

Review Article

Practical experience in development and promotion of food-based dietary guidelines in Thailand

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Although under-nutrition problems have been decreasing in Thailand, non-communicable diseases have become leading causes of death and disability. *Food-Based Dietary Guidelines (FBDGs)* is a key strategy to promote healthy daily food consumption and appropriate lifestyles. The development consists of qualitative and quantitative parts. The purposes were 1) to assist consumers in making healthy dietary choices and disease prevention; 2) to guide governmental agencies in nutrition implementations, promotion of healthy food products and education programs; 3) to assist national and local agencies in policy formulations and implementations; 4) to assist health-care providers in primary diseases prevention efforts. The procedures to develop FBDGs specifically were to 1) set nutritional goals based on Thai DRI and RDI; 2) assign the units used for one portion of each food group; 3) quantify the size and number of servings of the major food groups, using the nutritive value calculated by the popularity vote method from secondary data; 4) evaluate the nutritive value of recommended amounts from combinations; 5) develop and test several food guide models based on Thai people's understanding and cultures; 6) implement through educational tools for the nationwide public units; 7) offer training programs, monitoring and evaluation in various populations to be performed by Ministry of Public Health (MOPH) and other academic sections. In long run successful FBDGs, there must not only be support from policy makers and cooperation between nutritionists from universities and the MOPH, but also application of ongoing activities such as "Sweet Enough Campaign Network" or "School Lunch Program".

Key Words: food-based dietary guidelines, food guide model, development, nutrition flag, Thailand

INTRODUCTION

Adequate nutrition is known to be essential for proper growth and development. Moreover, it has recently been accepted that healthy eating is a significant factor in reducing the risk of developing nutrition-related problems. In terms of nutrition problems, Thailand is a country in transition. It is facing both under-nutrition and overnutrition. Though it can be said that under-nutrition, such as protein-energy malnutrition, vitamin A deficiency, iodine deficiency disorder, and iron deficiency anemia, have been decreasing and infectious diseases have been brought under control,¹ concurrently, chronic and degenerative diseases or non-communicable diseases, such as obesity, coronary heart disease, cancer, hypertension and diabetes mellitus have become leading causes of death and disability in Thailand.^{1,2} Thai Food-Based Dietary Guidelines (Thai FBDG) were designed to help people to choose what and how much to eat from each food group.

The purposes of developing Thai food-based dietary guidelines are to assist consumers in making dietary choices for promotion of well-being and disease prevention and to assist the governmental agencies in the development of policies to guide the implementation of nutrition intervention. It is expected that FBDG will help to improve the effectiveness of nutrition education efforts, directed both to the general public and at the national level.³ This will assist health care providers in primary diseases prevention efforts and will guide the implementation of food, nutrition and health goals by promotion of healthy food products.

DEVELOPMENT OF FOOD-BASED DIETARY GUIDELINES

There are 2 parts: qualitative (9 guidelines)⁴ and quantitative parts (food guide model "Nutrition Flag").⁵

Qualitative component of Thai FBDGs – 9 guidelines:

There are nine guidelines for a healthy Thai 6 years of age and older. They were developed in 1996 jointly by the Nutrition Division of the Ministry of Public Health, the Institute of Nutrition of Mahidol University, and other nutritionists and health personnel from various universities.

The nine guidelines are:

1. Eat a variety of foods from each of the five food groups and maintain proper weight.
2. Eat adequate amounts of rice or alternative carbohydrate sources.
3. Eat plenty of vegetables and fruits regularly.
4. Eat fish, lean meat, eggs, legumes and pulses regularly.
5. Drink sufficient amounts of milk every day.
6. Choose a diet that is moderate in total fat.

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7. Avoid an excessive intake of sweet and salty foods.
8. Eat clean and safe food.
9. Avoid or reduce the consumption of alcoholic beverages.

These guidelines had principles and rationale underlying each dietary recommendation and reflected current scientific consensus on the most important dietary measures associated with consuming adequate amounts of essential nutrients and reducing the risk of chronic diseases. The underlying principles involved nutritional adequacy through the consumption of an appropriate variety of foods and the reduction of chronic disease risk through moderate intake of fats, saturated fatty acids, cholesterol, sodium, sugar and alcohol. Increased vegetable and fruit consumption is also promoted. There is a user self-evaluation section in the booklet.

