The cedar food guide at the beginning of this manual provides a graphic illustration of the food groups and the recommended intakes from each for Lebanese adults, to ensure a varied and balanced diet providing 2,000 calories (equivalents of a serving of each of the five food groups are relayed in Table 3.1 page 16). It also provides a graphic illustration of the recommendations on safe water consumption and engagement in physical activity for improving general health. The recommended intakes from each of the five food groups and the serving equivalents for each group are adapted from recommendations of the United States Department of Agriculture (USDA MyPlate, 2011).
The Food-Based Dietary Guideline Manual for Promoting Healthy Eating in the Lebanese Adult Population

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This manual has been developed by the Faculty of Agricultural and Food Sciences of the American University of Beirut in collaboration with the Lebanese National Council for Scientific Research (CNRS). This manual has been adopted by the Ministry of Public Health for its dissemination to policy makers, health-care providers, nutritionists, and dietitians in Lebanon. Scientific and official institutions look upon this manual as a vital foundation for supporting the national nutrition strategy in Lebanon.

The guidelines presented in this manual aim at promoting general health, improving dietary behavior, and reducing the risk of chronic noncommunicable diseases among Lebanese adults. These guidelines are based on simple and easily achievable recommendations based on locally available and affordable foods, for the promotion of healthy eating and lifestyle practices. These guidelines can be adopted in various settings, such as in hospitals, private clinics, homes, and universities, as well as in health-related businesses.

The established recommendations are based on sound scientific evidence relating dietary and physical activity practices with health outcomes. A thorough review of common chronic diseases in the country highlighted the prevalence of overweight and obesity, cardiovascular and metabolic diseases, and micronutrient deficiency-related disorders among the Lebanese adult population. Poor diet and physical activity practices are important factors implicated in the increase in overweight and obesity in Lebanon, as well as in the emergence of chronic diseases in the country, including cardiovascular disease, hypertension, dyslipidemia, type 2 diabetes, the metabolic syndrome and certain types of cancer. Moreover, inadequate food intake is also implicated in the development of several micronutrient deficiency-related diseases such as anemia and osteoporosis. The developed Lebanese food-based dietary guidelines have been, therefore, tailored to the food consumption patterns of the Lebanese adult population and the prevalent chronic diseases in the country.

The food-based dietary guidelines presented in this manual are not listed in the order of importance. They are integrated recommendations necessitating their implementation as a whole, while being used in combination with one another for the planning of an overall healthy diet.

We hope this manual is able to meet its goal of improving the health of the Lebanese adult population, through guidance towards healthy eating behaviors aimed at preventing the development of chronic noncommunicable diseases.

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The 14 Food-Based Dietary Guidelines for Lebanese Adults
Enjoy and Maintain a Healthy Body Weight

The aim of this guideline is to achieve and maintain a healthy body weight, at which overall health is improved, while stressing the importance of preventing unhealthy weight gain.

Being overweight or obese predisposes an individual to chronic diseases (such as cardiovascular disease, hypertension, type II diabetes, and some types of cancer especially breast, ovarian, prostate, colon, liver, pancreatic, gallbladder and kidney cancers), while being underweight increases one’s risk of nutrient deficiencies, anemias, bone loss, and early mortality. Individuals who are overweight or obese should aim for decreasing their body weight, while individuals who are underweight should aim for increasing their body weight for improved overall health.

In Lebanon, overweight and obesity prevalence among adults is estimated at 36.8% and 28.2%, respectively. Obesity is likely to increase in the country, as a trend analysis of two national studies (1997 and 2009) showed a considerable increase in adult obesity prevalence rates by 62%. An emergence of chronic diseases, including diabetes and cardiovascular disease, has paralleled the increasing prevalence of overweight and obesity in the country. Food consumption and lifestyle studies point to an increase in energy consumption, combined with a low physical activity pattern in the Lebanese adult population. Faulty dietary habits identified as possible underlying factors include a high intake of fat (especially saturated fat) and sugar, and a suboptimal intake of fruit, vegetables, whole-grain cereals, and legumes. Presented below are weight management recommendations for individuals who are overweight and obese (Box 1.1) and for individuals who are underweight (Box 1.2). Also presented are important recommendations on weight maintenance for special population groups (Box 1.3).
### Weight Management Recommendations for Overweight and Obese Individuals

- Aim for a healthy body weight with a normal Body Mass Index (BMI) (refer to Table 1.1).
- Aim for a slow and steady weight loss (around half a kilogram per week) by decreasing total energy intake while ensuring an adequate intake of nutrients, and by increasing physical activity.
- Balance calories from foods and beverages with energy expended through physical activity (refer to Table 1.2).
- Pay attention to food portion sizes, as decreasing portion size is one of the most efficient strategies for weight loss.
- Limit the consumption of energy-dense foods, such as Arabic sweets, pastries, and fried foods.
- Limit the consumption of sugar-sweetened beverages such as sweetened fruit juices and soft drinks. Opt for fresh fruit juices or non-caloric soft drinks instead.
- Increase the consumption of nutrient-dense and fiber-rich foods (such as fruit, vegetables, whole-grains, and legumes).

### Weight Management Recommendations for Underweight Individuals

- Aim for a healthy body weight with a normal Body Mass Index (BMI) (refer to Table 1.1).
- Balance calories from foods and beverages with energy expended through physical activity (refer to Table 1.2).
- Eat small and frequent meals throughout the day.
- Consume adequate amounts of food from the different food groups (fruit, vegetables, cereals, legumes, milk and dairy, and meats).
- Add calories to your day by:
  - Drinking healthy beverages with a good amount of calories (such as whole milk and fresh fruit juices), in between meals.
  - Munching on nutritious snacks such as fresh or dried fruit, unsalted raw nuts, cereal bars, or yogurt and jam.
### Table 1.1

<table>
<thead>
<tr>
<th>BMI (kg/m²)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 18.5</td>
<td>Underweight</td>
</tr>
<tr>
<td>18.5 - 24.9</td>
<td>Normal</td>
</tr>
<tr>
<td>25 - 29.9</td>
<td>Overweight</td>
</tr>
<tr>
<td>≥ 30</td>
<td>Obese</td>
</tr>
</tbody>
</table>

*The BMI is an indicator of whether your weight is adequate for your height. To calculate your BMI, divide your weight in kilograms (kg) by your height in meters (m²) squared

Note: ≥ : equal to or greater than; < : less than

### Table 1.2

<table>
<thead>
<tr>
<th>Age Range (years)</th>
<th>Energy Range (calories) for Males</th>
<th>Energy Range (calories) for Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 - 20</td>
<td>2,600 - 3,000</td>
<td>2,000 - 2,400</td>
</tr>
<tr>
<td>21 - 25</td>
<td>2,400 - 3,000</td>
<td>2,000 - 2,400</td>
</tr>
<tr>
<td>26 - 30</td>
<td>2,400 - 3,000</td>
<td>1,800 - 2,400</td>
</tr>
<tr>
<td>31 - 35</td>
<td>2,400 - 3,000</td>
<td>1,800 - 2,200</td>
</tr>
<tr>
<td>36 - 40</td>
<td>2,400 - 2,800</td>
<td>1,800 - 2,200</td>
</tr>
<tr>
<td>41 - 45</td>
<td>2,200 - 2,800</td>
<td>1,800 - 2,200</td>
</tr>
<tr>
<td>46 - 50</td>
<td>2,200 - 2,800</td>
<td>1,800 - 2,200</td>
</tr>
<tr>
<td>51 - 55</td>
<td>2,200 - 2,800</td>
<td>1,600 - 2,200</td>
</tr>
<tr>
<td>56 - 60</td>
<td>2,200 - 2,600</td>
<td>1,600 - 2,200</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>2,000 - 2,600</td>
<td>1,600 - 2,000</td>
</tr>
</tbody>
</table>

*The lower end of the energy range corresponds to sedentary individuals while the upper range corresponds to active individuals

Note: > : greater than
**PREGNANT WOMEN**

A woman’s weight at the start of pregnancy is one of the most important modifiers of weight gain during pregnancy and its impact on the health of the mother and her baby. The Institute of Medicine (IOM) in the United States has published new recommendations for total and rate of weight gain during pregnancy, based on prepregnancy BMI values (refer to Table 1.3). To ensure proper maternal and child health outcomes, women are advised to be within a normal BMI range at the time they conceive, and to gain weight within the recommended weight ranges shown in Table 1.3.

<table>
<thead>
<tr>
<th>Prepregnancy BMI (kg/m²)*</th>
<th>Rates of Weight Gain in 2nd and 3rd Trimesters** (mean range in kg/wk)</th>
<th>Total Weight Gain Range (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight: &lt; 18.5</td>
<td>0.45 (0.45 - 0.59)</td>
<td>12.7 - 18.2</td>
</tr>
<tr>
<td>Normal Weight: 18.5 - 24.9</td>
<td>0.45 (0.36 - 0.45)</td>
<td>11.4 - 15.9</td>
</tr>
<tr>
<td>Overweight: 25 - 29.9</td>
<td>0.27 (0.23 - 0.32)</td>
<td>6.8 - 11.4</td>
</tr>
<tr>
<td>Obese ≥ 30</td>
<td>0.23 (0.18 - 0.27)</td>
<td>5 - 9</td>
</tr>
</tbody>
</table>

* BMI classified according to the WHO criteria (refer to Table 1.1)
** Calculations assume a 0.5 – 2 kg weight gain in the first trimester

**Note:** ≥ : equal to or greater than; < : less than
Be Physically Active Every Day

The aim of this guideline is to encourage regular physical activity, as a protective means against overweight, obesity and major chronic diseases.

Physical activity is essential for maintaining a healthy body weight and for prevention of chronic diseases (such as cardiovascular disease, type II diabetes, and certain types of cancer). Regular physical activity helps increase HDL-cholesterol (the good cholesterol), decrease triglycerides, reduce the need for insulin among diabetics, increase one’s metabolism, and burn fat. Regular physical activity also improves blood circulation and breathing, strengthens bones, muscles and joints, and helps relieve tension and stress. Physical activity can include leisure, occupational, and household activities divided throughout the day with added health benefits. Weight-bearing exercise is also important, as it can increase bone mineral density and muscle strength, helping therefore decrease the risk of osteoporosis and bone fractures. The type of exercise must, however, be tailored to an individual’s needs and physical abilities.

