

# DEVELOPMENT OF FOOD-BASED DIETARY GUIDELINES FOR THE WESTERN PACIFIC REGION

*The shift from nutrients and food groups  
to food availability, traditional cuisine  
and modern foods in relation to emerging  
chronic noncommunicable diseases*



WORLD HEALTH ORGANIZATION  
Regional Office for the Western Pacific  
Manila



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## ACKNOWLEDGEMENTS

The Western Pacific Regional Office of the World Health Organization acknowledges the valuable contribution made to this document by the following:

### **Contributors:**

**Professor Mark L Wahlqvist**, International Health & Development Unit, Asia Pacific Health & Nutrition Centre, Monash University, Australia

**Dr Antigone Kouris-Blazos**, International Health & Development Unit, Asia Pacific Health & Nutrition Centre, Monash University, Australia

**Pat Crotty**, School of Health Science, Deakin University, Australia

**Professor Tony Worsley**, Department of Public Health, Faculty of Medicine, University of Adelaide, Australia

**Dr Phil Harvey**, MOST/USAID Micronutrition Programme, United States of America

**Dr Han Tieru**, Noncommunicable Diseases Unit, WHO Regional Office for Western Pacific, Manila, Philippines

**Dr L. Tommaso Cavalli-Sforza**, Nutrition Unit, WHO Regional Office for Western Pacific, Manila, Philippines

### **Reviewers:**

**Professor Ha Huy Khoi**, National Institute of Nutrition, Hanoi, Viet Nam

**Dr Chen Chun Ming**, Chinese Academy of Preventive Medicine, Beijing, China

**Dr Ge Keyou**, National Institute of Food & Nutrition, Chinese Academy of Preventive Medicine, Beijing, China

**Dr Tee E Siong**, Division of Human Nutrition, Institute for Medical Research, Kuala Lumpur, Malaysia

**Professor Jim Mann**, Department of Human Nutrition, University of Otago, New Zealand

**Mrs Adelisa Ramos**, Nutrition Service, Department of Health, Manila, Philippines

**Professor Lucy Rabuco**, Department of Nutrition, University of the Philippines, Manila, Philippines

**Professor Khor Geok Lin**, Department of Nutrition and Community Health, Faculty of Biomedicine and Health Sciences, Universiti Putra Malaysia, Malaysia

**(Working group on integrated prevention and control of cardiovascular diseases and diabetes in Malaysia, 1997)**

**Dr Ramon F. Abarquez, Jr.**, The Philippine Society of Hypertension, Manila, Philippines

**Dr Robert Beaglehole**, Department of Community Health, University of Auckland, Auckland, New Zealand

**Professor Clive Cockram**, Department of Medicine, Chinese University of Hong Kong, Hong Kong

**Dr Margaret Cornelius**, Ministry of Health and Social Welfare, Suva, Fiji

**Dr Maximilian de Courten**, International Diabetes Institute, Melbourne, Australia

**Dr Terence Dwyer**, Menzies Centre for Population Health Research, University of Tasmania, Tasmania, Australia

**Dr Shanta C. Emmanuel**, Ministry of Health, Singapore

**Dr Ki-Soon Kim**, Department of Preventive Medicine and Community Health, Chosun University Medical College, Republic of Korea

**Professor Pham Gia Khai**, Viet Nam National Heart Institute, Hanoi, Viet Nam

**Dr Ingrid Martin**, Cardiovascular Diseases Programme, WHO Headquarters, Geneva, Switzerland

**Dr Wan Nazaimoon**, Institute for Medical Research, Kuala Lumpur, Malaysia

**Dr Zainal Ariffin Omar**, Ministry of Health, Kuala Lumpur, Malaysia

**Dr David Scrimgeour**, Office of the WHO Representative in the South Pacific, Suva, Fiji

**Dr Teruichi Shimomitsu**, Department of Preventive Medicine and Public Health, Tokyo Medical College, Tokyo, Japan

**Dr M.S. Tsechkovski**, Division of Noncommunicable Diseases Control, WHO Headquarters, Geneva, Switzerland

**Dr Yukio Yamori**, Graduate School of Human and Environmental Studies, Kyoto University, Kyoto, Japan

**Dr Yao Chonghua**, Beijing Institute of Heart, Lung and Blood Vessel Diseases, Beijing, China

**Dr Zhang Anyu**, Tianjin Medical University, Tianjin, China

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# PREFACE

Most countries and areas of the Western Pacific Region are experiencing a health transition due to fast changes in lifestyles and population ageing. As one of the results of the transition, noncommunicable diseases, such as cardiovascular diseases, cancer and diabetes are increasing and have become major public health issues in most countries and areas of the Region. It is notable that diet changes such as nutrient content, methods of food production and processing are predominant in all societies. Unhealthy diet, high saturated fat, high salt intake, high calorie density, and low fibre are very prevalent. These are some of the most important risk factors of noncommunicable diseases and have had a strong negative impact on people's health and on patterns of disease transition.

To address the importance of diet changes in patterns of disease transition and the prevention of noncommunicable diseases through proper nutrition intervention and education, the WHO Regional Office for the Western Pacific established an expert group headed by Professor Mark Wahlqvist. The group produced a report on development of food-based dietary guidelines, noting the shift from nutrients and food groups to food availability, traditional cuisine and modern foods in relation to emergent chronic noncommunicable diseases. The group's aim was to study the issues associated with food and nutrition within a holistic socioeconomic and cultural framework. It was to provide good advice and work out appropriate solutions for health workers and the general public on how to maintain a healthy diet and to modify unhealthy eating habits. These would not only support prevention efforts but would also have a beneficial influence on other health issues. The expert group's recommendations were then reviewed and endorsed by the regional working group on



integrated prevention and control of cardiovascular diseases and diabetes in Malaysia in 1997. They have gone through a wide regional consultation to gain a general consensus on their implementation, resulting in this document.

Given the great diversity of eating habits in the Region, specific advice for populations is not given. Instead, the suggestions concentrate on how to develop culturally sensitive dietary advice with emphasis on food, dishes and local cuisine. It is very important that the strategies and principles recommended here will be used to develop the more detailed food-based dietary guidelines within a local context in different countries and areas. Their focus should be not only on emerging noncommunicable diseases but also on community-based lifestyle education, as well as supporting appropriate dietary practices.

I am pleased that this document on the development of food-based dietary guidelines has been finalized and is now being published by the WHO Regional Office for the Western Pacific. I hope that Member States, health sectors and other related sectors, and health workers will work together with WHO to implement these important guidelines.

Shigeru Omi, MD, Ph.D.  
Regional Director

# FOREWORD

Food-based dietary guidelines (FBDGs) are new. Although they are based on a familiar idea, FBDGs depart from dietary guidelines in important ways. Firstly, FBDGs are aimed at putting into practice the nutrition education goals of the national plans of action for nutrition (NPANs). Secondly, they emphasize local adaptation and application, and thirdly, the focus is clearly on fieldworkers and their unique contribution to improved health through nutrition. The guidelines are culturally sensitive and relate directly to the communities in question. They address current concerns about the emergence of chronic noncommunicable diseases, as well as the antecedent health profile in societies in health transition, and possible future health profiles.

Because the ideas are new, this document cannot draw on a wealth of examples. Nor can it identify people who are experienced in the processes started by the joint WHO/FAO Expert Consultation in Cyprus<sup>1</sup>. However, it is highly likely that the local level has a wealth of experience in related activities which could usefully inform us. We must find a way of learning from this experience.

The expert group recognized that examples and expertise will also be generated in the future by fieldworkers supported by well-informed local, national and regional resources. This document aims to provide a thoughtful rationale for the development and application of FBDGs in the Western Pacific Region of WHO, and to put forward some ideas which will hopefully help the process get a start where it is needed.

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<sup>1</sup> Expert consultation on the preparation and use of food-based dietary guidelines, Cyprus, March 1995.

The expert group strongly advocated support for fieldworkers and their supervisors. This is to enable them to make progress in applying “the Cyprus process” locally and to support positive assessment of their own and local programme experiences. In this way we will all learn more about the practical aspects of applying these ideas in the Region.

Professor Mark Wahlqvist  
Head of the expert group on  
development of FBDGs

# INTRODUCTION

The Western Pacific Region of the World Health Organization includes East Asia, Oceania and Pacific island nations (see Table 1). The nutrition situation in the Region reflects its enormous geographic, socioeconomic and cultural diversity. Undernutrition is still the most important nutritional problem, with protein-energy malnutrition, and deficiencies in vitamin A, iodine and iron remaining major health problems in many countries (1). With increasing prosperity and length of life have come new problems such as childhood obesity. There has been a dramatic increase in the prevalence of chronic noncommunicable diseases, which are now a leading cause of death (2). Food safety and a changing food supply are important emerging issues, and trends in the Region have generally shown increases in both availability and accessibility.

**Table 1 : Countries and areas in the Western Pacific Region of WHO**

Australia	New Zealand
Brunei Darussalam	Niue
Cambodia	Palau, Republic of
China, People's Republic of	Papua New Guinea
Cook Islands	Philippines
Fiji	Republic of Korea
Japan	Samoa
Kiribati	Singapore
Lao People's Democratic Republic	Solomon Islands
Malaysia	Tonga
Marshall Islands, Republic of	Tuvalu
Micronesia, Federated States of	Vanuatu
Mongolia	Viet Nam
Nauru	
<i>Associate Member:</i> Tokelau	
<i>Areas in the Region which are not responsible for the conduct of their international relations:</i>	
American Samoa	Mariana Islands, Commonwealth of the
French Polynesia	New Caledonia
Guam	Pitcairn Island
Hong Kong Special Administrative Region	Wallis and Futuna
Macao	

To be effective, nutrition education must take place within an environment which supports public adoption of the advice offered. Dietary guidelines are part of a country's overall plans to achieve its nutrition goals. These goals have usually been specified in the last few years, often as a result of the country's commitment to the World Declaration and Plan of Action for Nutrition. Countries presently without policies or plans of action should develop these first before addressing the development of guidelines. Dietary guidelines on their own are unlikely to be effective.

The current dietary guidelines are mainly nutrient-based and deal with dietary components. Their aims include the reduction of people's chances of developing chronic degenerative diseases. This sort of dietary guideline may be appropriate in developed countries, but is inappropriate where overnutrition is rare, or where undernutrition is common and overnutrition is also shortly going to develop. It is important that countries at different stages of nutrition and health find dietary guidelines appropriate to their condition. This is particularly true for countries with a double burden of both undernutrition and overnutrition, and those which are moving towards that situation. Food-based dietary guidelines are now being promoted as an alternative way of dealing with all these issues. With these new guidelines the focus is shifted away from nutrients and food groups to locally available foods and traditional cuisines.

Since the FAO/WHO International Conference on Nutrition, held in Rome in 1992 (3), over 160 countries have committed to developing a National Plan of Action for Nutrition. Food-based dietary guidelines were among the priority considerations at this conference. WHO and FAO then jointly convened, in Nicosia, Cyprus in March 1995, an Expert Consultation on preparation and use of food-based dietary guidelines (4). The experts recommended that FAO and WHO should collaborate with governments in developing, implementing and monitoring these new kinds of guidelines.

As at April 1999, 80% of WHO's Member States had finalized or drafted plans of action for nutrition (5). National nutrition data are available from almost all countries and monitoring mechanisms are available in about 25% of countries. About 40% of countries have national dietary goals or guidelines. Countries are encouraged to have an

identifiable unit in government dealing with nutrition, to collect national data, to develop a policy and to institute some appropriate monitoring and/or surveillance systems. However, nutritional risk factors associated with noncommunicable diseases have not been well addressed in the plans of action for nutrition in many developing countries. Therefore, the importance of diet changes in patterns of disease transition and prevention of noncommunicable disease through proper nutrition intervention and education should be emphasized.



