



TUVALU GUIDELINES FOR A HEALTHY DIET AND LIFESTYLE



Pacific
Community
Communauté
du Pacifique

Tuvalu guidelines for a healthy diet and lifestyle



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Communauté
du Pacifique

Suva, Fiji, 2021

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Overview

Purpose and intended use of the handbook

The main purpose of this handbook is to provide background information and guidance on appropriate and effective use of the *Pacific guidelines for healthy living*.

The handbook is intended for health professionals and educators responsible for developing and delivering food and nutrition programmes in Tuvalu. The handbook can be used as a policy tool to provide guidance on types and amounts of food and dietary patterns consistent with a healthy diet and lifestyle.

The guidelines for healthy living are designed to be culturally acceptable and relevant for the general healthy population. They emphasise a holistic approach to promoting healthy living by integrating diet (consumption of locally grown and produced foods), physical activity and other lifestyle factors, such as reducing tobacco smoking and use of alcohol. The importance of addressing nutrition throughout the life course is also recognised with the recommendation on exclusive breastfeeding. The background on the development of these guidelines is attached as Annex 1.

Tuvalu endorsed and approved the adaptation of the *Pacific guidelines for healthy living* as a guide for healthy living in Tuvalu.

The structure of the handbook

This handbook is divided into three parts:

Part 1 – Background

Part 2 – The guidelines and the technical explanatory notes for each guideline

Part 3 – Monitoring and evaluating the dissemination and communication of the guidelines

PART 1

Background

A healthy diet is essential for promoting and maintaining good health and wellbeing, as well as reducing the risk of developing non-communicable diseases (NCDs), such as diabetes, obesity, heart disease and cancers, as well as micronutrient deficiencies. Just as good nutrition protects us from nutritional disorders, poor nutrition renders the body vulnerable to such illnesses. In addition, unhealthy lifestyle behaviours, such as smoking tobacco, physical inactivity, and harmful levels of alcohol consumption, increase the risk of health problems.

Tuvalu context

The population of Tuvalu is facing high levels of diseases, premature deaths and disability linked to unhealthy diets and lifestyles. Food plays an important role in the Tuvaluan culture, customs and traditions. Inability to consistently access safe and nutritious food threatens food and nutrition security, undermines livelihoods and economic growth, and is a root cause of the double burden of malnutrition – over- and under-nutrition¹.

Over-nutrition is a result of eating too much high-energy, low-nutrient food and contributes to obesity and the high prevalence of NCDs, which in turn can lead to increased NCD-related disability and mortality. NCDs are the leading cause of death and disability in the Pacific including Tuvalu, causing up to 80% of all deaths².

Under-nutrition is a consequence of insufficient intake of nutrient-dense foods, exacerbated by the presence of an underlying illness, poor sanitation and unsafe food-handling practices. Stunting, wasting and undernourishment are common indicators of under-nutrition and are the underlying causes of childhood morbidity and mortality. Also of concern are micronutrient deficiencies, often referred to as ‘hidden hunger’ because their effects are not seen until too late³. Micronutrient deficiencies can have long-term effects across the life course, including on education performance and health outcomes.

NCD Risk Factors STEPS survey reports show that many people in Tuvalu have more than one risk factor for NCDs. People are considered at high risk for developing NCDs if they have three or more NCD risk factors (daily smoking, overweight, hypertension, consuming less than five servings of fruit and vegetables per day, and low physical activity). The proportion of people in Tuvalu at high risk of NCDs ranges from 21.9–79.3%.

NCD Risk Factors STEPS survey

Non-communicable diseases are now the leading causes of morbidity and mortality in Tuvalu. The Tuvalu Ministry of Health has made a concerted effort to strengthen its own capacity to deliver services to prevent and manage NCDs as well as engage partners across government and non-government sectors to address the NCD crisis.

According to the Tuvalu Health Report (2015)⁴, four of the five leading causes of death in Tuvalu in 2015 were NCDs. Preliminary results from the 2015 Tuvalu NCD STEPS survey indicated high levels of obesity (62.2%), tobacco use

1 Joint report by the Secretariat of the Pacific Community (SPC) and the World Health Organisation (WHO) Subregional Office for the Pacific Islands on *Towards a food secure Pacific – a framework for action on food security in the Pacific 2011-2015, 2010*

2 World Health Organisation (WHO). STEPS Survey Reports. Available on <https://www.who.int/nmh/ncd-tools/western-pacific-region/en/>

3 A report prepared on behalf of the Food and Agriculture Organisation (FAO) Subregional Office for the Pacific Islands, July 2014. *Nutrition in the Pacific Islands countries and territories – a review of developments since the 1st International Conference on Nutrition 9ICN1) and strategic considerations for the future.*

4 World Health Organization, 2015. *Tuvalu NCD Risk Factors STEPS Report 2015.*

(35.0%), binge alcohol drinking among drinkers (18.7%), and hypertension (42.2%), as well as low levels of physical activity (31.6%) among adults aged 18–69 years in Tuvalu. Approximately 64% of Tuvaluans have three-to-five risk factors for NCDs.


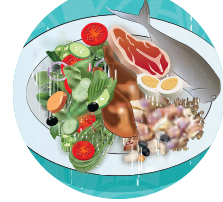



Like many other countries, Tuvalu is affected by the forces of globalisation and urbanisation. Tackling NCDs will require effective behaviour change strategies, strong leadership at the highest levels of government, and policy coherence across different government departments. Strengthening multi-sectoral strategies to support the prevention and management of NCDs is highly recommended.

The following section provides the technical information that underpins the guideline recommendations. The information contained in this section is not meant to be presented as it is; it should be used as a reference and needs to be adapted and tailored to the target groups with whom the health professionals or educators communicate.

PART 2

The following section provides the technical information that underpins the guideline recommendations. The information contained in this section is not meant to be presented as it is; it should be used as a reference and needs to be adapted and tailored to the target groups with whom the health professionals or educators communicate.

Key guidelines for healthy living

	<p>Eat a variety of foods from the three food groups in the appropriate amounts each day and choose fresh local products.</p>	<p>Energy foods: cassava, taro, breadfruit, rice and bread Protective foods: leafy greens, tomatoes, cucumber, capsicum, papaya, ripe banana Body building foods (fish, lean meats, eggs, dried beans, low-fat milk products)</p>
	<p>Eat protective foods at each meal.</p>	
	<p>Choose and prepare foods with less salt, fat and sugar.</p>	
	<p>Prepare and store foods safely. Wash hands thoroughly with soap before and after handling food.</p>	
	<p>Do at least 30 minutes of moderate-intensity activity (e.g. brisk walking) on five or more days each week.</p>	

	Relaxing and being part of a community are good for your health. Make sure to enjoy time with family and friends.	
	Feed babies with breast milk and nothing else for the first six months of life. Start complementary feeds at six months and continue some breastfeeding until at least two years of age.	
	Don't smoke or do drugs.	
	Reduce consumption of alcohol, kava and home brew. If you drink, avoid heavy drinking.	

These guidelines are intended to be easy to understand, follow and tell others about. It is recommended that these guidelines be regularly reviewed as new knowledge about nutrition and health becomes available and take into account changes in the use and impact of the guidelines due to socio-economic and cultural transitions and influences over time.

1. Eat a variety of foods from the three food groups in the appropriate amounts each day, and choose fresh, local products.

- **Energy foods – should make up one third (35%) of all the food you eat each day**
e.g. starchy staples like taro, yams, cassava, breadfruit, rice and bread
- **Protective foods – should make up half (50%) of all the food you eat each day**
e.g. all fresh locally grown vegetables and fruits
- **Body-building foods – should make up one sixth (15%) of all the food you eat each day**
e.g. protein-rich foods like fish, chicken, meat, dried beans, nuts and milk

Variety

For good health, eat a variety of foods from the three food groups each day. Foods provide a wide range of essential nutrients, vitamins, minerals, phytochemicals and antioxidants that are beneficial to health. Variety ensures that people eat a nutritionally adequate and balanced diet each day. It can also help keep meals interesting. Eating too much food from one food group can lead to an imbalanced diet.

Amount

Eat enough food to meet energy and nutrient requirements for good health, to maintain a healthy weight, and to satisfy hunger. The total amount of food to eat each day to meet these requirements depends on factors such as age, life stage, health status and level of physical activity. Individuals differ in the amount of energy they require, and energy requirements affect the total amount of food an individual needs.

If a person's weight is within a healthy or normal range (considered to be a body mass index [BMI] between 18.5 and 24.9, with BMI calculated as weight in kilograms divided by height in meters squared – kg/m²), then we can assume that he/she is eating enough food to meet his/her energy requirements. Therefore the total amount of all foods consumed is not an issue. However, it is still important to eat a balanced diet to ensure nutrient requirements are met. If the person is overweight or obese (BMI over 25), he/she is eating more than his/her energy requirements. Therefore, the total amount of food consumed matters, as well as the types of foods from each food group, and the ratios of the three food groups. It is also important to consider the level of physical activity (refer to guideline #5). Replacing some of the energy foods with more protective foods (particularly vegetables) would be one way of reducing the total energy content of the diet without compromising its nutritional quality.

BMI classifications

Classification	BMI (kg/m ²)	Risk of comorbidities
Underweight	< 18.5	Low (but risk of other clinical problems increased)
Normal range	18.5 – 24.9	Average
Overweight	25.0 – 29.9	Increased
Obese class I	30.0 – 34.9	Moderate
Obese class II	35.0 – 39.9	Severe
Obese class III	≥40	Very severe






Source: WHO Technical Report Series 916

Given the high levels of overweight and obesity in Tuvalu, guidance is needed to help people control the amount of food they eat. The most accurate way to monitor portion sizes and amount of food consumed is by weighing the food with a food scale and measuring cup⁵. However, this is not realistic or practical for many people. An easier way of helping people to visualise and estimate the appropriate amount of food to eat is by using one's hands as a guide, as shown in Figure 1. Other ways include using portion control plates or simply using smaller plates and cups⁶.

⁵ Division of Nutrition and Physical Activity: Research to Practice Series No.2. *Portion size*. Atlanta Center for Disease Control and Prevention.

