3.1 Food-based dietary guidelines: overview and follow-up

Dr Chizuru Nishida, WHO Headquarters

FBDG are not new. The 1992 ICN Plan of Action for Nutrition included nine action-oriented strategies:

1. Incorporating nutritional objectives, considerations and components into development policies and programmes;

2. Improving household food security;

3. Protecting consumers through improved food quality and safety;

4. Preventing and managing infectious diseases;

5. Promoting breastfeeding;

6. Caring for the socioeconomically deprived and nutritionally vulnerable;

7. Preventing and controlling specific micronutrient deficiencies;

8. Promoting appropriate diets and healthy lifestyles;


The strategy for point 8 calls on governments “on the basis of energy and nutrient recommendations to provide advice to the public by disseminating qualitative and/or quantitative dietary guidelines relevant to different age groups and lifestyles, and appropriate for the country’s population.”

Fifty-four countries, 28% of WHO Member States, including seven countries in the Eastern Mediterranean Region, have incorporated all nine action-oriented strategies in their national plans of action for nutrition.

FBDG are recommended as preventive strategies, because they provide a framework for advice on the selection and consumption of nutritionally adequate, safe, healthy and affordable diets and encourage healthy lifestyles. An FAO/WHO technical consultation was held in Cyprus resulting in the manual “Preparation and use of food-based dietary guidelines” issued in 1995 (TRS 880). Since then WHO has
supported countries through regional workshops in the development of national FBDG. Five workshops were held in South America in 1995–1996, one in India in 1997, and one in the Philippines in 1999. According to an inventory on the status of development of FBDG in the world in December 2004, 37 only countries had finalized their FBDG, and six countries are preparing theirs. In this Region, three countries declared their willingness to prepare FBDG, based on information obtained in 2001.

The magnitude of malnutrition in the world shows the need for an effective strategy: intra-uterine growth retardation, 30 million/year (23.8% of all births); protein-energy malnutrition, 159 million under-5 children; iodine deficiency disorders, 740 million; vitamin A deficiency, 120 million under-5 children, 3 million under-5 children with xerophthalmia; anaemia, including iron deficiency anaemia, 2 billion; overweight and obesity, 1.2 billion (340 million obese) adults and 16 million children.

In the Eastern Mediterranean Region, the most commonly cited factors affecting nutritional status were infectious diseases and parasites, poverty, changing dietary habits, physical inactivity, and insufficient intake of iron-rich foods.

Some of the emerging issues which countries identified as needing action include globalization of the economy; nutrition transition (overweight and obesity); fetal programming of chronic diseases; the impact of HIV/AIDS; biotechnology such as production and utilization of genetically modified foods; micronutrients beyond the big three (iodine, vitamin A and iron), such as zinc, folate (folic acid), calcium, vitamin C and selenium; and prion diseases such as bovine spongiform encephalopathy.

Examples of existing FBDG posters were shown, as well as core guidelines of the South-East Asia Region:

- Eat enough food to meet body needs and maintain a healthy body weight
- Eat a variety of foods
- Eat clean and safe food
- Eat whole grain cereals, legumes, roots and tubers
- Eat plenty of vegetables and fruit regularly
- Eat moderate amounts of fat in your diet
- Limit salt intake
- Moderate sugar intake
Avoid or limit alcohol

Breastfeed as appropriate

For the development of national FBDG, nutrient recommendations can be obtained from FAO/WHO expert consultations on:

- Fats and oils (1993 and updates in 2006)
- Carbohydrates (1997 and updates in 2008)
- Energy (updates in 2001)
- Protein (updates in 2002)

WHO is supporting countries through regional reviews and assessments: Central and Eastern European countries (Hungary, 2004); Eastern Mediterranean Region countries (Cairo, 2004); Latin American countries (2005); Asian countries (2005).

3.2 Regional overview of diet-related health problems

Dr Kunal Bagchi, WHO Regional Office for the Eastern Mediterranean

Countries of the Eastern Mediterranean Region may broadly be divided into four categories. The first category includes countries that are in an advanced stage of over-nutrition, characterized by overweight and obesity, together with the presence of dietary risk factors for chronic diseases and moderate micronutrient deficiencies. Any of the countries from the Gulf Cooperation Council (GCC) would fit into this category.

The second category includes countries that have moderate levels of over-nutrition with dietary risk factors for chronic diseases, as well as moderate levels of under-nutrition in specific areas and widespread micronutrient deficiencies. A good example is Jordan.

The third category includes countries with significant under-nutrition reflected in both acute and chronic child and maternal malnutrition, as well as emerging over-nutrition in specific population groups, for example, affluent urban populations. Pakistan is a good example.

The fourth category includes countries with severe child and maternal under-nutrition and widespread micronutrient deficiencies. Essentially these are countries that are experiencing humanitarian crises, such as Afghanistan. Under-nutrition continues to affect a large proportion of children in countries of the Region. The high prevalence of stunting and wasting demonstrates this fact.
Food and dietary habits have changed over the years in the Region, coupled with an increasingly sedentary lifestyle. The availability of total fat in selected countries of the Region has increased according to data taken from FAO Food Balance Sheets for different years. Traditional foods are being replaced by fast foods, soft drinks and increased consumption of meat. The proportion of energy derived from cereals and cereal products has decreased. The sharp decline in the cost of vegetable oils and sugar has put such products in direct competition with cereals as the cheapest food ingredients. More high-fat and high-energy foods are incorporated in the diet.

The average overweight and obesity prevalence rate reaches over 30% among the entire adult population in the Region. The modern environment has allowed overweight and obesity to increase at alarming rates, posing a major public health challenge.

Among the noncommunicable chronic diseases, diabetes mellitus is reaching pandemic proportions in several countries. The regional prevalence of type 2 diabetes mellitus is estimated to range between 7% and 25%. The prevalence of diabetes has increased steadily over the past ten years in the GCC countries. The prevalence of hypertension is estimated to be around 26% in the Region.