## THE TARGET GROUP TO IMPLEMENT THIS DOCUMENT

The primary target group are those who work in the areas of health, agriculture and nutrition, who are interested in contributing to the goal of improving nutritional health in the population. A working group or committee, with representatives from the broad range of sectors with a stake in nutrition, should be involved in the process. The first step in developing food-based dietary guidelines is to form this group. Once developed, culturally appropriate ways of presenting the main messages should be sought, pre-tested and disseminated. FBDGs should be developed in each country although different guidelines may be required for different geographic regions or socioeconomic groups within the same country. It will be important to raise the awareness of policy makers and those responsible for resource allocation. Advocacy can be based upon reduced health-care costs through improved health, increased capacity for work and learning, and the likely cooperation of the food industry.

# AIMS

This document aims to provide:

- information on the health and nutritional needs in the Western Pacific Region (in summary and as background to development of relevant guidelines) (sections 2 and 3 )
- a rationale for promoting healthy local cuisines/dishes (sections 4.3 - 4.5)
- strategies for the development of culturally sensitive dietary advice (section 4.6)
- principles of food-based dietary guidelines for the Region (section 4.7).

It does not recommend specifically what advice to give populations in the Region, as there is such a range of different eating habits. Instead, it concentrates on how to develop culturally sensitive dietary advice with an emphasis on foods, dishes and local cuisine. The inclusion of healthy modern foods is also addressed.

## **SECTION 1**

# **FOOD-BASED DIETARY GUIDELINES**

### **1.1 Background**

Most current dietary guidelines are nutrient-based (fat, alcohol, salt, sugar, calcium, iron), but expressed as food groups. This may create confusion about the new term “food-based” since most existing guidelines around the world also mention foods, for example, “eat more vegetables, cereals etc”. However, FBDGs describe the human diet in a more integrated way, because they go beyond addressing “foods” simply as “food groups”. They address the way in which foods are produced (agriculture), prepared (different cuisines), processed (by the food industry) and developed (e.g. novel/functional foods). They address traditional foods and dishes, and most importantly, they address how those dishes are prepared (the cuisine), making such guidelines more practical and user-friendly at the individual level.

FBDGs incorporate the nutrient composition of foods, as well as the non-nutrient components of food. They include locally available foods, sustainable food production, food patterns (e.g. traditional diets and cuisine, and their influence on morbidity and mortality levels in populations. To increase food variety, FBDGs will promote healthy traditional foods/dishes from the local cuisine as well as from other cuisines (if available). Similarly, healthy, modern, novel and functional foods will be addressed and promoted.

FBDGs aim to reduce: chronic undernutrition; micronutrient malnutrition; and diet-related communicable and noncommunicable diseases. Country-specific FBDGs will be based directly upon the diet

and disease relationships which are particularly important to the individual country. For example, the priorities in addressing FBDGs will depend on whether public health concerns are related to dietary lack or excess, or indeed to combinations of both. They will also need to be appropriate for the local region (e.g. they will need to relate to the social, economic, agricultural and environmental factors affecting food availability and eating patterns) and will need to reflect the recognition that health relates to more than one dietary pattern (4).

FBDGs are intended for use by individual members of the general public. The guidelines express principles of nutrition education through the foods and culture-specific dishes to be promoted. This makes the guidelines as practical as possible. They can largely avoid the technical terms of nutritional science. FBDGs will encourage healthy traditional dishes and cooking practices and will be sensitive to local agriculture and whether or not it can support the guidelines. They can also take into account the negative and positive nutritional effects which follow changes in dietary patterns (e.g. changes to people's traditional diets following migration and their acculturation to mainstream diet) where there is evidence about which food patterns to avoid or encourage. FBDGs can also be structured so that people meet their recommended dietary intakes of all known essential nutrients (protein, essential fatty acids, dietary fibre, vitamins and minerals). This is especially important where nutrient deficiency has been linked with diet-related public health problems (e.g. essential fatty acids or folic acid and cardiovascular disease) (6,7). As well as the development of FBDGs, a set of dietary guidelines expressed in scientific terms may also exist, with quantitative recommendations of nutrients and food components, available for use and reference by policy-makers and health care professionals. The groups or bodies responsible for developing FBDGs are encouraged to integrate these messages with other policies related to health (e.g. smoking, physical activity, alcohol consumption).

## **1.2 Rationale**

Food-based dietary guidelines offer an opportunity to improve the effectiveness of nutrition education for the public. They take into account information concerning people's food consumption as well as their nutrient intake, and incorporate this knowledge within a culturally sensitive

framework (8). They need to give equal emphasis to technical and cultural aspects of nutrition. They must also give enough scope for the local adaptation of programmes. They differ from conventional dietary guidelines in that FBDGs are developed for health professionals and for governments. The new guidelines are intended to help focus the nutrition education efforts related to national plans of action for nutrition. This involves a complex and culturally sensitive process based on defining public health problems and selecting particular messages.

This document does not recommend specifically what advice to give populations in the Western Pacific Region. Instead it concentrates on how to develop the advice most likely to benefit specific populations.

Some of the elements of a “process approach” to nutrition education have already been put forward by FAO (3). It recommended analysis of four programme elements:

- nutrition issues;
- target groups;
- settings; and
- methods.

This process approach needs to be applied in the context of relevant local knowledge. For many reasons it may be difficult to implement. There may be a lack of basic local information on nutrient intake and food composition, or it may be hard to resist developing a set of scientific injunctions for everyone. As far as possible, action should happen from the “bottom up”. Nutrition education campaigns need sustained popular participation and probably behavioural change. Good communication with people is essential to success (9).

Of the four elements above, only the nutrition issues rely heavily on nutrition science. The other three elements require some form of cultural analysis. This process is only just beginning and will involve more sociocultural considerations. Only a few relevant concepts and methods for nutritionists and others to use exist for the cultural aspects of nutrition.

The term “cuisine” which appears here is used in a holistic sense incorporating elements of beliefs, behaviours, and food availability for people in a specific locality. Cuisine is regional and “owned” by local

people. It is firmly part of people's daily lives and represents an insider's view of household food provision in contrast to the more familiar term "food habits" (10, 11).

The important characteristics of a cuisine are its:

- basic foods;
- cooking techniques; and
- characteristic flavours.

The people who create a particular cuisine will also have ideas about meals and snacks which a nutrition educator needs to understand. A cuisine uses local ingredients and cooking methods, traditional recipes and forms of social interaction to produce a food style of a particular community. It is local and regional, not national. National boundaries are political and national cuisines are usually a collection of regional dishes often collected by chefs and published in cookbooks. It is also not the cuisine served in restaurants where the ingredients are often rare and expensive, and often used out of season. The Thai cuisine enjoyed in restaurants around the world or read about in cookbooks may be very different from what a family in a Thai village buys, grows, prepares and shares in daily life. Local cuisine is what ordinary people serve in their domestic lives including festival food. Not only this, it is part of local conversation. Local people do not need to be told what it is, they know because they have dealt with it all their lives. A cuisine has common social roots, it is the food of a community (11). Understanding of a cuisine requires going to the people and asking about it.

This thorough understanding of a local cuisine is an excellent start to "bottom up" strategies in developing and applying FBDGs. What foods are eaten in what quantities? Are particular social roles assigned to family members in gathering or preparing particular foods? What foods are always combined, or never combined? This information may bring a better understanding of what impact a particular piece of advice may have in this community. It is vital that dietary advice does not undermine trust in the local cuisine. At best such advice will be rejected, at worst it may create lack of confidence in food selection and preparation, perhaps in circumstances where people have little scope for changing their practices (12). This may be particularly important where food choices are changing



under pressure of delocalization and globalization of the food supply (13, 14). The retention of healthy traditional practices is an important concern in this situation.

Experts (15) have described “traditional” and “modern” foods in the context of Finnish food choices. Modern foods are those which Finns are consuming in increasing amounts (fruit juices, vegetables, and fruit, cheeses and candies), and traditional foods are those for which consumption is falling (milk, potatoes, bread and butter). By labelling the foods in contemporary nutritional terms as “healthy” or “unhealthy”, they demonstrate that traditional healthy foods e.g. potatoes and bread have a higher consumption in lower socioeconomic groups. Modern healthy foods are consumed in greater amounts by higher status groups while unhealthy modern foods such as cheese and candies, are consumed more by the higher socioeconomic groups, and unhealthy traditional foods, such as butter, are consumed more by the lower socioeconomic groups. These distinctions may help in countries where FBDGs must be developed during rapid change in dietary patterns. Strategies which support keeping up healthy traditions while encouraging healthy changes might be developed in this context.

### **1.3 FBDGs and chronic noncommunicable diseases**

There is a transition in the Western Pacific Region, from a high prevalence of infectious diseases, high infant mortality, protein-energy malnutrition and micronutrient deficiencies, to a larger life span, accompanied by a high prevalence of chronic noncommunicable diseases (CNCDs). CNCDs are now among the major causes of death in most countries of the Region. Cardiovascular diseases (CVDs) are one of the leading causes of death in 32 countries and areas, accounting for approximately 3 million deaths each year. The age-adjusted mortality from CVDs is higher in many developing countries than in developed countries in the Region. Diabetes prevalence exceeds 8% in 13 countries and areas. The prevalence of diabetes is increasing rapidly in the countries in which significant social, economic changes are occurring. There is particularly high diabetes prevalence in Pacific island countries. Cancer is now one of the leading causes of deaths in 26 countries and areas of the Region. Some 3.5 million cancer cases occur each year (16). This reflects a demographic transition (e.g. increased longevity and numbers of elderly

people) as well as changes in diet and lifestyles, especially in the newly industrialized countries. Lifestyle shifts, such as the presence of increasing amounts of saturated fat and energy in the diet and a higher prevalence of other risk factors for CNCDS, such as tobacco and alcohol use, inactivity and stress are contributing to the changing health profile (17). One of the major problems with this epidemiological transition is that countries must continue to maintain essential programmes to prevent and control infectious diseases and undernutrition, as well as developing new programmes for the CNCDS (18).

Some countries in the Region have shown declines in CNCDS; the age-standardized death rates from all cardiovascular disease decreased over a 15-year period by 50% in Australia and Japan and by 30% in New Zealand (19) and these trends have continued. Cardiovascular mortality has also been shown to be declining in Singapore. However, even in countries where there have been marked declines, rates can still be very high. For example, death rates from ischaemic heart disease are five times higher in Australia than in Japan. On the other hand, mortality rates from cancer and diabetes are increasing and some countries are seeing a rise in CNCDS. In Viet Nam, deaths from cardiovascular causes tripled during the 1970s and continue to rise today (2,18). Cancer was fourth among the ten leading causes of death in the Philippines. About 90% of all cancer cases recorded affected those above 35 years old. Diabetes mellitus is now also recognized as a growing public health problem in the Philippines.

Even though CNCDS are a major concern, undernutrition is still a major problem. At least six countries in the Region still have unacceptably high levels of moderate to severe protein-energy malnutrition. Nevertheless, the proportion and numbers of malnourished children have decreased and length of life has increased over the past 30 years in the Region. Japan and Hong Kong have amongst the best life expectancies in the world, increasing by one year every three years over the last 30 years (20). Improving socioeconomic conditions have been critical, supported by public health measures and other factors such as better educational opportunities for women. Keeping up traditional cuisines as food security has improved has also been an important factor in this.

The most widespread of the micronutrient deficiencies in the Region is iron deficiency anaemia (and, probably, often folic acid deficiency as well). Prevalence can range from 0% to 70% in pregnant women and up to 90% in children in some areas. In Asian countries such as the Lao

People's Democratic Republic (Lao PDR), Viet Nam and in parts of the Pacific, high prevalences of thalassaemia and also megaloblastic anaemia (up to 36% for women of north Indian origin in Malaysia) contribute to anaemia (21). Many countries in the Region are also affected by iodine deficiency disorders including Cambodia, China, Fiji, Lao PDR, Malaysia, Mongolia, Papua New Guinea, Philippines and Viet Nam. In the Philippines, the goitre prevalence rate in the early 1990s was 6.9% in children aged seven years and over. The highest prevalence registered was amongst pregnant women (21). Over 420 million people are at risk of iodine deficiency disorders in the Region, and over a quarter of those have clinical signs of iodine deficiency (22). Maternal nutrition with low-body-weight infants and early childhood growth with stunting, predict an increased prevalence of abdominal obesity, diabetes and coronary heart disease in later life (23-25). These inter-generational consequences of undernutrition for those who are later exposed to food abundance is probably one of the major contributors to CNCs in the Region. It cannot be addressed simply by dietary guidelines within one generation.