In Lebanon, almost 67.8% of the adult Lebanese population is physically inactive, with men tending to be less physically active than women. Also, overweight, obesity, chronic diseases, and osteoporosis are a serious public health concern in Lebanon; stressing the importance of regular physical activity along with adopting healthy eating habits. Presented below are key recommendations for physical activity (Box 2.1) and tips on how to be active (Box 2.2)
**Key Recommendations for Physical Activity**

- Get moving and be physically active every day
- Reduce the time spent being physically inactive (such as watching TV, playing video games, or sitting at the computer)
- For weight maintenance, engage in at least 30 minutes of moderate-intensity physical activity 5 days a week, such as brisk walking, cycling, weight-lifting, or dancing. The 30 minutes of exercise need not be continuous and can be achieved through one or a combination of activities throughout the day
- For weight loss, engage in moderate-intensity exercises for greater than 30 minutes on most days of the week
- For women above 50 years old, men above 40 years old, pregnant women, and individuals with a history of chronic disease, consult a healthcare provider before starting an exercise regimen

**How to be Active**

- Walk to your destination if possible instead of driving your car or taking a cab, and walk briskly
- Get off a bus/taxi before your final destination
- Take the stairs wherever you are
- Actively play with children
- Take up a new sport
- Go for a brisk walk 10 minutes before lunch or after dinner
Eat a Variety of Nutritious Foods Every Day for a Balanced Diet

The aim of this guideline is to encourage the consumption of a variety of food items every day, to ensure the diet provides adequate amounts of essential macronutrients and micronutrients.

Diversifying one's food ensures appropriate intakes of macronutrients (carbohydrates, protein and fat) and micronutrients (vitamins and minerals). Varying one's food should be interpreted as promoting the consumption of nutrient-dense food items that are rich in vitamins, minerals, phytochemicals, and fiber, rather than unhealthy empty calories. It is thus important to promote the consumption of nutritious food items such as whole-grains, legumes, fruit, vegetables, fatty fish, and low-fat milk and dairy products, while emphasizing the reduction in intake of refined grains, total and solid fats, sweets, and empty calories. Consuming food in moderation by reducing serving sizes is a key point to keep in mind when varying one's diet.

In Lebanon, there is limited data on dietary diversification. However, given the considerable progress in food production and processing in the Mediterranean region, there is no doubt that there is access to a constantly increasing variety of fresh and processed foods that are now conveniently obtainable on a daily basis. Nevertheless, food consumption data in the country point towards a decreased consumption of several food groups and nutrients, which may explain the observed micronutrient deficiencies in the country. Inadequate intake of fruit, vegetables, fish, and whole-grain cereals has been witnessed in the Lebanese adult population, as well as inadequate dietary intakes of several vitamins and minerals, namely calcium, vitamin D, iron, folate, vitamin B12, potassium, and iodine. Presented below are key recommendations for consuming a varied diet (Box 3.1) and tips on how to snack healthy (Box 3.2), as well as tips on how to achieve the recommended daily intakes of iron and vitamin D (Boxes 3.3 and 3.4). Also presented are important recommendations regarding specific nutrients for special population groups (Box 3.5).
Stock your kitchen with easy and healthy nutrition. Keep a variety of nutritious food items in your kitchen to make meal and snack preparation easy and healthy (such as washed fruit and vegetables, unsalted nuts, low-fat yogurt cheeses, and whole-grain breads).

Choose nutrient-dense food items from each food group for your meals (review the cedar food guide at the beginning of this manual and refer to Table 3.1 for recommended intakes and serving sizes of each of the five food groups)

- Consume whole-grain products as the basis of most meals
- Include a variety of legumes and unsalted nuts and seeds in your daily or weekly diet
- Choose a variety of fruit of different colors every day (such as fruit with pits, citrus fruit, berries, and melons) and a variety of vegetables such as dark-green leafy vegetables, orange-colored vegetables, and starchy vegetables
- Consume 3 servings of milk per day (low fat or fat free), or consume equivalent servings of low-fat or fat-free dairy products
- Consume fish on a weekly basis, in addition to consuming lean red meat and poultry

Choose nutrient-dense food items for healthy snacks throughout the day (refer to Box 3.2)

How to Snack Healthy

- Snacking helps boost energy throughout the day. Therefore, plan to snack throughout the day, while keeping track of the total calories consumed at meals and snacks
- Plan your snacks wisely, choosing from nutrient-dense and low fat/low sugar items like fruit, vegetables, unsalted raw nuts, or low-fat dairy foods
- For those watching their weight, beware of mindless snacking
- For those wanting to gain weight, snacking is also recommended as it helps add calories throughout the day; choose from nutrient-dense and calorie-rich food items (such as milk shakes made with fresh fruit or cheese sandwiches with vegetables)
### Table 3.1  
**Recommended Intakes and Examples of Serving Sizes of Each of the Five Food Groups**

<table>
<thead>
<tr>
<th>Recommended Intakes of the Five Food Groups (based on a 2,000 calorie diet)</th>
<th>Examples of One Serving of Each of the Food Groups</th>
</tr>
</thead>
</table>
| **Cereals and grains** (at least 6 servings per day, with at least ½ being whole-grain) | • ¼ big loaf of Arabic whole-wheat pita bread  
• 1 slice of whole-wheat loaf (toast) bread  
• ½ cup cooked ‘Burghul’, whole wheat, brown rice, whole-wheat pasta or noodles  
• 1 cup ready-to-eat breakfast cereal (unsweetened) |
| **Fruit** (2 servings per day) | • 1 small apple  
• 1 large banana, orange, or peach  
• ½ cup dried fruit (dates, prunes, raisins, apricots)  
• 1 cup fresh fruit juice |
| **Vegetables** (2 - 3 servings per day) | • 1 cup raw vegetables  
• 2 cups raw green leafy vegetables  
• 1 cup cooked vegetables  
• 1 cup vegetable juice |
| **Low-fat milk and dairy products** (3 servings per day) | • 1 cup liquid milk or yogurt  
• 3 tablespoons powdered milk  
• 45 g white cheese  
• 1 cup milk-based pudding such as ‘Mhalbiyeh’, ‘Sahlab’ or ‘Riz Bi Halib’  
• 8 tablespoons ‘Labneh’ |
| **Protein-rich foods** (5 - 6.5 servings per day) | • 30 g cooked lean red meat or white meat (poultry or fish)  
• 1 whole egg or 1.5 egg whites  
• ¼ cup legumes (beans, lentils, peas)  
• 15 g unsalted nuts or seeds |

**Note:**  
- The cedar food guide at the beginning of this manual provides a graphic illustration of the above food groups and the recommended intake of each.  
- The recommended intakes from each of the five food groups and the serving equivalents for each group are adapted from recommendations of the United States Department of Agriculture (USDA MyPlate, 2011).
How to Achieve the Recommended Daily Intake of Iron

For men: 8 mg
For women*: 18 mg

- Consume lean red meat and poultry; they are rich sources of heme iron, which is efficiently absorbed by the body. The regular inclusion of these products in the diet increases the intake of dietary iron (refer to Table 3.2 for other iron-rich food items)
- Eat more dark-green vegetables (such as broccoli, ‘Mlukhiyeh’, celery, and Swiss chard), and consume legumes (such as lentils, fava beans (‘Fool’), and chickpeas) at least 3 times per week. Make sure to include a source of vitamin C (such as lemon juice or orange juice) or some form of meat with these dishes, because these enhance the absorption of iron from plant-food items
- Consume iron-fortified breakfast cereals if available
- Avoid drinking tea, coffee, and caffeine-containing carbonated beverages with meals, as food components in these beverages may decrease the absorption of iron in food
- Do not take iron supplements, unless otherwise indicated by your physician or dietitian
  - Iron supplements are indicated for individuals with iron-deficiency and when the diet alone cannot restore iron levels back to normal. Iron supplements are also recommended for: pregnant women, women of child-bearing age (especially those with heavy menstrual losses), people with renal failure (especially those undergoing routine dialysis), and people with gastrointestinal disorders who do not absorb iron normally
  - Iron supplements are not recommended for: individuals who are not experiencing iron deficiency (especially adult men and postmenopausal women) and individuals known to have hemo-chromatosis (a genetic disease characterized by iron overload)
  - Daily maximum limit for iron intake: 45 mg

* Iron requirements decrease to 8 mg/day for women after the age of 50 years, considered the onset of menopause
Note: Spinach is not a rich source of iron. Iron in spinach is not well absorbed by the body due to other compounds present that interfere with its absorption
Guideline 3: Eat a variety of nutritious foods every day for a balanced diet

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Iron (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organ meat, cooked (90 g*)</td>
<td>5.2 - 9.9</td>
</tr>
<tr>
<td>Cereals, iron fortified (¾ cup)</td>
<td>4.5</td>
</tr>
<tr>
<td>Soybeans, boiled (½ cup)</td>
<td>4.4</td>
</tr>
<tr>
<td>Pumpkin seeds, roasted (30 g***)</td>
<td>4.2</td>
</tr>
<tr>
<td>Carob molasses, 1 tablespoon (15 ml)</td>
<td>3.5</td>
</tr>
<tr>
<td>Lentils, cooked (¼ cup)</td>
<td>3.3</td>
</tr>
<tr>
<td>Beef, tenderloin, cooked (90 g)</td>
<td>3</td>
</tr>
<tr>
<td>Kidney beans, cooked (½ cup)</td>
<td>2.6</td>
</tr>
<tr>
<td>Sardines, canned in oil, drained (1 can)</td>
<td>2.5</td>
</tr>
<tr>
<td>Lima*** beans, boiled (½ cup)</td>
<td>2.3</td>
</tr>
<tr>
<td>Pinto† beans, boiled (½ cup)</td>
<td>1.8</td>
</tr>
<tr>
<td>Raisins, seedless (½ cup)</td>
<td>1.5</td>
</tr>
<tr>
<td>Chicken thigh, cooked (105 g)</td>
<td>1.3</td>
</tr>
<tr>
<td>Chicken breast, cooked (½ breast, 90 g)</td>
<td>1.1</td>
</tr>
</tbody>
</table>

*90 g equals in size a deck of playing cards or the palm of a hand
**30 g = 2 tablespoons
***Lima beans: ‘Fasoulia Aa’reeda’
†Pinto beans: ‘Fasoulia Aysha Khanum’

Note: Legumes and other iron-containing plant foods should be consumed with a vitamin-C rich food source, or with small amounts of meat, chicken, or fish, for better absorption of iron
How to Achieve the Recommended Daily Intake of Vitamin D