A large proportion of the adult and young population in the countries of the Region smokes including 62% of adult males, 48% of adult females, and 26% of young males. Cardiovascular diseases account for the highest number of deaths in the Region. Total mortality from cancer has been estimated to be around 8%.

The close relationships between obesity, diabetes mellitus, hypertension, smoking and physical activity are demonstrated through information compiled from countries. It is estimated that 40%-45% of obese individuals develop type 2 diabetes, 85%-90% of all diabetics are overweight and obese, and 85%-90% of all diabetics are physically inactive.

Obesity appears to be the most important single target variable to control if the incidence of diabetes and other noncommunicable diseases is to be reduced. Control of obesity would help reduce prevalence of hypertension and reverse the lipid disturbances associated with obesity.

The issue of physical activity as it relates to diet and chronic disease in the Eastern Mediterranean Region countries was also addressed. The experience of the Regional Office, based on data available from countries, indicates that when obesity is a common feature in a cultural group, strong negative social pressure limits the involvement of population groups in weight control programmes. A tolerant attitude towards being overweight develops and some individuals even harbour
an image of being attractive despite their obesity. Exercise is not part of a daily routine for the men and women living in many countries of the Region. Even among the obese population, exercise is not popular and is often combined with a low level of knowledge and poor attitude.

A number of needs and concerns exist. First, there is a general lack of standardized and representative data on chronic diseases in countries of the Region. Efforts have been made to establish data-gathering surveillance systems, but their linkages to food and diet have to be strengthened. Second, there is limited awareness regarding appropriate diets at the individual, community, school and government level. Third, negative effects of mass media messages result in increased consumption of processed and fast food and sweetened soft drinks. Increased tobacco consumption and lack of physical activity are other concerns.

3.3 Regional overview of food consumption patterns
Dr Fatima Nachem, FAO Regional Office for the Near East

Countries in the Near East have witnessed many changes in the past 40 years, including a tremendous increase in the population and an improvement of income, as well as socioeconomic and political changes that have greatly influenced the way people eat in this Region. Many countries were food insecure in the 1960s, as is shown by the FAOSTAT Daily Energy Supply (DES) figures and the numbers of the undernourished. The situation has improved greatly since then and the DES has increased in all countries, reaching that of the industrialized countries for some. The share of total energy of proteins and fats has also increased, but has stayed within the international recommendations of 10%-15% for proteins and less than 30% for fat, except for Lebanon, Syrian Arab Republic and some GCC countries in which fat contribution to total calories exceeded the recommended 30%.

A closer look at the composition of DES by macronutrients reveals that for most countries the contribution of proteins stayed almost unchanged with vegetable proteins being the main contributor to total protein calories. On the other hand, the fat contribution to total caloric supply remained unchanged for most countries except for Kuwait, Lebanon, Saudi Arabia, Syrian Arab Republic and the United Arab Emirates. Here again, the major increase came from vegetable fats.

Supply of major food groups per capita has also seen an increase, which was more pronounced in some countries than others. Countries, which are identified as low income have seen the lowest increase in food supply per capita.

The structure of food supply shows that minor changes have occurred among the major food groups. However there have been major
changes in some countries in the composition of these food groups. This has been particularly evident in the group of oils, where some countries have seen the introduction of new types of oil, such as palm oil, or the substitution of traditionally used oils, such as olive oil, by soybean oil. Similar trends have also been observed within the group of cereals. In addition, countries that witnessed a decrease in their per capita supply of cereals have also witnessed an increase in their per capita supply of oil.

The contribution of sugar to total caloric supply increased slightly in a few countries, but remained at around 10% of DES for all of the countries.

Many factors specific to the Region could explain these minor structural changes in the food patterns in the countries of the Region. Income is often associated with major changes in diet. While this is true for most countries, the increase in income was not always concomitant with an increase in the percent contribution of animal protein to DES. The increasing inequality in the distribution of incomes in many countries could be one of the reasons to explain this observation. In addition, the engagement of women in paid activity is the lowest in the world in this Region, which could explain to a certain extent the slower change in food patterns. Cultural habits could also explain the high expenditure on fruits and vegetables as a percent of total food expenditure seen in some countries of the Region. On the other hand, food policies and food aid significantly shape consumption patterns in these countries. A few countries still use food subsidies as a means of protecting the less privileged in their societies. Mainly cereals, oils and sugar are subsidized. In combination with the policies of subsidizing cereal producers this contributes to the availability of these foods at lower prices to consumers across the whole society. In addition to all of the above, the food industry and supermarkets are increasing in number in many of these countries, but their impact on food habits has not been assessed yet.

It should be noted that the most populated countries are still practicing policies that place many restrictions on imports, including food items. This has recently started to become less strict in some countries, which might influence food habits in the long run.

While Food Balance Sheets are invaluable for studying trends over time and for an overview of food patterns in a certain country, their use is limited when it comes to studying variations at the individual level or when these variations need to be disaggregated by gender, region, or socioeconomic status. With the increase in the number of those living under the poverty line in many countries in this Region, local food consumption surveys are required to obtain information at the micro level. Such information would be fundamental in advising policies and interventions.
# Points raised in the discussion

- Food subsidies play an important role in shaping food patterns of the poor in some countries in the Region. To ensure that people eat balanced diets, consideration needs to be given to the foods that are subsidised.

- A high total energy intake is a risk factor for obesity, even if the dietary composition is balanced in terms of the ratio of macro-nutrients.

- Food Balance Sheet data (FBS) may mask differences between population groups.

- Although food availability has improved in the last 30 years, problems of under nutrition in the Region should not be underestimated.

- In order to develop national FBDG that address the particular nutrition and health concerns of the population, data on actual food consumption patterns are needed.

- Capacities need to be strengthened regarding the use of standardized survey methods for dietary intake that allow inter-country comparisons.