CNCs depend not only on the increased intake of detrimental foods (e.g. fatty meat, full-fat dairy products), but on the reduced intake of protective foods, such as fish (26) fruits, vegetables and beverages like tea (27, 28). Because the protective food approach to CNCs is poorly developed in nutritional science, the FBDGs approach is much more important than the nutrient-based approach. Food variety is probably the best available example of the FBDG approach to reduce health detriment and enhance health protection through diet (29-31).

#### **1.4 Reformulation of food-health relationships in an urban setting**

The rise of CNCs has been seen most clearly in urban settings. That rise has not, however, prevented increasing length of life. For example, the prevalences of obesity (Body mass index <sup>3</sup> 30) in Asia are still as low as 1%-3% in Japan and Hong Kong where affluence and longevity exist together. It does, however, emphasize that there are several linked factors which may cause a certain disease, like obesity, to develop (see Figure). These are termed "pathways".

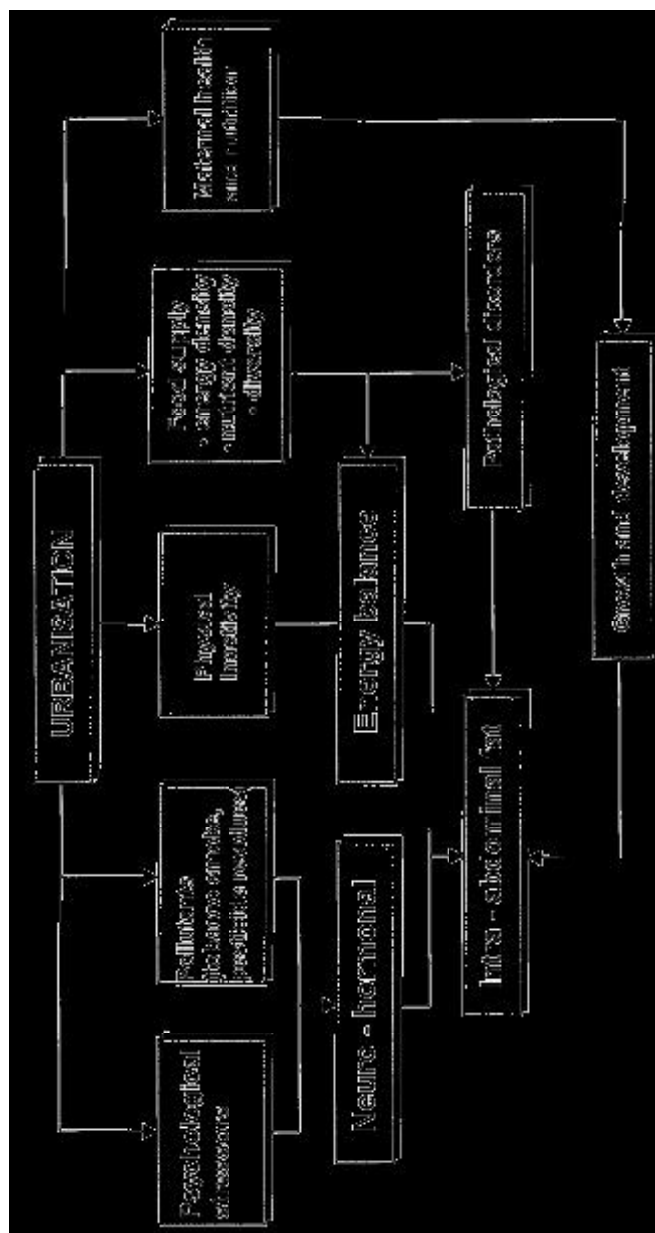


Figure. Pathways to abdominal obesity

There is emerging evidence that low death rates from CVDs can occur even though there are unexpectedly high prevalences of identified disease risk factors (e.g. obesity, diabetes, hyperlipidaemia, inactivity, smoking). This apparent dissociation between CVD mortality and CVD risk factors has been identified (32) in elderly Greek migrants living in Australia. The term “morbidity mortality paradox” was coined to describe this phenomenon. It was hypothesized (32) that it may be possible to develop a more “benign” form of diabetes or obesity, or it may be possible to counteract other CVD risk factors, depending upon the kind of foods consumed. For example, becoming overweight on a traditional Mediterranean diet rich in antioxidants and protective foods (e.g. cereals, pulses, nuts, herbs, fish, fruit, wine and vegetables stewed in olive oil) may not be the same as becoming overweight on a typical Western diet high in saturated fat. A common misconception is that thin people are necessarily healthier than overweight people, yet the former may have become thin by eating an inadequate diet and/or by smoking excessively. All sedentary obese patients tend to be regarded equally with respect to morbidity and mortality; however, the dietary pathways to achieve that current weight may also need to be considered. Further studies are needed to identify traditional foods/dishes which can assist in counteracting existing CNCD risk factors.

CNCDs need to be dealt with through an integrated approach which recognizes the non-food environment as well as the food environment. As urban settings change, the food-health relationships can be expected to change as well. This phenomenon will mean that FBDGs need to be progressively adjusted (33, 34).

## **SECTION 2**

# **HEALTH AND NUTRITIONAL NEEDS IN THE WESTERN PACIFIC: CULTURALLY RELATED AREAS WHICH MAY BE ADDRESSED BY FBDGS**

### **2.1 Nutrition problems and policies**

The health risks faced by the Western Pacific Region include traditional environmental issues (such as poor sanitation), modern agricultural hazards (such as pesticide contamination of water and food), as well as risks associated with urbanization and industrialization (such as CNCs). Countries in the Region have a wide range of nutritional status, from countries still grappling with problems of undernutrition (such as Papua New Guinea), to those suffering more from health problems associated with overnutrition (such as Australia, Hong Kong, New Zealand, Singapore). In between are countries (such as China, Malaysia) undergoing nutrition transition which are faced with both the old problems of nutrient deficiencies and the new problems of overnutrition (35).

The following are examples of countries or areas facing illustrative nutrition problems and the status of policies adopted to address them.



## CHINA

China is the most populous country on earth with over 1.2 billion people. It has a complex mix of health problems. Chronic degenerative diseases have increased during the past 30 years (especially in urban areas) but a variety of undernutrition problems also persist. Cancers, cerebrovascular and ischaemic heart disease are the leading causes of death. Chronic undernutrition still exists in preschool children. (In the 1992 national survey, 2%-13% of urban preschoolers and 15%-30% of rural preschoolers were undernourished). In 1992, iron deficiency anaemia was widespread in children (5%-22% of urban preschool children and 10%-29% of rural preschool children) and in pregnant women (34%-36%). The prevalence of iodine deficiency (IDD) and vitamin A disorders have been well reduced through the national programme on IDD and targeting of individual communities for Vitamin A treatment. Maternal and infant mortality rates have been high in the recent past but have been reduced substantially. While heights and longevity have increased dramatically in the last 45 years, obesity is now seen mainly in urban areas (where prevalence is 10% for women and 5% for men) and disease patterns are changing (36-39). In the 1992 national nutritional survey, obesity in urban children and in adults had doubled since 1989. About 9% of rural adults and 14% of urban adults had a body-mass index (BMI) greater than 25. The percentage of overweight urban children (having weight-for-height values greater than the median value of the reference population plus 2 standard deviations) was 3.8% in 1992 and 6.7% in 1995. As the diet has become more westernized (including increased consumption of foods of animal origin), national average fat intakes have risen from 18% in 1982 to 22% in 1992 and from 25% to 28% respectively, in the same years, in urban areas.

China has advanced nutrition surveillance expertise (e.g. in the Chinese Institute of Nutrition) and the Government greatly emphasizes food security. A national plan of action for nutrition has been formulated. Government policy aims to maintain traditional diets whilst reducing fat intakes and pork production (to make more grains available for human consumption) and the nutritional improvement of at-risk groups. Nutrition policies are coordinated with other policies such as population control and agricultural production policies. The Chinese recommended daily allowances (RDAs) are reviewed periodically and are major instruments of government policy.

The “Dietary guidelines for Chinese residents” along with a “Balanced diet pagoda” have been put forward recently to replace the former nutrient-based dietary guidelines. They are based on the available food and nutrition data and present knowledge on nutrition and health. The Chinese dietary guidelines appear in many forms (e.g. in pictures and posters) and for specific population groups (infants, preschool children, adolescents, pregnant and lactating women, and the elderly). The Pagoda describes the recommended amount of five categories of food and encourages a diversified food intake, three meals a day and limits on the use of sweet foods, fats, salt and alcohol. The “desirable dietary pattern” formulated for the year 2000 matches the FBDGs very well and is also used for evaluation of the quality of diet. The Pattern suggests that 60% of energy intake should be from cereal and tubers, 14% from animal food, 9% from added oil/fat, 5% from beans, pulses and related products, 5% sugar, 2% nuts and oilseeds, and 5% vegetables/fruits. This would maintain the high intakes of phytoestrogens from soy and other foods (39).

## HONG KONG

Hong Kong’s population is approximately six million people. The nutrition problems are mainly to do with overnutrition. Life expectancy is very high (74.7 years for males, 80.3 years for females) and the infant mortality rate is one of the lowest in the world (4.8 per 1000). About 13% of the population is over 60 years old. Cancers and cardiovascular disease are major causes of mortality. Osteoporosis, childhood obesity (13.4% and 10.5% for males and females over six years of age), elevated serum cholesterol levels (44% of adults have levels greater than 5.2 mmol/l) and hypertension are among the key health concerns (40). At present there is no comprehensive nutrition policy, and there are no recommended dietary allowances nor dietary guidelines for Hong Kong. However, a number of agencies do encourage healthy eating. For example, the Hospital Authority launched a version of the United States Food Pyramid in 1994. Other agencies have promoted versions of this, in which dairy products and fruits are downplayed because of the non-traditional nature of the former and the high cost of the latter (most fruit is imported).

## INDONESIA<sup>2</sup>

The prevalence of moderate and severe malnutrition has declined in the last 20 years. However, protein-energy malnutrition for children under five years of age is a problem in many areas of Indonesia. Xerophthalmia from vitamin A deficiency has declined from 1978 to 1992 but there are still some population groups where deficiency is high and subclinical deficiency is widespread. Iodine deficiency disorders are declining due to a national control programme. Iron deficiency anaemia is still a widespread problem, especially in children under five years of age and in pregnant women. Iron supplementation, food fortification and education programmes exist. The prevalence of overweight boys and girls has been increasing slowly, and more so in urban than in rural areas. There is also evidence that there are increasing numbers of overweight adults in urban populations. An epidemiological transition is likely to occur very soon in this country. Already there are signs of changing profiles of causes of death from infectious diseases to CNCDS. For example, cardiovascular diseases accounted for 9.2% of deaths in 1986 and 15.3% in 1992.

Repelita IV (the fourth five-year plan of Indonesia) has food and nutrition policies that focus on alleviating poverty as the primary goal. Specific nutrition goals include: increasing community self-sufficiency in nutrition, increasing the physical status, intelligence and productivity of people, and increasing food security through food diversification. Nutrition targets include: to decrease malnutrition to less than 5%, eliminate vitamin A deficiency cases, decrease the total goitre rate to less than 10% and eliminate new cases of cretinism, decrease the prevalence of anaemic pregnant women to less than 15% and detect any other micronutrient deficiencies (such as zinc and selenium).

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<sup>2</sup> Indonesia properly belongs in the group of countries of WHO's South-East Asia Region, however, information on the country is included here for purposes of comparison with nearby countries and areas of the Western Pacific Region.

## JAPAN

The key health issues in Japan relate to overnutrition and chronic degenerative diseases rather than undernutrition and communicable diseases. Cancers, heart disease and stroke are the three main causes of death. Although the prevalence of heart disease is declining, mean serum cholesterol is increasing; 8%-10% of adults have elevated serum cholesterols. Around one-quarter of adults have hypertension; diabetes and osteoporosis are increasing; and around 12% of adults are regarded as overweight. The nutrition status of the elderly is of key concern as about 16% of the population are currently classified as elderly (41).

