

Technical Note
October 2016

Food-Based Dietary Guidelines: An Overview

Jeanette Andrade and Juan Andrade, University of Illinois at Urbana Champaign

Introduction

Men and women of all ages need to consume a variety of foods to support growth, provide strength, improve cognitive function, and reduce susceptibility to chronic diseases, illnesses, and infection (Smolin & Grosvenor, 2016; WHO, 2014). In an effort to help address the nutrition concerns of populations, Food-Based Dietary Guidelines (FBDG) have been established in several countries around the world (FAO, 2016). These FBDG are created to inform the public about consuming more nutritious foods and living a healthier life (FAO, 2016). Additionally, countries use FBDGs not only to guide nutrition education programs but also to guide policies and programs in various sectors like agriculture, education and social protection. The purpose of this technical note is to help health professionals and non-health professionals understand basic facts about the FBDG such as origins, purpose, characteristics, and potential challenges when developing and implementing these FBDG with target communities.

Food-based Dietary Guidelines

As early as the 1950s, the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) have provided and updated energy and macro/micronutrient requirements for healthy populations of all ages (FAO/WHO, 2006). Although the amount of carbohydrates, proteins, fats, vitamins and minerals that one needs on a daily basis are somewhat similar regardless of the location or culture, translating and communicating these scientific recommendations to the average consumer is another matter. FBDGs are worded in terms of food and diet rather than nutrients to be understood and used by community members. The FAO and the WHO have promoted FBDG through the Expert Consultation Meeting, the International Conference on Nutrition, and the Countrywide Integrated Non-Communicable Diseases Intervention program (FAO/WHO, 2006).

The premise of these FBDG are “to establish a basis for public food and nutrition, health and agricultural policies and nutrition education programs to foster healthy eating habits and lifestyles” (FAO, 2016, para 1). Essentially, they are established to encourage the public to consume a more diverse and nutrient-dense diet, while balancing meals as a means to help address the nutritional concerns of the general population in a particular country (FAO, 2016).

The development of these FBDG is country-specific and involves multiple stakeholders such as government agencies, academia, the food industry, and consumers (Clay, 1998). The FBDG are based on sound scientific evidence surrounding nutrition and its relationship with health and disease, and depending

on the country, they should also consider a) the practicality of implementation, b) the local foods, c) access and availability of foods, and d) the social-economic situation of a given country (FAO, 2016; FAO/WHO, 2006; WHO, 2014).

In order for governments to establish practical FBDG, these should manifest into simple, short messages with graphics (e.g., food pyramids, food plates, flags) about local foods, food groups, and lifestyle choices (FAO, 2016; FAO/WHO, 2006). FBDGs may also include the various relationships between chronic diseases, conditions, and illnesses prevalent in the country (e.g., prevalence of iron-deficiency anemia, diabetes, overweight and obesity) and food consumption. FBDGs also cover topics such as the amount and types of food groups to consume on a daily basis, meal planning techniques, nutrient and disease interactions (e.g., calcium and osteoporosis), strategies to reduce/prevent chronic disease (e.g., dairy and healthy bones; low sodium diets and heart health), and dietary advice for particular life stages (e.g., consuming more protein during pregnancy) (FAO, 2016; FAO/WHO, 2006).

FBDG Messages

The FBDG include evidence-based, nutrition recommendations to reach a broad population, which are typically displayed via posters or other printed materials. Consensus on the number of recommendations, its intended purpose, target group, and distribution channels are established by a committee consisting of individuals from the government, academia, and industry that follows the national health and nutrition agenda of the specific country.

Historically, the FBDG have focused on undernutrition and included messages aimed at consuming a diverse diet in order to address energy and nutrient gaps. FBDG have evolved to include messages to support healthy lifestyles and may include recommendations for food groups, physical activity, and specific recommendations to target various age groups (e.g., pregnant or lactating females) (FAO, 2016; FAO/WHO, 2006). The number of recommendations varies per country, but average around ten (as low as 6, for example in Nigeria, to as high as 16 in Greece). The recommendations can be non-specific such as *'consume a variety of foods'* (e.g., Canada, Qatar, and United States FBDG), *'maintain a healthy body weight and balance calories you eat with physical activity'* (Japan FBDG), *'enjoy your meals by sharing them with family and friends whenever possible'* (Mexico FBDG), and *'breast milk is the best food source for infants under six months of age'* (Venezuela FBDG). On the other hand, some examples of content-specific recommendations are *'consume 2300 mg or less of sodium on a daily basis'* (United States FBDG), *'eat two tablespoons of beans per tortilla'* (Guatemala FBDG), *'eat at least one dark green and one orange vegetable per day'* (Canada FBDG), and *'do physical activity every day for at least 30 minutes'* (Benin FBDG) (EUFIC, 2009; FAO, 2016; FAO/WHO, 2006).