## 3.4 Summary of diet, nutrition and chronic diseases: Technical Report 916 and the global debate

*Dr Chizuru Nishida, WHO Headquarters*

Nutrition is coming to the forefront as a major modifiable determinant of chronic diseases, with scientific evidence increasingly supporting the view that alterations in diet have strong effects, both positive and negative, on health throughout life. For example, up to 70% of stroke, up to 80% of cases of coronary heart disease, and up to 90% of type II diabetes could be avoided through changing lifestyle factors. Furthermore, up to 70% of colon cancer and about one-third of other cancers could be prevented by eating healthily, maintaining normal weight and being physically active throughout the lifespan.

Most importantly, dietary adjustments may not only influence present health, but may determine whether or not an individual will develop such diseases as cancer, cardiovascular disease and diabetes much later in life. However, these concepts have not led to a change in policies or in practice. Therefore, to address the growing epidemic of diet-related chronic diseases afflicting both developed and developing countries, the joint WHO/FAO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases was held in Geneva from 28 January to 1 February 2002.
The overall objective of the Consultation was to review current international recommendations on diet, nutrition and the prevention of chronic diseases, and to update them by evaluating the new scientific evidence and lessons learned from implementing national intervention strategies to reduce the burden of these diseases. The report of the joint WHO/FAO Expert Consultation updated the report of the 1989 WHO Study Group. The main features in the content and approach taken by the Joint WHO/FAO Expert Consultation are summarized as follows:

The primary purpose of the consultation was to examine and develop recommendations for diet and nutrition in the prevention of chronic diseases, but the need for sufficient physical activity was also discussed, and was emphasized in the final report. This emphasis is consistent with the trend to include physical activity as part of diet, nutrition and health.

The report of the consultation includes a chapter examining global and regional food consumption patterns and trends. It addresses likely implications of nutrient recommendations and dietary guidelines for food supply and production and the need for developing integrated action strategies. The report also includes the criteria used to describe strength of evidence. These were based on the criteria used in the World Cancer Research Fund report on food, nutrition and the prevention of cancer, modified to include results of controlled trials, where relevant and available. Furthermore, the consultation recognized the complex interaction between environmental factors that affect excess weight gain as an important contributing risk factor for many chronic diseases. Therefore, in categorizing risks, the consultation took into consideration consistent evidence on community and environmental factors, which lead to behavioural changes and thereby modify risk.

In updating the population nutrient intake goals, the consultation applied convincing and probable evidence. Convincing evidence is based on epidemiological studies showing consistent associations between the exposures and the disease, with little or no evidence to the contrary. The available evidence is based on a substantial number of studies, including prospective observational studies and where relevant, randomized controlled trials of sufficient size, duration and quality showing consistent effects. Furthermore, association should be biologically plausible. Probable evidence is based on epidemiological studies showing fairly consistent associations between the disease and the exposure, but there are perceived shortcomings in the available evidence or some evidence to the contrary, which make it difficult to make a more definite judgement.

Shortcomings in the evidence may be insufficient duration of trials (or studies), insufficient availability of trials (or studies), insufficient sample sizes; or incomplete follow-up. However, laboratory evidence is usually supportive and association should be biologically plausible. Detailed
features, approaches and contents of the report of the Consultation can be viewed in an article in Public Health Nutrition.

In the light of the updated population nutrient intake goals recommended by the joint WHO/FAO expert consultation, national FBDG should be reviewed, or formulated as necessary by adapting recommended population nutrient intake goals to local situations. The goals and recommendations of the joint WHO/FAO expert consultation provide an important scientific basis for developing and implementing global, regional and national strategies for improving the health and nutritional well-being of the world population.

3.5 Overview of the Global Strategy on Diet, Physical Activity and Health and its regional implications

Dr Denise Costa Coelho, WHO Headquarters

In May 2004, the 57th World Health Assembly endorsed the WHO Global Strategy on Diet, Physical Activity and Health (DPAS) in resolution WHA57.17. The DPAS was developed through an inclusive and extensive process of consultations with all concerned stakeholders, in response to a request from WHO Member States at the 2002 World Health Assembly (WHA55.23). A total of 81 countries attended six regional consultations, and 11 United Nations agencies, 25 international nongovernmental organizations and 25 international industry associations were consulted. The WHO Director-General chaired round-table discussions with senior executives of 13 international companies, and with 13 nongovernmental organizations. An international reference group advised the process. A consultation with countries of the Eastern Mediterranean Region was held in Cairo, 30 April-2 May 2003.

In the resolution, the Health Assembly acknowledged that "... malnutrition, including under-nutrition and nutritional deficiencies, is still a major cause of death and disease in many parts of the world, especially in developing countries, and that this strategy complements the important work of WHO and its Member States in the overall area of nutrition" (WHA 57.17). Members States have expressed their concern that WHO should continue to consider the whole spectrum of nutrition diseases in its work. There are common solutions, common policy options to jointly address these conditions. Keeping the best balance is the challenge and the opportunity to move the nutrition agenda further.

DPAS sets as key principles for action that: strategies and policies should be multisectoral, address all major chronic noncommunicable disease risk factors and have a long-term perspective; its implementation needs to address all age, sex and socioeconomic groups; advocacy must be

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sustainable and continuing; entry point at country level should be
political; tools for countries should be based on needs; macro and micro
levels should be addressed in combination. It recommends that policies
aiming at environmental change, and those aiming at change, which
are the individual’s responsibility, should be balanced and appropriate
to national and regional circumstances.

FBDG are a core component of DPAS implementation. Member States
are encouraged to “.... draw up national (food-based) dietary
guidelines, taking account of evidence from national and international
sources. Such guidelines advise national nutrition policy, nutrition
education, other public health interventions and intersectoral
collaboration. They may be updated periodically in the light of changes
in dietary and disease patterns and evolving scientific knowledge.” WHO,
in cooperation with other international organizations, is recommended
to facilitate the drafting and implementation of national food-based
dietary and physical activity guidelines, in collaboration with national
agencies.