For individuals 20 - 70 years: 600 IU
For individuals aged 70 years or older: 800 IU

- Consume a variety of fish and seafood (refer to Table 3.3 for other vitamin-D rich food items)
- Consume vitamin D-fortified food products (such as breakfast cereals and milk) if available
- Consider taking a daily low-dose vitamin D supplement (providing 200 IU or 400 IU) after consulting with your physician or dietitian

- As there is a potential for vitamin D toxicity from too much vitamin D supplement use, the following individuals should avoid taking vitamin D supplements: individuals who are not vitamin D deficient, those who are exposed to plenty of sunlight, and those who consume a vitamin D-rich diet

- **Daily maximum limit for vitamin D intake:** 4,000 IU

Attention:
- Although the sun is important for vitamin D synthesis by the skin, it is advised to limit one’s sun exposure due to risk of skin cancer
- Using sunscreens of SPF greater than 15 can limit the skin’s ability of synthesizing vitamin D

* IU = International Units

### Table 3.3 Vitamin D-Rich Food Items

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Vitamin D (IU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cod liver oil, 1 tablespoon (15 ml)</td>
<td>1,360</td>
</tr>
<tr>
<td>Salmon, cooked (100 g)</td>
<td>360</td>
</tr>
<tr>
<td>Tuna, canned in oil (½ can)</td>
<td>200</td>
</tr>
<tr>
<td>Sardines, canned in oil (½ can)</td>
<td>250</td>
</tr>
<tr>
<td>Tuna, light, canned in water (¼ can)</td>
<td>154</td>
</tr>
<tr>
<td>Milk, vitamin-D fortified (1 cup)</td>
<td>98</td>
</tr>
<tr>
<td>Egg, whole</td>
<td>20</td>
</tr>
<tr>
<td>Beef liver, cooked (100 g)</td>
<td>15</td>
</tr>
</tbody>
</table>

Note:
- 100 g equals in size to slightly more than the size of a deck of playing cards or the palm of a hand
- 1 cup = 240 ml
Vegetarians should include a variety of plant-based protein sources such as legumes and nuts to ensure an adequate intake of iron and protein. Vegetarians are advised to increase the bioavailability of iron from plant sources by adding vitamin C-rich food items (such as lemon or orange juice, kiwi, and green peppers) to meals. Strict vegetarians (vegans) must consume vitamin D and vitamin B12-enriched food items (refer to Tables 3.3 and 3.4) to meet the recommended daily intakes of vitamin D (600 IU) and vitamin B12 (2.5 microgram [µg]).

Women of child-bearing age

Folate is an important vitamin for women of child-bearing age, as it is necessary for reducing the risk of anemia and certain fetal malformations (such as neural tube defects) during pregnancy. Women of child-bearing age are advised to consume folate-rich food items (refer to Table 3.5), especially green-leafy vegetables, fruit, beans, and peas. Before and during pregnancy, a daily intake of 600 µg of folate is required. It is thus recommended to take a folic acid supplement providing 400 µg/day alongside consuming a folate-rich diet one month before pregnancy and during the 1st three months of pregnancy.
### Table 3.4  
**Vitamin B12-Rich Food Items**

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Vitamin B12 (μg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mollusks, cooked (90 g)</td>
<td>84.1</td>
</tr>
<tr>
<td>Beef liver, braised (1 slice)</td>
<td>47.9</td>
</tr>
<tr>
<td>Salmon, cooked (90 g)</td>
<td>4.9</td>
</tr>
<tr>
<td>Lean beef, broiled (90 g)</td>
<td>2.4</td>
</tr>
<tr>
<td>Yogurt (1 cup)</td>
<td>1.4</td>
</tr>
<tr>
<td>White tuna, canned in water (½ can)</td>
<td>1</td>
</tr>
<tr>
<td>Milk (1 cup)</td>
<td>0.9</td>
</tr>
<tr>
<td>Egg, hardboiled (1 whole)</td>
<td>0.6</td>
</tr>
<tr>
<td>Chicken breast, roasted (¼ breast, 90 g)</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Note:**
90 g meat equals in size a deck of playing cards or the palm of a hand  
1 cup = 240 ml

### Table 3.5  
**Folate-Rich Food Items**

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Folate (μg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef liver, braised (90 g)</td>
<td>185</td>
</tr>
<tr>
<td>Spinach, frozen, boiled (¼ cup)</td>
<td>100</td>
</tr>
<tr>
<td>Asparagus, boiled (4 spears)</td>
<td>85</td>
</tr>
<tr>
<td>Spinach, raw (1 cup)</td>
<td>60</td>
</tr>
<tr>
<td>Green peas, frozen, boiled (¼ cup)</td>
<td>50</td>
</tr>
<tr>
<td>Broccoli, frozen, cooked (¼ cup)</td>
<td>50</td>
</tr>
<tr>
<td>Lettuce, Romaine, shredded (¼ cup)</td>
<td>40</td>
</tr>
<tr>
<td>Cantaloupe (¼ medium)</td>
<td>25</td>
</tr>
<tr>
<td>Banana (1 medium)</td>
<td>20</td>
</tr>
</tbody>
</table>

**Note:**
90 g meat equals in size a deck of playing cards or the palm of a hand

Guideline 3  Eat a variety of nutritious foods every day for a balanced diet
Eat Cereals, Especially Whole Grains, as the Basis of Daily Meals

The aim of this guideline is to emphasize the importance of consuming a variety of cereals every day, particularly whole-grain cereals which are rich in dietary fiber.

The consumption of cereals, especially whole grains, has been associated with a decreased risk of cardiovascular diseases, overweight, abdominal obesity, hypercholesterolemia, and insulin resistance. Higher intakes of breads and cereals can help in achieving dietary targets of lower fat consumption, and as cereals are a major source of resistant starch, they are an important dietary component for colon health. The Food and Drug Administration (FDA) in the United States has approved the health claim that ‘diets rich in whole-grain foods and other plant foods, and low in total fat, saturated fat, and cholesterol may reduce the risk of heart disease and certain cancers’.

In Lebanon, although there has been a consistent decline in cereal consumption over the past three decades, cereals remain the principal staple food in the country. Cereals and cereal-based products contribute to almost ⅓ of daily energy intake among the Lebanese adult population, with wheat (mainly consumed as bread) being the major staple cereal, followed by rice. Nevertheless, a trend towards an increased consumption of refined cereals such as refined flour and pasta, as well as white rice, at the expense of whole-grain cereals has been witnessed. In a country where chronic diseases are prevalent, the consumption of cereals, especially whole grains, as the basis of most meals, will help play a role in reducing the risk of chronic diseases (including cardiovascular disease, type II diabetes, and certain types of cancer such as colon and breast cancer), in addition to promoting colon health and helping maintain normal body weight. Presented below is the recommended daily intake of cereals (Box 4.1), as well as key recommendations and tips for cereal and whole-grain cereal consumption (Box 4.2).
Box 4.1

Recommended Daily Intake of Cereals

(based on a 2,000 calorie diet)

At least 6 servings per day, with at least half of the servings being whole-grain cereals

1 serving is equal to:

- ¼ loaf of Arabic pita bread
- 1 slice of loaf (toast) bread
- ½ cup cooked ‘Burghul’, wheat, rice, spaghetti, noodles, or macaroni
- 1 cup ready-to-eat breakfast cereals (unsweetened)
- ½ hamburger bun or ‘Ka’ak Ourshalli’
- 3 cups popcorn, popped

Box 4.2

Key Recommendations and Tips for Cereal and Whole-Grain Cereal Consumption

- Buy and consume wheat (preferably whole wheat), rice (preferably brown rice), pasta (preferably made from whole wheat), oats (preferably whole) and barley (preferably whole) on a daily basis. Refer to Box 4.3 for tips on how to buy whole-grain foods
- Consume brown rice and whole-wheat pasta with traditional hot dishes such as vegetables stuffed with rice and meat (such as stuffed zucchini, stuffed eggplant, stuffed squash, stuffed grape leaves, and stuffed cabbage), vegetable-based stews that are usually consumed with rice (bean stew, peas stew, okra stew, ‘Mlukhiyah’ stew), as well as ‘Burghul’-based dishes (‘Burghul a Banadoura’) and wheat-based dishes (‘Freek’)
- Consume whole-grain breads instead of white breads when making sandwiches and with traditional dip-foods (such as ‘Labneh’, ‘Mjaddara’, and ‘Hummus bi Tahini’)
- When choosing grain-based snacks, choose ones that are low in salt, sugar and fat, such as wheat-based desserts (‘Kamhyeh’), sandwiches prepared with whole-wheat bread (‘Labneh’ sandwich, thyme sandwich), popcorn (with little or no added salt, butter, or oil), and low fat/low salt ‘Ka’ak’
Choose food products that list one of the following as one of the first ingredients in the nutrition label: whole-wheat flour, whole wheat, brown-rice flour, oatmeal, whole oats, whole barley, and whole-grain corn flour.

Check the ingredient list on a product’s nutrition label for the words ‘whole’, ‘whole-grain’, or ‘unrefined’, as these indicate that they contain whole grains. Food products with the following labels such as ‘multigrain’, ‘stone-ground’, ‘100% wheat’, ‘cracked wheat’, ‘seven grain’, or ‘bran’, do not necessarily contain whole grains.

When choosing whole-grain food items, read the Daily Value (DV) per serving in the nutrition label on the food package and look for ‘good source of fiber’ (indicating that the fiber content equals 10% - 19% of the Daily Value) or ‘excellent source of fiber’ (indicating that the fiber content is more than 20% of the Daily Value). Also, make sure to double-check fiber claims on the food’s nutrition label. A ‘good source of fiber’ claim should mean that the product contains at least 2.5 g of fiber per serving, while a ‘high fiber’ claim should mean that the product contains at least 5 g of fiber per serving.
## Box 4-4: Lebanese Bread

Bread is the most commonly consumed cereal food in Lebanon. Lebanese breads are generally made from highly milled (refined) flour and may contain substantial amounts of salt. Therefore, to increase one’s cereal consumption while increasing one’s fiber intake and maintaining a low salt intake, one should consume breads made from unrefined flour and small amounts of salt.
Enjoy More Fruit and Vegetables Daily

The aim of this guideline is to promote the daily consumption of a variety of fruit and vegetables, as they contain numerous essential nutrients that can help protect against chronic diseases and micronutrient deficiencies.

