub-

lished by Drewnowski (18) and Katz et al (19)). While conceptually simple, there is no straightforward, universally accepted approach to classifying individual foods as more or less nutritious. Similarly, some context specificity is required in the categorization of individual foods as nutritious. The same food, for example, whole fat milk, may provide much-needed energy and other nutrients to one population group (e.g., underweight 3-year-old children), but be less "healthy" for another due to high energy (calories) and fat content (e.g., obese adults).

"Nutrient profiling" or the rating of foods based on their nutrient density (i.e., nutrient content per 100 g or per 100 kcal of energy or per serving) has evolved substantially in recent years as an approach to classifying individual foods as more or less nutritious (18,20). Such scores now provide the basis for several regulatory and health promotion-aimed efforts, including front of pack labelling and health claims (21). Recent efforts have also proposed more complete profiling approaches that, in addition to nutrient density, take into consideration the food groups of ingredients (e.g., fruit or vegetable content), and further develop the content of ingredients (e.g., types of fat) that should be limited (20). To date, nutrient-profiling has been used predominantly for packaged foods in many high-income and several middle-income countries. Considerable limitations remain for extending its utility to unpackaged foods and in contexts where a large portion of food is not commercially produced.

Several evidence gaps and controversies that influence our ability to characterize health diets and nutritious foods:

While much progress has been made to characterize healthy diets, and to classify individual foods as nutritious parts of healthy diets, several gaps in evidence and controversies remain.

- *Imperfect characterization of population nutrient requirements to avoid deficiency and promote health:* Reference values for nutrient intakes of humans have been established, focussing on the avoidance of deficiency and excess. Nutrient requirements vary by age, sex, and life stage (e.g., pregnancy), and among individuals such that no single nutrient requirement value, even within age/ sex groups can be defined. *Estimated average requirements* are therefore developed and converted *into recommended daily nutrient intake* levels that will, at the population level, ensure that the requirements of 95% of the population are met (22). Upper tolerable limits are set at the minimum level above which potential harmful effects may be observed and are essential for understanding health risks and avoiding excess. FAO (23) and many national governments have published nutrient requirements. Several limitations exist, however, including diverse methodological approaches to setting estimated requirements, extrapolation of requirements from one age group to another, among others. Some experts are now calling for additional research to estimate requirements using a consistent approach (24).

  In addition to the focus on the positive (and negative) effects of individual nutrients, much research has focused on the potential health effects – both positive and negative - of consuming specific foods, food groups or dietary patterns (6). This is critically important as it advances our understanding of the link between diet and health, and the importance of food, which contains many more bioactive components than just the commonly known nutrients. Evidence for health-promoting qualities of bioactive components in many food groups (e.g., fruits and vegetables; nuts and seeds; fermented dairy) and the health-harming effects of excessive quantities of some nutrients or dietary components, for example, trans fat, salt, sugar, forms the basis of the guidelines proposed by FAO (15,25), WHO (13), and the High Level Panel of Experts (16). While the basic tenants of these guidelines are unlikely to change, evidence continues to evolve for all dietary components and to some extent, is constrained by the imperfect estimates of nutrient requirements and tolerable upper limits discussed above. Some have also called for greater transparency and better management of commercial interests in researching the associations between food products and health outcomes (26). Emerging evidence suggests that eventually, dietary recommendations may be personalized to optimize human health outcomes based on individual characteristics (27,28),

but science is still far from achieving this goal.

- *Imperfect knowledge of the nutrient and "anti-nutrient" content of food:* Our ability to fully characterize dietary patterns of populations and individuals (where data permit) is highly dependent on the quality of the food composition tables, i.e., databases containing the amounts of nutrients in foods per specific portion sizes. Unfortunately, there are many issues with food composition tables including lack of data or out of date information for many countries and world regions, particularly for less common foods (e.g., edible insects); substances that influence nutrient absorption (e.g., tannins, phytate); the lack of and/or out-of-date information on nutrients added (or lost) as a result of processing, including food fortification or plant breeding (biofortification); poor or unclear analytical approaches and the lack of consideration for nutrient bioavailability, among others (29). Fortunately, this issue is well recognized and substantial advances have been made through the efforts of the INFOODS project of FAO (30).
- *Lack of consensus and standardized definitions related to food processing and health implications:* A growing body of evidence suggests that highly processed foods (or ultra-processed foods) are human health-harming (31). Recent studies have also highlighted the impact of such foods on the environment (32) – an issue that was even raised in the early discussions on sustainable diets (9,10). Recent studies have primarily used the NOVA classification of ultra-processed foods (33,34). However, as yet, there is no single accepted definition that clearly lays out the specific aspects of food processing that may be health-harming (35,36). The implications of highly processed foods, particularly those high in sugar, trans fat and salt, are not under debate. Urgent consensus is needed on how to classify such foods, define food processing categories and operationalize the implications for the private sector.