The private sector should also be a significant player in promoting healthy
diets as the healthy choices should be the easy ones. The food industry
is recommended to limit levels of saturated fats, trans-fatty acids, free
sugars and salt in existing products and to develop and provide
affordable, healthy and nutritious choices to consumers. The industry
can play an important role in providing consumers with adequate and
understandable product and nutrition information and in practicing
responsible marketing that supports the strategy, especially to children.
But, above all, it can and should strive for healthy workplaces that
promote a healthy diet and physical activity among its workforces.

The DPAS created a new and exciting momentum for work in the area
of nutrition for WHO. Nutrition-related diseases are interconnected in the
life cycle. Populations, families and even individuals are being burdened
by several of these conditions. Public policies can change this scenario
and decrease the dual burden of nutritional diseases. A science-based,
comprehensive, integrated and action/policy oriented “nutrition agenda” should be set at global, regional and country levels, addressing
the whole spectrum of the nutrition problems, interconnecting current
policies, technical guidelines and strategies. Building and implementing
the nutrition agenda should be a collective responsibility and a multi-
stakeholder effort.

WHO’s continued work in nutrition contributes to DPAS implementation
while addressing the whole spectrum of nutrition diseases, and should
be reinforced. It includes the development/updating of national
intersectoral food and nutrition plans and policies, the updating and
implementation of national FBDG, the development and implementation
of strategies to address obesity, particularly childhood obesity, the
promotion of fruit and vegetable consumption, and the setting-up of comprehensive school-based nutritional interventions through the “Nutrition Friendly Schools Initiative”.

To reinforce its work in these and other areas, WHO aims at building a strong network in nutrition with regions, countries and other global organizations; and at providing Member States and the international community with technical guidance and collaboration. WHO also acts globally and internationally to raise awareness and commitment, to build alliances, networks and partnerships, to address issues that are international in nature, and to develop and implement a communication strategy for “Nutrition: Where do we collectively want to be in 2015?”

In the plenary discussion which followed, the question was raised whether the BMI cut-off point for obesity in the Region should be 25 or 23 as is currently being considered in Asia. At present, there is no agreement among the experts, so the BMI cut-off point of 25 is still valid.

### Points raised in the discussion

- In Asia, the BMI cut-off point for obesity is now under consideration. Similar research is needed to determine appropriate cut-off points for obesity in the Eastern Mediterranean/Near East Region.

- Recommendations for physical activity, that are appropriate for the Region, should be considered.

- Sugar intake is a major and hard to address concern in this Region because the sugar industry is very powerful.

- Development of FBDG should be a multisectoral effort in which the food and agriculture sector is a key player.

### 3.6 Process and steps in developing food-based dietary guidelines

**Dr Antonia Trichopoulou, University of Athens Medical School**

The realization that diet is an important determinant of human health is not new. What is new; however, is; first, the documentation of our knowledge about what is healthy in diet and what is not; second, the semi-quantification of our understanding; and third, the realization that changes can be successfully implemented at either the individual or the population level.
These facts impose on us, nutrition scientists and public health officials, an obligation to act. As a first step towards meeting this obligation, national FBDG have been developed, and conscientious citizens have been asked to adopt them toward better nutrition for a better life.

The ability to monitor and compare the dietary habits of different populations is important in the formulation of dietary guidelines and in planning and implementing national food, nutrition and agricultural policies. In the field of public health, emphasis should be placed on the importance of recording standardized and comparable dietary data and the promotion of nutrition surveillance systems.

The first step in developing FBDG is the compilation of a national report, which reflects available information on energy, food and nutrient intake, as well as health indicators (prevalence of overweight and obesity, blood lipids, mortality, morbidity, physical activity and smoking). The report should identify the major nutrition and health problems. It should also point out the inadequacies of data collected, which would limit the comparability of the collected data.

The national report should not only compile data but should be a stimulus for future projects in the area of nutrition and health. The report should also serve as a basis for improvements and for the planning of such future projects, and show what still has to be done in order to obtain comparable and representative data. In order to obtain comparable data between countries, according to the European 2004 Health and Nutrition report the assessment should take place during a whole year in order to avoid seasonal fluctuations. Uniform age groups should be used; the sampling method should be standardized between all countries; a standardized database for the calculation of nutrient intake should be used among all countries; and the data should be representative for the target population.

Standardized assessment methods are also needed for physical activity and smoking, and for overweight and obesity (self-reported or measured), and uniform cut-off points should be applied. Many studies have evaluated the association between single foods, food groups, or nutrients and chronic diseases. During the last 10 years the focus has been on the identification of a dietary pattern that maximizes longevity.

FBDG are easier for the public to follow than recommendations about nutrient intake alone. Patterns of food intake may be more relevant to health and disease than intakes of specific foods or particular nutrients. FBDG can incorporate aspects of the socio-cultural environment that affect food availability and choices, and can overcome behavioural obstacles that hinder their implementation. To develop FBDG, consensus is needed among the ministries of health, agriculture, and commerce, the scientific community, and nongovernmental organizations. Dietary guidelines should also be as simple as possible and provide common-sense advice.
Dr Trichopoulou also presented the Mediterranean diet and the corresponding food guide in a pyramid shape (see Annex 5). She briefly mentioned the importance of preserving the knowledge and use of traditional foods, noting that the Department of Hygiene and Epidemiology in the University of Athens Medical School has started studying the traditional foods of Greece.

**Points raised in the discussion**

- In more than one country, one or more national organizations/institutes work on developing FBDG or food composition tables. It is more effective if they unite their efforts.

- A major challenge is to develop clear and sensible nutrition messages that can be readily adopted by the public.

### 3.7 Food and dietary data needed for the preparation of food-based dietary guidelines

*Dr Antonia Trichopoulou, University of Athens Medical School*

The presentation refers to the report Monitoring public health nutrition in Europe (European Union Report, 2003). Definition of indicators of health should be consistent across member states. Indicators should be defined for food and nutrient intake, including breast feeding; nutritional status, anthropometry and physical activity.