The regular consumption of fruit and vegetables is associated with substantially lower risks of several chronic diseases such as coronary heart disease, stroke, major types of cancer, hypertension and possibly type 2 diabetes mellitus. The protective effects of fruit and vegetables are mediated through various nutrients such as antioxidants, phytochemicals, vitamins, minerals, and fiber.

In Lebanon, the traditional diet is long known for its abundance of plant foods, including fruit and vegetables, where minimally processed fresh fruit was considered the typical dessert of the day. Over the past decade, there has been a decrease in fruit and vegetable consumption in the country, with almost one third of the adult population consuming less than the World Health Organization (WHO) recommended intake level of 400 g of fruit and vegetables per day. In view of the presence of chronic diseases and micronutrient deficiencies in the country, increasing the intake of fruit and vegetables may favorably protect against these nutrition-related health problems. Presented below is the recommended daily intake of fruit and vegetables based on the United States Department of Agriculture (USDA) ‘5 A Day’ recommendation (Boxes 5.1 and 5.2). Also presented are key recommendations for fruit and vegetable consumption (Box 5.3) and tips on how to increase their daily intake (Boxes 5.4 and 5.5).
Box 5.1

Recommended Daily Intake of Fruit

(based on a 2,000 calorie diet)

2 servings per day

1 serving is equal to:
- 1 small apple
- 1 large banana, orange, or peach
- 32 grapes
- 24 cherries
- 2 large plums
- 1 small wedge of watermelon
- ½ cup dried fruit (dates, prunes, raisins, or apricots)
- 1 cup fresh fruit salad (unsweetened)
- 1 cup fresh fruit juice

Box 5.2

Recommended Daily Intake of Vegetables

(based on a 2,000 calorie diet)

2 - 3 servings per day

1 serving is equal to:
- 1 large tomato
- 2 medium carrots
- 1 cup raw vegetables (cucumbers, green peppers, green peas)
- 2 cups raw green leafy vegetables (lettuce, parsly, parsley, rocket leaves)
- 1 cup cooked vegetables (spinach, green peas, zucchini, cauliflower)
- 1 cup vegetable juice
Consume a variety of fruit, including apples, pears, citrus fruit, melon, berries, grapes, bananas, and pit fruit such as apricots and peaches (refer to Table 5.1).

Choose whole fruit over fruit juice as the former has much more fiber. Eat the fruit with its peel as a lot of the fiber and antioxidants are hidden there. Make sure to wash fruit very well to remove any residues of pesticides and dirt.

Consume dried fruit in moderate amounts (dried dates, figs, or apricots, as well as raisins or prunes) as these are more energy-dense than fresh fruit.

Limit the intake of canned fruit as these are usually packed in sugar-containing syrup.

Consume a variety of vegetables of all colors (green, orange, white, red). Eat at least one dark green and one orange vegetable a day (refer to Table 5.1).

Eat vegetables with their peel as a lot of the fiber and antioxidants are hidden there. Make sure to wash vegetables very well to remove any residues of pesticides and dirt.

Limit the intake of canned vegetables as these are usually preserved in a salty solution.

When preparing vegetables:

- Do not overcook so as to preserve nutrients
- Substitute boiling with stir-frying and steaming to minimize nutrient loss and maintain flavor
- Prepare with little salt, flavoring instead with lemon, herbs, garlic or spices
- Add some oil to enhance the absorption of fat-soluble vitamins (vitamins A, D, E and K)
Choosing a Variety of Fruit and Vegetables of All Colors to Achieve a Variety of Health Benefits

<table>
<thead>
<tr>
<th>Color</th>
<th>Examples</th>
<th>Health Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>Tomatoes, watermelon, cherries, and strawberries</td>
<td>A red color indicates the presence of the phytonutrient lycopene which protects against cancer</td>
</tr>
<tr>
<td>ORANGE</td>
<td>Carrots, sweet potatoes, oranges, mango, melon, and clementines</td>
<td>An orange color indicates the presence of beta-carotene, a beneficial antioxidant against cancer and heart disease</td>
</tr>
<tr>
<td>YELLOW</td>
<td>Lemons, bell peppers, squash, grapefruit, and bananas</td>
<td>A yellow color indicates the presence of beta-carotene and limonene that help prevent cancer</td>
</tr>
<tr>
<td>GREEN</td>
<td>Broccoli, peas, artichoke, spinach, parsley, and green bell peppers</td>
<td>A green color indicates the presence of polyphenols and carotenoids that help prevent cancer and heart disease</td>
</tr>
<tr>
<td>PURPLE</td>
<td>Raisins, grapes, eggplant, purple onions, and beets</td>
<td>A purple color indicates the presence of flavonoids and polyphenols that help prevent cancer and heart disease</td>
</tr>
<tr>
<td>WHITE</td>
<td>Onions, garlic, turnips, cabbage, and mushrooms</td>
<td>A white color indicates the presence of ally sulfides that help lower blood cholesterol, blood pressure, and the risk of cancer</td>
</tr>
</tbody>
</table>

Guideline 5: Enjoy more fruit and vegetables daily
How to Increase Fruit Intake

- Buy any type of fruit that is in season
- Keep a bowl of washed fresh fruit in the fridge or on your kitchen table
- Eat unsweetened breakfast cereals or yogurt with freshly-cut fruit or sprinkled with dried fruit
- Choose dried fruit that don’t have added sugar and are not covered in chocolate
- Snack on dried fruit or cut-up fresh fruit at work
- For dessert, have a bowl of fruit salad, baked fruit (baked apples or pears), or a glass of home-made milk-shake with freshly blended whole fruit and low-fat milk
- In hot weather, enjoy a cup of freshly blended cocktail made with whole fruit. Also, enjoy sucking on frozen strawberries, cherries, or red grapes
How to Increase Vegetable Intake

- Buy a variety of vegetables that are in season
- Stock up on fresh vegetables in your kitchen and fridge
- Buy frozen and canned vegetables only if fresh versions are not in season
- Eat more green salads (such as ‘Fattoush’, ‘Tabbouleh’, fresh ‘Zaatar’ salad with onions, cabbage salad with grated carrots), but use oil and commercial salad dressings sparingly
- Eat raw vegetables (such as carrots, cucumbers, celery, and cauliflower) as a snack with low-fat homemade dips (such as garlic and ‘Labneh’ dip)
- Eat more vegetable-based dishes (dishes with sautéed vegetables) and vegetable-based stews (such as okra, green bean, spinach, or Jews Mallow (‘Mlukhiyeh’) stew)
- Grill vegetables (such as tomatoes, onions, green pepper, and mushrooms) with grilled meat or chicken
Consume Legume-Based Dishes Regularly and Enjoy Some Unsalted Nuts and Seeds

The aim of this guideline is to encourage the consumption of legumes, nuts and seeds in order to increase daily intake of protein, fiber, and micronutrients.

Legumes, nuts, and seeds are a good source of protein, fiber, antioxidants, vitamins (including folate and vitamin E), and minerals (including iron and zinc). Nuts and seeds have shown to favorably affect blood lipids, as they are low in saturated fat and high in heart-healthy unsaturated fats. The consumption of legumes (beans, lentils, and peas) has been associated with a reduced risk of cardiovascular diseases and type II diabetes. The soluble fiber in legumes helps decrease blood lipids and glucose concentrations, while the insoluble fiber helps improve gastrointestinal function (refer to Box 6.1 on the recommended daily intake of fiber and Table 6.1 on the fiber content of selected legumes and nuts).

In Lebanon, legumes, nuts, and seeds are components of the traditional cuisine. Despite their relative popularity, consumption of these food items is low in the country. Increasing the intake of legumes and unsalted nuts and seeds may help decrease the incidence and prevalence of micronutrient deficiencies and chronic diseases in Lebanon. As they are a good source of iron, their consumption is important in view of the persistence of iron deficiency anemia in the Lebanese population. Moreover, as they are a good source of protein, it is recommended to increase their consumption to meet the recommended intake of protein-rich foods. Presented below is the recommended daily intake of protein-rich foods (Box 6.2), key recommendations for the consumption of legumes, nuts, and seeds (Box 6.3), as well as tips on how to increase their consumption (Box 6.4).
Box 6.1

**Recommended Daily Intake of Fiber**

(based on a 2,000 calorie diet)

- For men: ~ 31 g per day
- For women: ~ 25 g per day

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**Guideline 6** Consume legume-based dishes regularly and enjoy some unsalted nuts and seeds

1 serving is equal to:
- ¼ cup cooked legumes
- 2 tablespoons ‘Hummus bi Tahini’
- 1 baked ‘Falafel’ patty
- 15 g of unsalted nuts or seeds
  - 3 ½ whole walnuts
  - 12 almonds
  - 1 tablespoon of seeds (pumpkin or sunflower seeds)
- 30 g cooked lean red meat, poultry, or fish

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**Box 6.2**

**Recommended Daily Intake of Protein-Rich Foods**

(based on a 2,000 calorie diet)

5 - 6.5 servings per day

---

**Table 6.1**

**Fiber Content of Selected Legumes and Nuts**

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Fiber (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lentils, cooked (½ cup)</td>
<td>8</td>
</tr>
<tr>
<td>Kidney beans, cooked (½ cup)</td>
<td>6</td>
</tr>
<tr>
<td>Chickpeas, cooked, canned (½ cup)</td>
<td>5</td>
</tr>
<tr>
<td>Peanuts, roasted (¼ cup)</td>
<td>3</td>
</tr>
<tr>
<td>Walnuts (¼ cup)</td>
<td>2</td>
</tr>
</tbody>
</table>

---

**Recommended Daily Intake of Protein-Rich Foods**

(based on a 2,000 calorie diet)

5 - 6.5 servings per day

1 serving is equal to:
- ¼ cup cooked legumes
- 2 tablespoons ‘Hummus bi Tahini’
- 1 baked ‘Falafel’ patty
- 15 g of unsalted nuts or seeds
  - 3 ½ whole walnuts
  - 12 almonds
  - 1 tablespoon of seeds (pumpkin or sunflower seeds)
- 30 g cooked lean red meat, poultry, or fish
Consume legume-based dishes regularly during the week such as kidney-bean or lima-bean stew with meat and rice, lentil-based dishes such as ‘Mjaddara’, ‘Mdardara’, lentil soup, rice-based dishes with chickpeas or green fava beans (‘Fool’) such as ‘Riz bi Hummus’ or ‘Riz bi Fool’, and dishes prepared with chickpeas or fava beans (‘Fool’) such as ‘Fattet Hummus’, ‘Baleela’, and ‘Fool Mdammas’