There is a long history of government food and nutrition policies. The Ministry of Health and Welfare coordinates most nutrition-related activities. The Japanese holistic approach to nutrition relates very well to FBDGs. Food and nutrition programmes often emphasize exercise, relaxation, social and family relations and sound balanced dietary habits. For example, dietary guidelines for the general population and specific target groups (e.g. women, elderly, infants, adolescents) include the following: “eat balanced diets with 30 or more different kinds of food daily; appreciate home cooking; stop eating when your stomach is 80% full; make the most of eating out to get new cooking ideas; combine tradition and originality to create new dietary habits for your family; start with entrees and vegetable dishes (elderly); avoid eating snacks at night (adolescents); accustom children to lightly seasoned food and Japanese cuisine”. There are also specific sets of guidelines for the prevention of adult diseases. The nine guidelines emphasize food variety, balancing caloric intake with exercise, limiting intakes of salt, fat, sweet foods, alcohol and smoking, eating more fresh and green leafy vegetables to prevent cancer, and taking in more calcium-rich foods to maintain strong bones. The Government’s guide to food for specified health use (FOSHU) is also important in that it is the first guide in the world to the use of functional foods.

## MALAYSIA

Rapid socioeconomic development and the various health promotion activities undertaken since the country attained independence in 1957 have contributed to much improvement in the nutritional status of the population. Frank manifestations of undernutrition are rare at the community level. Nonetheless, prevalence of underweight and stunting in young children, amounting to about one in four and one in three respectively, are often reported, especially in rural communities (42).

Iron deficiency anaemia is the major nutrient deficiency problem affecting young children and pregnant women. Iodine deficiency disorders are a serious nutritional concern, particularly in the states of Sarawak and Sabah. Meanwhile, problems related to overnutrition have emerged such as childhood obesity, hypercholesterolaemia, hypertension, diabetes mellitus, and obesity among young adults. Tackling the problems of undernutrition remains a priority in Malaysia. However, particular attention is also being paid to overnutrition and chronic diseases.

Mortality data have shown that deaths due to diseases of the circulatory system and cancer have been increasing since the 1960s whereas deaths due to infectious and parasitic diseases and conditions that relate to pregnancy and childbirth have decreased in number. This reflects the improvement in health care facilities in the country over the past three decades. It is estimated that 12% of the population is overweight. Cardiovascular diseases and malignant neoplasms have become the leading cause of death (43).

The dual problems of undernutrition and overnutrition are addressed in the country's National Plan of Action for Nutrition. Following the International Conference on Nutrition held in Rome in December, 1992, the Ministry of Health of Malaysia (Division of Family Health Development) set up a National Coordinating Committee on Food and Nutrition to coordinate the formation and subsequent implementation of the NPAN. This Committee comprised representatives from about 20 departments and agencies that carry out activities related directly or indirectly to nutrition.

The NPAN of Malaysia (1996-2000) addressed the nine areas identified in the Conference, including improving household food security, protecting consumers through improved food quality and safety, and promoting appropriate diets and healthy lifestyles. Three technical working groups for research, training and dietary guidelines were appointed in 1996 to support implementation of the recommendations in the NPAN. These groups are specifically responsible for developing dietary guidelines and revising the recommended daily allowances for Malaysia. The dietary guidelines are in the final stage of review while the recommended daily allowances are being revised to harmonize with those from other countries in south-east Asia. Recognizing the trend of increasing prevalence of CNCDS in the past decades, the Ministry of Health launched a "healthy lifestyle" campaign in 1991 with the aim of raising public awareness of a specific theme each year. The theme for the first campaign was cardiovascular disease, followed by other themes related to food and nutrition, such as food safety in 1993, and healthy

eating in 1997. The effectiveness of the latter campaign was evaluated in 1998 through a knowledge, attitude and practice study among various age and working groups nationwide. The results of this study are being analysed.

## **PACIFIC ISLANDS**

The Pacific island countries are often grouped into three areas based upon ethnicity and location: Melanesia, Polynesia and Micronesia. Even within these areas, there are many differences in environment and level of economic development which affect food, nutrition and health within each country (44).

Historical and economic factors have caused a dependency on imported food to emerge as a major issue facing the islands. Involvement in the cash economy is often seen as the most realistic way rural people have of improving their quality of life and most governments have encouraged this. The results have included rapid urbanization and the use of fertile land for cash cropping, both of which increase the demand for imported foods. Imported foods are generally cheaper, more accessible and more convenient. They are also often seen as having a higher status than the traditional foods they replace. These are important advantages for individuals and there are advantages, if only short-term, for governments as well. Importing food provides political benefits by making available relatively inexpensive food for growing urban populations and financial benefits by feeding the people in institutions for which governments are responsible. The disadvantages of increasing dependency on imported food are substantial, however, and involve adverse outcomes in terms of food, health and the economy. The nutritional quality of imported foods is generally inferior to that of traditional foods; they have lower nutrient density, particularly in terms of fibre. Diets which include imported foods are usually higher in fat. Imported meats, in particular, are often low-quality cuts with a high fat content such as is found in mutton flaps. Increasing reliance on imported food results directly in a decreased ability to be self-sufficient in food. This self-sufficiency is often stated as an important goal in relation to national security. Food aid provided in response to natural disasters, however well intentioned, often contributes to the problem of food dependency. Increasing consumption of imported foods uses scarce foreign exchange for consumption rather than investment, with negative economic outcomes.

The health implications of these changes have been recorded since the 1960s (17, 44). They are generally adverse and include a general shift in morbidity and mortality patterns from infectious and parasitic diseases to noncommunicable diseases and accidents. There are both advantages and disadvantages for children in this transition. Higher energy density has contributed to increased growth rates of children and lowering rates of malnutrition, but this has been accompanied by increased bottle-feeding and dental disease. For adults the outcomes are generally adverse. Higher intakes of energy and salt, lower intakes of other nutrients, particularly fibre, together with reduced physical activity, have resulted in increasing rates of diabetes, hypertension, obesity, cardiovascular disease, gout and cancers. Most Pacific island countries have now established national food and nutrition working groups, and these have developed policies and plans of action in line with the FAO/WHO guidelines stemming from the International Conference on Nutrition in 1992. These documents help Pacific island governments to consider what degree of dependence on imported food is consistent with their aims for increased economic self-reliance and improved health.

## PHILIPPINES

The prevalence of diseases of the heart and of the vascular system is rising rapidly in the Philippines. The Philippine Health Statistics (1993) reported 195 449 cases of heart disease or 157.4 cases per 100 000 population, placing the disease seventh in the list of the ten leading causes of morbidity. The Philippine Heart Center in 1994 estimated a prevalence of 750 000 cases of coronary artery disease. Heart diseases also ranked number one among the leading causes of death and accounted for 15.3% of total deaths in the country.

A knowledge, attitude and practice survey among urban Filipinos showed that poor dietary habits ranked eighth as a perceived risk factor for CVD and fifth as a perceived risk factor for cancer (43,45,46). The Filipinos are known to be food lovers yet, as the results of this study showed, they are not healthy eaters. Over the past seven years fewer Filipinos are anaemic and children are getting taller and heavier. However, protein-energy malnutrition and deficiencies in iron, iodine and vitamin A continue to be the key nutritional problems. A survey by the Food and Nutrition Research Institute revealed that 12.7% of adult males were overweight and 1.7% were obese. In adult females, 15.2% were overweight and 3.4% were obese. Women are prone to be obese starting at age 40 and are more so between 45 and 55 years, while the prevalence of obesity is lower at age 70 and above. The same survey

showed that the underweight prevalence (BMI less than 18.5) among women is 16.1%, which is 4.6% higher than for men (11.5%). There are indications that some Filipino adults are underweight due to their low energy intake (1683Kcal per capita per day) and fat intake. However, there seem to be more overweight and obese adults than underweight adults, suggesting that overnutrition is an emerging problem.

Cereals and cereal products, especially rice, occupy the greatest bulk of the Filipino diet, taking up 38% of the total diet. Animal foods take up about 22% and fruits and vegetables occupy about 30%. Among the urban population, the low consumption of meat, eggs and dairy foods imply a low intake of dietary protein. Overall, consumption of fruit was very low and 17% of families did not eat vegetables regularly.

From the nutritional point of view, the Filipino diet appears to be inadequate compared to recommended allowances, particularly in dietary energy, calcium, vitamin A, thiamin, riboflavin, ascorbic acid and, to some extent, iron. Because of the shortage in food intake, various nutritional disorders result among children, pregnant and lactating women, and the elderly. The 1993 Survey also revealed that about 20 million Filipinos have iron-deficiency anaemia. Wasting, which measures acute malnutrition, was apparently increasing. Severe chronic malnutrition afflicted 0.4% of preschool children in 1993 - a significant increase from the 1987 level. Vitamin A deficiency, indicated by low serum retinol level in preschool children in 11 out of 15 regions, was particularly common in depressed urban and rural communities.

The Philippine Plan of Action for Nutrition aims to reduce the prevalence of undernutrition among preschool children and schoolchildren, to improve the quantity and quality of food intake, eliminate vitamin A deficiency and iodine deficiency disorders and reduce the prevalence of iron deficiency anaemia. Strategies include the promotion of household food security and the prevention, control and elimination of micronutrient malnutrition. This will be achieved with home and community food production, credit assistance for livelihood, nutrition education, micronutrient supplementation and food fortification and food assistance. The basic food groups divide foods into three categories. These are: Group I Body-Building (protein rich foods); Group II Body-regulating foods (fruits and vegetables); and Group III Energy-giving foods (carbohydrate and fat-rich foods). They are used to encourage the general public to eat a variety of foods from each food group daily. They thus are a guide to dietary improvement (43).



## REPUBLIC OF KOREA

There has been remarkable improvement in the nutritional status of the Korean population, along with the rapid economic growth and industrialization during the last three decades. The Korean population has been getting taller and heavier. There is very little evidence of severe nutrient deficiencies but some age groups have problems with iron deficiency anaemia. General overnutrition is occurring in some sectors of the population and obesity is liable to increase further in high-income areas such as in some urban areas. Prior to 1980, the major causes of death were infectious diseases. Leading causes of death in the Republic of Korea include cancers (especially gastric cancer), strokes, heart disease, injuries, liver and kidney disease, and diabetes. Serum cholesterol levels have increased since the 1960s; approximately 11% of the population have elevated serum cholesterols. Five per cent of adults suffer from hypertension and problems related to overnutrition are generally increasing: 17%-19% of adults in Seoul are overweight. Anaemia is estimated to affect 14% and 30% of men and women respectively (45).

Rice is the main dietary staple. It is usually served with vegetables, poultry, fish or meat. Consumption of vegetables has decreased in the recent past, being replaced with animal products. Current food policy still emphasizes rice production but there are increasing imports from other countries. The Government is now giving high priority to managing imported foods. The national health promotion and community health acts were established in 1995 and improving nutrition is now a major objective. The Ministry of Health and Social Welfare's Nutrition Committee (under the auspices of the Food Sanitation Council) monitors nutrition programmes and has issued a set of dietary guidelines. These recommend the consumption of a variety of foods, eating moderately to maintain a standard weight, enjoyment of regular meals, reduced consumption of salty foods and the avoidance of too much alcohol .

## VIET NAM

Over the past 20 years the nutrition situation has improved. Up to 1989, Viet Nam had to import rice. Since 1990, due to the impact of economic reform, it has been a rice exporting country. The prevalence of underweight in children younger than five years of age dropped from 45% in 1994 to 40% in 1997 (47). Iodine and iron deficiencies are also

considered to be important nutritional issues. The problem of vitamin A deficiency appears to have been virtually eliminated. A programme of universal supplementation has been successfully implemented, however, it will not continue indefinitely (48). The Vietnamese are now growing taller and heavier. While undernutrition and micronutrient malnutrition are still major nutritional problems, the prevalence of overweight in primary schoolchildren and that of chronic noncommunicable diseases in adults are increasing, particularly in big cities. The national hypertension survey in 1991 indicated that prevalence of hypertension was 11.7 % in the country. The National Plan of Action for Nutrition 1995-2000 was approved by the Government of Viet Nam in September, 1995.