Quantitative component of the Thai FBDGs – Food Guide Model “Nutrition Flag”:

The first guideline is, “Eat a variety of foods” which contains messages relating to dietary moderation, proportionality and variety. The food guide suggests a range of daily serving from each of the major food groups. It is understood that a single model cannot represent every aspect of the food guide messages. Nevertheless, it specifies that the model should communicate importance concepts in a useful and memorable way.

Finally, the element of usability was to be incorporated into the design of the food guide model. Therefore, it was necessary that consumers could easily understand and remember the relative amounts of foods to eat from the five major food groups and to keep consumption from fat, salt and sugar groups as the smallest component of the diet.

Step in the development of the Thai Food Guide Model.

1. Setting of nutritional goals based on Thai RDA and RDI; the acceptable value of each nutrient is a minimum of 70 %.
2. Assignment of units used for one portion of each food group: using common household units, traditional and typical for Thai, such as the rice-serving spoon, table spoon, and teaspoon.
3. Determination of portion size and portion number from **Figure 2** Number of portions for each food group based actual consumption, and establishment of the amount of portions of each food group for 3 caloric levels, 1600, 2000 and 2400 kcal, using secondary data of dietary assessment from 5 research projects, rapid surveys from food centers and national dietary survey data.
4. Determination of average nutritive value for each food group, using the popularity vote method, portion size and corrections for cooking loss/gain of nutrient.
5. Evaluation of the nutritive value of the recommended amount of food from combinations of food groups, calculations for nutrient intake per day and adjustment of the recommendation if it did not reach the nutrient goals.
6. Food Guide Model Development: development of

several kinds of food guide models based on Thai culture and ease of demonstration of the proportion of food groups. Testing for understanding and acceptability was performed in various educational and economic groups.

7. Implementation through educational tools to public offices, schools, academic institutes, hospitals, hotels and related public places. A training program for various populations was offered by the Ministry of Public Health.
8. Monitoring and evaluation by periodic testing of knowledge, attitudes and practices among school children, teenagers and adults were performed by the Ministry of Public Health (MOPH) and other academic sections.

Four food guide models have been developed. After testing for acceptability, the nutrition flag model (Figure 1) was chosen and the number of portions for each food group based on energy consumption is shown in Figure 2.

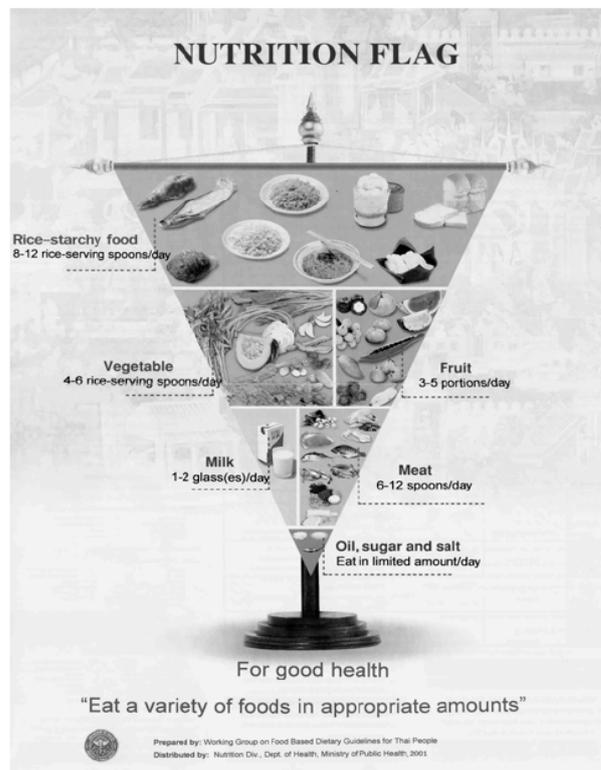


Figure 1. Thai food guide model “Nutrition Flag”