Add vitamin C-containing ingredients to legume-based dishes (such as lemon juice), or add some meat to the meal, as this will help increase the absorption of iron from the legumes

Prepare ‘Falafel’ in the oven with limited amounts of oil rather than deep-frying

Choose unsalted nuts and seeds, preferably raw or roasted, not fried
How to Increase the Consumption of Legumes, Nuts, and Seeds

- Vary the kinds of beans and lentils you eat
- Sprinkle a handful of beans or unsalted nuts (such as walnuts and almonds) and seeds onto a salad
- Add unsalted nuts and seeds to your unsweetened breakfast cereals
- Top rice dishes or salads with a handful of lightly toasted pine nuts, almonds, or cashew nuts
- Make dishes that combine both legumes and rice, such as ‘Mjaddara’, ‘Mdadara’, ‘Fasoulia’ stew with rice, ‘Riz bi Hummus’ and ‘Riz bi Fool’, so as to improve the protein quality of the meal
- Add unsalted raw nuts such as almonds, walnuts, or pistachios to homemade puddings (such as ‘Mhalbiyeh’), cakes, and desserts, as well as to fruit salads
- Prepare sauces or dips with seed spread (such as ‘Tahini’), and consume with Lebanese dishes such as fish-based meals and homemade beef ‘Shawarma’
Consume Low-Fat Milk and Dairy Products Every Day

The aim of this guideline is to encourage the daily consumption of at least 3 servings of low-fat dairy products, as they are good sources of protein, vitamins, and calcium.

Milk and dairy products are the major source of calcium and vitamin D, two vital nutrients for promoting dental and bone health, and for attaining peak bone mass during childhood and adolescence, which is important for reducing the risk of fractures and osteoporosis later in life. Dairy products are also important sources of other nutrients, such as protein (vital for cell synthesis), riboflavin (necessary for normal cell function, growth, and energy production), vitamin A (important for vision and cellular growth), vitamin B12 (vital for maintaining healthy nerve cells and red blood cells), and zinc (which is important for the immune system and wound healing). As full-fat milk and dairy products can substantially contribute to the intake of total fat and saturated fat, low-fat and fat-free versions should be selected.

In Lebanon, dairy products (mainly cheese and yogurt) are common foods of the traditional diet. Yogurt is commonly consumed, followed by cheese and ‘Labneh’, with milk being the least consumed dairy product in the Lebanese adult population. With the persistence of osteoporosis and deficiencies of calcium and vitamin D in the country, the incorporation of dairy products into the daily diet is recommended. Care, however, must be given regarding the consumption of low-fat or fat-free varieties of milk and dairy products so as to prevent any further escalation of the already prevalent chronic diseases in the country. Presented below is the recommended daily intake of milk and dairy products (Box 7.1), as well as key recommendations (Box 7.2) and tips (Box 7.4) for the consumption of milk and dairy products. Also presented are important recommendations on milk and dairy consumption for special population groups (Box 7.5).
Consume low-fat or skim milk, yogurt, and cheeses

Choose white cheeses over yellow cheeses, as the latter tend to contain more total and saturated fat

Consume natural cheeses more often than processed cheeses, as the latter contain higher amounts of salt

Consume calcium and vitamin D-enriched milk, if available

Consume natural yogurt instead of salted yogurt-based drinks (such as ‘Laban Ayran’) or sweetened yogurt

Soak high salt cheeses (such as ‘Akkawi’) in water before consumption to decrease their salt content

Box 7.1

Recommended Daily Intake of Milk and Dairy Products

(based on a 2,000 calorie diet)

3 servings of low-fat milk or dairy products per day to supply the recommended intake of calcium of 1,000 mg per day

1 serving is equal to:

- 1 cup* liquid milk or yogurt
- 3 tablespoons powdered milk
- 45 g white cheese (such as 2 slices of ‘Halloum’, ‘Double Crème’, or low-salt ‘Akkawi’)
- 60 g processed cheese (such as 3 triangles of cheese spread)
- 8 tablespoons ‘Labneh’
- 1 cup milk-based pudding (such as ‘Mhalbiyeh’, ‘Sahlab’, or ‘Riz bi Halib’) prepared with low amounts of sugar
- 1 ½ cups of low-fat milk-based ice cream

* 1 cup = 240 ml

Box 7.2

Key Recommendations for the Consumption of Milk and Dairy Products
You can get enough calcium even while cutting back on fat! Low-fat or fat-free dairy products are as rich in calcium as the whole-fat versions (refer to Table 7.1 for calcium content of milk and selected dairy products available on the Lebanese market).

The consumption of the below food components with dairy products can decrease the absorption of calcium:
- Oxalic acid (found in spinach, sweet potatoes, beans, and chickpeas)
- Phytic acid (found in raw beans, seeds, nuts, and grains)

The consumption of the below food components can increase the urinary loss of calcium:
- Salt (in excessive amounts)
- Caffeine (in amounts coming from more than 3 - 4 cups of coffee per day)

### Table 7.1

<table>
<thead>
<tr>
<th>Name and Type</th>
<th>Calcium (mg/100g)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk (liquid), low fat and fat free</td>
<td>120 - 125</td>
</tr>
<tr>
<td>Yogurt, low fat and fat free</td>
<td>183 - 199</td>
</tr>
<tr>
<td>‘Akkawi’, low fat and fat free</td>
<td>485 - 521</td>
</tr>
<tr>
<td>‘Halloumi’, low fat and fat free</td>
<td>750 - 921</td>
</tr>
<tr>
<td>‘Double-crème’, low fat and fat free</td>
<td>274 - 378</td>
</tr>
<tr>
<td>Braided Cheese (‘Mjaddal’), low fat</td>
<td>524</td>
</tr>
<tr>
<td>‘Labneh’ (low fat and fat free)</td>
<td>43 - 94</td>
</tr>
</tbody>
</table>

*The higher end of the range corresponds to the fat-free version of the food product.
How to Increase the Consumption of Low-Fat Milk and Dairy Products

- Prepare traditional Lebanese dishes (such as ‘Shish Barak’, ‘Fattet Hummus’, and ‘Kibbeh bi Laban’) with low-fat or fat-free yogurt
- When preparing coffee or tea, use low-fat milk instead of cream or coffee whiteners
- Use low-fat or fat-free milk when making cream soups and cream-based dishes
- Drink milk as a beverage at snacks with ‘Kaak’ or fruit
- Snack on a bowl of low-fat or fat-free yogurt topped with fruit
- Make homemade smoothies using low-fat or fat-free yogurt and fresh fruit
- Make homemade puddings like ‘Mhalbiyeh’ or ‘Sahlab’ with fat-free or low-fat milk. Cut down on the amount of sugar called for by the recipe by half or third, or add fresh or dried fruit to add sweetness, or use sugar substitutes or non-nutritive sweeteners
- Top dishes or cream soups with low-fat grated cheese
- Top up a salad with cut-up low-fat or fat-free white cheese

Important Recommendations for Special Population Groups

PREGNANT AND BREASTFEEDING WOMEN

Milk and dairy consumption during pregnancy are very important sources of high-quality protein for the growing fetus, as well as calcium and vitamin D that are needed for the early skeletal growth that begins in utero.

Consumption of milk and dairy products is also important during the period of breastfeeding, as these foods are good sources of protein, riboflavin, and vitamins A, D, and B12. Maternal status and diet during breastfeeding can influence the quantity of these nutrients in human milk.

The consumption of 3 – 4 servings per day of milk or other dairy products is necessary to meet the needs of calcium and vitamin D during pregnancy and breastfeeding, which are 1,000 mg of calcium and 600 IU vitamin D per day.
INDIVIDUALS WITH LACTOSE INTOLERANCE

Lactose intolerance is the inability to digest dietary lactose (the major sugar in milk and dairy products). Individuals who are lactose intolerant are advised to be cautious of foods containing lactose and the following items that may be high in lactose: milk, milk solids, buttermilk, sour or sweet cream, margarine, whey, and whey protein.

- For individuals who can tolerate some lactose, drink small amounts of milk with meals divided up throughout the day (as tolerated), and consume dairy products with low-lactose content (refer to Table 7.2). Fermented dairy products such as yogurt and cheeses are usually well tolerated.
- For individuals who cannot tolerate any lactose, consume lactose-free milk and other dairy products if available, as well as calcium-rich non-dairy foods (refer to Table 7.3). Seek advice about taking calcium supplements to meet daily needs of calcium, or taking a supplemental lactase-enzyme with food to improve one's tolerance to lactose.

VEGETARIANS

A vegetarian diet is relatively high in oxalates and phytates, which are food components that interfere with calcium absorption by the body. Vegetarians who avoid milk and dairy products should increase the consumption of calcium-containing non-dairy products (refer to Table 7.3), and seek medical advice about taking calcium and vitamin D supplements.