To define the food and nutrient intake, the European Union uses the following indicators:

- consumption/availability of vegetables (excluding potatoes and vegetable juice)
- consumption/availability of fruit (excluding fruit juice)
- consumption/availability of meat and meat products
- consumption/availability of fish
- saturated fatty acid content of the typical diet
- polyunsaturated fatty acid content of the typical diet
- mono-unsaturated fatty acid content of the typical diet
- non-starch polysaccharides content of the typical diet
- vitamin content of the typical diet: vitamins C, D and E, folate and carotenoids

- mineral content of the typical diet: Fe, I, Ca and Se.

For nutritional status:

- serum carotenoid levels
- blood lipid pattern
- haemoglobin, serum ferritin
- serum transferrin receptor
- folic acid status
- selenium status
- serum 25-hydroxy vitamin D3.

The following sources can be used for the collection of nutritional data.

<table>
<thead>
<tr>
<th>Level</th>
<th>Source</th>
<th>Type of data</th>
</tr>
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<tbody>
<tr>
<td>Population</td>
<td>Food Balance Sheets (FBS)</td>
<td>Ecological: large units</td>
</tr>
<tr>
<td>Household</td>
<td>Household budget surveys (HBS)</td>
<td>Ecological: small units</td>
</tr>
<tr>
<td>Individual</td>
<td>Nutrition surveys (INS)</td>
<td>Analytical: individuals</td>
</tr>
</tbody>
</table>

The Data Food Networking (DAFNE) initiative of the European Union was launched with the objective of developing a regularly updated European databank of comparable food and socioeconomic information, as a tool for monitoring trends in food habits in Europe. Initially, 16 European countries participated and there are another five new European Union countries. Standard procedures have been identified for data collection.

Household budget survey (HBS) data on food availability at household level, as well as relevant demographic and socioeconomic characteristics are forwarded to the Greek centre coordinating the Data Food Networking (DAFNE) initiative. Central combination and post-harmonization of the raw HBS data are undertaken according to procedures developed in the DAFNE project.

The DAFNE data on mean food availability (g or ml/person/day) are integrated in DatneSoft (v 2.1), which is window-environment software...
allowing the presentation of dietary data in various formats (tables, bars, pie-charts, map presentations) and at various levels of detail. The software also makes possible the follow-up of trends in food availability over time, within and between countries; the study of the effect of the household’s locality and of the education and occupation of the household head on the daily food choices, and the export of data for further uses.

Future plans of the DAFNE initiative include:

- integrating data from Albania, Bulgaria and Croatia in the DAFNE databank;
- developing an approach to evaluate the effect of meals taken out of home;
- finalizing the DAFNE Food Composition Table;
- conducting a dietary survey in a sub-sample of the HBS population, in order to develop conversion factors (meals taken out of home, pregnancy, supplements).

In conclusion, the comparability of operational measures is crucial to the meaningful interpretation of comparisons among countries. This has been a key objective of the DAFNE initiative. A system allowing the regular update of the DAFNE database and the expansion of the network to embrace all European countries could provide a ready source of data for monitoring public health nutrition in Europe at reasonable cost.

The DAFNE-Software (DAFNEsoft v2.0) can be downloaded free of cost at: www.nut.uoa.gr

3.8 Health and nutrition information needed for the preparation of food-based dietary guidelines

Dr Kraisid Tontisirin, FAO Headquarters

The overall goal of FBDG is to promote nutritional well-being, to prevent diet-related diseases and to provide guidance for food, agriculture and education policy. As FBDG aim to have an impact on people’s behaviour, they need to take into consideration the in-country situation, the epidemiological information on nutrition and health, as well as the scientific evidence regarding diet/health relationships.

The information required for developing FBDG should help to identify significant nutrition and health issues, estimate the magnitude (prevalence) and severity (e.g. mild, moderate, severe) of such problems, distinguish high-risk age groups and other population groups,
and set priorities for nutrition education interventions in the health, agriculture and education sectors.

To obtain nutrition and health information, epidemiology and surveillance methods have been used. Epidemiology is used for fact finding purposes and to understand the connections between the observed effects and the possible causes. Surveillance involves the continuous collection of information to define the current situation, show trends, forecast changes, highlight priorities and lead preventive and corrective actions.

Ideally, each country would have good quality data from different sectors. However, in reality most countries will find that there are limitations in the available information. Such limitations should not be reasons to avoid or delay the FBDG development process. It is important to begin with the analysis and interpretation of the available information. Observations in the country can be compared to findings from other countries in a region, as well as with information from international scientific literature.

The process of FBDG development can lead to the recognition that more data is needed and this can stimulate the gathering of data. With regard to nutrition, data and information should include under-nutrition (inadequate energy consumption, protein energy malnutrition, micronutrient deficiencies) over-nutrition, diet-related diseases, and food safety in both rural and urban settings in the human life-cycle. Health information needed may include the prevalence of diet-related diseases, such as food-borne diseases (diarrhoeal diseases, parasitic infections and food intoxication), noncommunicable diseases (obesity, diabetes mellitus, hypertension, hyperlipidaemia and cholesterolism, cardiovascular diseases, cancer, dental caries and others), as well as other morbidity and mortality data. In addition, data on risk factors of noncommunicable diseases (undesirable food patterns, smoking, physical inactivity, stress and poor environments) as well as data on the availability, accessibility and quality of health services, may be needed. The extent to which nutrition and health information are required depends on the stage of the FBDG development process, the type of health issues that need to be addressed, the availability of nutrition data, and the timeframe and availability of funds and expertise. The following data and information sources may be consulted: health statistics, nutrition surveys, national census data, household expenditure surveys, food consumption surveys, physical activity assessments, FAO Food Balance Sheets, and international literature.