⁶ Secretariat of the Pacific Community (SPC) 2002. *Background for the four posters – a detailed manual for local trainers*. SPC, Noumea

Figure 1. Food groups and portion size

Food groups and types of foods to choose	Amount to be eaten	Main nutrients they provide
Energy foods – starchy staples <i>Energy food to choose:</i> <ul style="list-style-type: none"> - Locally grown root crops - Breadfruit, cooked green bananas - Whole grain breads - Brown rice <i>Energy foods to limit:</i> <ul style="list-style-type: none"> - Refined grains and cereals such as white rice, pasta, noodles, vermicelli and bread - Foods prepared with fats and sugar, e.g. biscuits and cakes <i>Energy foods to avoid:</i> <ul style="list-style-type: none"> - Processed and deep-fried foods - Sugar and free sugars⁷ - Sugar-sweetened beverages 	<p>Should make up one third (35%) of all the foods you eat each day</p> <p>Eat at least six portions each day</p> <p>Example of portion: 1 portion = fist</p> 	Carbohydrates Vitamins Dietary fibre
Protective foods – all vegetables and fruits <i>Protective foods to choose:</i> <ul style="list-style-type: none"> - All fresh fruits and vegetables, locally grown - All frozen vegetables and fruits with no added sugar or salt <i>Protective food to limit:</i> <ul style="list-style-type: none"> - Canned fruit in juice is a good alternative if fresh fruit is limited. - Dried fruits with no added sugar or preservatives - Canned vegetables containing little salt <i>Protective foods to avoid:</i> <ul style="list-style-type: none"> - Canned vegetables - Dried fruits with added sugar or preservatives - Cordials and fruit drinks - Fruit juice and fruit juice concentrate 	<p>Should make up half (50%) of all the foods you eat each day</p> <p>Eat five or more portions each day</p> <p>Example of portions: Vegetables 1 portion = 2 cupped hands</p>  <p>Fruit 1 portion = 1 cupped hand</p> 	Vitamins Minerals Dietary fibre Phytochemicals Antioxidants
Body-building foods – protein rich foods <i>Body-building foods to choose:</i> <ul style="list-style-type: none"> - Local, lean cuts of meat, chicken - Fish - Eggs - Dried beans and legumes - Nuts - Reduced fat milk and milk products <i>Body-building foods to limit:</i> <ul style="list-style-type: none"> - Meat with visible fat - Canned meat or fish with high salt content <i>Body-building foods to avoid:</i> <ul style="list-style-type: none"> - Processed meat – spam, canned corned meat - Corned beef/brisket in container, burgers, sausages, condensed milk, mutton flaps 	<p>Should make up one sixth (15%) of all the food you eat each day</p> <p>Eat at least one to two portions each day</p> <p>Example of portions: Meat 1 portion = palm of your hand</p>  <p>Nuts 1 portion = 1 cupped hand</p>  <p>Beans/legumes 1 portion = 1 cupped hand</p>	Proteins and essential amino acids Vitamins Minerals Fatty acids Fibre (from dried beans and nuts)

⁷ World Health Organization. 2015. *Guideline: sugars intake for adults and children*. WHO, Geneva, Switzerland.

To be able to educate people about their diets, it is important to know what they are currently eating, so that the advice is relevant and appropriate. There are several methods of assessing what individuals are eating. A list of these dietary assessment tools is attached in ANNEX 2.

Daily intake

The body needs a regular supply of energy to maintain health. Therefore, eating three meals regularly each day is recommended. This will also help to avoid overeating, which can happen if meals are skipped. Note that a snack is not a full meal, but a small amount of food, usually eaten in between main meals. Snacking is not recommended for everyone. It is more suitable for very active children and adults who have high energy needs, as well as those who can tolerate only small amounts of food and beverages.

Local foods

These guidelines emphasise the consumption of locally grown produce as much as possible. Local foods are readily available (subject to seasonal variation), and are generally fresher, do not contain preservatives and are high in vitamins, minerals and fibre. Local root crops and staples are naturally high in fibre; fresh local fish is commonly more nutritious than tinned fish; and local foods can often be grown for free and are good for the local economy⁸. Having your own garden is a good way of making fresh vegetables and fruit readily available for the whole family, as well as an opportunity for physical activity. Encouraging people to be involved in home gardening is one way of getting them more interested in their diet.

Ways of supporting people to eat a variety of nutritious local foods in the appropriate amounts

- *Individual*
 - Choose fresh, locally grown vegetables and fruits.
 - Use smaller plates as a way to control the amount of food eaten.
 - Prevent overeating during meal times by avoiding skipping meals.
 - Set aside time from other activities to eat, and be aware of the food you are consuming.
 - Avoid eating out of the packet and follow the recommended serving size.
- *Health care programmes*
 - Adopt and promote the use of healthy dietary guidelines.
 - Train health professionals on the use of the healthy diet guidelines.
 - Provide counselling on healthy diets, focusing on eating a variety of foods from the three food groups and portion control for weight management.
 - Conduct nutrition education sessions in communities on the three food groups.
- *Community*
 - Develop implement and monitor healthy food policies in schools, churches and workplaces.
 - Raise awareness on the nutritional value of local foods.
 - Promote and support education sessions and cooking demonstrations emphasising nutritious local foods.
 - Offer nutritious local foods at community events.
- *Government*
 - Develop and implement a national campaign to promote healthy local foods.
 - Draft and endorse policies that support the production of local food.
 - Manage food taxes and subsidies and adopt and enforce legislation on unhealthy foods and beverages.

8 Secretariat of the Pacific Community (SPC). 2011. *Pacific Island food leaflets 1-9*. Public Health Division, SPC, Noumea, New Caledonia.

2. Eat vegetables and fruits at every meal

There is overwhelming evidence to show that a diet rich in protective foods such as vegetables and fruits can lower blood pressure, prevent micronutrient deficiencies, reduce risk of heart disease and stroke, and prevent some types of cancer. Evidence from the Tuvalu STEPS survey 2015 report shows that 95.8% of adults consume less than the recommended daily servings of fruits and vegetables.

Vegetables and fruits are nutrient-dense foods that are low in calories (particularly vegetables) and high in vitamins, fibre, minerals, phytochemicals (which give fruits and vegetables their bright colours), and antioxidants. They are usually low in fat and have no cholesterol, which can also help reduce the risk of developing heart disease. Vegetables and fruits are excellent sources of dietary fibre, which can help prevent constipation.

Recommendations

Eat five or more servings of fresh local vegetables and fruits every day⁹.

Ways to eat more vegetables and fruits

- *Individual*
 - If you need a snack in between meals, choose fresh vegetables and fruits.
 - Add colourful salad vegetables to meals.
 - Add vegetables to stir-fries, soups and stews.
 - Bulk up the meal with a variety of colourful cooked vegetables and salads.
- *Health care programmes*
 - Promote the nutritional value of all vegetables and fruits.
 - Adopt and promote the use of healthy diet guidelines.
 - Train health professionals on the use of the healthy diet guidelines.
 - Provide counselling on healthy diets, focusing on increasing consumption of vegetables and fruits.
 - Conduct nutrition education sessions in communities, including how to prepare and make vegetables more appealing.
- *Community*
 - Develop, implement and monitor healthy food policies in schools, churches and workplaces.
 - Raise awareness on the benefits of growing and eating local vegetables and fruits.
 - Encourage and support growing and harvesting of fruit trees.
 - Encourage and support community gardening initiatives.
- *Government*
 - Develop, implement and monitor a national **5+ a day** campaign to promote consumption of vegetables and fruits.
 - Develop and adopt taxation policies on reducing taxes on imported vegetables and fruits.
 - Integrate food security in national policies to support production of local produce.
 - Improve market access for locally grown produce.
 - Adopt and enforce legislation on unhealthy foods and beverages.

9 Joint FAO/WHO Workshop on Fruit and Vegetables for Health (2004: Kobe, Japan). *Fruit and vegetables for health: Report for a joint FAO/WHO Workshop, 1-3 September, 2004, Kobe Japan*. Publications, WHO, Geneva, Switzerland

3. Choose, prepare and eat foods with less salt, fat and sugar

Many people consume too many foods and drinks with high levels of salt, fat and sugar, which are linked to increased risks of all the lifestyle diseases. Everyone should aim to reduce consumption of food with high levels of salt, fat and sugar.

Salt

Salt is the chemical compound sodium chloride (NaCl). Both sodium and chloride are required for health. Sodium plays a very important role in maintaining the fluid balance in the body¹⁰. It attracts and holds water; therefore a high salt diet can lead to too much water in the body, which would mean extra work for the heart to circulate the blood around the body, resulting in high blood pressure, which is associated with very high risks of stroke and heart disease.¹¹

Salt contains sodium, so a diet high in salt would also be high in sodium.

Salt is commonly used to preserve and flavour foods and it is the main source of sodium in our diet. Most processed foods have high salt content. Examples of very high-salt foods are:

- salty meats such as corned beef, spam, ham, bacon, luncheon meats and sausages;
- canned, packet and instant soups;
- packet foods such as instant noodles;
- soy sauce, salted flavourings, stock cubes, yeast extracts;
- canned foods;
- foods pickled in salted solutions;
- smoked meat and fish;
- salted snacks, such as potato crisps, salted biscuits, crackers; and
- high-salt, ready-to-eat meals and foods, sauces, white bread, cheese, take-away food.

Recommendations

Reduce salt intake to less than one teaspoon of salt a day. Note that one teaspoon of salt contains 2g of sodium.¹² ***This amount should take into account total salt intake from all dietary sources.***

Salt – nutrient label

The key message is to choose and prepare foods with little salt, so it is important to know how much salt is contained in foods. A lot of foods do not obviously taste salty but may contain high amounts of salt. Checking the salt content on food labels is one quick way of making healthy food choices. Most food labels list only the sodium content of the food, which can be confusing. Reduce sodium intake to less than 2 g (2000 mg) per day.

¹⁰ WHO Technical Report Series 916, 12

¹¹ World Health Organization. 2012. *Guidelines: sodium intakes for adults and children*. WHO, Geneva, Switzerland.

¹² WHO, *Guidelines: sodium intake for adults and children*, 16.

As a guide to help make healthier food choices:

- to convert salt to sodium – divide by 2.5
- to convert sodium to salt – multiply by 2.5

For example:

- 1000 mg salt = 400 mg sodium
- 225 mg sodium = 562.5 mg salt
(1000 mg = 1 g)

It is also wise to check the ingredient list, as 'salt' is known by many other names, such as sodium, rock salt, sea salt, monosodium glutamate (MSG), sodium citrate, sodium bicarbonate and sodium alginate.

Ways to reduce salt intake

- *Individual*
 - Use other ways of adding flavour to the food:
 - use herbs, spices, lemon juice or vinegar to add flavour; and
 - make your own stock and gravy instead of using stock cubes or powder.
 - If using other salty ingredients such as soy sauce or stock cubes during cooking, avoid adding extra salt.
 - Avoid using pre-packaged seasoning mixes because they often contain a lot of salt.
 - Remember to check the food labels for salt or sodium, and choose low salt options, i.e. options that contain less salt – (<300 mg sodium per 100 g of food).
 - Low salt (<0.3 g/100 g)
 - Medium-salt foods (0.3–1.9 g/100 g food)
 - High salt foods (> 2 g/100 g of food)
 - Check the ingredient list for salt.
- *Health care programmes*
 - Adopt and promote the use of these dietary guidelines.
 - Provide nutrition counselling to reduce salt intake and help reduce high blood pressure.
 - Conduct nutrition education in various community settings, such as churches and work places, to promote healthy diets and lifestyles.
 - Conduct supermarket tours to raise awareness on the salt content of manufactured foods.
- *Community*
 - Raise awareness on the benefits of reducing salt intake.
 - Develop, implement and monitor healthy food policies in schools, churches and workplaces, emphasising low salt food choices.