ELDERLY

Intestinal calcium absorption tends to decline with age, partly due to changes in vitamin D metabolism, and lower active vitamin D levels in the elderly. To ensure adequate vitamin D intake in this age group, and for enhancing the absorption of calcium and thus decreasing bone loss, consuming vitamin D-fortified foods or taking supplements of calcium and vitamin D is recommended.
### Table 7.2 Lactose Content of Milk and Selected Dairy Products

<table>
<thead>
<tr>
<th>Dairy Product</th>
<th>Lactose (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk, low fat (1 cup)</td>
<td>12.7</td>
</tr>
<tr>
<td>Milk, full fat (1 cup)</td>
<td>12.3</td>
</tr>
<tr>
<td>Yogurt, low fat (1 cup)</td>
<td>8.4</td>
</tr>
<tr>
<td>Ice cream, vanilla (¼ cup)</td>
<td>4.9</td>
</tr>
<tr>
<td>Cottage Cheese (‘Arisheh’) (1 cup)</td>
<td>1.4</td>
</tr>
<tr>
<td>‘Akkawi’ Cheese (100 g)</td>
<td>0.7 - 0.8</td>
</tr>
<tr>
<td>Cheddar Cheese (30 g)</td>
<td>0.07</td>
</tr>
<tr>
<td>‘Double Crème’ Cheese (100 g)</td>
<td>0.7 - 1.2</td>
</tr>
<tr>
<td>‘Halloum’ Cheese (100 g)</td>
<td>0.7 - 1.2</td>
</tr>
<tr>
<td>‘Labneh’ (100 g)</td>
<td>0 - 0.7</td>
</tr>
<tr>
<td>Braided Cheese (‘Mjaddal’) (100 g)</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Note: 1 cup = 240 ml
30 g cheese equals in size 2 fingers of your hand → 100 g cheese ≈7 fingers
50 g ‘Labneh’ = 2 tablespoons → 100 g ‘Labneh’ = 4 tablespoons ‘Labneh’

### Table 7.3 Calcium Content of Selected Non-Dairy Food Items

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Calcium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium-fortified soy beverage (1 cup*)</td>
<td>300</td>
</tr>
<tr>
<td>Calcium-fortified orange juice (1 cup)</td>
<td>300</td>
</tr>
<tr>
<td>Calcium-fortified cereal (1 cup)</td>
<td>200</td>
</tr>
<tr>
<td>Raw almonds (¼ cup)</td>
<td>100</td>
</tr>
<tr>
<td>Dried figs (4 pieces)</td>
<td>100</td>
</tr>
<tr>
<td>Orange (medium)</td>
<td>50</td>
</tr>
<tr>
<td>Cooked broccoli (½ cup)</td>
<td>50</td>
</tr>
<tr>
<td>White beans (½ cup)</td>
<td>50</td>
</tr>
</tbody>
</table>

* 1 cup = 240 ml
Consume at Least Two Servings of Fish, Including Fatty Fish, Every Week

The aim of this guideline is to encourage the consumption of fish at least twice a week, in order to help reduce the risk of chronic diseases, especially cardiovascular disease.

Fish is a good source of high-quality protein, vitamins (such as A and B12), minerals (such as iron, zinc, phosphorous, and potassium), and essential fatty acids, in addition to being low in calories, total fat, and saturated fat when compared to other protein-rich animal foods. Fish, particularly fatty fish, is rich in essential omega-3 fatty acids, which are strongly associated with a reduced risk of cardiovascular disease, stroke, and type 2 diabetes.

In Lebanon, despite fish being a common dish of the traditional Mediterranean diet, its consumption among the adult population falls below the World Health Organization (WHO) and the American Heart Association (AHA) recommended intake level of 2 servings per week. As only 20.3% of Lebanese adults meet the recommendation for fish intake, the consumption of at least 2 servings of fish per week is, therefore, recommended to maintain optimal health of the Lebanese population among whom cardiovascular diseases are common. Presented below is the recommended intake of fish and omega-3 fatty acids (Box 8.1), as well as key recommendations for the consumption of fish (Box 8.2). Also presented are important recommendations on seafood consumption for special population groups (Box 8.3).
Fish:
- For healthy individuals: 0.5 g - 1 g of omega-3 fatty acids per day (refer to Table 8.1 for the omega-3 fatty acid content of selected fish and shellfish)
- For treatment of existing cardiovascular disease: 1 g or more of omega-3 fatty acids per day

*1 serving of fish = 90 g of fish (equals in size a deck of playing cards or the palm of a hand)

**Fatty fish include: salmon, mackerel (سنّ غزال), herring (رنجة, رنكة), sardines (سردين), albacore tuna, and lake trout (ترويت, سمك السلمون المرقط)

Guideline 8  Consume at least two servings of fish, including fatty fish, every week

Box 8.1

Recommended Intake of Fish and Omega-3 Fatty Acids

Box 8.2

Key Recommendations for the Consumption of Fish

- Eat baked or grilled fish at least 2 times a week, seasoned with lemon, herbs, and spices (such as garlic powder, black pepper, basil, and paprika)
- Select fatty types of fish (such as salmon, tuna, sardines, and herring) for at least one of the recommended servings per week
- Include fish in pasta or rice-based dishes (‘Sayyadieyeh’), as well as in sandwiches
- When buying canned fish, choose brands that are canned in water as they are lower in fat and calories as compared to those canned in oil
- Consume a variety of fish to achieve the desired health outcomes from omega-3 fatty acids, and to minimize any potentially adverse effects due to environmental pollutants such as mercury
- For those who do not consume fish or have limited access to a variety of fish, a fish oil supplement may be considered alongside consuming non-fish containing omega-3 food items such as walnuts, walnut oil, flaxseeds, and flaxseed oil (refer to Table 8.2 for omega-3 fatty acid content of selected plant foods and oils)
### Table 8.1 Omega-3 Fatty Acid Content of Selected Fish and Shellfish

<table>
<thead>
<tr>
<th>Type of Fish and Shellfish</th>
<th>Ω-3 (g) per serving*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herring (رنجة , رنكة)</td>
<td>1.81</td>
</tr>
<tr>
<td>Salmon, Atlantic, Farmed (السلمون الزّراعي)</td>
<td>1.09 - 1.83</td>
</tr>
<tr>
<td>Sardines (السردين)</td>
<td>0.98 - 1.70</td>
</tr>
<tr>
<td>Tuna, white, canned in water (التونة)</td>
<td>0.73</td>
</tr>
<tr>
<td>Salmon, Atlantic, Wild (السلمون البرّي)</td>
<td>0.9 - 1.56</td>
</tr>
<tr>
<td>Mackerel (الإسقمري, أبو سّن, غزال)</td>
<td>0.34 - 1.57</td>
</tr>
<tr>
<td>Trout (ترويت)</td>
<td>0.84 - 0.98</td>
</tr>
<tr>
<td>Halibut (هلبوت)</td>
<td>0.4 - 1.0</td>
</tr>
<tr>
<td>Sole (سمك موسس)</td>
<td>0.42</td>
</tr>
<tr>
<td>Hamour (هامور)</td>
<td>0.32</td>
</tr>
<tr>
<td>Shrimp (قريدس)</td>
<td>0.27</td>
</tr>
<tr>
<td>Loukouz (لّقّز)</td>
<td>0.22</td>
</tr>
<tr>
<td>Lobster (كركند)</td>
<td>0.07 - 0.41</td>
</tr>
</tbody>
</table>

*1 serving is equal to 90 g which equals in size a deck of playing cards or the palm of a hand

### Table 8.2 Omega-3 Fatty Acid Content of Selected Plant Foods and Oils

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Ω-3 (g/tablespoon*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walnuts</td>
<td>0.7</td>
</tr>
<tr>
<td>Soybean oil</td>
<td>0.9</td>
</tr>
<tr>
<td>Canola oil</td>
<td>1.3</td>
</tr>
<tr>
<td>Walnut oil</td>
<td>1.4</td>
</tr>
<tr>
<td>Flaxseeds</td>
<td>2.2</td>
</tr>
<tr>
<td>Flaxseed oil</td>
<td>8.5</td>
</tr>
</tbody>
</table>

*1 Tablespoon = 15 ml
Raw seafood (fish and shellfish) consumption is not recommended for pregnant women as it may contain bacteria that may make the woman sick or lead to miscarriage.

Seafood consumption is advantageous for pregnant women, due to the omega-3 fatty acid and protein content, both of which are essential for the developing fetal brain and body. However, as some seafood species contain mercury at concentrations that may cause adverse developmental effects to the unborn child, the below recommendations for seafood consumption before and during pregnancy should be followed (refer to Table 8.3 for mercury content of selected seafood).

- For women contemplating pregnancy: avoid consumption of seafood with moderate-to-high mercury levels 6 - 12 months prior to conception
- For pregnant women: consume 2 - 4 servings per week of low-mercury containing seafood

**INDIVIDUALS WITH CHOLESTEROL TROUBLES**

Although shellfish (such as crab, lobster, and shrimp) is very low in fat, it contains high levels of cholesterol. Individuals who have trouble with controlling their blood cholesterol levels should, therefore, limit their intake of shellfish.

**WOMEN OF CHILDBEARING AGE AND PREGNANT WOMEN**

- Raw seafood (fish and shellfish) consumption is not recommended for pregnant women as it may contain bacteria that may make the woman sick or lead to miscarriage.
- Seafood consumption is advantageous for pregnant women, due to the omega-3 fatty acid and protein content, both of which are essential for the developing fetal brain and body. However, as some seafood species contain mercury at concentrations that may cause adverse developmental effects to the unborn child, the below recommendations for seafood consumption before and during pregnancy should be followed (refer to Table 8.3 for mercury content of selected seafood).

### Table 8.3  Mercury Content of Selected Seafood

<table>
<thead>
<tr>
<th>Lowest Content</th>
<th>Moderate Content</th>
<th>High Content</th>
<th>Highest Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchovies**</td>
<td>Cod (Alaskan)</td>
<td>Bluefish</td>
<td>Mackerel (King)</td>
</tr>
<tr>
<td>Crab**</td>
<td>Lobster</td>
<td>Tuna (canned Albacore)***</td>
<td>Marlin</td>
</tr>
<tr>
<td>Mullet**</td>
<td>Mahi Mahi</td>
<td>Tuna (Yellowfin)***</td>
<td>Shark</td>
</tr>
<tr>
<td>Oyster</td>
<td>Snapper</td>
<td>Grouper</td>
<td>Tilefish**</td>
</tr>
<tr>
<td>Salmon*</td>
<td>Tuna (canned chunk light)***</td>
<td>Hamour</td>
<td><strong>Tuna (Bigeye, Ahi)</strong>*</td>
</tr>
<tr>
<td>Sardines**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scallop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shrimp**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sole**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squid (Calamari)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trout (Freshwater)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Mullet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grey Mullet</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Farmed Salmon may contain PCB’s (Poly-Chlorinated Biphenyls) chemicals with serious long-term health effects  
**Seafood types that can be found in Lebanese sea/fresh waters  
***Read canned tuna labels carefully, and avoid high-mercury tuna types

**Definitions:** Least mercury: Less than 0.09 parts per million; Moderate mercury: From 0.09 to 0.29 parts per million; High mercury: From 0.3 to 0.49 parts per million; Highest mercury: More than 0.5 parts per million  

**Note:** Shrimp (fresh and processed) is generally low in mercury. However, a fresh shrimp species (Peneaus) in Lebanon was recently detected with high mercury levels

**Guideline 8: Consume at least two servings of fish, including fatty fish, every week**
Consume Lean Red Meat and Poultry

The aim of this guideline is to promote the regular intake of lean red meat and poultry, which are valuable sources of high quality protein, vitamins, and minerals.