3.9 Developing food-based dietary guidelines: experiences from Thailand
Dr Prapaisri P. Sirichakwal, Mahidol University

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 diseases.
Thailand is a country in transition, facing both undernutrition and overnutrition, although aspects of undernutrition, such as protein-energy malnutrition, vitamin A deficiency, iodine deficiency disorder, and iron deficiency anaemia, have been decreasing and infectious diseases have been brought under control. Concurrently, chronic and degenerative diseases or noncommunicable diseases, obesity, coronary heart disease, cancer, hypertension and diabetes mellitus, have become leading causes of death and disability in Thailand.

The purposes of developing Thai FBDG are to assist consumers in making dietary choices for well-being and diseases prevention; to assist governmental agencies in the development of policies to guide the implementation of nutrition interventions and education programmes; to assist agencies at the national and local level in the formulation and implementation of regulatory policies and programmes related to food, nutrition and health; to assist health care providers in primary diseases prevention; and to guide the implementation of food, nutrition and health goals by promoting the production of healthy food.

Thai FBDG comprise two parts, one qualitative containing the nine guidelines, and one quantitative, containing, the food guide model “Nutrition Flag”. The FBDG were designed to help people to choose what and how much to eat from each food group. The FBDG were developed jointly in 1996 by the Nutrition Division, Ministry of Public Health, Institute of Nutrition, Mahidol University, and other nutritionists and health personnel from various universities. There are nine guidelines for healthy Thais of 6 years of age and older:

- Eat a variety of foods from each of the five food groups and maintain proper weight.
- Eat an adequate amount of rice or alternative carbohydrate sources.
- Eat plenty of vegetables and fruit regularly.
- Eat fish, lean meat, egg, legumes and pulses regularly.
- Drink sufficient amounts of milk every day.
- Choose a diet that is moderate in total fat.
- Avoid an excessive intake of sweet and salty foods.
- Eat clean and safe food.
- Avoid or reduce the consumption of alcoholic beverages.

A rationale and principles were formulated for each dietary recommendation, reflecting 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 Thai food guide is the “Nutrition Flag” and visualizes the first guidelines which contain messages relating to dietary moderation, proportionality and variety. The food guide suggests a range of daily servings from each of the major food groups. It is understood that a single model cannot represent every aspect of the FBDG; however, it can visualize the most important concepts in a clear and memorable way.

Steps in the development of the Thai Food Guide Model included setting nutritional goals based on Thai RDA and RDI (≥ 70%); assignment of unit used for one portion of each food group; using common household units typical for Thais, such as rice-serving spoon, table spoon, etc.; determination of portion size and portion number from actual consumption data and establishment of the amount of portions of each food group for 3 caloric levels, 1600, 2000 and 2400 kcal; determination of average nutritive value for each food group, using the popularity vote method, portion size and correction for cooking loss/gain; evaluation of nutritive value of the recommended amount of food from a combination of food groups by calculation for nutrient intake per day (and adjustment of the recommendation if it did not reach the nutrient goals).

Several kinds of food guide modes were developed based on Thai culture and the proportion of food groups that were easy to demonstrate. These modes included pilot testing for understanding and acceptability in various educational and economic groups; implementation through educational tools to public offices, schools, academic institutes, hospitals, hotels and other public places; training of target groups; monitoring and evaluation by periodic testing of knowledge, attitude and practice among schoolchildren, teenagers and adults.

Ongoing activities related to Thai FBDG include a campaign for lowering sugar consumption through a “no sugar kids network”; a healthy eating index for Thai people; healthy snacks with friendly nutrition labelling for schoolchildren; and the school lunch programme.

Several lessons have been learned from developing the Thai FBDG. Policy-makers have to support the programme; collaboration between nutritionists from various universities and the implementing organization is essential; a nutrient database for local food is necessary; recent national food consumption and nutritional surveys are required; audience input/comment is needed for guidelines and for the food guide; different guidelines may be needed for special population groups; baseline data for food consumption are crucial for evaluating the success of the FBDG in terms of changes in eating patterns; information on new food products and food preparation may be incorporated in nutrition education in order to make the guidance more successful.
3.10 Developing food-based dietary guidelines: Experiences from India
Dr Seema Puri, Delhi University

India has witnessed unprecedented growth in food grain production and moved from chronic shortages to an era of surplus. Along with the steps to achieve adequate production, initiatives are being taken to distribute foodstuffs of the right quality and quantity to the right places and persons at the right time and at an affordable cost.

Achievement of food adequacy at the national level is a necessary, though not a sufficient precondition, to ensure the achievement of household nutrition security. Available data also indicate that overall, diets have adequate amounts of protein, calcium, thiamine, niacin and vitamin C, but are inadequate in vitamin A, riboflavin and iron.

There has been a substantial reduction in severe grades of malnutrition, including chronic energy deficiency, and some improvement in nutritional status of all segments of the population. However, it is a matter of concern that although mortality rates have come down by 50% and fertility by 40% during the last five decades, the reduction in under-nutrition is only 20%. While there has been a decline in the prevalence of stunting and wasting, even now one third of all children weigh less than 2.5 kg at birth, half of the preschool children suffer from mild and moderate malnutrition and more than two thirds of women and children are anaemic. Vitamin A deficiency and iodine deficiency disorders still remain public health problems.

Diet-related chronic diseases do not affect only the elite population but are becoming a problem even among middle and lower income groups. The incidence of cardiovascular diseases and diabetes among the low-income group has also increased significantly.

With increasing longevity, the proportion of elderly is increasing rapidly. Available data from nutrition surveys indicate that the dual problem of chronic energy and micronutrient deficiency on the one hand, and obesity on the other, are seen among the elderly. Osteoporosis and its related consequences also impact the lives of older persons. The situation is being further compounded by the emergence of a rapidly increasing number of HIV/AIDS cases, with their related health, nutritional and social implications. In India, an estimated 3.97 million people are living with HIV/AIDS.