- *Government*
 - Adopt and enforce legislation on unhealthy food.
 - Adopt the use of CODEX salt standards in food regulations.
 - Work with the food industry to reduce salt levels in processed foods.
 - Adopt and enforce food labelling legislation that clearly states the amount of salt per 100 g of food.
 - Develop, implement and monitor national salt reduction campaigns.

Fat

Fat is an important nutrient in the diet. Dietary fats provide:

- energy, which is needed for growth and to keep the body functioning. (This is important for children to make sure they get enough energy to grow well. Fat is the most energy dense nutrient, with 1 g of fat [regardless of the type of fat] providing approximately 9 kcal);
- essential fatty acids, which are important building blocks for hormones and body structures, such as cell walls.

Types of fat¹³

Most of the fat in the food we eat is a mixture of three main types of fats: **saturated, poly-unsaturated, and mono-unsaturated**. There are also some other types of fat such as Omega-3, Omega-6, trans-fats and cholesterol. Different types of fat have different functions and effects and they can all be found in the foods we eat.

Table 2: Major types of dietary fats, their effects and sources

Type of fat	Effects	Sources
Saturated fats	<ul style="list-style-type: none"> - ↑ blood cholesterol - ↑ risk of blocking arteries - ↑ risk of heart disease and stroke 	<ul style="list-style-type: none"> - Animal products – meat and fat on meat, lard, chicken skin, egg yolk - Dairy products – milk, cheese, butter, ghee - Mature coconut flesh – coconut cream and coconut oil - Palm oil and processed foods made with palm oil, such as take-away fried foods, noodles, potato crisps, cakes, cookies, pies, pastries, crackers
Mono-unsaturated fats	<ul style="list-style-type: none"> - ↓ risk of heart disease and stroke - ↓ total cholesterol - ↓ LDL (bad cholesterol) - little effect on HDL (good cholesterol) - source of essential fatty acids 	<ul style="list-style-type: none"> - Oils – canola, olive, peanut, safflower, sesame - Avocados - Nuts – almonds, hazelnuts, peanuts, flaxseeds, walnuts

¹³ Food and Agriculture Organization (FAO). Food and Nutrition Paper 91, 2010. *Fats and fatty acids in human nutrition; a report of an expert consultation 10–14 November 2008*. FAO, Rome

Type of fat	Effects	Sources
Poly-unsaturated Omega-6 fatty acids Omega-3- fatty acids	<ul style="list-style-type: none"> - ↓ total LDL - ↓ blood pressure - ↓ risk of heart disease and stroke 	<ul style="list-style-type: none"> - Sunflower seeds - Soybean, canola and linseed oils - Oily fish (canned and fresh) – mullet, mackerel, sardines, salmon, tuna, herring
Hydrogenated oils and trans fats	<ul style="list-style-type: none"> - ↑ blood cholesterol - ↑ risk of blocking arteries - ↑ risk of heart disease and stroke - ↑ risk of type 2 diabetes - ↓ HDL (good cholesterol) 	<ul style="list-style-type: none"> - Partially hydrogenated oils - Processed foods made with hydrogenated oils, such as some baked goods, fried foods, margarine

Other types of fat¹⁴

Cholesterol is a fatty substance present in animals, including the human body. The body produces it naturally, even if it is not eaten in the diet. Cholesterol is a problem when there is too much circulating in the blood. It causes narrowing and hardening of the arteries, increasing the risk of heart attacks and strokes. Eating too much saturated fat can cause high cholesterol.

Sterols and stanols are plant forms of cholesterol found in fruits, vegetables, nuts, seeds and whole grains. When eaten, they prevent our bodies from absorbing the cholesterol from other sources. Recent advances in food manufacturing have enabled these to be added in larger amounts to foods such as margarine, but they are present in small amounts in most plant foods.

Coconut¹⁵

Coconut cream and oil from mature coconut flesh have received a lot of attention because of the high fat content, particularly the high levels of saturated fats in coconut oil. Traditional and modern Pacific cuisine includes plenty of coconut cream. Concentrated coconut cream is further processed into coconut oil, which is used for cooking and beauty products for hair and skin.

The fat content of mature coconut flesh (per 100 g edible portion) varies at different stages: coconut flesh, fresh, mature (40 g); coconut cream, fresh, no water (32.3 g); coconut cream, fresh, water added (24.9 g), and coconut oil (99.9 g).¹⁶

Coconut oil contains the following fatty acids: lauric (44–52%), myristic (13–19%), palmitic (8–11%), capric (6–10%), caprylic (5–9%) and stearic (1–3%). It also contains 6–8% unsaturated fatty acids. Lauric acid is a medium chain fatty acid which appears to act more like unsaturated fatty acids in raising high density lipoprotein (HDL) cholesterol, thought to be protective against heart diseases. However, the remaining saturated fatty acids appear to increase the risk of heart disease. Evidence remains controversial and more research is needed to clarify the role of coconut oil in heart diseases.

¹⁴ FAO, Food and Nutrition Paper 91, 19

¹⁵ Snowdon, Wendy *et al.* 2003. *Coconut: its role in health*. Secretariat of the Pacific Community (SPC), Noumea, New Caledonia.

¹⁶ Dignan, Cecil *et al.* 2004. *The Pacific Islands food composition tables*. 2nd edition. Food and Agriculture Organization (FAO), Rome, Italy.

Fat recommendation

Total fat intake should not contribute more than 30% (15–30%) of total energy, no more than 10% from saturated fats and less than 1% from trans-fatty acids.¹⁷ According to WHO, a total of at least 20% of calories from fat is consistent with good health. So for someone on a 2,000 kcal per-day diet, 20% of total daily energy from total fats equates to 400 kcal, or 44.4 g or 8–9 tsp dietary fat per day.

This amount should take into account total fat intake from all dietary sources. There are enough different types of fat within foods, so there is no need for additional fat in the diet. Foods in the body-building group are rich in fat, as well as protein. Coconut cream can still be part of the overall healthy diet and preferably be the main source of saturated fat, if other sources of saturated fats are minimised.

Fat-nutrient labels

The recommendation is to choose, eat and prepare foods with less fat. It is important to check the nutrition information on food labels for the amount and types of fat.

As a general rule, if the product has less than 10 g of total fat per 100 g of food and less than 2 g per 100 g of saturated fat, then it is a good choice.

However, even if the food product is considered a low-fat option, it can still provide a large amount of total fat in the diet if the food is eaten regularly and/or in large quantities.

It is also useful to check out the ingredient list, as fat (especially saturated fat) can be listed under different names, such as vegetable oil/fat, palm oil, animal fat/oil, coconut oil, copha (hydrogenated coconut oil), butter fat, shortening, milk solids/fats, lard and even chocolate!

There are other terms to be aware of about the fat content of foods as they appear on packaged foods. These claims should comply with the national food regulations. Some are described below.

Light or Lite – can mean a lot of things, but not necessarily low in fat or saturated fat. The product could be light in flavour, colour, salt, weight, alcohol, fat or calories. A product with this claim should contain one-third fewer calories than the original product¹⁸

No cholesterol or cholesterol-free – does not mean no fat. Many foods can be free of cholesterol but not of saturated fat, such as palm oil or coconut oil. Plant foods do not contain cholesterol.

90% fat free – really means that the product contains 10 g fat per 100 g of food. If the product weighs 300 g and it is eaten all in one sitting, then it is not really low in fat. Also, many products that are ‘fat free’ often have extra sugar added and are just as high in calories as the original product.

Food preparation

Fat carries the flavour of the food, making it palatable; hence, many fatty foods are very tasty. However, we do not need to compromise the taste of the food in order to be healthy. The amount of fat used when cooking can add extra calories to the overall energy content of the cooked food. For example, food that is deep fried tends to absorb a lot of the fat that it is cooked in compared to food that is cooked in a small amount of fat.

¹⁷ WHO Technical Report Series 916, 9

¹⁸ Food and Agriculture Organization (FAO). 1997. Codex Alimentarius International Food Standards - *Codex guidelines for use of health and nutrition claims*, CAC/GL 23. (revised 2004, amended 2001, 2008 -2013). FAO, Rome, Italy.

Table 3: Healthy cooking methods¹⁹

Cooking Method	How
Stir-fry or shallow fry	<ul style="list-style-type: none"> - Use a wok or non-stick frying pan and use a small amount of oil or oil spray. - Add a little water or low salt stock to keep the food moist. - Avoid high-sodium (salt) seasonings like teriyaki and soy sauce.
Roasting	<ul style="list-style-type: none"> - Use a rack in the pan so the meat or chicken does not sit in its own fat drippings. - Instead of basting with pan drippings, use fat-free liquids like tomato juice or lemon juice. - When making gravy from the drippings, chill first and then use a gravy strainer or skim ladle to remove the fat.
Grilling and broiling	<ul style="list-style-type: none"> - Use a rack so the fat drips away from the food.
Baking	<ul style="list-style-type: none"> - Bake foods in covered cookware with a little fat-free liquid or water.
Poaching	<ul style="list-style-type: none"> - Cook chicken or fish by immersing it in simmering liquid.
Sautéing	<ul style="list-style-type: none"> - Use a non-stick frying pan. - Use oil spray or a small amount of broth or wine, or a tiny bit of vegetable oil rubbed onto the frying pan with a paper towel.
Steaming	<ul style="list-style-type: none"> - Steam vegetables over simmering water. They will retain more flavour and will not need any salt.