Red meat and poultry are the best dietary sources of high-quality protein and the richest sources of iron, zinc and vitamin B12, micronutrients which play important roles in formation of blood cells and prevention of anemia, normal growth and development, and normal functioning of the immune system (refer to Tables 9.1, 9.2, and 9.3 for iron, vitamin B12, and zinc-rich food items).

In Lebanon, an increasing availability and consumption of meat has been witnessed. Despite this trend, a high prevalence of iron deficiency anemia and deficiencies of vitamin B12 and zinc persist in the Lebanese population. These deficiencies may be attributed in part, to the prevalent dietary practices in the country; iron intake and bioavailability, for instance, may be compromised by dietary habits that include low red meat consumption and frequent tea and coffee drinking after meals. It is therefore recommended that the regular intake of red meat and poultry be adopted, to help prevent micronutrient deficiencies. As they are also a good source of protein, the regular intake of these meats can help meet the recommended intake of protein-rich foods. However, it is recommended that lean meats be consumed, so as to offset undesirable increases in animal fat intake (which is rich in saturated fats), and prevent further escalation of obesity and associated chronic diseases in the country. Presented below is the recommended daily intake of protein-rich foods (Box 9.1), as well as key recommendations for the consumption of lean red meat and poultry (Box 9.2). Also presented are important recommendations on meat consumption for special population groups (Box 9.3).
Box 9.1

Recommended Daily Intake of Protein-Rich Foods

(based on a 2,000 calorie diet)

5 - 6.5 servings per day

1 serving is equal to:

- 30 g of cooked lean red meat (beef, veal, lamb or pork) or white meat (poultry or fish)

- 1 serving of meat substitutes*:
  - ¼ cup legumes (consumed with a vitamin-C rich food source or with small amounts of meat, chicken, or fish, for better absorption of iron)
  - 15 g of unsalted nuts or seeds
  - 1 whole egg** (or 1.5 egg whites)

*You do not have to consume red meat and poultry on a daily basis. Alternate the consumption of red meat, poultry, fish, legumes, nuts, and seeds throughout the week

**For individuals with heart disease, limit the consumption of egg yolks to not more than 2 yolks per week, as egg yolks are high in cholesterol
For cooking and preparing meat-based dishes such as ‘Shawarma’ and ‘Kafta’, as well as traditional dishes such as ‘Kebbeh’, ‘Ouzi’, or ‘Mansaf’, select extra lean and lean cuts of red meat such as beef tenderloin (فيليه)، sirloin (فيليه فو)، round (لعبة)، flank (الجناح)، shank (ميزات)، and brisket (الموزات)، or lamb tenderloin (فيليه)، and leg (فخذ). Choose leaner cuts of beef chuck (الباط) and short plate meat (الصدر الأوسط)، as there are no lean options for these cuts (refer to Figure 9.1 for beef and lamb meat cuts).

Choose beef and veal over lamb and pork meat, as beef and veal are lower in total fat and saturated fat.

Choose skinless chicken or turkey breasts over thigh options.

Limit the intake of organ meats (such as ‘Sawda’ and ‘Nkhaa’), since these are high in cholesterol.

Avoid the consumption of canned and processed meats, such as luncheon meats, smoked-meats (such as ‘Basterma’, ‘Mortadella’, and ‘Jambon’), and sausages (‘Makanik’), as these are high in salt, fat, and potentially carcinogenic compounds (nitrates and nitrites).

Adopt healthy cooking techniques for red meat and poultry such as grilling, broiling, baking, boiling, sautéing, or roasting instead of frying.

Trim away all visible white fat from red meat and poultry cuts before cooking.

Remove chicken skin prior to cooking.

Drain away any fat drippings that appear during cooking.

Limit the intake of fried meats (such as fried escalope and hamburgers), as these are high in fat and calories.

Consume meat dishes without high fat sauces or gravies.

Make sure to properly cook red meat and poultry before consumption, as these foods are highly perishable and provide an optimal medium for microbial growth.

<table>
<thead>
<tr>
<th>Box 9.2</th>
<th>Key Recommendations for the Consumption of Lean Red Meat and Poultry</th>
</tr>
</thead>
</table>
|         | For cooking and preparing meat-based dishes such as ‘Shawarma’ and ‘Kafta’, as well as traditional dishes such as ‘Kebbeh’, ‘Ouzi’, or ‘Mansaf’, select extra lean and lean cuts of red meat such as beef tenderloin (فيليه)، sirloin (فيليه فو)، round (لعبة)، flank (الجناح)، shank (ميزات)، and brisket (الموزات)، or lamb tenderloin (فيليه)، and leg (فخذ). Choose leaner cuts of beef chuck (الباط) and short plate meat (الصدر الأوسط)، as there are no lean options for these cuts (refer to Figure 9.1 for beef and lamb meat cuts).

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Make sure to properly cook red meat and poultry before consumption, as these foods are highly perishable and provide an optimal medium for microbial growth. |
Figure 9.1 Beef and Lamb Meat Cuts

Guideline 9: Consume lean red meat and poultry
### Table 9.1: Iron-Rich Food Items

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Iron (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organ meat, cooked (90 g*)</td>
<td>5.2 - 9.9</td>
</tr>
<tr>
<td>Cereals, iron fortified (¼ cup)</td>
<td>4.5</td>
</tr>
<tr>
<td>Soybeans, boiled (½ cup)</td>
<td>4.4</td>
</tr>
<tr>
<td>Pumpkin seeds, roasted (30 g***)</td>
<td>4.2</td>
</tr>
<tr>
<td>Carob molasses, 1 tablespoon (15 ml)</td>
<td>3.5</td>
</tr>
<tr>
<td>Lentils, cooked (¼ cup)</td>
<td>3.3</td>
</tr>
<tr>
<td>Beef, tenderloin, cooked (90 g)</td>
<td>3</td>
</tr>
<tr>
<td>Kidney beans, cooked (¼ cup)</td>
<td>2.6</td>
</tr>
<tr>
<td>Sardines, canned in oil, drained (1 can)</td>
<td>2.5</td>
</tr>
<tr>
<td>Lima*** beans, boiled (¼ cup)</td>
<td>2.3</td>
</tr>
<tr>
<td>Pinto† beans, boiled (¼ cup)</td>
<td>1.8</td>
</tr>
<tr>
<td>Raisins, seedless (¼ cup)</td>
<td>1.5</td>
</tr>
<tr>
<td>Chicken thigh, cooked (105 g)</td>
<td>1.3</td>
</tr>
<tr>
<td>Chicken breast, cooked (½ breast, 90 g)</td>
<td>1.1</td>
</tr>
</tbody>
</table>

*90 g equals in size a deck of playing cards or the palm of a hand

**30 g = 2 tablespoons

***Lima beans: ‘Fasoula Aa’reeda’

†Pinto beans: ‘Fasoula Aysha Khanum’

**Note:** Legumes and other iron-containing plant foods should be consumed with a vitamin-C rich food source, or with small amounts of meat, chicken, or fish, for better absorption of iron.

### Table 9.2: Vitamin B12-Rich Food Items

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Vitamin B12 (µg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mollusks, cooked (90 g)</td>
<td>84.1</td>
</tr>
<tr>
<td>Beef liver, braised (1 slice)</td>
<td>47.9</td>
</tr>
<tr>
<td>Salmon, cooked (90 g)</td>
<td>4.9</td>
</tr>
<tr>
<td>Lean beef, broiled (90 g)</td>
<td>2.4</td>
</tr>
<tr>
<td>Yogurt (1 cup)</td>
<td>1.4</td>
</tr>
<tr>
<td>White tuna, canned in water (½ can)</td>
<td>1</td>
</tr>
<tr>
<td>Milk (1 cup)</td>
<td>0.9</td>
</tr>
<tr>
<td>Egg, hardboiled (1 whole)</td>
<td>0.6</td>
</tr>
<tr>
<td>Chicken breast, roasted (½ breast, 90 g)</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Note:** 90 g equals in size a deck of playing cards or the palm of a hand

### Table 9.3: Zinc-Rich Food Items

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Zinc (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oysters (6 medium)</td>
<td>76.7</td>
</tr>
<tr>
<td>Beef shank, cooked (90 g*)</td>
<td>8.9</td>
</tr>
<tr>
<td>Crab, cooked (90 g)</td>
<td>6.5</td>
</tr>
<tr>
<td>Chicken thigh, roasted (1 thigh)</td>
<td>2.7</td>
</tr>
<tr>
<td>Lobster, cooked (90 g)</td>
<td>2.5</td>
</tr>
<tr>
<td>Chicken breast, roasted (½ breast, 90 g)</td>
<td>0.9</td>
</tr>
<tr>
<td>Kidney beans, cooked (½ cup)</td>
<td>0.8</td>
</tr>
</tbody>
</table>

* 90 g equals in size a deck of playing cards or the palm of a hand
VEGETARIANS

- Vegetarians who exclude all animal products from their diet may need almost twice as much dietary iron each day because of the lower intestinal absorption of non-heme iron in plant foods.
- Vegetarians should consider consuming a good source of vitamin C (such as citrus fruit) with meals, in order to improve the absorption of non-heme iron and zinc from plant-based foods.
- Vegetarians should choose from a variety of legumes, nuts and seeds to obtain an adequate balance of protein, iron, and zinc. Whole-grain cereals are also relatively good sources of zinc and iron.
- Vegetarians should consider consuming vitamin B12-enriched food products if available, or take vitamin B12 supplements (under the supervision of a physician or dietitian), as this vitamin is only naturally present in animal-based food items.
Limit Intake of Sugar, Especially Added Sugar from Sweetened Foods and Beverages

The aim of this guideline is to promote care and moderation in the consumption of sugar and sugar-containing foods and beverages, as a protective means against overweight, obesity, chronic diseases, and dental caries.

Scientific evidence well recognizes that dietary sugars can displace other nutrients from the diet (as they provide significant energy without essential nutrients), may lead to unhealthy weight gain, and increase the risk of dental caries (if care is not given to oral hygiene).