The NPAN has three primary objectives:

- Elimination of starvation;
- Improvement of nutritional status in relation to:
  - (a) reducing chronic energy deficiency in adults from 40% to 30%, especially women of childbearing age (classified by BMI);
  - (b) reducing protein-energy malnutrition in children under five years of age from 45% to 30%; and,
  - (c) reducing low-birth-weight from 14% to less than 10%;
- Reducing micronutrient deficiencies including vitamin A deficiency, iodine deficiency and anaemia due to iron deficiency.

A major means of addressing these issues is through varying the kinds of food grown, based on the traditional gardening approach in Viet Nam, which emphasizes growing vegetables and fruits, production of food from ponds, and animal husbandry. The recommended daily allowances and dietary guidelines, the main instruments of NPAN implementation, have been reviewed and were adopted in 1996.

## 2.2 Sociocultural issues

Any intervention concerning food is likely to have some sociocultural impact. Many sociocultural issues have nutritional implications, from poverty to culturally determined household food allocation. A sympathetic understanding of the social contexts within which FBDGs are developed and applied is essential for effective communication, successful outcomes and the minimization of unintended consequences.

### *Overweight*

Many Pacific island nations have considerable morbidity and mortality from diet-related CNCs, diabetes and heart disease in particular. The traditional social and cultural practices of ritual fattening of women and young girls, particularly in matrilineal groups, were a practical strategy to promote survival in islands with unpredictable food cycles. Fragile island ecologies, where cyclonic destruction and drought regularly reduced community food availability, became less of a threat to survival of the group where women and young girls were able to draw on body stores of fat to increase the likelihood of the successful completion of their pregnancies and their own survival as well (49). Regardless of whether genetic predisposition to overweight is part of the explanation of high rates of overweight and obesity, the cultural meaning to both the individual and the community of valuing people with large bodies may have changed little. It must be considered as part of the context within which FBDGs are developed and applied. For example, an approach sympathetic to local values would probably avoid labelling large people as “sick” or “weak” as this may then become a barrier to the goals of effective communication, successful outcomes and the minimization of unintended consequences.

### *Household management*

How women feed their families is one of the most relevant concerns for nutrition education. The term “regulated improvisation” describes the complex and continuous effort to improvise acceptable allocations of time, energy and money “... while meeting community ideals of maternal concern, social standing and moral propriety” (50). This may mean juggling the available food, which may be seasonally variable, with food

purchases (and therefore money), routine household demands and special occasions such as feasts or hospitality obligations. There may be socially important mutual obligations of giving food or providing labour to neighbours to maintain the network of reciprocity which will be called on in future. This takes place in the context of a local stock of shared knowledge about the local cuisine, recipes, rituals, the needs of the sick and the needs of pregnancy, and aged people's requirements. This is the context in which women may be asked by health workers to accommodate FBDGs.

Health workers will need to have a thorough understanding of what life is like to communicate effectively, reach successful outcomes and minimize unintended consequences.

## **2.3 Food security**

People who do not have enough to eat are unlikely to pay attention to educational messages about healthy food consumption behaviours. Food security is essential before particular food consumption patterns can be promoted in a population group. Food security is usually identified as a priority in national food and nutrition policies and NPANs. It has been defined in many ways, but is most commonly understood as “access at all times by all people to adequate food for an active and healthy life” (51). Food insecurity was previously considered an issue only for poor countries. In the last 20 years there has been increasing concern about hunger in food-rich countries. Research in the United States of America has resulted in a definition of hunger including both qualitative and quantitative components: “the inability to acquire an adequate quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so (52). Food security has been defined at a number of levels: national, community, household and individual. Improved agricultural technologies introduced as part of “the Green Revolution” helped many countries to achieve security at the national level, but these benefits were often not distributed evenly to ensure it at the household and the individual levels. In food-rich countries, food security is only an issue of concern at the household and the individual levels.

Factors determining food insecurity and hunger are complex but can be described usefully through a conceptual framework based upon the food and nutrition system. In rural areas, where most of the world's food insecure live, subsistence farming systems provide most of the food. The systems involve a close relationship between consumption and production. Inadequate consumption often results from failure of production and the factors determining this are often climatic or related to diseases of crops or animals. Populations relying solely on subsistence production are now rare. There is an increasing involvement in the market system in most rural areas.

In rapidly expanding urban populations, the adequacy and stability of the food supply, and access to it, rely almost entirely on the food market and distribution systems. The sources of food for the market are varied and include surplus production from "subsistence" producers, commercial production of animals and crops, and food imports. Access to market foods is regulated by exchange or market systems, and usually by access to money. Even when sufficient food has been produced, employment opportunities, wage rates and social support mechanisms on one hand, and food prices on the other, have the dominant impact on food security. There is a constant tension between providing inexpensive food for urban populations and providing adequate incentive (i.e. price) to farmers to produce an adequate food supply. Agricultural policies and programmes are still essential elements in achieving food security goals both in terms of food production and also in generating employment for the rural landless.

Important issues in developing a better understanding of food security in countries of the Western Pacific Region include: the economic role of women and decision-making processes in households, particularly those of female-headed households; the strategies of households for coping with food insecurity, particularly urban households; and the development of a means of measuring, and hence monitoring food security.

## 2.4 Food safety

### *How do FBDGs help food safety?*

Foodborne illness is widespread and is associated primarily with microbiological contamination of food and water supplies. Poor sanitation and water supplies are common in both urban and rural areas in the Region. The success of FBDG strategies is threatened in at least two ways by infectious diseases and parasites. Infestation with intestinal parasites represents a waste of food resources. Nourishment from foods produced for humans is effectively used to nourish parasitic life forms which damage human health. Effective control of parasitic infections through adequate sanitation and water supply systems and safe food is of prime concern throughout the Region. An essential strategy is to prevent faecal contamination of water by keeping water supplies separate from sewerage systems.

Attempts to provide a more nourishing food supply must be accompanied by effective environmental health activities, especially in the provision of potable water and sanitation systems for rural and urban populations. These services are by no means assured in the Region. Many people, even in urban conurbations, do not have access to uncontaminated water. The FBDGs form only one part of the population's transition to urban life and depend for their success on complementary initiatives in environmental health such as those outlined in the Century 21 agenda (53).

The ways in which the foods are produced and distributed are also of crucial importance because the foods themselves can distribute parasites and infectious diseases. For example, vegetables grown in soils fertilized with human manure may carry a range of bacteria not removed by washing. In large food-manufacturing plants in which foods from different sources are used, harmful microbiological agents may be mixed with uncontaminated foods thus contaminating all the factory's production. Retail distribution such as street stalls with poor food storage facilities and poorly educated staff increase the risks of contamination.

The consumption of a wide variety of foods is likely to reduce risks, particularly as some foods appear to improve the balance of flora in the

gut (e.g. some fermented foods). Again, consumption of locally produced foods is likely to reduce risks of foodborne illness as supply chains are short and hazards are more likely to be recognized and reduced. More research is required into the preventive effects of traditional foods.

## 2.5 Third wave diseases

The dietary guideline focus is on a particular set of CNCDS (54):

- obesity (especially abdominal);
- diabetes (and impaired glucose tolerance);
- cardiovascular disease;
- certain cancers (lung, breast, colorectal, prostate, pancreas, skin, brain etc);
- osteopenia/osteoporosis.

However, there is a new wave of health problems and diseases with a relationship to nutrition which requires a systematic review of dietary guidelines (55).

These health problems and diseases include:

- ageing and associated frailty;
- protracted menopause with increased longevity in women;
- cognitive impairment and dementia;
- behavioural and psychological disorders (especially with urbanization);
- new infectious diseases;
- environmental diseases (due to chemical residues, atmospheric pollution and ecosystem imbalance);
- risks (along with the benefits) of new foods.

The challenge will be to minimize these new health problems by FBDGs which are environmentally sensitive and which people themselves understand and control. The quest for new foods to improve health (in relation to certain CNCs for example) may create new problems where risk-benefit analysis has been inadequate or where the consequences are unintended.

## 2.6 Ageing

As socioeconomic circumstances have improved and effective programmes of disease control have been implemented, survival during childhood has increased. This has resulted in an increase in life expectancy and larger proportions of the population moving into the age range in which chronic degenerative diseases become the major causes of ill-health and death. This is the so-called “demographic transition” (18). At the same time, there has been an “epidemiological transition” in diseases due to dietary shifts and a higher prevalence of other risk factors for CNCs.

More than half (330 million) of the world’s elderly population aged 60 and over live in developing countries. By the year 2020, there will be 1000 million elderly people in the world, with more than 70% of that number living in developing countries. Elderly people now represent around 20% of the total population. This will increase to 24% by 2020. Within the next 25 years, Europe is projected to retain its title of the “oldest” region of the world. The “oldest” country by 2020 will be Japan (31%), followed by Italy, Greece and Germany (all greater than 28%) and Switzerland (27.4%). By 2020 the percentage of elderly is projected to reach 23% in North America, 17% in East Asia, 12% in Latin America, and 10% in South Asia. Many developing countries will rank higher than the developed countries in terms of the number of elderly people. By 2020, seven developing countries will be among the ten countries with the largest elderly population in the world: China (231 million), India (145 million), Indonesia (39 million), Brazil (30 million), Pakistan (18 million), Mexico (15 million) and Bangladesh (14 million) (56).



Particular attention needs to be given to the nutritional needs of an ageing population. The burden of CNCs is generally greater there than in the younger age groups. Associated body compositional disorders with loss of lean and bone mass contribute to older people's frailty. Decline in physical activity (and with it energy expenditure) mean that, to achieve energy balance, more essential nutrients and other food components (phytochemicals) need to be obtained with less energy intake. This means that nutrient and food component density needs to improve with advancing years. FBDGs formulated for later life therefore should include foods of high nutritional quality, like fish, lean meat, eggs, low-fat dairy products, wholegrain cereals, other seeds and nuts, legumes, fruits and vegetables. This directional food change towards foods that are richer in essential nutrients and protective factors also addresses, to some extent, major age-related disorders like immunocompetence, and possibly, cognitive impairment (55-57).

## **SECTION 3**

# **OTHER EFFECTS OF FBDGs**

### **3.1 Policy**

FAO has stated that governments should support the development of country-specific food-based dietary guidelines to set directions for nutrition education, nutrition communication and behavioural change programmes (3, 58). The relationship between FBDGs and policy is potentially a two-way process. All levels of government policy, in health services, agriculture, environment, education and welfare, development, women's development and population policies, health promotion and especially food and nutrition may influence FBDGs. In turn, policy may potentially be influenced by the guidelines. Some countries may already have a national or regional food and nutrition policy which will support the development of FBDGs. The guidelines developed need to fit into this framework. Sometimes existing frameworks, which may be centrally controlled, will have a very strong influence on the development of FBDGs, especially at the local level. However, their development may also provide an opportunity for nutrition education which targets a group of people who are able to facilitate or support nutrition education.

This group, called a "tertiary group" by FAO, may include decision makers at all levels such as politicians and administrators, as well as influential community or religious leaders. FBDGs, by changing the traditional focus of dietary guidelines from nutrients to locally available foods, may provide an opportunity for debate and discussion, creating a learning opportunity for those involved. The process discussed in Cyprus gives a framework for action. The first stage, the formation of a working group or committee, can be seen as a form of nutrition education. The

people to form this group should be carefully selected. High priority are those with valuable knowledge and experience, who are interested in addressing inequities, particularly in access to health and nutrition services and who are in a position to influence change. It is important that FAO, WHO and other United Nations agencies encourage those involved in the development and implementation of FBDGs through promoting regional support networks, especially through training, including the development of local learning materials.