Fat plays an important role in food processing as a flavour enhancer, and it helps maintain good structure and taste of baked products. Making healthy substitutions and modifying favourite recipes to make them healthier are two ways of maintaining the key functions of fat in cooking without compromising on nutrition, quality or taste.²⁰

Table 4: Healthy substitutions

The recipe calls for	Use this instead
Whole milk (1 cup)	<ul style="list-style-type: none"> - 1 cup low or reduced fat milk
Heavy cream (1 cup)	<ul style="list-style-type: none"> - 1 cup light and creamy evaporated skim milk - 1/2 cup low-fat yogurt blended with 1/2 cup plain low-fat unsalted cottage cheese
Sour cream	<ul style="list-style-type: none"> - Low-fat unsalted cottage cheese plus low-fat or fat-free yogurt - Use low fat or reduced fat varieties
Cream cheese	<ul style="list-style-type: none"> - 4 tablespoons soft margarine (low in saturated fat and 0 grams trans-fat) blended with 1 cup low-fat cottage cheese and add a small amount of fat-free milk if needed to achieve desired consistency
Butter (1 tablespoon)	<ul style="list-style-type: none"> - 3/4 tablespoon of a variety of cooking oils – depending on flavour
Unsweetened baking chocolate (approx. 30 g)	<ul style="list-style-type: none"> - 3 tablespoons unsweetened cocoa powder or carob powder plus 1 tablespoon vegetable oil; since carob is sweeter than cocoa, reduce the sugar in the recipe by 25%

Source: Australian Dietary Guidelines Eating Well on <https://www.eatforhealth.gov.au/eating-well/tips-eating-well/low-fat-cooking-techniques>

19 Australian Dietary Guidelines: Eating Well. Accessed from <https://www.eatforhealth.gov.au/eating-well/tips-eating-well/low-fat-cooking-techniques>

20 National Health Foundation of New Zealand. 2005. *Catering Guidelines*. National Heart Foundation New Zealand

Ways to reduce fat intake

- *Individual*
 - Trim off visible fat on all types of meat.
 - Remove the skin from the chicken before cooking or eating.
 - Select and use cuts of red meat and pork labelled 'loin' and 'round', as they usually have the least fat.
 - If using coconut cream, dilute it with water to reduce the fat content while keeping the flavour and taste.
 - Drain off the fat from corned beef and add plenty of fresh or frozen vegetables before eating.
 - Use reduced-fat, low-fat, light or no-fat salad dressings on salads, in dips and in marinades.
 - Choose low or reduced fat varieties of milk and milk products.
- *Health care programmes*
 - Adopt and promote the use of these dietary guidelines.
 - Provide nutrition counselling on obesity and heart disease risks.
 - Conduct nutrition education in various community settings, such as churches, community groups and work places.
 - Conduct cooking demonstrations to promote healthy cooking techniques.
- *Communities*
 - Raise awareness on the benefits of reducing fat intake, in particular trans and saturated fat intake.
 - Conduct cooking demonstrations to promote healthy cooking techniques.
 - Develop and promote healthy recipes.
 - Develop and implement healthy food policies in schools, churches and workplaces, emphasising low-fat food choices.
- *Government*
 - Adopt and enforce legislation on unhealthy food and beverages and on the adoption and application of fat standards in food regulations.
 - Work with the food industry to reduce trans-fat levels in processed foods.
 - Adopt and enforce food labelling legislation.
 - Develop national campaigns on healthy diets/healthy eating/healthy food.

Sugar

Sugar is a type of carbohydrate and the term 'sugar' is traditionally used to define monosaccharides (one sugar unit, such as glucose or fructose) and disaccharides (two sugar units, such as sucrose, lactose and maltose).²¹ Glucose is the main source of energy (1 g providing 4 kcal) used by the body and is easily absorbed in the gut. Carbohydrates with three or more sugar units are oligo and polysaccharides, such as starch, glycogen and cellulose.

Sugar is used primarily for its sweetening properties to improve palatability and enhance the taste of foods. In addition to its sweetening properties, sugar also contributes to the colour, body, viscosity, flavour and texture of foods, so it is added to some foods that you might not expect, such as ketchup, savoury sauces, ready-made meals and bread. Sugar is also a common preservative, used to preserve fruits and jams.

²¹ Institute of Medicine of National Academy of Sciences. 2011. *Dietary reference intakes for energy, carbohydrates, fibre, fat, fatty acids, cholesterol, protein and amino acids (macronutrients)*. National Academies Press, Washington DC

Types of sugar

The most common sugars present in foods are sucrose, glucose, fructose, maltose and lactose, and all of these sugars occur naturally. Sucrose is simply table sugar; glucose, fructose and sucrose are found in honey, fruit, and vegetables; maltose is produced by starch breakdown and is found in cereals; and lactose is found in milk and milk products.

Table 5: Types of sugar

Type of sugar	Definition
Intrinsic sugars	Sugar held within cell structures of foods, as in fruits and vegetables
Free sugars	Free sugars include monosaccharides (e.g. glucose) and disaccharides (e.g. sucrose) added to foods and beverages, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates. Free sugars also include white, brown and raw sugars. Free sugars contribute to overall energy density of diets by providing significant energy without specific nutrients.
Milk sugars	Sugars naturally present in milk and milk products (e.g. lactose and galactose)

A high intake of free sugars in the form of sugar-sweetened beverages (SSBs) is linked to obesity and dental caries²². SSBs are beverages or drinks with added sugar. They are sometimes referred to as 'soft drinks', 'fizzy drinks' or 'sugary drinks'. Fruit juices and fruit juice concentrates are not SSBs, but they do contribute to free sugar intake, as the sugars they contain are no longer held within a cell structure as they would be in a whole fruit. Consuming fruit juice adds calories to the diet and may contribute to weight gain.

Sugar recommendation

Choose and prepare foods with less added or free sugar. High sugar foods and drinks should not provide more than 10% of total daily energy intake. Choosing foods with less added sugar is important for weight loss or diabetes management.

Everyone should reduce intake of free sugars to less than 10% of daily calorie intake, and a further reduction to below 5% for additional benefits.²³ All sugars provide the same amount of calories – 4 kcal/17 kJ per gram; so for someone on a 2,000 kcal diet per day:

- 10% of total daily energy intake equates to 200 kcal = 53 g = **13 tsp sugar/day**
- 5% of total daily energy intake equates to 100 kcal = 26 g = **5-6 tsp sugar/day**

This amount should also take into account total sugar intake from all dietary sources, especially dietary sources of free sugars such as, sugar-sweetened beverages, fruit juices and table sugar added to tea and coffee, etc.

Sugar – nutrient labels

Beware of the hidden sugar in foods – read the food labels and check the sugar content. As a general rule, products that contain 10 g or less of sugar per 100 g of food (more if fruit is present in the product) are healthier options.

Checking the ingredient list is also advised, as sugar can be listed as brown sugar, corn syrup, dextrose, disaccharides, fructose, glucose, golden syrup, honey, invert sugar, lactose, malt extract, molasses, monosaccharides, raw sugar and sucrose. These are all forms of free sugars, which can contribute to unwanted weight gain if consumed in large amounts.

22 WHO Guidelines: Sugars intake for adults and children, 10

Ways to reduce free sugar intake

- *Individual*
 - Choose foods and drinks that are low in sugar.
 - Eat whole fresh fruits and vegetables rather than juicing them.
 - Try reducing the amount of sugar added to coffee and tea from two teaspoons to one and eventually to none.
 - Modify the amount of sugar in baked foods; use fruit purees or dried fruit instead.
 - Dilute fruit juices with water.
 - Watch out for 'no added sugar' drinks. They contain a lot of natural fruit sugars but little or no fibre. Check the carbohydrate content. Choose foods that have less than 10 g sugar/100 g of food.
- *Health care programmes*
 - Adopt and promote the use of these dietary guidelines.
 - Provide nutrition counselling on weight management and diabetes.
 - Conduct nutrition education in various community settings, such as churches and work places.
- *Communities*
 - Raise awareness on the benefits of reducing intake of free sugars.
 - Develop, implement and monitor healthy food policies in schools, churches and workplaces, emphasising low sugar food choices.
 - Avoid adding sugar to tea or coffee when preparing hot drinks for community functions. Offer sugar on the side and allow guests to help themselves.
- *Government*
 - Adopt and enforce legislation on unhealthy food and SSBs and on the adoption of sugar standards in the food regulations.
 - Work with the food industry to reduce sugar levels in processed foods.
 - Adopt and enforce food labelling legislation.
 - Develop national campaigns on healthy diets/healthy eating/healthy foods.

To stay healthy, choose, prepare and eat foods from the three food groups with minimal added salt, fat and sugar.

4. Prepare, store and keep food safe. Wash hands thoroughly with soap before and after preparing food

Food must not only be nutritious but should also be safe to eat. Eating food that is contaminated with chemicals or microorganisms can cause foodborne illnesses. The microorganisms themselves may cause illness or they may produce poisons (toxins) in the food that can cause illness. These microorganisms are present everywhere in our environment. Keeping food clean and safe can also help to keep it fresher for longer and reduce waste.

Safe food handling practices

Guidelines on how to keep food clean and safe are detailed in the WHO manual: *Five Keys to Safer Food Manual*.²³ The five keys are:

²³ World Health Organization. 2006. *Five keys to safer food manual*. WHO, Geneva, Switzerland

i) Keep hands and utensils clean

ii) Separate raw and cooked foods

iii) Cook food thoroughly

iv) Keep food at a safe temperature

v) Use safe water and raw food materials

Foodborne illnesses

Foodborne illnesses are caused by eating foods contaminated by harmful microorganisms or chemicals. The common symptoms associated with food poisoning are not pleasant and can, if not treated properly, be fatal, especially in young children, pregnant women and the elderly. The symptoms include diarrhoea, vomiting, nausea and stomach cramps, depending on the cause of the illness. Symptoms may occur very quickly after eating the food, or may take days or even weeks to appear. Generally, symptoms occur within 24–72 hours after the food has been eaten. Ciguatera is a common type of foodborne illness in Pacific Island countries caused by ciguatera toxins in certain reef fish.²⁴ This toxin comes from certain algae that the fish eats and the fish may appear fresh and clean. Details on foodborne illnesses and symptoms can be found in *Five Keys to Safer Food Manual*²⁵

Harmful chemicals

Foodborne illnesses are also caused by eating food that has been contaminated with poisonous chemicals, such as heavy metals (e.g. lead and mercury), environmental pollutants, improperly used pesticides, agricultural and cleaning chemicals, and natural toxins (aflatoxins) produced by mould growing on various foods, particularly cereals, spices and nuts.

Minimising the risk of contaminating food with harmful chemicals includes proper use of pesticides and cleaning chemicals, and proper disposing of environmental pollutants. Foods that may have chemicals on the surface can be washed with clean water and peeled to reduce the risk of consuming the harmful chemicals. Appropriate storage conditions for high-risk raw foods can reduce the risk of formation of aflatoxins.

Population groups most at risk from consuming contaminated foods are young children and pregnant women. It is recommended that pregnant women in particular avoid eating certain kinds of fish (e.g. shark, swordfish, tuna and seafood) from polluted waters because of the high risk to the unborn baby from mercury poisoning.

Recommendations

The best way to keep yourself and your family healthy and to avoid food poisoning is to follow basic food safety guidelines as recommended by WHO.²⁶

Ways to prepare and keep food safe

- *Individual*
 - Always wash hands with soap and water before and after preparing foods.
 - Always wash and keep cooking utensils clean.
 - Always wash hands with soap and water after going to the toilet.
 - Always check the food labels for the expiry dates.

²⁴ Laurent, Dominique *et al.* 2005. *Ciguatera: field reference guide*. Secretariat of the Pacific Community (SPC), Noumea, New Caledonia.