FBDG Graphics

The use of colorful, vibrant, smart, and culturally rich graphics has been quite common in countries that have implemented the FBDG. The most iconic infographic on these FBDG is the one used to illustrate food groups to consume daily. Each country decides the number of food groups (e.g., cereals, dairy) representative of its own food basket, food habits and cultural factors (e.g., in some countries potatoes may be depicted as staple foods, in others potatoes as designated as starchy vegetables). As depicted below, some countries include *five food groups* (cereals, fruits and vegetables, meats, dairy, and fats (oils and sweets)), while others opt for *six food groups* (cereals, fruits, vegetables, meats, dairy, fats (oils and

sweets)), or even seven food groups (cereal, fruits, vegetables, legumes, meats, dairy, fats (oils, sweets)) (FAO, 2016).

The simple graphical display of these food groups depends on the country as some may illustrate these food groups in a *plate format* (e.g., Malawi, Mexico, United States) (FAO, 2016), *pyramid format* (e.g., Nigeria, Malaysia) (FAO, 2016), or in a format that is familiar to the population such as a *healthy pot* (e.g., Guatemala and Honduras) (FAO, 2016), or in a format that is familiar to the population such as a *healthy pot* (e.g., Guatemala and Honduras) (FAO, 2016), or as a *rainbow* (e.g., Canada), a *spin top* (e.g., Japan), or an *oyster Shell* (e.g. Qatar) (FAO, 2016).

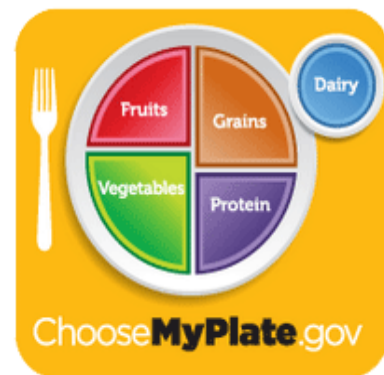
Examples of Plate Formats



Malawi



Mexico



United States

Examples of Food Pyramids

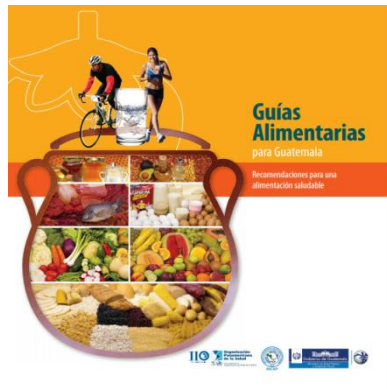


Nigeria



Malaysia

Examples of Health Pot Depictions

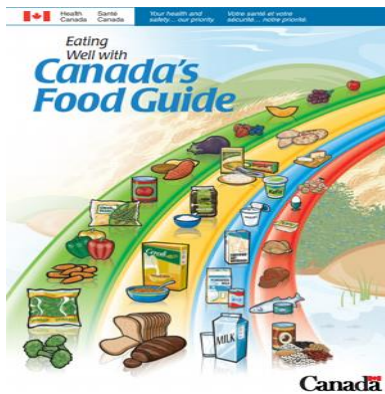


Guatemala



Honduras

Examples of a Rainbow, a Spin Top, and an Oyster Shell to Depict FBDGs



Canada



Japan



Qatar

Measuring Food Portion Sizes

Some FBDG also provide methods to help the public gauge their food intake. These methods depend on the culture and system used to measure foods at homes. Some countries, for instance, use the metric or the British system (grams vs. ounces), others use volumetric tools (e.g., spoons, cups), visible quantities (e.g., one banana, one egg), and others relate measurements with common objects (e.g., a palm with a cup, or a tennis ball for $\frac{1}{2}$ cup) (FAO, 2016). Although, measuring portion sizes is encouraged, if not done correctly, portion sizes may result in over- or under-consumption of essential nutrients.