During the present Tenth Plan period, there are focused and comprehensive interventions aimed at improving the nutritional and health status of individuals. There has been a paradigm shift from household food security and freedom from hunger to nutrition security for the family and the individual; from untargeted food supplementation to screening of all the persons from vulnerable groups, identification
of those with various grades of under-nutrition and their appropriate management; from lack of focused interventions on the prevention of over-nutrition to the promotion of appropriate lifestyles and dietary intakes for the prevention and management of over-nutrition and obesity.

In India, the focus of nutrition programmes has undergone several priority shifts in food production, demonstration, consumption and community development efforts. The next shift was to include supplementary nutrition programmes and prophylaxis programmes against specific micronutrient deficiencies, such as iron deficiency anaemia, iodine deficiency disorders and vitamin A deficiency, as early as 1960s-1970s.

The next major shift was directed towards a multisectoral approach. The Integrated Child Development Services Scheme (ICDS) was launched in 1975 marking the beginning of a multisectoral phase. ICDS promotes child survival and development through an integrated approach for converging basic services for improved child care, early stimulation and learning, improved enrolment and retention, health and nutrition, and water and environmental sanitation. It is designed to bring about nutritional benefits for expectant and nursing mothers, women in the reproductive age group and children below the age of 6 years. It is one of the largest outreach programmes and extends to over 5.2 million mothers and 30 million children under 6 years of age belonging to low income groups.

Other supplementary feeding programmes are being implemented by the government along with initiatives to improve the nutritional status of children, which include setting up a targeted public distribution system for provision of essential food items to the underprivileged; improving household food security through food subsidies, food for work and economic uplifting; and nutrition education efforts to increase awareness and bring about desired changes in dietary practices, including promotion of breastfeeding, infant feeding and dietary diversification.

With the paradigm shift in policy from freedom from hunger to nutrition security for the family and the individual, the focus on increasing nutrition and health awareness gained momentum. Keeping these factors in mind, in 1998 the Department of Women and Child Development, Ministry of Human Resource Development, in collaboration with the Nutrition Syndicate, developed the Food Based Dietary Guidelines for Indians, a simple illustrated book on guidelines for healthy eating. The book focuses on the types of foods which should/should not be consumed by various ages. In the same year, the National Institute of Nutrition also brought out a set of two documents entitled Dietary guidelines for Indians, one of a quantitative nature for policy makers and health professionals, while the second is a more qualitative version for the general public. These publications are nominally priced and available to the general public. Both documents have been developed by groups of experts with representatives from the government and the fields of health, nutrition, community medicine, among others.
In 2004, the Department of Women and Child Development, Ministry of Human Resource Development, released the national guidelines for infant and young child feeding, which focus on initiation of breastfeeding immediately after birth, exclusive breastfeeding for the first 6 months, appropriate and adequate complementary feeding and continuation of breastfeeding up to 2 years and beyond.

In conclusion, the formulation of FBDG is an ongoing process which needs periodic review and revision based on the feedback obtained on its usage. Monitoring and evaluation systems need to be put into place to study the impact of the FBDG on food consumption patterns. In a vast country like India, translation of these FBDG into local languages will help greater penetration. The campaign can further be strengthened by supporting these documents with educational material such as posters, handouts, CDs, among others. The media, particularly television, radio and the internet, should be employed for widespread coverage of these messages. The private sector can be involved as a partner, as part of its corporate social responsibility initiatives.

It has to be realized that nutritional health in all age groups represents a national economic asset. Malnutrition-free India is the goal and the vision of the national nutrition policy in the next decade. India’s strong institutional and human resource base is capable of bringing about such a transformation.

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<th>Points raised in the discussion</th>
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<tr>
<td>■ Duplication of efforts should be avoided in the development of FBDG.</td>
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<td>■ There is a need for one single multisectoral body that acts as the steering committee for the development of FBDG.</td>
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<td>■ Water intake could be included in FBDG.</td>
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<td>■ Many countries in economic transition face problems of under and over-nutrition. Therefore, both should be addressed when developing FBDG.</td>
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<td>■ It is important to involve the academia in the process.</td>
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<td>■ It is necessary to consider the purchasing power of the population when recommendations are made.</td>
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<td>■ India’s FBDG do not stipulate the number of servings to be consumed from each food group.</td>
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3.11 Linking food-based dietary guidelines and nutrition education
Mrs Ellen Muehlhoff, FAO Headquarters

Having a set of dietary guidelines is not enough to ensure that the population will follow the advice given or contribute to an effective nutrition policy. In order to achieve the desirable goal of improved nutrition, dietary guidelines need to be communicated to the public through appropriate nutrition education and promotion programmes. Supportive environments and policies also need to be in place to enable people to adopt and sustain healthy dietary behaviours.

Before planning educational programmes, it is important to understand that eating behaviour is complex. Food and eating patterns are influenced by a wide range of factors that operate at the individual and the societal level. Important determining factors include level of education, knowledge and understanding about nutrition, personal food preferences, learning history, cooking skills, income, and food prices. Influences at the societal level are beliefs about food, religion and culture. Economic development and urbanisation may alter dietary habits and lifestyle patterns at the same time as new food products become available. The demand for traditional food may become less. Marketing and advertising of food products through television, and radio, often targeted at children, also have an important impact on consumption. Food, agriculture, trade and fiscal policies influence a nation's food supply, food availability and food access.

Dietary guidelines are based on scientific research and need to be "translated" into a food-based format for consumers. Consumer friendly dietary guidelines should possess the following characteristics:

- short: not more than 6 to 8 messages;
- simple and clear: formulated in a way that people from different cultural backgrounds and literacy levels understand;
- user-friendly and not confusing;
- worded in a positive way and motivate consumers to make changes;
- emphasize improvement, not perfection.