²⁵ WHO *Five keys to safer food manual*, 29

- *Health care programmes*
 - Adopt and promote the use of these dietary guidelines.
 - Conduct food safety training for food handlers.
 - Promote the WHO food safety guidelines and practices.
 - Raise awareness on ciguatera poisoning.
 - Maintain registry of notifiable foodborne illnesses.
 - Strengthen capacity for surveillance of and response to foodborne diseases.
- *Communities*
 - Raise awareness of food safety practices.
 - Develop, implement and monitor healthy food policies in schools, churches and workplaces.
 - Develop food safety guidelines for food handlers.
 - Raise awareness among community people about risk areas for fishing.
- *Government*
 - Adopt and enforce food safety legislation.
 - Raise the awareness of the general public about food safety issues.
 - Work with the food industry to ensure compliance with food safety legislative requirements.
 - Maintain surveillance systems for testing the quality of coastal waters and detection of algal blooms.

5. Do at least 30 minutes of moderate-intensity activity (e.g. brisk walking) on five or more days each week

Research shows that being active on a daily basis is the best way to maintain and improve health.²⁶ Physical activity is defined as any movement made by the body, while exercise is defined as planned, structured and repetitive bodily movement done to improve or maintain fitness.²⁷ The *Pacific Physical Activity Guidelines for adults aged 18-65 years*²⁸ sets out the key recommendations for physical activity. They are applicable to all Tuvaluans.

1. If you are not physically active (not moving much), it is not too late to START NOW! Do regular physical activity and reduce sedentary activities.
2. Be active every day in as many ways as you can, your way.
3. Do at least 30 minutes of moderate-intensity physical activity on five or more days each week.
4. If you can, enjoy some regular vigorous-intensity activity for extra health and fitness benefits.

Given the low levels of physical activity among Pacific adults, the key objectives of the guidelines are to engage the generally healthy but sedentary population in some form of physical activity. The physical activity guidelines listed above are important for informing the public on the benefits of physical activity, together with the following concepts.

- **Frequency (how often)** – the number of times an exercise or activity is performed, generally expressed in sessions, episodes or bouts per week
- **Intensity (how hard a person works to do the activity)** – the rate at which the activity is being performed or the magnitude of effort required to perform an activity or exercise

²⁶ World Health Organization, 2008. *Pacific physical activity guidelines for adults; a framework for accelerating the communication of physical activity guidelines*. World Health Organization, Geneva

²⁷ Secretariat of the Pacific Community. 2010. *Promoting physical activity in Pacific Island countries: Workshop manual*. SPC, Noumea, New Caledonia.

²⁸ WHO. *Pacific physical activity guidelines for adults*, 33, p 6.

- **Time (duration, how long)** – the length of time which an activity or exercise is performed, generally expressed in minutes
- **Type of physical activity (what type)** – the mode of participation, e.g. aerobics (walking, running, swimming); muscle and bone strengthening (weight training, functional training, push-ups); and stretching.
- **Volume (how much in total)** – total volume of physical activity over a given period of time, e.g. 2.5 hours/week (30 minutes a day for five days a week)

Health benefits of physical activity

People who are active are generally healthier. Table 6 highlights some of the specific health effects of physical activity.

Table 6: Health condition and physical activity benefits²⁹

Health Condition	Effects of Physical Activity
Overweight or obesity	<ul style="list-style-type: none"> - ↑ Energy expenditure and burns stored fat - Helps control and manage body weight - Increases muscle mass - Increases mobility
Type 2 Diabetes	<ul style="list-style-type: none"> - ↓ blood glucose levels - ↓ central obesity - ↑ insulin sensitivity
Cardiovascular diseases	<ul style="list-style-type: none"> - Improves blood lipid profile: ↑ HDL (good cholesterol); ↓ LDL (bad cholesterol); ↓ total cholesterol; ↓ triglycerides - ↓ blood pressure
Osteoporosis	<ul style="list-style-type: none"> - ↑ bone mineral density (BMD) in youth - ↓ BMD loss with ageing - Improves muscle strength and posture
Mental health	<ul style="list-style-type: none"> - Reduces anxiety and depression - Improves appearance and self-esteem

Safety considerations

While there are many good reasons for people to be more physically active, there are some circumstances in which caution needs to be used to ensure safety for everyone concerned. Before starting a physical activity programme, individuals should take reasonable precautions to protect themselves from any problems or seek medical advice if needed. For additional details please refer to the physical activity workshop manual.³⁰

²⁹ Secretariat of the Pacific Community. 2010. *Promoting physical activity in Pacific Island countries: Workshop manual*. SPC, Noumea, New Caledonia

³⁰ SPC. *Promoting physical activity in Pacific Island countries: workshop manual*, 36, pg 20–22.

Physical activity recommendations

The average adult needs to do a minimum of 30 minutes of activity every day to reduce the risk of NCDs and maintain health. The *Pacific Physical Activity Guidelines*³¹ for adults recommends that **adults do at least 30 minutes (duration) of moderate-intensity (intensity) physical activity on five or more days each week (frequency)**. This can be built up throughout the day in multiple blocks of 10–15 minutes sessions, noting that accumulating more physical activity is better achieved by doing a variety of activities that suit the individual. These are the ideal levels, but any slight increase in a person's physical activity level can benefit their health, even if they do not reach these targets.

Increasing the duration of the moderate-intensity physical activity to 60–90 minutes may be required to lose weight.

Ways to increase physical activity

- *Individual*
 - Make a start and do some physical activity. Anything that makes your body move is good – walking, swimming, gardening, dancing or cleaning.
 - Build up the physical activity level gradually to at least 30 minutes. Greater health benefits can be obtained by engaging in physical activity of a vigorous intensity or more longer duration of moderate activity.
 - Meet friends for a walk instead of sitting in the house to talk.
 - Take time to play with family and friends.
- *Health care programmes*
 - Develop, implement and monitor physical activity guidelines.
 - Facilitate and coordinate physical activity programmes and competitions in the workplace.
 - Promote the benefits of physical activity.
- *Community*
 - Establish physical activity and wellness programmes.
 - Host regular sports events or fun games to encourage participation in physical activity.
 - Build and maintain walking tracks and other physical activity spaces.
- *Government*
 - Develop and endorse a national physical activity policy that creates supportive environments for physical activity.
 - Strengthen multi-sectoral partnerships, collaboration and coordination among key stakeholders for physical activity.

6. Drink plenty of safe, clean water every day

Water is essential to life. The human body is made up of between 50% and 70% water.³² Water helps to keep the body cool, remove waste, lubricate joints, digest food, prevent constipation and carry oxygen and nutrients to body cells.

Maintaining fluid balance

The amount of water in the body is carefully controlled, and maintaining this fluid balance is essential to life. The body takes in water from drinks and foods – especially vegetables and fruits, which contain varying amounts of water – and routinely loses it when we breathe, sweat, and pass urine and faeces. It is important to replace losses with water.

31 WHO. *Pacific physical activity guidelines for adults*, 33, pg 7.

32 Institute of Medicine of the National Academies, Panel on the Dietary Reference Intakes for Electrolytes and Water, Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board. 2005. *Dietary reference for intakes of water, potassium, sodium, chloride and sulfate*. The National Academies Press, Washington, D.C.

When the loss is not replaced regularly with food and beverages, dehydration (lack of water) can occur. Severe loss of water can also be caused by diarrhoea that lasts longer than five days, or vomiting that lasts more than 6–12 hours in babies and children, or more than 24 hours in adults. The first symptoms of dehydration are dizziness, confusion, feeling faint, muscle cramps and tiredness. If not treated, the situation worsens and death can result. It is best to seek medical attention sooner rather than later, as treating severe dehydration requires medical supervision.

Recommendation

To maintain a steady state of fluid balance, a daily intake of about 2.5 L (6-8 cups) of fluid from drinks and food is recommended to match losses in urine, faeces, sweat and breathing.³³ You will need more than this if you are sweating a lot because it is hot or you are being active – or if you have a fever. During intense activity, a person can lose up to 3 litres of water in an hour through sweating. It is very important to replace this as soon as possible, by drinking water during the activity and not waiting till it has finished.

Drinks include:

- **Water** – is the best drink to choose
- **Others** – fresh drinking coconut, milk, pure fruit and vegetable juice with no added sugar

Ways to encourage drinking water

- *Individual*
 - Make safe drinking water available; boil it first if necessary.
 - Avoid drinking too many high-sugar drinks.
- *Health care programmes*
 - Make safe drinking water available.
 - Promote 'drinking water only' policies.
 - Promote the use of these guidelines.
- *Community*
 - Promote 'drinking water only' in schools, work places and community events.
 - Develop, implement and monitor healthy food policies.
- *Government*
 - Ensure water and sanitation policies and legislation are enforced.
 - Ensure safe drinking water is available in homes, schools, communities and workplaces.

7. Do not smoke, use tobacco products or do drugs

Tobacco³⁴

There is no safe level of smoking – even breathing other people's cigarette smoke is harmful. Nicotine is a drug found naturally in tobacco and it is an addictive substance like cocaine, which, with regular intake over time, causes physical and emotional dependence. This makes it difficult for smokers to quit. It is important to understand how smoking affects the body physically and mentally so as to provide appropriate support to those who want to stop smoking.

33 Institute of Medicine of the National Academies. *Dietary reference for intakes of water, potassium, sodium, chloride and sulfate*, 39.

34 Secretariat of the Pacific Community (SPC). 2011. *Tobacco factsheet*. SPC, Noumea, New Caledonai

Drugs³⁵

Drug abuse includes any inappropriate use of pharmaceuticals (both prescription and over-the-counter drugs) and any use of illicit drugs such as cocaine, ice or marijuana. Like smoking, no amount of illicit drug is safe; they all contain chemicals that are harmful to the body, impede judgement and lead to harmful risk-taking behaviours. Preventing drug abuse improves the quality of life and health and reduces accidents.

Recommendations

Tobacco

The single most important thing smokers can do is to stop smoking. This will improve their health, as well as the health of those around them. Stopping smoking is not easy to do but it can be done with lots of help and support.

Drugs

To avoid harmful effects of inappropriate use of pharmaceuticals, it is important to follow the prescription advice from the health professional. There are no safe levels with illicit drugs, and stopping is the best advice.

Ways to stop smoking

- *Individual level*
 - If you are smoking, make the decision to stop and seek professional help and support from family and friends.
 - Choose a day to stop smoking and make a plan on how to stay focused on your reasons for stopping, as well as a plan to cope with the withdrawal symptoms.
 - Stopping smoking requires strong commitment over a long period of time.
 - If the attempt to stop smoking did not succeed the first time, do not give up, but try again and seek help.
- *Health care programmes*
 - Provide smoking cessation counselling and treatment options for people who want to quit smoking.
 - Raise awareness on the harmful effect of second-hand smoking.
- *Community*
 - Develop and implement anti-tobacco programmes in schools, workplaces and churches.
 - Raise awareness on the harms of tobacco products and the effects of second-hand smoke.
 - Support tobacco-free environments.
- *Government*
 - Adopt and enforce tobacco legislation in accordance with FCTC³⁶ agreements.
 - Increase taxes for tobacco and tobacco products.
 - Advocate and implement tobacco-free Pacific 2025 strategies.³⁷

Ways to prevent drug abuse

- *Individual*
 - Avoid the use of illicit drugs or misuse of prescription medication.
 - Seek help from family, friends and medical professionals.