Advice given to the community about healthy eating is of interest to many parties. Some of the most powerful and influential of these are in the private sector. This can be both a problem and an opportunity. Companies whose products can be integrated into nutrition education messages may have an important role to play in supporting the spread of information in the community.

## **3.2 Environmental issues**

The emphasis of FBDGs on variety and on the maintenance of traditional dietary patterns is likely to enhance the environment, for several reasons. Firstly, local production reduces the use of fossil fuels in long-distance transportation of foods. Secondly, the vegetable-grain staple base of traditional cuisines represents less intensive forms of food production than, for example, feedlot rearing of animals. Problems associated with the pollution of watercourses are less likely. The preferential use of vegetables and grains over meats and meat products is likely to allow better human use of land. Meat production is a less efficient way of transferring energy to humans than grain production. However, the high nutrient density of meats may have considerable advantages. The FBDG emphasis on variety does not prevent the use of meat, but it does reduce over-reliance on any single group of foods. This emphasis also tends to inhibit the great increases in fat consumption (associated with greater reliance on animal products) which have been observed in the nutrition transition. However, the environmental friendliness of the FBDGs is not certain. Grain, fruit and vegetable production can be environmentally destructive according to the types of agricultural

technology used. Intensive rice and green vegetable production can be far bigger users of fossil fuels (e.g. through the use of machinery and fertilizers) than beef cattle production (59).

An emphasis on variety and local foods is more likely to conflict with the development of market-oriented monoculture which has been associated with soil degradation and malnutrition among producers (60). This is a major problem for the success of FBDG policies, as they tend to oppose the prevailing sociopolitical view supporting global free trade. While it is essential to sustain the biophysical environment for long-term food production, this depends largely on the sociopolitical-economic environment. It is now recognized that free-market systems of production and distribution may result in nutritional and other forms of impoverishment, particularly among rural food producers. Overdependence on the production of agricultural commodities has often been associated with shortages of money to pay for a varied diet and with the sale of household food produce at little profit. Experts have questioned the wisdom of unquestioning support of earning income through reliance on the export of a limited range of commodities or manufactured components (60).

FBDG policies may well result in better human health and biophysical environments. However, it may not be possible to put them into practice unless there are supportive sociopolitical policies which are followed by governments and community-based organizations. To give a practical example, the provision of potable water in a village or urban area will depend on the community or government agency having the will to organize people and to raise funds to buy the necessary engineering materials and services.

### **3.3 Unintended effects of change**

Any change in food patterns is likely to have other, unintended effects as well. It is important to understand as many as possible of them. Some of these consequences will be positive, some will be undesirable and others will not be important in either nutritional or social terms. One programme can produce both good and bad effects. It is the undesirable unintended consequences which are the most important to identify and prevent. Unforeseen undesirable consequences can be complex, as seen in the unintended outcomes of nutrition education for dietary fat reduction

in developed countries: the production and sale of low-fat foods which are more expensive than their full-fat counterparts (e.g. low-fat cheese, lean meats). This makes low-income households less likely to purchase them. There has been a rise in the consumption of low-fat milks, but an overall drop in milk consumption by women in the United States (61). It is confusing when a traditionally highly valued food is associated with illness, as has happened, for example, with meat and eggs. The consequences may be only indirectly related to nutrition and may affect the way food is organized in a culture, the sustainability of the food supply, household economics, and roles related to food gathering, preparation and service.

The promotion of a particular food which is more time-consuming to prepare, or changed agricultural practices may mean that people have to make difficult time allocations. This could affect many areas of life, child-care, income and recreation. People's beliefs and practices are influenced by government nutrition education, and also by traditional beliefs and other communication channels such as mass media. FBDGs will be only one source of information for most communities. Nutrition education which promotes FBDGs must be seen within the broader context of the nature of information and attitude flow in every community. People may combine government information with other forms of information to come up with quite a different message from the one health workers wish to give. This makes it essential to pretest FBDG messages.

It is not possible to foresee all the possibilities, which means that it is also essential to monitor the programme impact. Carefully prepared messages, based on the best available information about health problems, local beliefs and practices, the local cuisine and food availability, will minimize the likelihood of unforeseen undesirable consequences and increase the likelihood of health gains. Successful FBDGs may produce unintended outcomes related to food production. For example, theoretically, a successful "five-a-day" campaign in the United States which increased vegetable consumption by 10% and fruit consumption by 15% may have a marked impact on land, water and agrochemical use. Fruit and vegetables, in comparison with grains, require twice as much fertilizer and up to twenty times as much pesticide (62). This is not necessarily a reason to stop promoting fruit and vegetable consumption, but it underlines the importance of having agricultural expertise available to those who are putting together FBDGs.

One way of dealing with this issue is to consider ways to promote the consumption of traditional foods. There are examples of successful campaigns of this nature, as for example, on the island of Yap, where there was a campaign to promote increased use of locally produced foods while discouraging the use of expensive and nonessential imported foods. The programme successfully promoted the popularity of coconut juice over soft drinks in the context of valuing local traditions (63).

## **SECTION 4**

# DEVELOPING AND IMPLEMENTING CULTURALLY SENSITIVE FBDGs

### **4.1 Locating the target audience for FBDGs<sup>3</sup>**

It is essential to identify and understand who the target group is, especially for educational programmes. The intervention can be effective only when it meets the perceived needs of the targeted group, and is presented in a way that is understandable and attractive to them. Ideally, the group may join in the planning of the programme, and get involved in its implementation. This promotes ownership of the programme and increases the behaviour changes achieved.

Experts (64) have identified primary, secondary and tertiary target groups which make up the framework for nutrition education programmes. The primary target group is often women, because they tend to make decisions about food, nutrition and health concerns of the family. However, other members of the household may have an important influence in relation to particular behaviours. Formative research to identify these influences is a necessary step in developing programme strategies.

The secondary target group is the people who will work with the primary target group to explain what the guidelines are. These include health and agricultural workers, teachers, village volunteers, food

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<sup>3</sup> The questions to consider when identifying target groups have been listed in the report of the Cyprus meeting on FBDGs (4) and a manual for the preparation and use of FBDGs has also been developed (56).

producers and retailers. Training will be required for this group. The tertiary target group includes the people who will facilitate or support the nutrition education programmes. These include influential government people, both politicians and administrators, leaders of nongovernmental organizations, and influential community and religious leaders.

Are multiple sets of dietary guidelines necessary? If they are, how many sets are required? The answer to these questions depend upon the priorities assigned to nutrition problems and which target groups are identified for intervention. In many countries the nutrition problems and potential solutions in urban and rural populations are different. Access to arable land or cash employment are major factors determining which interventions may be appropriate. A second question to ask is whether the guidelines are to include children, infants and other vulnerable groups. A manual for the preparation and use of FBDGs has been developed (56). The principles of FBDGs for older adults are also being developed (57).

## **4.2 Evidence-based FBDGs**

There is a growing demand for evidence-based public health strategies and health care services. The problem is that the advocates of these approaches often think only in terms of clinical trials. Food and food-pattern interventions cannot be tested by randomized double-blind clinical trials in the same way as pharmaceuticals. Evidence-based FBDGs require epidemiological evidence (to say whether an approach makes sense in everyday life); clinical epidemiology (to evaluate risk-benefit ratios); dietary modelling and prediction of outcomes (prospectively and by intervention, to give causal or pathogenic evidence for the food health concepts); and the study of mechanisms (to validate the concepts). These mechanisms are likely to be complex in order to account for how the many components of food, and the many foods in a cuisine, and the many settings for these cuisines operate.

Where dietary habits are linked with a low risk of disease, public health policies should ensure that commercial interests do not disturb these dietary habits. Where surveys indicate a high risk of disease, policies to change practices relating to diet and exercise for the general public will need to be considered. The diet likely to protect against any one of the main CNCDS is likely to also provide protection against the others.



However, being able to make healthy food choices is dependent on what is available, what can be afforded, cultural practices and the relevant knowledge. It is important what food goes into the diet, and how much is usually eaten. Feasting traditions in some urban sedentary Pacific populations have resulted in too great an energy intake resulting in high levels of obesity (54).

### **4.3 Robustness of food cultures, historical content and implications for the future**

Massive urbanization is occurring throughout the Region. This is the basis for the epidemiological and nutritional transitions which are a feature of late 20th century life in the Region (65). Historically, there have been similar events in the United Kingdom, Western Europe and North America. In the United Kingdom, during the Industrial Revolution, many indigenous cuisines were lost. Similar processes are not apparent in many countries in the Western Pacific although “global foods” (such as those prepared at fast food outlets) have entered. However, regional cuisines and food purchasing practices (e.g. “wet markets”) are flourishing in many countries (see section 4.4).

In contrast to the experience in the United Kingdom, the transition to urbanization in many Asian countries is more “nationalistic” (66), perhaps as a consequence of the experience of colonialism; community solidarity is strongly supported by governments. In some countries, strong tariff regimes protect local food (and other) production from foreign imports, such as the Japanese beef and rice industries’ opposition to foreign imports; and the policy of the Government of the Republic of South Korea, post World War II, to support prices for small farmers.

The robustness of local food production and their associated cuisines, however, may be threatened by what has been termed “the globalization project” (60). “Free market” policies, enforced by global organizations such as the International Monetary Fund, and the World Trade Organization, etc, encourage export cultures and harmonization of production practices. Foreign foodstuffs may well threaten local production practices. The dependence of farmers on monocultures and their associated commodity price-taking can be a factor which reduces

the variety of foods and nutrients available to farming families. For example, small-scale poultry and fish production have traditionally added to the variety of foods available to farmers.

Once commodity market conditions come into play such surplus production is quickly converted into minimal monetary gains which are soon dissipated among more pressing needs (such as payments for rent, chemicals, seeds, etc). The poor health of large-scale monoculturists is evidence of the negative effects of free market policies in many regions (e.g. the Punjab, rural China). Asian governments are aware of this; for example, the Government of Indonesia made efforts to halt the exodus from rural areas through the diversification of rural industries.

#### **4.4 Promoting healthy traditional and modern foods and dishes**

People who want to have a healthy diet need to have information about food and guidance in choosing from the range available. This then has to be related to cultural considerations. Local knowledge is therefore essential. The expert advice of nutritionists and social scientists familiar with local culture and conditions will be valuable to the working group or committee involved in developing FBDGs. They will be able to help identify what foods to promote and which to avoid in public education aimed at improving diet.

The practical reason for promoting traditional food choices and patterns is that it is usually more effective to promote and support what people already do, or want to do, than to ask them to change. Assessing dietary intake, local cuisine, food beliefs and practices to identify health-sustaining traditions are a good start for promotion of messages based on FBDGs.

There are a number of approaches to working in this context, for example,

- the use of appropriate dietary methodology (67),
- rapid assessment procedures (68, 69),
- focused ethnographic studies (13) and
- community diagnosis (70).

Of these, the community diagnosis approach has been specifically applied to nutrition education. All need collaboration with social scientists to obtain the most useful and practical results from nutrition education.

Community diagnosis in both developing and promoting culturally sensitive FBDGs should integrate both health and social data. The role of the nutrition educator as a “cultural broker”<sup>4</sup> is central to this approach. He or she works to identify health workers’ and local people’s beliefs, so that effective messages can be developed which are compatible with local views. To do this effectively, local beliefs should be understood, especially views about such central concepts as the “digestibility” of different foods, how “meals” and “snacks” are conceptualized, views about blood, strength and positive health, worms, breast milk quality, and health as a “balance” especially in cultures with a hot/cold system of beliefs and an understanding of local cuisine from the community’s perspective.

Any one of the approaches above may be used as a framework for such an investigation. For the nutrition educator, as cultural broker, the goal is to present new ideas in relation to indigenous concepts and to mediate between the two. This evolutionary approach to education emphasizes a culture’s capacity to adapt, and educational strategies which support cultural continuity. This way of working is based on the idea that indigenous concepts or life experiences may be used to communicate health messages so that they are both understood and also viewed as culturally appropriate and not disruptive.