Even though the FBDG could deliver simple, actionable messages, employ engaging and motivating illustrations, and show easy ways to measure food intake; many challenges exist that may prevent target groups to apply and adopt these recommendations.

Challenges and Considerations to Achieve Functional FBDG

There are several challenges that require attention when developing and implementing FBDG. Consumers may understand the necessity to consume diverse, well-balanced meals throughout the day, but continuous application may be limited by various barriers (food preferences, time for shopping, and food preparation, shopping and cooking skills) (Keller & Lang, 2007) and also a clients' socio-economic, and cultural context (FAO/WHO, 2006), thus potentially limiting the usefulness of these guidelines. Additionally, estimating portion sizes or following strict recipes is not common in most countries. Even though there are a number of methods to estimate daily requirements from common foods, the average individual does not measure foods on a daily basis using the simplest of tools available or using estimated amounts (e.g., 240 milliliters = 8 ounces = 1 cup = two handfuls) (Ball & Friedman, 2010; Chaudry, Connelly, Siek, & Welch, 2011).

Finally, recommendations that are simple and elicit a defined action may be easier for people to follow. For example, instead of promoting a behavior of eating less saturated fat, one may promote eating chicken without the skin. In this case, the consumer might be confused about saturated fat (or unsaturated fat), but will not be confused about eating chicken without the skin. The FBDG should be broad and consider vulnerable groups (e.g., pregnant women, elders, infants, and children), their living conditions, and food and nutrition security of the community and region. In those locations, vulnerable groups may not have the means to access a diverse diet (FAO, 2016; WHO, 2014). Having a diverse food supply year round might not be possible in some areas of the world due to seasonality and limited natural resources (e.g., nutrient-rich soil and water). Food preferences, most of which are determined to a great extent by the reigning culture, play a role in adopting the FBDG and modifying behavior (FAO, 2016; FAO/WHO, 2006). In summary, challenges remain when developing and implementing FBDGs among community members. However, opportunities exist to develop educational materials and tools to ensure community members know, understand, and are able to use FBDGs as a tool to support healthy behaviors in the household.

References

- Ball, G.D., Friedman A. (2010). Dice, golf balls, and CDs: assumptions about portion size measurement aids. *Canadian Journal of Dietetic Practitioner Research*, 71:146–149.
- Chaudry, B., Connelly, K., Siek, K.A., & Welch, J.L. (2011). The design of a mobile size estimation interface for low-literacy population. *International Conference about Pervasive Computer Technology in Healthcare*, 160-167.
- Clay, W.D. (1998). *Preparation and use of Food-Based Dietary Guidelines*. Retrieved from www.fao.org/docrep/W5849T/w5849t0a.htm on July 12, 2016
- EUFIC (2016). *Food-Based Dietary Guidelines in Europe*. Retrieved from www.eufic.org/article/en/expid/food-based-dietary-guidelines-in-europe on September 3, 2016
- Evergreen, S., Gullickson, A., Mann, C., & Welch, W. (2011). Developing & Validating Survey Instruments. *Western Michigan University*. Retrieved from www.colorado.edu/ibs/decaproject/pubs/instrument-design-webinar-handout.pdf on August 29, 2016.
- FAO/WHO. (2006). Technical consultation on national food-based dietary guidelines. *Historical Overview of Food-Based Dietary Guidelines*. Rome: Food and Agriculture Organization of the United Nations. Retrieved from <http://ftp.fao.org/docrep/fao/010/ai216e/ai216e02.pdf> on July 12, 2016
- FAO (2016). *Food-based Dietary Guidelines*. Rome: Food and Agriculture Organization of the United Nations. Retrieved from www.fao.org/nutrition/nutrition-education/food-dietary-guidelines/en on July 8, 2016
- Keller, I., & Lang, T. (2007). Food-based dietary guidelines and implementation: Lessons from four countries – Chile, Germany, New Zealand, and South Africa. *Public Health Nutrition*, 11(8), 867-874.
- Smolin L, Grosvenor M. (2016). *Nutrition Science and Applications*, 4th ed. John Wiley & Sons Inc.
- World Health Organization (2014). *10 Facts on the State of Global Health*. Retrieved from www.who.int/features/factfiles/global_burden/en/ on July 11, 2016



Designed to be shared

This work is licensed under a Creative Commons Attribution 3.0 Unported License. creativecommons.org/licenses/by/3.0/

Dr. Jeanette Andrade and Dr. Juan Andrade, University of Illinois at Urbana Champaign