ANNEX 2: AVOIDING CONSUMPTION OF HEALTH-HARMING SUBSTANCES

Bringing safety to the definition of healthy diets:

Food safety refers to "*all those hazards, whether chronic or acute, that may make food injurious to the health of the consumer*" (37). Food safety issues can arise from food contamination with biological hazards, pathogens, or chemicals (natural or processed contaminants, residues of pesticides or veterinary medicine etc.) during production, processing, storage (including but not limited to the lack of adequate cold storage), transport and distribution of food, as well as in the household. Standards and controls are in place to protect consumers from unsafe foods (16).[2] In addition to the disease burden, food-borne disease in low- and middle-income countries (LMICs) is also a concern because of a broad range of economic costs and their impacts on market access (38).

Current knowledge suggests that biological hazards and antimicrobial resistance may present a higher disease burden than chemical hazards. However, there is still uncertainty due to difficulty in measuring and attributing long-term and chronic effects. Chronic effects due to chemicals (natural or processed contaminants, pesticide residues etc.) are more challenging to trace and quantify their actual impact on disease burden. The study by the Foodborne Disease Burden Epidemiology Reference Group of the World Health Organization (FERG/WHO) (39) estimated that the global burden of food-borne diseases was comparable to that of HIV/AIDS, malaria and tuberculosis , with LMICs bearing 98% of this burden. The FERG/WHO report (39) quantified the burden of disease from the most critical food borne toxins (aflatoxin, cassava cyanide and dioxins). Some work has also been done to estimate the burden of illness due to four food-borne metals (arsenic, cadmium, lead, methylmercury), which is estimated to be substantial (40). As with nutrition, our evidence related to food safety and health continues to evolve. For example, the clinical outcome of exposure to food-borne pathogens may be modulated by the human

2 Forms of nutrients in foods or added to foods in food process that may be health harming, such as trans fat are addressed discussed in Annex 1.

gut microbiome (41).

Despite the heavy burden of disease among LMICs, the systems and practices for monitoring food-borne hazards and risks, food safety system performance and related disease outcomes are predominantly utilised in high-income countries (HICs). Whilst there are many promising approaches to managing food safety in LMICs, few have demonstrated sustainable impact at scale. It is also essential to distinguish between food safety and food quality. Food safety ensures that food is fit for human consumption and not harmful to human health and is most often under the competence of veterinary, health or agricultural inspectors, while food quality is a market category that is usually the responsibility of food or market inspectors (42).

Several evidence gaps and controversies that influence the ability to assess and ensure the safety of foods as part of a healthy diet:

- *Food safety has complex interactions with other societal concerns.* Safety must be built into foods, and this puts responsibility for food safety all along the value chain, including producers, processors, transporters, retailers, and consumers. If food chain actors lack the requisite knowledge, resources, and skills, then safety cannot be assured. Some food safety perceptions and knowledge may be shared generationally and may not be scientifically grounded. In many LMICs, food is often purchased from traditional markets close to the point of production and undergoes limited transformation (43). Several traditional ways of processing food can be highly effective at reducing risk, but food-borne illness is may still be linked to poor hygiene conditions, close contact with animals, and limited access to clean water from the market through to the household. Informal market drivers and incentives for safe food are often weak, although adverse food safety events can leave the sellers vulnerable to reputational harm. As such, food safety has implications for livelihoods. Likewise, food-borne diseases can have important consequences for women's resilience. Women predominate in traditional food processing and sales and are usually responsible for food preparation at home.
- *The preferred method for improving food safety and quality is preventive, and many but not all potential food hazards can be controlled along the food chain.* Engaging the food industry at all levels to understand their role in preventing food contamination through the application of good practices, i.e., good agricultural practices (GAP), good manufacturing practices (GMP), good hygienic practices (GHP), and the Hazard Analysis Critical Control Point system (HACCP) is challenging. The HACCP principles have been formalized by the Codex Committee on Food Hygiene and provide a systematic structure that the food industry, both large and small, can use for the identification and control of food-borne hazards. Governments should recognize the application of a HACCP approach by the food industry as a fundamental tool for improving the safety of food (37). However, the level of safety that these food safety systems are expected to deliver has seldom been defined in quantitative terms.

  In addition to HACCP, the Codex Alimentarius Commission (CAC) sets standards to address the safety and nutritional quality of foods for most segments of the food chain to protect consumer health and fair practices. The CAC establishes standards for maximum levels of food additives, limits for contaminants and toxins, and residue limits for pesticides and veterinary drugs.
- *Some countries, especially LMIC, have not adopted modern food safety control systems even though there is a significant burden of food-related illness* (43). Many countries lack effective public health surveillance systems, so the burden of food-borne disease and broader economic ramifications are not well understood. Food safety capacity may be concentrated either geographically, for example, in the capital city, or for niche markets intended for export. Building on these analyses, the World Bank recommends that governments consider how to make "smart" food safety investments, such as investing in foundational knowledge, human resources and in-

frastructure, including those that address basic environmental health issues, such as access to clean water, improved sanitation and reduced environmental contamination in the soil, water and air (43).

Food safety priorities for countries include addressing risks from farm to table, changing from reactive to proactive approaches to food safety, and adopting a risk analysis approach to ensure prioritized decision making. Building food safety capacity will assist governments in economic development by improving the health of their own citizens and opening countries to more food export markets and tourism (43).

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