35 US Department of Health and Human Services. 2014. *Surgeon General National Prevention Strategy: Preventing drug abuse and excessive alcohol use*. Access January 2017. <https://www.surgeongeneral.gov/priorities/prevention/strategy/preventing-drug-abuse-excessive-alcohol-use.html>

36 World Health Organization. 2005. Framework Convention on Tobacco Control (FCTC). WHO, Geneva, Switzerland

37 Tobacco Free Pacific 2025. <http://www.tfp2025.org/>

- *Health care programmes*
 - Develop guidelines and monitoring systems to identify, track, and prevent inappropriate patterns of prescribing and use of prescription drugs, including opioids for pain management.
 - Train prescribers on the use of prescription guidelines.
- *Community*
 - Raise awareness of the harmful effects of drug abuse.
- *Government*
 - Adopt and enforce legislation on illicit drugs.

8. Reduce consumption of alcohol, kava and home brew. If you drink, avoid heavy drinking

Alcohol³⁸

Drinking too much alcohol may increase the risk of health problems. If you do not drink, it is best not to start drinking.

Alcohol contains nearly the same amount of energy per gram as fat, at 7 kcal/1 g alcohol, but these are 'empty calories', as alcohol contains no essential nutrients. Regular consumption of alcohol will increase the amount of energy taken in, making weight loss difficult for those who need to lose weight.

There is general agreement that drinking too much alcohol at one time on a regular basis is not good. This can cause permanent liver damage over a period of time. Unfortunately, most alcohol use is in heavy drinking sessions, drinking more than the recommended standard amount of alcohol, especially among adult men. This also contributes to social problems, such as violence and accidents.

Recommendations

WHO does not currently define any safe level of alcohol intake. Many countries have produced recommendations for alcohol intake but they vary from country to country, reflecting the uncertainties among the scientific experts on the appropriate levels of consumption that would be consistent with healthy behaviours.

It is prudent, therefore, to consider these recommendations for the various population groups.³⁹

1. Children and young people (defined as persons who are 18 years and under)
 - *Not drinking alcohol is the safest option.*
2. Adults (defined as persons who are over 18 years old)
 - *Men should not consume more than two standard drinks per day.*
 - *Women should not have more than one standard drink per day.*
3. Pregnant and breastfeeding women
 - *Alcohol should not be consumed during pregnancy and breastfeeding.*

38 Secretariat of the Pacific Community (SPC). 2012. *Alcohol factsheet*. SPC, Noumea, New Caledonia

39 Australian Government, Department of Health. 2009. Australian guidelines to reduce health risk from drinking alcohol. Available on <http://www.alcohol.gov.au/internet/alcohol/publishing.nsf/Content/guidelines>

Standard drink

A standard drink is a unit of measure to define the amount of pure alcohol consumed and is a way of tracking the amount of alcohol people consume. One standard drink always contains 10 g of alcohol, regardless of container size or alcohol type (i.e. beer, wine, or spirits).

Examples of a standard drink:

- 1 glass beer (285 ml, 5% strength)
- 1 glass beer (375 ml, light, <5% strength)
- 1 small glass (100 ml) wine,
- 1 single measure of spirits, e.g. vodka, gin (30 ml)



Kava

Kava is a traditional drink in some Pacific countries, including Tuvalu, although the 2005 STEPS survey reported only 9.4% of the population having ever tried or drunk kava in their lifetime.

The active ingredients in the kava drink are fat-soluble compounds known as *kavalactones*, which have narcotic, hypnotic, anaesthetic, diuretic and muscle-relaxant effects.⁴⁰ The narcotic and muscle-relaxant effect produce mild sedation and calming.

The mild sedation effect causes sleepiness and lethargy, and kava drinkers are often known to have lazy days after drinking kava the night before. This can create social and economic problems due to regular absenteeism from work. It may also increase the risk of workplace-related injuries due to people turning up to work half-asleep or even falling asleep at work. Heavy use of kava, combined with alcohol, has been linked to malnutrition, liver disorders and elevated blood lipids.

Recommendations

There are currently no recommendations for kava. However, the general key health promotion messages need to focus on minimising the risks associated with the effects of kava drinking. One shell (half a coconut shell) of kava is the usual local unit of measure. Current kava legislation focuses on controlling the export and sale of kava, rather than on controlling consumption levels.

Home brew

Home brew refers to alcoholic beverages brewed at home for personal use. This is a common practice in the rural areas, where access to commercially produced alcoholic beverages is limited. In addition to the alcohol levels, the other key consideration is food safety, which can contribute to health problems.

Ways to reduce alcohol-related harm

- *Individual*
 - When drinking, avoid heavy drinking of alcoholic beverages and kava. Excessive drinking is dangerous.
 - Do not drive or operate machinery or go out fishing or swimming after drinking.

⁴⁰ Food Standards Australia New Zealand (FSANZ). 2004. Kava: A human health risk assessment. Technical Report Series No. 30. Access January 2017. <http://www.foodstandards.gov.au>.

- *Health care programmes*
 - Provide counselling for individuals who seek help.
- *Community*
 - Raise awareness on the harm of alcohol abuse, kava and home brew.
 - If serving or providing alcohol or kava at community functions, also serve and provide non-alcoholic drinks, such as water and coconut juice, as well as healthy food.
- *Government*
 - Increase alcohol taxes.
 - Develop, implement and monitor alcohol policies, legislation and regulations.

9. Feed babies with breastmilk and nothing else for the first six months of life. Start complementary feeds at about six months and continue breastfeeding until the baby is at least two years of age

This recommendation acknowledges the importance of taking the **life-course approach** in promoting good nutrition. It is important, given the high prevalence of NCDs among the adult population in the Pacific. Evidence now shows that a foundation of a person's lifelong health, including pre-disposition to obesity and certain chronic diseases, is largely set during the first 1,000 days of life.⁴¹

Malnutrition early in life can cause irreversible damage to children's brain development and their physical growth, leading to diminished capacity to learn, poorer performance in school, greater susceptibility to infections and diseases and a lifetime of lost earning potential. It can even put children at increased risk of developing illnesses, such as heart disease, diabetes and certain types of cancers later in life.⁴²

Exclusive breastfeeding means feeding baby with breastmilk and nothing else for the first six months of life. This is the recommendation set by WHO and UNICEF.⁴³ Breastfeeding provides many benefits for both baby and mother, including survival, health and development of the baby. Breastmilk is the best food for the baby.⁴⁴ It provides all the essential nutrients baby needs for the first six months of life. It contains growth factors, vitamins, proteins, and protective factors, including immunoglobulin, that protect against infections and diseases, such as diarrhoea, asthma, lung infections and eczema. For the breastfeeding mother, breastfeeding contributes to her health and wellbeing, including a reduction in the risk of breast and ovarian cancer. It helps her recover from childbirth, is a natural form of birth control, and is cheap and convenient.

In order to improve infant and young child health, WHO recommends that mothers first provide breast milk to their infants within one hour of birth. This ensures that the infant receives the first milk or colostrum which is rich in protective factors such as antibodies.

At around six months of age, an infant's nutritional requirements begin to exceed what is provided through breast milk alone. The introduction of nutritionally adequate, age-appropriate, and safe complementary foods is recommended at this stage to ensure infant's growth is not compromised. Continued breastfeeding after six months can provide protection to the child against many illnesses, and also provides closeness, comfort, and contact that are important for development.

After six months of age, breastfed infants require considerable amounts of essential nutrients from complementary foods. Complementary feeding typically covers the period from six to 24 months of age – a very vulnerable period. It is the time when malnutrition starts in many infants, contributing significantly to the high prevalence of malnutrition in children under five years of age worldwide.

41 The Lancet Breastfeeding Series papers. January 2016. www.thelancet.com/series/breastfeeding

42 Victora Cesar G. et.al. for the The Lancet Breastfeeding Series Group. 2016. Breastfeeding 1 – Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. Vol 387 (10017, 475–490). *The Lancet*.

43 World Health Organization. 2010. *Infant and young child feeding: fact sheet*. <http://www.who.int/mediacentre/factsheets/fs342/en/index.html>

44 The Lancet Breastfeeding Series, 50.

Guidance on infant and young child feeding emphasises the importance of ensuring that complementary foods are timely, adequate, safe and properly administered.

WHO has published a series of evidence-based principles on complementary feeding for both breastfed and non-breastfed children.⁴⁵ These include:

- Continue frequent, on-demand breastfeeding until two years old or beyond.
- Practise responsive feeding, i.e. feed infants directly and assist older children. Feed slowly and patiently, encourage them to eat but do not force them, talk to the child and maintain eye contact.
- Practise good hygiene and proper food handling. Prepare food with no added salt or sugar.
- Start at six months with small amounts of foods and increase gradually as the child gets older.
- Gradually increase food consistency and variety.
- Increase the number of times that the child is fed: two or three meals per day for infants 6–8 months of age, three or four meals per day for infants 9–23 months of age, and one or two additional snacks as required.
- Feed a variety of nutrient-rich foods, especially those rich in dietary iron and Vitamin A.
- Use fortified complementary foods or vitamin-mineral supplements, as needed.
- Increase fluid intake during illness, including more breastfeeding, and offer soft, favourite foods.

Recommendations

The recommendations by WHO and UNICEF⁴⁶ on exclusive breastfeeding are as follows.

- Initiate breastfeeding within the first hour after the birth.
- Breastfeed exclusively for the first six months.
- Continue breastfeeding for two years or more, together with safe, nutritionally adequate complementary feeding starting in the sixth month.

Ways to encourage breastfeeding

- *Mothers*
 - Relax and ensure you and baby are comfortable.
 - Talk to your family to give you space and time to breastfeed your baby.
- *Health care programmes*
 - Conduct training for staff on maternal nutrition and infant and young child feeding strategies.
 - Support implementation of the Baby Friendly Hospital Initiative (BFHI).
 - Promote World Breastfeeding Week, 1-7 August.

45 a) Pan American Health Organization (PAHO). 2003. Guiding principles for complementary feeding of the breastfed child. Available on http://www.who.int/maternal_child_adolescent/documents/a85622/en/

b) World Health Organization. 2005. Guiding principles for feeding non-breastfeeding children 6-24 months of age. WHO, Geneva, Switzerland. Available on http://www.who.int/maternal_child_adolescent/documents/9241593431/en/

c) World Health Organization. 2003. *Global Strategy for Infant and Young Child Feeding* (IYCF). WHO, Geneva, Switzerland.