***These are the basic steps for “cultural brokerage”:***

1. Break down nutrition education/FBDG messages to their underlying assumptions and concepts (i.e. health worker ideas);
2. Identify and explore related ideas in the local community (i.e. indigenous ideas);
3. Draw parallels between basic concepts in the two models (e.g. FBDGs and local cuisine or health beliefs);

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<sup>4</sup> A cultural broker is defined as an individual affiliated with two or more health systems who mediates between them.

4. Mediate between differences and play up mutual concerns (see example below);
5. Look at how indigenous beliefs or behaviour patterns might match with nutrition education messages;
6. Selectively focus attention on health concerns which have the best possibilities of matching;
7. Use local life experiences to create communication bridges (using analogies or “parables” is consistent with traditional methods of education).

Here is an example from South India (paraphrased from (70)):

In the indigenous community, papaya is thought to be “heating” and not much of it is eaten, even though it is readily available. It is eaten unripe, when it is green, and gives little nourishment. Actually the green papaya is more “heating” than the ripe papaya to eat - in fact the ripe papaya helps with digestion when eaten in a moderate quantity at a cool time of the day or when a person is not overheated from work. However, knowing that there were strong feelings about not eating papaya during pregnancy, the nutrition educators did not push this as an appropriate time to consume the fruit. Potentially unhealthy beliefs or behaviours should only be said to be “wrong” as a last resort.

Care needs to be taken when choosing approaches. One may be more suitable than another. For example, focused ethnographic studies are particularly useful for looking at local decision making in relation to health care of a specific illness category or cluster of illnesses. This method links local behaviours to indigenous illness concepts. An example could be where health workers have identified their highest priority area such as diabetes or undernutrition in children under five years old.

The inclusion of a social scientist in the working group or committee to develop FBDGs will be particularly helpful. The techniques suggested work much better with expert advice. It may be possible, for example, for an anthropologist to advise on the variations in local beliefs and behaviours in a region as these may strongly affect how messages are received (71, 72). This may be particularly important in urban areas (73). There is a complex process of selection to go through before deciding on the focus for messages derived from the FBDGs. Examples of local practices and local foods included in dietary guidelines and food selection guides for Fiji, Singapore and Malaysia are described in the Appendix.

The Commonwealth of the Northern Mariana Islands has already developed FBDGs by following the approach recommended by the WHO Cyprus Declaration. Dietary and non-dietary recommendations for a healthy lifestyle include:

- **Physical activity** (30 minutes of moderate exercise ) e.g. folk dancing
- **Ideal body weight** (e.g. eat smaller portions of food and limit second servings of food that are high in fat and calories)
- **Balanced diet** e.g. grains at every meal; fruits three times a day; vegetables three different kinds each day; low-fat milk or calcium-dense alternative (tofu, green leafy vegetable *kankung*) two times each day; low fat meals such as fish, lean meats two times each day; include local traditional foods in the daily diet (banana blossom, cooking banana, pumpkin tips, *kangkung*, yam, taro, young coconut, bamboo shoots, leaves from sweet potato/taro/tapioca/*malungai*); when in season eat more local fruits (mangoes, guava, sour sop, sweet sop, star fruit)
- **Fibre** (cabbage, broccoli, cauliflower, tapioca top leaves, *kangkung*, soy beans are especially valuable in preventing disease).
- **Fat** (eating a lot of *fritada* and organ meats may increase the chances of getting heart disease or gout, eat small servings less often; limit intake of coconut milk/cream, pork belly, pig skin, turkey tail, which can increase the chances of getting heart disease).
- **Salt** (if at risk of developing high blood pressure eat less soy sauce, less than two tablespoons a day, and less *ajinomoto* and salty foods such as *finadeni*, *koko*, salted fish, *soba* seasoning.
- Limit sugar intake
- **Fluids** (drink water and or fresh juices such as young coconut juice, soursop juice, mango/papaya/tomato/guava juice)
- **Alcohol** (one drink a day for women and two drinks per day for men)

- **Encourage breast feeding.**

The “Recommendations for Appropriate Food Intake” in Viet Nam acknowledge the multiple roles of food with respect to health, family, culture and religion.

For example:

- Consume a certain amount of both animal and vegetable sources of protein. It is recommended to eat fish at least three times every week and increase the intake of soybean products.
- Set up a healthy family meal that is delicious, wholesome, clean, economical and affectionate.
- Prepare a diversified meal, composed of different types of foods.

Similarly, in Japan, a guideline is included which recommends making all activities relating to food and eating pleasurable ones and using the mealtime as an occasion for family communication and appreciating home cooking “It is important to rediscover meals as pleasurable occasions. Too much dependence on processed foods tends to diminish family togetherness and results in meals that are nutritionally poor” (74). Apart from dietary guidelines, Japan also has exercise guidelines and relaxation guidelines included in its guidelines for health promotion.

FAO’s view is that nutrition education’s principal role is to increase the capacity of households to use existing food resources to their maximum advantage (3). In doing this it needs to take into account the economic, organizational, and environmental factors which can positively or negatively affect dietary habits. The FAO package “Get the best from your food” can provide a framework within which FBDGs can be integrated, as it is designed to be adapted locally, regionally or nationally. Its messages can be used to develop educational programmes for public information, schools or other training settings. The messages are, “Enjoy a variety of food”; “Eat to meet your needs”; “Protect the quality and safety of your food”; and “Keep active and stay fit”.

The processes discussed in this section could be used to develop specific messages for specific groups within the context of the broader framework of “Enjoy a variety of food”. This implies that, at the local level, it is not useful to direct all the guidelines to everybody. The whole set of FBDGs are for health workers not the community. Selecting the

most appropriate local application is the result of community diagnosis and finding the most likely possibilities. For example, promoting higher consumption levels of ripe papaya might address specific nutritional problems such as low intakes of carotene. The nutrition educator can play the cultural broker role by using effective communication, bringing about successful outcomes and minimizing unintended consequences.

#### **4.5 Modern Western Pacific cuisine**

Traditional cuisines are often endangered because they may be regarded as too old fashioned or time-consuming to prepare. This century is witnessing the submergence of traditional cuisine by others more powerful - where the cuisine of another culture is adopted in preference to the existing one. The next generation, particularly in Asia, appears to be rejecting traditional foods in favour of Western high-fat fast food. These dietary changes seem to parallel Western diet-related diseases. The level of adoption of Western foods in Asian countries seems to be directly related to the level of development. Western food is seen as being more modern than traditional food. Western food is a status symbol linked with sophistication and paradoxically is thought to be healthier than traditional foods. This dilution of culture can be seen all over the world, especially in developing countries (75).

A study conducted in Finland (15) revealed some potentially useful ideas about transitions in food choice. It suggested that low socioeconomic groups follow the changing food patterns of the more affluent segments of society within a five-year time lag. In both low and high socioeconomic groups, there is both change and retention of food choices. Ways and means to make the best of this process of change can be found by the societies which are in transition.

#### ***Traditional food patterns - should they be retained?***

Peoples of all nations with different food cultures can achieve similar life expectancy and morbidity rates (4, 76, 77). For example, life expectancies in Asia (Japan and Hong Kong) and the Mediterranean (Crete) are amongst the longest in the world. In these countries the eradication of protein-energy malnutrition attributable to food deficit has

not resulted in an undue impact on longevity through CNCs. The reasons for this are not altogether clear and the present situation may change unless the health protective nature of their lifestyles is understood and maintained. Candidate protective factors include environmental social factors (like activity and networking), physical activity (like walking and Tai-chi) and food habits. It can be difficult to separate these variables which may, in any case, be synergistic or at least complementary. The challenge is to identify which are the food factors and patterns in common between cultures that result in less morbidity and mortality. This will enable culture-specific FBDGs to promote the healthier traditional foods and dishes. Adverse characteristics of traditional diets may have developed due to the lack of refrigeration and methods used to preserve food or because of limited availability of certain foods in the environment.

What is the way to identify the healthiest traditional foods and dishes from various cultures which can be included in FBDGs? The Greek and Japanese cuisines illustrate that traditional cuisines are not perfect and that they can be further refined and improved.

Traditional cuisines around the world tend to be high in plant food (70%-80% of total food intake) and low in animal food (20%-30% of total food intake); differences appear to occur with amounts of fats, fish, fruit, alcohol and salt consumed. For example, traditional Asian cuisine is low in fruit and fat (~15% energy intake) and Mediterranean cuisine is high in fruit and fat (more than 30% energy intake, with two-thirds derived from monounsaturated fat) (28) - both tend to be high in fish and salt and moderate in alcohol.

Greeks in the 1960s had the longest life expectancy in the world, followed by the Japanese. The traditional Greek diet of the 1960s was associated with very low rates of coronary heart disease and cancers of the colon and breast. The traditional Japanese diet of the 1960s did not appear as “healthy” as the Greek diet because of their much higher rates of cancer (especially stomach and liver) and haemorrhagic stroke. Also, the rates of stomach cancer and ischaemic stroke in Greece were not low relative to the United States. This suggests that some aspects of the traditional Japanese and Greek diet of the 1960s may have been hazardous. Very low fat intake over a lifetime may in fact have adverse effects. The high frequency of stomach cancer and haemorrhagic strokes in Japan is likely to be explained in part by high intake of salt and low intake of fruits. The moderate intake of alcohol in both countries was probably



protective against coronary heart disease but contributed to increased risk of stroke. The Japanese today have amongst the longest life expectancies in the world and this has been attributed in part to their increased intake of fruit and fat and reduced intake of salty traditional dishes.

Evidence in support of the beneficial properties of the traditional Greek food pattern (defined as a varied diet high in plant foods, low in animal foods, high in monounsaturated fat but low in saturated fat, moderate in alcohol) has recently become available. Studies (78-81) found that keeping to the overall Greek food pattern was more important for longevity than individual food groups. Deviations from this food pattern amongst elderly migrant Greeks in Australia have been associated with increased morbidity (32, 82). Whether or not further mortality benefit may have been obtained in non-Greek cohorts if foods were prepared according to Greek cuisine, requires further study. The traditional Greek meal pattern (e.g. main meal for lunch accompanied by wine) has also been associated with lower overall body fatness and appeared to promote greater food variety (83).

These examples illustrate that traditional cuisines are not perfect. They can be further refined and improved by selecting healthy traditional dishes (e.g. vegetarian-style where meat and nuts are used as condiments), by adding a greater variety of plant foods to traditional dishes and limiting traditional foods/dishes which are heavily preserved/pickled in salt or high in animal fats. With the globalization of cuisines, there is now access to recipes and foods from around the world. In Australia, stir fries using modified Asian recipes have become very popular due to their convenience and because the vegetables taste better cooked this way (although the proportion of meat used tends to be greater than in traditional Asian recipes). FBDGs developed for the Region could take advantage of this globalization and encourage healthy traditional foods/dishes from other cuisines/cultures to increase food variety (e.g. tomato-based Mediterranean vegetable dishes into Chinese cuisine). They could also address modern foods such as functional foods (e.g. soy and linseed bread, fermented drinks) and encourage the food industry to produce pre-prepared meals that are low in animal fats (e.g. frozen vegetarian meals based on soy) but high in nutrients and phytochemicals, equivalent to home-cooked meals. The “time famine” that many urban dwellers are experiencing (and neglect of cooking skills) often results in reliance on high-fat fast food for meals.

Anecdotal evidence suggests that people know less and less how to cook. This is becoming a particularly significant sociological phenomenon, a factor determining what people eat, and, therefore, a health indicator. When unable to cook, people are nutritionally powerless and restricted in food choice. Cooking is becoming a luxury afforded to those with time. Historically, very simple people, who could not read or write, were custodians of traditional cooking skills. But this no longer appears to be the case - middle classes have now taken over the traditional food of the poor because they have the time to cook. By the year 2000, it is predicted that one in every two meals will be taken outside the home and that many meals will be consumed in the car. This is already evident in the megacities of Asia where travelling times are protracted. Meals will happen where hunger and convenience coincide rather than there being formal mealtimes. These changes in meal patterns have been attributed to “time famine” because people are neglecting food preparation as part of daily life (75). FBDGs could also usefully address cooking skills.