Food group	Suggested energy 1,600 Kcal/day • Children, 6-13 yrs • Working women, 25-60 yrs • Elderly, over 60 years	Suggested energy 2,000 Kcal/day • Teenagers and young adults, 14-25 yrs • Working men, 25-60 yrs	Suggested energy 2,400 Kcal/day • Female/male who needs more energy such as farmers, laborers, athletes
Rice-starchy food	8 rice-serving spoons	10 rice-serving spoons 1 round-egg spoon of sticky rice = 2 rice-serving spoons of rice	12 rice-serving spoons
Vegetable	4 (or) 5 rice-serving spoons	5 rice-serving spoons	6 rice-serving spoons
Fruit	3 (4) portions	4 portions 1 portion 1 portion 1 portion 1 portion (3 pieces)	5 portions
Meat	6 spoons	9 spoons	12 spoons
Milk	2 (1) glasses	1 glass If one does not drink milk, eat 1 slice of banana (4 spoons) or 2 spoons of small grey fish	1 glass

Note: oil, sugar and salt are recommended to have in limited amounts. () Recommendation for adults

Figure 2. Number of portions for each food group based on energy consumption.

IMPLEMENTATION AND EVALUATION

Currently the requirement of FBDGs for Thais must be evaluated. Evaluation would possibly be complex and would not be without any costs. Consequently, it is important to consider the potential benefits of periodically evaluating the FBDGs. Evaluation could establish the extent to which the FBDGs are or are not accomplishing their intended goals. That is, FBDGs can be employed as a tool to promote health and reduce risk of certain chronic diseases and to provide insights into reasons for their successes and limitations. Potential explanations could be limitations of the FBDGs themselves, that is, whether individuals follow them and whether they receive the desired benefits. Such findings would answer questions of whether current diet-health guidance is optimal, and provide insights into further diet and health research to improve information and guidance. Alternatively, success or a lack of success could be attributable to implementation of the FBDGs; that is, whether program policies are having the desired effects on knowledge, attitudes, and behaviours, or not. How FBDGs also could be used to improve information and program strategies for changing dietary behaviours of the target populations is challenging for policy makers.

There is no comparable mandate to evaluate the effectiveness of the FBDGs for Thais at periodic intervals. The evaluation would present considerable methodological challenges. However, evaluation research could be useful as part of the ongoing process of providing up-to-date dietary guidance to the MOPH, research institutes and others. The developing and implementing policies will turn guidance from “recommendation to reality” to improve public health. To conduct evaluation research, we need to maintain and improve national nutrition monitoring data. Besides the cross-sectional data sets that provide national estimates of diet and health, more longitudinal data sets are needed so that diet and health relationships can be better understood. The development of new measures will be important to assess FBDGs related outcomes. The analytical methods that improve the ability to assess the guidelines related effects independent of other social changes are also to be considered. To the extent that we are able to make progress in this area, that will improve development and implementation of future FBDGs for Thais. These recommendations are;

- A complete nutrient database for local food is necessary.
- An updated national food consumption and nutritional problem survey is needed.
- Audience input/comment is needed to achieve the desired outcomes of both guidelines and the food guide model.
- Different guidelines and models may be needed for some local populations or special population groups.
- Having baseline data for recent food consumption is crucial to evaluate the success of the program using FBDG to assess the changes in eating patterns and the nutritional problems after implementation.
- New information about the role of food fortification, functional foods, different cooking styles and preparations may be needed to support and update nutritional education in order to make the guidance more suc-

cessful.

SOME ACTIVITIES RELATED TO THAI FBDG

- Campaign program for lowering sugar consumption through the “Sweet enough campaign network” since 2002.
- Thai FDA passed a law prohibiting sugar addition in follow-on formula for infants in November 2004.
- Healthy Eating Index for Thai people.
- Healthy snacks for school children with friendly nutrition labeling.
- School lunch program – menu development.
- Elderly menu development
- Nutrition education training for teachers and health volunteers
- Assessment of dietary pattern and food consumption
- Setting the data base for the portion size of some ingredients in mixed diet

The Ministry of Public Health has a plan to revise the Thai FBDG since it has been developed and used for about one decade. Possibly lower recommendations of the amounts of some food categories to make them more realistic are needed. Databases of recipes of mixed diets are also required to assess the amounts of each food group consumed.

AUTHOR DISCLOSURES

Prapaisri P Sirichakwal and Kitti Sranacharoenpong, no conflicts of interest.

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