46 WHO, *Global Strategy for Infant and Young Child Feeding* (IYCF), 54c

- Promote implementation of the first 1,000 days initiatives (2 ½ years).
- Allow mother time and space to breastfeed her baby.
- Support mothers who are not able to breastfeed their babies to ensure that a breastmilk alternative is prepared according to instructions in a safe environment.
- *Communities*
 - Support development and implementation of the BFHI.
 - Support promotion of breastfeeding awareness week.
 - Promote implementation of the first 1,000 days initiatives.
 - Encourage and facilitate mother and baby support groups in the community.
 - Conduct health promotion and education activities supporting mothers and babies.
- *Governments*
 - Support development of policies to establish BFHI in all health facilities.
 - Adopt and support implementation of the Global Strategy for Infant and Young Child Feeding.
 - Develop and adopt legislation that supports breastfeeding in workplaces, including advocating for longer maternity leave to support mothers to exclusively breastfeed their babies.
 - Adopt and enforce legislation on the code for marketing of breast milk substitutes.

10. Relaxing and being part of a community are good for your health. Make sure you enjoy time with family and friends

People who are stressed and do not relax are at greater risk of lifestyle diseases, particularly stroke, high blood pressure and heart disease.⁴⁷ It is important to identify and avoid stressful situations.

Causes of stress

Stress has many possible causes, and they are different for every individual. One situation may make one person stressed but have no effect on someone else. Some common stressors include:

- environmental problems such as extreme weather;
- work, in particular for workaholics;
- major life events, such as the death of a relative, a lost job, loss of financial support or income, a promotion or a new baby; and
- others, e.g. self-criticism, missing bus, other people's behaviour toward you.

Much stress is related to our reaction to an issue or problem and our inability to cope with it. People react differently to stressful situations. Some people tend to overeat when stressed, while others do not eat. Either extreme poses a threat to nutritional status and wellbeing.

Recommendations

Take time to relax and enjoy time with friends and family.

⁴⁷ WHO. *Pacific physical activity guidelines for adults*, 33

Ways to enjoy time with family and friends

- *Individuals*
 - If you work, avoid taking your work home.
 - Take time out to relax and enjoy life.
 - Go for a walk, listen to music on the radio, and talk with friends.
 - Enjoy a family meal at the table, turn off the TV.
 - If you are worried about something, talk to a trusted friend or seek professional help.
 - Do some physical activity; it is a great way to relieve stress.
- *Health care programmes*
 - Develop stress management guidelines and provide stress management counselling for employees and employers.
- *Communities*
 - Support development of wellness programmes in the community and work places.
- *Governments*
 - Develop and adopt occupational health policies.

PART 3

Monitoring and evaluating the dissemination and communication of the guidelines

The main purpose of the guidelines is to communicate appropriate dietary and lifestyle behaviours to the public to promote and maintain overall health. However, it is not easy to assess behaviour changes linked to the implementation of the guidelines. Any changes in targeted behaviour promoted through the guidelines, such as increasing the consumption of vegetables and fruits or reducing the consumption of fat or sugar or salt, should be monitored, using existing mechanisms and tools, such as STEPS and the Global School-Based Student Health Survey (GSSHS).

Therefore, the monitoring and evaluation will focus on the dissemination and communication of the guidelines and, in line with good practice, the use of the guidelines must be reviewed every five years.

To increase awareness, acceptance and usage of the guidelines, they must be effectively disseminated and communicated to all stakeholders. The framework for the regional and national dissemination of guidelines developed for the *Pacific Physical Activity Guidelines*⁴⁸ will be adapted as a model for disseminating and evaluating the revised *Pacific guidelines for healthy living*. The template provided below can be adapted to suit different country contexts.

Phases for dissemination and communication



Table 7: Monitoring framework for dissemination and communication of the *Tuvalu guidelines for a healthy diet and lifestyle*

Expected outcomes	Activities	Indicators
Phase 1: Advocating for endorsement of the guidelines at national level		
<i>Tuvalu Guideline for a Healthy Diet and Lifestyle</i> endorsed at national level	<ul style="list-style-type: none"> Identify and present the guidelines at the relevant national meetings 	<ul style="list-style-type: none"> Number of national meetings where the guidelines were presented
Phase 2: Disseminating the endorsed guidelines to stakeholders, and raising awareness		
<ul style="list-style-type: none"> Increased awareness of the guidelines among all relevant stakeholders Guidelines in place for implementation 	<ul style="list-style-type: none"> Distribute the guidelines to all relevant stakeholders and partners Conduct awareness campaigns or workshops for relevant stakeholders 	<ul style="list-style-type: none"> Number of guidelines distributed Number of awareness campaigns or workshops for relevant stakeholders conducted Percentage of health and non-health agencies that are aware of the guidelines
Phase 3: Using the guidelines		
<ul style="list-style-type: none"> Guidelines included in the national primary care plans, NCD plans and other relevant health and nutrition programmes 	<ul style="list-style-type: none"> Incorporate the guidelines into national primary care plans, NCD plans and other relevant health and nutrition programmes 	<ul style="list-style-type: none"> Number of health facilities that incorporate the guidelines into primary care plans and programmes
<ul style="list-style-type: none"> Improved knowledge on how to use the guidelines among relevant stakeholders 	<ul style="list-style-type: none"> Conduct training workshops to train relevant stakeholders on how to use the guidelines 	<ul style="list-style-type: none"> Number of training workshops conducted targeting relevant stakeholders
Phase 4: Communicating guideline messages to the general public		
<ul style="list-style-type: none"> Increased level of media awareness of key guideline messages Increased proportion of the population receiving advice/counselling on healthy diet and lifestyle behaviours Improved awareness and knowledge on healthy diet and lifestyle behaviour among the general public 	<ul style="list-style-type: none"> Develop and implement mass media campaigns promoting key guideline messages Publish articles and news about the guidelines in relevant journals or media, targeting the general public in countries Conduct counselling sessions on healthy diet and lifestyle behaviours 	<ul style="list-style-type: none"> Number of national campaigns implemented Number of media outlets publishing and promoting key messages Percentage of the population reached with key messages Percentage of the population aware of the healthy diet and lifestyle recommendations and/or improved knowledge

Guiding principles for effective dissemination of guidelines at national level

The following guiding principles serve as a checklist for effective dissemination of the guidelines at the national level, once the guidelines are accepted and endorsed.

Enlist local or national opinion leaders, health ministers or well-known individuals or celebrities to help publicise the guidelines and healthy diet and lifestyle messages to the community. This will enhance the national adoption process, local ownership and relevance of the guidelines.

- Relevant government sectors, and non-governmental, donor, and development agencies should collaborate and work in partnerships to develop strategies to disseminate the guidelines to relevant and interested professionals and groups.
- Multisectoral coalitions should facilitate nationwide dissemination of guidelines through education and training activities

ANNEX 1 – Development of the guidelines

The Pacific guidelines that were developed by SPC in 2000 in close collaboration with member countries were based on recommendations developed by WHO/FAO.⁴⁹

To communicate the key messages, a set of four posters, factsheets and a training manual were developed and released in 2002. Training was conducted for country nutritionists on how to communicate the key messages. Most countries adapted and translated these regional guidelines into their own languages to suit their specific national context.

Between 2002, when the guidelines were released and disseminated, and 2016, no review of the effectiveness of their use was undertaken, due to limited capacity at both regional and national levels. Countries were, however, encouraged to undertake monitoring and evaluation on the use of the guidelines to ensure that the guidelines and supporting resources were suitable for their country situation.

The NCD Roadmap released in 2014 identified ‘Promote public awareness about diet’ as one of the ‘best buy’ interventions for addressing the consequences of unhealthy diets. Reduction of salt consumption and a focus on the types of dietary fats to be avoided were also identified.⁵⁰ In 2015, the participants at a workshop on the double burden of malnutrition identified the need to review the Pacific guidelines and requested SPC to lead the review process.⁵¹

In 2016, SPC initiated the process to review the guidelines. To progress the review, SPC convened a workshop in January 2017 with a group of Pacific nutrition experts to discuss the results of the review process and to look at improving how the guidelines can be used to promote healthy eating and lifestyle behaviours in the Pacific region.⁵² A summary of the review and key recommendations from the workshop are in the workshop report.⁵³ This handbook is the result of the review.

1. Nutrient goals

There are no specific Pacific nutrient recommendations, so the international nutrient goals are used as a guide. These population nutrient goals have been developed to cover population average intakes that are considered to be consistent with maintaining health, and they allow margins for population variations.⁵⁴ These nutrient goals are not appropriate for children aged two years and under, as their dietary energy and nutrient requirements are different.⁵⁵ Separate guidelines for infants and young children need to be developed.

To localise the international nutrient goals, a guide was developed specifically for the Pacific, based on the local eating patterns collected from sample diets of adults and the types of foods available in the region.⁵⁶ Emphasis was placed on promoting the consumption of local foods. Guidelines 1-3 of the *Pacific guidelines for healthy living* translate these nutrient goals into whole foods with recommendations of the kinds of foods to eat each day to maintain health.

49 World Health Organization. 1999. *Development of food-based dietary guidelines for the Western Pacific regions*. World Health Organization, Regional Office for the Western Pacific, Manila, Philippines.

50 World Bank. 2014. *NCD Roadmap Report: a background document on preventing and controlling NCDs in the Pacific*. Prepared for the Joint Forum Economic and Pacific Health Ministers’ Meeting, July 2014.

51 Pacific Countries’ Meeting on the Action Plan on the Double Burden of Malnutrition (2015–2020), 23–24 April 2015, Tanoa International Hotel, Nadi, Fiji.

52 The Pacific Community (SPC). 2017. *Pacific food-based dietary guidelines review workshop – workshop report*. SPC, Noumea, New Caledonia

53 SPC. *Pacific food-based dietary guidelines review workshop – workshop report*, 10

54 Joint WHO/FAO Expert Consultation on Diet Nutrition and the Prevention of Chronic Diseases (2002: Geneva, Switzerland). *Diet, nutrition and the prevention of chronic diseases: Report of a joint WHO/FAO expert consultation, Geneva. 28 January – 1 February 2002*. WHO Technical Report Series No. 916.

55 *Preparation and use of food-based dietary guidelines: report of a joint FAO/WHO consultation*. WHO, Geneva, Switzerland. WHO Technical Report Series 880.

56 Secretariat of the Pacific Community (SPC). 2002. *Background for four posters – a detailed manual for local trainers*. SPC, Noumea, New Caledonia

2. Food groups

Foods were categorised into the three main food groups.

- **Energy foods** – foods that are rich in energy, e.g. **starchy staples** such as yams, taro, cassava, sweet potato, breadfruit and **whole grains and cereals**, such as rice and bread
- **Protective foods** – all fruits and vegetables, rich in vitamins, minerals and fibre
- **Body-building foods** – foods that are rich in protein, iron, essential fatty acids and other minerals, such as fish, lean meat, chicken, eggs, nuts, dried beans, milk and milk products

The three-food-group concept has been widely used for nutrition education in the Pacific and forms the cornerstone of all the advice and information about healthy eating in most Pacific countries.⁵⁷ These three food groups are retained in these revised guidelines.