If these predictions are correct, they have important implications for the role nutritionists and governments will have in developing urban environments and in regulating the food chain to ensure that consumers can make healthy choices when it comes to selecting pre-prepared foods and dishes.

#### **4.6 Strategies for the development of FBDGs**

Ideally, resources permitting, WHO would support and strengthen training of nutrition education workers in the Region for the development and application of FBDGs. This could include the development of training materials with emphasis on local application, and the promotion of related training programmes in partnership with appropriate regional organizations. As part of support for the development of national FBDGs, WHO, in collaboration with government institutions, international nongovernmental organizations and others, would aim as far as possible to promote the development of a network for exchanging experience in the development of FBDGs, within and outside the Region.

The following strategies will help when developing and monitoring FBDGs:

1. Develop FBDGs within a local context and with a focus not only on emerging CNCDS in the Western Pacific, but also on the legacy of food insecurity, and the future prospects of new food-health relationships. Where possible use local data on food and nutrition and food consumption behaviour.

For example, a reference statement along these lines can be developed by a working group:

“This community’s eating patterns are characterized by ..... Its major problems are ..... . From available evidence it is likely that the features of the food pattern which account for (*health problems*) are (*foods, way grown, stored, cooked*). Foods, nutrients and phytochemicals which may not be adequately represented in the food culture or cuisine in question will need to be addressed and the health protective characteristics of the culture or cuisine considered”.

2. FBDGs for CNCDS prevention or management will have limited value in isolation. Put the FBDGs for CNCDS (and other outcomes) in the context of community-based lifestyle education.
3. Formulate a risk-benefit analysis of the FBDG proposals and acknowledge  
that there may be unintended consequences of nutrition education programmes.
4. Formulate a culturally sensitive communication and behavioural change strategy.
5. Plan monitoring and surveillance which at least uses a recognized nutrition-anthropological methodology, like rapid assessment procedures, or one which may be more quantitative.

6. WHO, in collaboration with FAO, should develop a framework for regional monitoring of the process. Outcomes should be monitored by appropriate food intake, body compositional and sociocultural markers. Probably the most crucial feature for a monitoring programme in any country is the support and resources available for collecting and interpreting data. In keeping with the need to understand how the Cyprus process works in practice and what this means in nutrition education at the local level, monitoring experience of practical activities in the Western Pacific Region is important.
7. For this type of monitoring to achieve its goals, i.e. to learn what happens when FBDGs are developed and used in the Region, community participation should be part of the process. This means inviting the contribution of those who are willing to share their experiences, both good and not so good.

#### **4.7 Principles of FBDGs for the Western Pacific Region**

People think of and eat food rather than its components. The development of culturally sensitive FBDGs in the light of the best scientific evidence is to be preferred to food-changes driven by studies on single food components and single disease outcomes; the risk-benefit ratio is likely to be much lower in this way. Recent literature points to the food intake pattern being more predictive of health outcomes than is the sum of its parts (78-81). This changing understanding and acknowledgment of people's personal and cultural needs as well as more integrative nutrition science, is now reflected in FBDGs. There is still much to be learned and distilled from the pooling of food cultural traditions.

## **The principles of FBDGs for the Western Pacific Region might appear as follows:**

1. Encourage a variety of low-energy-dense foods e.g. at least 20 biologically distinct foods a week drawing from all food groups (see Table 2). An easy way to increase food variety is to include healthy dishes from other cuisines e.g. tofu and leafy greens from Asia, tomato/legume dishes from the Mediterranean.
2. Emphasize healthy traditional dishes which are vegetable and legume based and where meat and nuts are used as condiments (i.e. small servings of nutritious but energy-dense foods are combined with larger servings of low-energy-dense foods). Encourage consumption of available protective foods (e.g. fish, garlic, onion, cruciferous & leafy vegetables, tomatoes, soy, pulses, citrus fruits, grapes, berries, olives, herbs, tea).
3. Limit traditional dishes/foods which are heavily preserved/pickled in salt or which have been battered and fried.
4. Consume fat which, ideally, should be unrefined from whole foods such as nuts, seeds, beans, olives, fish, lean meat. Limit fatty spreads in cooking or on bread. Minimize foods containing hidden animal fats (fatty meat, full-fat dairy products, some fast/processed food) and hydrogenated plant fats (some fast/processed food, commercial cakes/biscuits).
5. Reserve added liquid fats (e.g. oils, coconut products) for cooked meals, vegetables and salads. Liquid plant fats added to cooking or at the table are useful if they encourage the consumption of a variety of low-energy-dense foods (especially plant foods, fish) by improving the flavour of such dishes (e.g. traditional vegetable dishes cooked with coconut milk or extra virgin olive oil). Added oils may also help in the absorption of fat-soluble nutrients and phytochemicals from plant foods. Encourage a variety of liquid plant fats for cooking which have been minimally processed (e.g. which are cold pressed or “extra virgin”).

6. Enjoy food and eating in the company of others, but avoid the regular use of energy-dense (nutrient poor) celebratory foods which are high in fat and or sugar (e.g. icecream, cakes, pastries, sweet drinks in Western food culture, confectionery and sweets, candies in Malay cultures and crackling pork in Chinese food culture).
7. Encourage food industry and fast food chains to produce ready-made meals that minimize or combine liquid plant fats with low-energy-dense plant foods (e.g. frozen vegetarian meals based on pulses, vegetables and extra virgin olive oil) as alternatives to animal based convenience foods containing animal fats or hardened plant fats. Functional foods produced by the food industry (e.g. bread based on wholegrains and seeds like soy linseed bread) can also be reflected by FBDGs.
8. Transfer as much as possible of one's food culture and health knowledge and related skills (in food production, choice, preparation, and storage) to one's children and grandchildren and to the broader community. Ensure knowledge is transferred. Teach cooking techniques (as part of survival skills) to all primary and secondary schoolchildren.

Since these principles are somewhat technical or have logistic implications their application requires local experts to work with community elders in their implementation.

Whatever FBDGs are developed they must be subject to critical appraisal, monitoring and review, especially in regard to unintended consequences and to ecological considerations. This process is part of the new public health nutrition.

**Table 2: Weekly food variety score (1-57) (31)**

Biologically distinct food groups	SCORE	Continued.	SCORE
1. Eggs (all varieties)		<b>BEVERAGES</b>	////////
<b>DAIRY</b> ////////		30. Water (& mineral)	
2. Milk, ice-cream, cheese		31. Tea, coffee, herbal teas, wine, beer, spirits	
<b>LIVE CULTURES</b>	////////	<b>FERMENTED FOODS</b>	////////
3. Yoghurt (e.g. acidophilus, bifidobacteria)		32. Miso, tempeh, soy sauce	
<b>YEAST</b>	////////	33. Sauerkraut	
4. Vegemite		34. All other varieties	
<b>FISH (+canned)</b>	////////		
5. Fatty fish (tuna, anchovies, salmon, sardines, herring, mackerel, kipper)		35. All varieties (+ soft drinks)	
6. Saltwater fish			
<b>SUGAR/CONFECTIONERY</b>	////////		
7. Freshwater fish			
8. Fish roe (caviar salad)			
<b>VEGETABLES(+canned,frozen)</b>	////////		
9. Shellfish (mussels, oysters, squid)		36. Root (potato, carrot, sweet potato, beetroot, parsnip, bamboo shoot, ginger, radish, water chestnut )	
		37. Flowers (broccoli, cauliflower)	
10. Crustaceans (prawns, lobster)		38. Stalks (celery, asparagus)	
<b>MEAT</b> ////////		39. Onion (spring, garlic, leeks)	
11. Ruminants (lamb, beef, veal)		40. Tomatoes, okra	
12. Monogastric (pork, ham, bacon)		41. Beans (green, snow peas)	
13. Poultry (chicken, duck, turkey)		43. Peppers (capsicum, chillies)	
15. Game (kangaroo, rabbit)		44. Marrow (zucchini, squash, cucumber, turnip, eggplant, swede, pumpkin)	
16. Liver		45. Fungi e.g. mushrooms	
		46. Herbs/spices	
17. Brain		<b>NUTS &amp; SEEDS</b>	////////
18. All other organ meats			
<b>LEGUMES (+canned)</b>	////////	47. Almond, cashew, chestnut, coconut, hazelnut, peanut, peanut butter, pine nut, pistachio, pumpkin seed, sesame seed, tahini, walnut	
19. Peas (fresh, dried, split peas): Chickpeas (dried, roasted); Beans (haricot, kidney, lima, broad) ; Lentils (red, brown, green); Soy products (tofu, milk).			
		<b>FRUIT</b>	////////
<b>CEREALS</b>	////////	48. Stone (peach, cherry, plums, apricot, avocado, olive, prune)	
20. Wheat (bread, pasta, ready-to-eat)		49. Apples	
		50. Pears, nashi	
21. Corn (cornflakes, polenta)		51. Berries (strawberries)	
22. Barley (bread, barley cereal)		52. Grapes (& raisins, sultanas)	
23. Oats (porridge, cereal, bread)		53. Bananas	
24. Rye (bread; ready-to-eat)		54. Citrus (orange, lemon)	
26. Rice (grain, ready-to-eat)		55. Melon (honeydew, watermelon)	
27. Other grains (millet, linseed)		56. Kiwi, date, passionfruit	
<b>FATS &amp; OILS</b>	////////		
28. Oils			
29. Hard/soft spreads			
57. Tropical (mango, pineapple)			

**TOTAL WEEKLY VARIETY SCORE**

Instructions: A score of ONE is given to each food only ONCE if consumed (>2 tablespoons) over a 7-day period. Score of biologically different foods consumed in a week: <20 marginal; 20-24 fair ; 25-29 good; >30 very good.

## APPENDIX

The following information, taken from the “Health and Food Guide for Fiji”, refers to local practices and local foods:

- Use less sugar. In Fiji people use a lot of sugar in tea, biscuits, cakes, jam, sweet drinks and other foods.
- Eat more fibre foods. Foods which have a lot of fibre are the root crops (*kakanadina*), brown bread, brown rice, green leafy vegetables and fruits.
- Choose good snack food. The best kinds are *bhajia*, *samosa*, peanuts, corn, fresh fruits, milk and sandwiches.

Similarly in Singapore the dietary guidelines include culture-specific examples:

- Replace meat dishes with more vegetable-based dishes. Cook with beancurd, nuts, peas, beans or lentils more often.
- Have nuts, red beans and green gram soups, sweet corn, salad vegetables and fresh fruit.
- Use less coconut cream and coconut milk in preparation of dishes like curries.
- Have fried foods like fried noodles less often and in smaller servings. Choose instead.



In Malaysia, a National Diabetes working group for the Ministry of Health in 1995 also issued examples of culture specific foods/dishes and modern foods to be avoided for the prevention of diabetes :

- Avoid fatty bread spreads e.g. peanut butter, *sri kaya*, cheese spread.
- Avoid fried foods e.g. fried crackers, *keropok*, curry puff, fried *kway teow* and fried rice, *roti canai*, fried rice, fried bananas, french fries, burger, fried fish/chicken.
- Avoid oily foods e.g. *rendang*, *nasi lemak*, *nasi minjak*, *rojak mamak*, *lor mai fan*, *roti canai*, *curry mee* .
- Reduce fat intake by baking foods wrapped in a banana leaf, turmeric leaf or aluminium foil; braise meat or poultry and vegetables with a little oil then add water to the pot and cover lightly with lid; for example when cooking *assam pedas* use only a little oil for frying; use skimmed milk instead of coconut milk curries or chicken and add a finely sliced potato at the beginning of the cooking.

In the Philippines, the Department of Health (DOH) started the Healthy Lifestyle-Healthy Diet Campaign in 1996 in response to the three leading causes of death in the country, namely, diseases of the heart and the vascular system and malignant neoplasms. The DOH cautions the public to limit the intake of salty foods, especially seasonings like *patis* (fish sauce), *toyo* (soy sauce) and *bagoong* (fish paste). Intake of processed foods like *tocino*, *longganisa* and *tapa* are likewise to be limited. It recommends eating high-fibre foods like vegetables, fruits, cereals, grains and rootcrops.

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