There are also important issues regarding content. The guidelines should be practical; and the recommended foods or food groups should be widely available, affordable and accessible to most people. The guidelines should also be comprehensible. The general public should be able to understand the advice given and be able to translate
recommendations into their daily dietary and life patterns. In addition, the guidelines should be culturally acceptable and compatible with national food habits. To ensure that the guidelines are acceptable, testing of the guidelines with the users is critical to their success.

Complementary educational tools, such as a food guide, need to be developed to help consumers apply the dietary guidance in their daily eating patterns and life habits. Food guides are graphic representations, often in the form of a food wheel, plate or pyramid, or other culturally appropriate shapes. They use pictures and diagrams that are visually striking to help people recall the foods they should include in their daily diet, and their proportions or quantities.

The food guide pyramid from the United States of America is an example of a structure that groups foods according to similarity among nutrients. The pyramid illustrates the relative proportions of different foods to be eaten by using the concept of serving size. Serving size can refer to the amount of food that is typically eaten, or to a standardized unit of food (e.g., half a cup, 100 grams). Even in countries where serving size may not be a relevant concept, some thought needs to be given to showing the relative proportion of foods from each group that contribute to the total diet. The American food guide pyramid was designed to teach people the concepts of variety, proportionality and moderation.

It is important to note that food guides cannot stand on their own. Materials and explanatory text need to be developed, focusing on the nutritional requirements of different population groups, such as infants, children from 6 months to 2 years, 2 to 5 years, schoolchildren, teenagers, adult men and women, and the elderly. Specific guidance is also needed for groups with special physiological needs, such as pregnant and lactating women, and others; e.g., low-literacy people, and ethnic groups.

Putting the messages into action requires further steps; namely, campaigns to raise nutritional awareness and educational programmes. An evaluation of nutrition programmes found that the more successful nutrition education programmes are those that set behaviour change as a goal, provide simple practical advice and motivation, develop personal skills, encourage individual and community participation, reach all people at various stages of the life cycle and operate in different settings, use a multimedia approach, and are backed up by supportive environments and policies to make healthy choices more accessible.

Action is required by different sectors, including agriculture, education and health as well as consumer organizations, and the food industry and retail companies. Broad areas of action where governments can support access to a range of healthy and safe foods could include food, agriculture and trade policies that promote production and access to a wide variety
of foods at affordable prices; food safety and quality; consumer-friendly nutrition labelling; nutrition standards for schools and nurseries; nutrition education in school curricula; teacher training; and responsible marketing that limits advertising of low nutritious foods to children.

Countries still struggling to feed many of their people are now also facing the costs of treating obesity and chronic diseases. As developing nations move forward, they need to educate their people about eating the right foods, not just more or less food, to avoid what could be a crushing economic and social burden in the next 15 to 20 years. To tackle the double burden of disease effectively, nutrition information and education are essential elements in a comprehensive strategy aimed at nutritional well-being for all.

### Points raised in the discussion

- One of the problems encountered with the USA Food Pyramid was that people understood that the best foods were on the top, while this small top section presented foods that should be consumed in limited amounts.

- It was seen as a proof of success when the pyramid appeared on the packaging of food items.

- 50% of the population in the US knows the food pyramid.

- FBDG should be simple and short.

- Communication experts are key players in the development of FBDG; they are needed to develop clear and simple messages.

- Supermarkets could be good partners in disseminating information on healthy food choices in their brochures.

- Consumers can influence the food industry by demanding healthy food products.

- For consumers to eat healthily, nutrition information and education need to be complemented by an enabling environment.

- Communication needs to be targeted to specific groups in order to motivate consumers to make good food choices.

- FBDG are an essential component of a comprehensive nutrition education and communication strategy.
3.12 Developing multisectoral nutrition communication plans: regional experiences
Ms. Lila A. Tomé, WHO Regional Office for the Eastern Mediterranean

Health communication is defined as the study and use of methods to inform and influence individual and community decisions that enhance health. It is a hybrid discipline that draws primarily from communication, behavioural science, health education and health promotion, political science and information technology. It encompasses everything from patient-health provider interactions to mass communication campaigns. Translating health information effectively at both the individual and societal level is essential for reducing mortality and morbidity as well as improving the quality of life.

The prevention and control of infectious diseases have always involved the need to communicate information to those at risk. For chronic diseases and injury, many of which can be prevented through individual behaviour change or through policy change, communication becomes equally, if not more, important. FBDG are a powerful health communication tool. There is a need for health-care professionals and providers to acquire the knowledge and skills needed to plan and execute effective communication plans. The communication environment in the 21st century has been described as cluttered. Thousands of messages are sent every day encouraging people to buy certain products. In order to compete in this increasingly competitive and complex environment, public health professionals must make communication an integral part of their everyday activities, as with science and epidemiology.

The growing interest in health and the ongoing improvement in information technology provide unprecedented communication opportunities for public health professionals. Knowledge and implementation of health communication principles can greatly enhance the practice of public health. The health communication framework can be outlined as assessing the science, defining the purpose of communication, identifying the audience, understanding their characteristics, developing message concepts, choosing media and channels, implementing, and evaluating the process and its impact.

With the collaboration and support of the Center for Disease Control and Prevention (Atlanta), the Regional Office was able to develop, plan and carry out several training workshops, both on regional and national levels, to improve health communication skills of public health professionals. The training focused on four main aspects: understanding
non-scientific audiences and how to communicate information to them through various means; advocacy; social marketing and mobilization; monitoring and evaluation.

Learning and improving the skills for health communication strategies was the main goal, which needed to be applied to an important and practical public health problem. As one of the regional strategies of the Regional Office is to alleviate micronutrient deficiencies, it was decided to use health communication as one of the primary tools to help address this problem. It will probably take some time before the impact of such interventions can be measured, especially in this Region, where countries are at different nutritional stages and have different needs.

FBDG are a potent communication tool. However, it is not enough to promote behavioural change, unless people are taught how to achieve and maintain it. FBDG should not only list or point out the optimal dietary behaviour but should also give the practical solutions needed to change the behaviour.