Most foods in the Pacific Island countries can be put into one of these three food groups. Since most foods contain a mixture of nutrients, they are put into a group based on the nutrient that is the most dominant. For example, eggs contain protein, vitamins and minerals and also some fat. Their nutritional content is similar to that of meat and other members of the body-building group, so they are included in the body-building group.

3. Food group proportions

The relative proportions of food from these three food groups were determined, based on the average amount each food group contributed to the total daily diet for adequate nutrition and good health. As the SPC 2000 guidelines were developed for the Pacific region, the food group proportions were based on typical diets in Pacific countries. This allowed for variations in the types of foods consumed across the region. These proportions are retained in these revised guidelines and listed here.⁵⁸

- **Energy foods:** *should make up half (50%) of all the food you eat each day*
- **Protective foods:** *should make up one third (35%) of all the food you eat each day*
- **Body-Building foods:** *should make up one sixth (15%) of all the food you eat each day*

Adjustments were made to ensure nutritional adequacy of the diet, while maintaining the emphasis on locally available foods in typically consumed portions. As the emphasis is on the consumption of healthy, locally grown foods, sugary and fatty foods and drinks were not included in the calculations of the food group proportions. Foods in the body-building group, such as fish, lean meat, eggs, nuts and milk products, are rich in fats as well as protein and other minerals, so there was no need for additional fat in the diet.

These proportions assume that the appropriate amount of dietary energy is consumed to maintain a healthy weight. Given the high prevalence of overweight and obesity in the Pacific, it is important to consider the actual amounts of foods and types of foods from each food group. ***The total amount and type of food eaten will vary – but the proportions should remain the same.***

The suggested number of servings is included as a guide only and should be used with caution, as these are based on average population intakes, making them relatively imprecise for use with individuals. It is the overall proportion of the food groups and their contribution to the overall diet that is important; the total amount will vary with each person.

⁵⁷ SPC. *Background materials for four posters*, 65.

4. Energy requirements

Dietary energy needs are influenced by a number of factors, including age, life stage (whether pregnant or breastfeeding), gender, height, weight, body size, level of physical activity and status of health. The population nutrient goals recommended by WHO focus on the overall energy requirements for health, so the nutrient requirements – particularly the energy-supplying nutrients (carbohydrate, fat and protein) – are expressed as a percentage of their contribution to total dietary energy. The assumption is that, if a diet meets the energy requirement of an individual, it will also satisfy the requirements for all essential nutrients.

5. Additional nutrients

Fortified foods may be useful sources of one or more nutrients, such as iron and iodine, that otherwise might be consumed in less than recommended amounts. Dietary supplements, such as folate and iron for adult women of child-bearing age, may also be useful when they fill a specific identified nutrient gap that cannot or is not otherwise being met by the individual's food intake. Nutrient supplements cannot replace a healthy diet. They are costly and regular use may not be sustainable in the long term. People who are already consuming the recommended amounts of a nutrient in their food will not achieve any additional health benefit if they also take the same nutrient as a supplement. In some cases, intake of supplements and fortified foods may exceed the safe levels of nutrients. However, given the high prevalence of dietary iron, iodine and Vitamin A deficiencies in some Pacific countries,⁵⁸ fortification and supplementation programmes, in conjunction with deworming programmes, are important considerations to make in the policy and plan of action for nutrition. There may be other country-specific deficiencies that need further investigation and consideration.

Table 1 Ranges of population nutrient goals

Ranges of population nutrient intake goals	
Dietary factor	Goal (% of total energy, unless otherwise stated)
Total fat	15–30%
Saturated fatty acids	<10%
Polyunsaturated fatty acids (PUFAs)	6–10%
n-6 Polyunsaturated fatty acids (PUFAs)	5–8%
n-3 Polyunsaturated fatty acids (PUFAs)	1–2%
Trans fatty acids	<1%
Monounsaturated fatty acids (MUFAs)	By difference ^a
Total carbohydrate	55–75% ^b
Free sugars ^c	<10%
Protein	10–15% ^d
Cholesterol	<300 mg per day
Sodium chloride (sodium) ^e	<5 g per day (<2 g per day)
Fruits and vegetables	≥400 g per day
Total dietary fibre	From foods ^f
Non-starch polysaccharides (NSP)	From foods ^f

^a This is calculated as: total fat – (saturated fatty acids + polyunsaturated fatty acids + trans fatty acids).

^b The percentage of total energy available after taking into account that consumed as protein and fat, hence the wide range.

^c The term "free sugars" refers to all monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and fruit juices.

^d The suggested range should be seen in the light of the Joint WHO/FAO/UNU Expert Consultation on Protein and Amino Acid Requirements in Human Nutrition, held in Geneva from 9 to 16 April 2002 (2).

^e Salt should be iodized appropriately (6). The need to adjust salt iodization, depending on observed sodium intake and surveillance of iodine status of the population, should be recognized.

^f See page 58, under "Non-starch polysaccharides".

Source: WHO Technical Report Series 916, pg66

58 Report prepared for FAO (2014) on *Nutrition in the Pacific Island countries and territories – a review of developments since the 1st International Conference on Nutrition (ICN1) and strategic considerations for the future*, 6.

ANNEX 2 – Dietary assessment instruments

To be able to advise or educate people about their diets, it is important to be aware of ways of assessing the health risks of inadequate nutrition.

Assessing nutrition adequacy of diets of individuals

When advising individuals about their diet, it is important to know what they are currently eating, so that the advice is relevant and appropriate. There are different methods of assessing what individuals are eating.⁵⁹ These include:

- dietary records;
- 24-hour recall;
- diet history;
- food frequency questionnaire; and
- brief dietary assessment instruments.

The methods most commonly used are the dietary records and the 24-hour recall.

⁵⁹ Secretariat of the Pacific Community. 2012. *Healthy Living – Healthy Life: working together to prevent and manage NCDs in Pacific Island countries and territories. Introductory Training Programme: Facilitator's Manual*. SPC, Noumea, New Caledonia

Example of 24-hour recall tool

Name: _____

Date: _____

Pregnant (if female of childbearing age)	YES	NO
Breastfeeding	YES	NO
Taking nutritional supplements	YES	NO

Portion abbreviations:

Cup = c	Tablespoon = Tbsp	Teaspoon = tsp	Slice = sl
Grams = gm			

What did you eat and drink in the last 24 hours?

Food and Beverages Eaten	Amount Eaten	Meal type (breakfast, morning or afternoon tea, lunch, dinner or supper)

There are limitations associated with all of these instruments.

Instrument	Description	Advantages	Disadvantages
Food record – weighed	<p>Respondent records all food and beverages and amounts consumed over 1+ days</p> <p>Everything must be weighed and recorded before eating</p>	<ul style="list-style-type: none"> • Intake quantified • Could enhance self-monitoring or weight control or other behaviour change 	<ul style="list-style-type: none"> • High investigator cost • High respondent burden • Extensive respondent training and motivation required • Many days needed to capture individual's usual intake • Affects eating behaviour • Intake often under-reported • Reports of intake decrease with time • Attrition increases with number of daily records requested • May lead to non-representative sample and subsequent non-responsive bias
24-hour dietary recall	Respondent is asked to remember and report all food and beverages consumed in the preceding 24 hours or preceding day	<ul style="list-style-type: none"> • Intake quantified • Appropriate for most populations, thus less potential for non-responsive bias • Relatively low respondent burden • Does not affect eating behaviour 	<ul style="list-style-type: none"> • High investigator cost • Many days needed to capture individual's usual intake • Intake often under-reported
Food frequency questionnaire (FFQ)	Asks respondents to report their usual frequency of consumption of each food from a list of foods for a specific period of time	<ul style="list-style-type: none"> • Usual individual intake asked • Information on total diet obtained • Low investigator cost • Does not affect eating behaviour 	<ul style="list-style-type: none"> • Not quantifiably precise • Difficult cognitive task for respondent • Intake often misreported
Brief dietary instrument	Instrument target a specific dietary component such as fat or sugar consumption	<ul style="list-style-type: none"> • Usual individual intake often asked • Information on total diet obtained • Low investigator cost • Low respondent burden • Does not affect eating behaviour 	<ul style="list-style-type: none"> • Not quantifiably precise • Difficult cognitive task for respondent • Assessment limited to small number of nutrients/foods • Intake often misreported

Instrument	Description	Advantages	Disadvantages
Diet history	Respondent is asked to keep detailed record of usual food and beverages with many details about the characteristics of the foods and beverages consumed	<ul style="list-style-type: none"> • Usual individual intake asked • Information on total diet obtained • Information often available on food consumed, by meal • Can have low investigator cost • Does not affect eating behaviour 	<ul style="list-style-type: none"> • Not quantifiably precise • Difficult cognitive task for respondent • Intake often misreported • Can have high investigator burden

Assessing the nutritional adequacy of diets at community or population level

By assessing food availability or food consumption at the population level and comparing it to the food guidelines, we can develop positions about overall adequacy of the food supply in terms of variety, quantity and quality of available food. This is important for national planning and national food security, to ensure that people have access to enough nutritious and safe foods to meet their dietary needs.

There are many ways of gathering information on country and community food use. Some examples are given below.

- A review of national food balance sheets on food imports and exports
- A review of food diaries in household income and expenditure surveys (HIES)
- A review of agriculture survey reports for local food production
- A study of food availability in local shops and markets

There are limitations inherent in the various sources of data, so inaccuracies are inevitable. They are caused, for example, by inaccurate data collection, food wastage, and uneven food distribution within communities and households.

When assessing the overall nutritional adequacy of diets at different levels, the following must be considered.

- **Variety** – is there enough variety within and across the food groups?
- **Food groups** – does the diet include a good mix of the different food groups in the recommended proportions?
- **Protective foods** – Are they included in each meal? Are there enough protective foods available or locally grown? Are there barriers to people eating more vegetables and fruits?
- **Amounts** – What are the consumption patterns and portion sizes like? It can be difficult to obtain accurate information on the actual amounts of foods consumed, as people tend to underestimate their food intake. Even without information on portion sizes, however, it is still possible to make some general assessment of the adequacy of the diet, following the guideline. Are the nutritional needs of every family member in the household being met? At the national level, is there enough nutritious food available to feed the population during peace time as well as during times of emergency?
- **Weight** – if the person is overweight and gaining weight, this could be due to a lack of exercise or overeating (or both). Consider asking questions about the level of physical activity.

The nutritional quality of a menu (e.g. in a school or hospital cafeteria) can also be assessed by looking at menu choices, portion sizes and where the food is coming from – locally grown or imported. Advice can be given to ensure a menu is consistent with the guidelines.



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