In Lebanon, there has been an increase in the supply and consumption of sugar and sweeteners over the past decade. A considerable proportion of the Lebanese adult population consumes excessive amounts of sugar, exceeding the World Health Organization (WHO) recommended maximum intake level of 10% of total energy intake. In a country where overweight, obesity, chronic diseases (such as diabetes), and physical inactivity are prevalent in the adult population, recommendations for a decrease in the consumption of sugar-containing energy-dense and nutrient-poor food choices should be adopted. Presented below is the maximum limit for daily sugar intake (Box 10.1) as well as key recommendations for decreasing sugar consumption (Box 10.2).
Guideline 10  Limit intake of sugar, especially added sugar from sweetened foods and beverages

Box 10.1  Maximum Limit for Daily Sugar Intake

Less than 10 teaspoons of added sugar per day (i.e. less than 50 g of added sugar or 10 % of total energy intake per day based on a 2,000 calorie diet)

Box 10.2  Key Recommendations for Decreasing Sugar Consumption

- Moderately consume sugar-containing food items such as honey and jams
- For snacks, opt for fresh or dried fruit and cereal-based products (such as ‘Ka’ak’ and ‘Kamhiyeh’), while limiting the intake of Arabic sweets, ice cream, chocolate, cake, biscuits, and candy (refer to Box 10.3 which lists foods containing most of the added sugars in the Lebanese diet and Box 10.4 for sugar content of selected dessert items)
- Opt for fresh fruit and vegetable juices over commercially made ones. Limit the consumption of sugar-sweetened fruit juices, sugar-sweetened syrup-based drinks (such as ‘Jellab’ and ‘Tamir Hindi’) and sweetened lemonade
- Limit the consumption of soft drinks (carbonated beverages), and opt for those that are “Diet” if available
- Avoid adding sugar to hot beverages; instead substitute sugar with non-nutritive sweeteners when available
- Make home-made puddings such as ‘Mhalbiyeh’ and ‘Mughly’ with half or third the amounts of sugar called for by the recipe, add fresh or dried fruit to add sweetness, use sugar substitutes or non-nutritive sweeteners, or add almond/vanilla extract, or orange-blossom/rose water to add extra flavor
- Read food labels carefully, while choosing food items without added sugar. Make sure food items claiming to be ‘sugar free’ contain less than 0.5 g sugar per serving. Added sugars may come in different names (refer to Table 10.1), but they all have the same effect in the body. Read food labels well and learn the different names of added sugars that are commonly found in the ingredient list of food products
Table 10.1  Don’t Let the Name Fool You – Learn the Different Names of Added Sugars

<table>
<thead>
<tr>
<th>Added Sugars</th>
<th>Alternative Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dextrose</td>
<td>Confectioner’s powdered sugar</td>
</tr>
<tr>
<td>Raw sugar</td>
<td>Powdered sugar</td>
</tr>
<tr>
<td>Sugar</td>
<td>Invert sugar</td>
</tr>
<tr>
<td>Brown sugar*</td>
<td>Corn syrup</td>
</tr>
<tr>
<td>Malt syrup</td>
<td>Maple syrup</td>
</tr>
<tr>
<td>Corn syrup solids</td>
<td>Molasses</td>
</tr>
<tr>
<td>White granulated sugar</td>
<td>Pancake syrup</td>
</tr>
<tr>
<td>High-fructose corn syrup</td>
<td>Honey</td>
</tr>
<tr>
<td>Dextrin nectars (such as peach or pear nectar)</td>
<td>Sucrose, fructose, maltose or lactose</td>
</tr>
</tbody>
</table>

* Brown sugar is not healthier than white sugar; brown sugar mainly consists of refined white sugar with added molasses

Box 10.3  Foods Containing Most of the Added Sugars in the Lebanese Diet

- Soft drinks (carbonated beverages)
- Sweetened commercial fruit juices
- Syrup-based drinks (such as ‘Jallab’, ‘Tamir Hindi’, and ‘Amar El Deen’)
- Pastries, cake, biscuits
- Arabic sweets (such as ‘Ma’amool’ and ‘Baklava’)
- Sweetened jams (made from figs, strawberries, or apricots)
- Milk-based desserts and products (such as ‘Mhalbiyeh’, ‘Riz Bi Haleeb’, and ‘Sahlab’)
- ‘Halaweh’
- Lebanese traditional ice cream, Gelato, or other commercial ice cream brands

Don’t Let the Name Fool You – Learn the Different Names of Added Sugars

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>Dextrose</td>
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<tr>
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</tr>
<tr>
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<td>Corn syrup</td>
</tr>
<tr>
<td>Malt syrup</td>
<td>Maple syrup</td>
</tr>
<tr>
<td>Corn syrup solids</td>
<td>Molasses</td>
</tr>
<tr>
<td>White granulated sugar</td>
<td>Pancake syrup</td>
</tr>
<tr>
<td>High-fructose corn syrup</td>
<td>Honey</td>
</tr>
<tr>
<td>Dextrin nectars (such as peach or pear nectar)</td>
<td>Sucrose, fructose, maltose or lactose</td>
</tr>
</tbody>
</table>

* Brown sugar is not healthier than white sugar; brown sugar mainly consists of refined white sugar with added molasses

Guideline 10  Limit intake of sugar, especially added sugar from sweetened foods and beverages
Did You Know?

- 1 piece of chocolate cake (150 g) contains 15 teaspoons of sugar
- 1 can of soft drink (330 ml) contains 9 teaspoons of sugar
- ½ cup of ‘Mughli’ contains 9 teaspoons of sugar
- ½ cup of ‘Mhalbiyeh’ contains 3 teaspoons of sugar
- ½ cup of vanilla ice cream contains 3 teaspoons of sugar
- 1 tablespoon of jam contains 2 teaspoons of sugar
Limit Intake of Solid Fats and Replace with Vegetable Oils

The aim of this guideline is to limit the intake of fats in general, particularly solid fats that are high in saturated and trans fat, while replacing them with vegetable oils, as a protective means against chronic diseases such as cardiovascular disease and dyslipidemia.

Dietary fats are essential to one’s diet, as they provide fat-soluble vitamins (A, D, E and K), and unsaturated fats, which have protective effects on blood lipids and glucose levels. These ‘healthy’ fats include monounsaturated fats (MUFAs) (found in olive oil, avocados, and ‘Tahini’) and polyunsaturated fats (PUFAs) (found in walnuts, vegetable oils, and fatty fish). Omega-3 PUFAs (such as α-linolenic acid and fish oils) are particularly important, as they have strong cardioprotective benefits. Dietary fats, however, contribute to energy density of food, thus may lead to unhealthy weight gain if consumed in high amounts. Solid fats (such as butter and animal ghee) can increase the risk of cardiovascular disease, being rich in cholesterol, saturated fat, and trans fat, which can raise blood cholesterol levels and may lead to the clogging of arteries (refer to Table 11.1 on the dietary sources of saturated and trans fats).

In Lebanon, there has been a gradual rise in daily fat consumption over the past three decades. Total fat intake in the adult population has reached a high of 39% of total energy intake, exceeding the American Heart Association (AHA) recommended maximum intake level of daily fat (35%), where the consumption of saturated fat is also higher than the AHA maximum limit for saturated fat intake (7%). Moreover, the consumption of olive oil, which is rich in MUFAs, is low among Lebanese adults, falling short of the Food and Drug Administration (FDA) recommended intake level of 1½ - 2 tablespoons per day. The above practices of fat consumption in the Lebanese population may partly explain the increased incidence of cardiovascular disease and dyslipidemia in the country. Presented below is the recommended daily intake of fat (Box 11.1), as well as key recommendations for the consumption of solid fats and oils (Box 11.2), and tips on how to reduce total fat and saturated fat in one’s diet (Box 11.3).
Recommended Daily Intake of Fats and Cholesterol

(based on a 2,000 calorie diet)

- Total fat: 25 - 35% of energy intake (around 56 - 78 g per day), with the majority coming from MUFAs and/or PUFAs
- Saturated fat: less than 7% of energy intake (less than 16 g per day)
- Trans fat: less than 1% of energy intake (less than 2 g per day)
- \( \alpha \)-linolenic PUFA:
  - 1.6 g per day for males
  - 1.1 g per day for females
  These PUFAs are found in walnuts and flaxseeds, as well as in many plant-based oils such as walnut, soybean, Canola, and flaxseed oils
- Cholesterol:
  - 300 mg per day for individuals without heart disease
  - 200 mg per day for individuals with heart disease

Dietary Sources of Saturated Fats and Trans Fats

<table>
<thead>
<tr>
<th>Saturated Fats</th>
<th>Trans Fats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Fat (beef, chicken, pork)</td>
<td>Margarine</td>
</tr>
<tr>
<td>Butter</td>
<td>Hydrogenated Oils</td>
</tr>
<tr>
<td>Coconut or Palm Oil</td>
<td>Partially Hydrogenated Oils</td>
</tr>
<tr>
<td>Cream</td>
<td></td>
</tr>
<tr>
<td>Vegetable Ghee</td>
<td></td>
</tr>
<tr>
<td>Full-Fat Milk and Dairy (yogurt, cheese, ‘Labneh’)</td>
<td></td>
</tr>
<tr>
<td>‘Kashta’</td>
<td></td>
</tr>
</tbody>
</table>

Note: Both Saturated Fats and Trans Fats are found in fast foods, fried foods, and commercially-prepared foods (cakes, biscuits, cookies, crackers, and chips)
• Consume low-fat or fat-free versions of dairy products. Choose low-fat or fat-free milk, yogurt, ‘Labneh’, and low-fat white cheeses instead of whole or full fat options (refer to Table 11.2 for fat and cholesterol content of selected white cheeses and ‘Labneh’ available on the Lebanese market).

• Limit the consumption of hard full-fat cheeses, particularly yellow cheeses (such as ‘Kashkaval’ and Swiss cheese) and spread cheeses, as these contain a lot of saturated fat. Instead, opt for white cheeses (such as ‘Akkawi’, ‘Halloum’, and ‘Double-Cream cheese’) or low-fat yellow cheeses when available.

• Use cooking cream or ‘Kashta’ only occasionally. Choose low-fat versions when available.

• Choose and consume white meat (such as chicken, turkey, or fish) more often than red meat (beef, lamb or pork).

• Choose beef and veal over lamb, goat, and pork meat, as beef and veal are lower in total fat and saturated fat.

• Trim away any visible solid fat from meat before preparing, and remove any remaining visible fat before eating.

• Limit the consumption of sausages (‘Makanik’), processed meat (‘Sujuk’, ‘Salami’), and organ meats, as these are high in cholesterol.

• Replace some daily meat servings with plant-based protein-rich foods such as legumes and unsalted nuts and seeds.

• Limit the consumption of fried foods (such as French fries, ‘Sambousik’, ‘Falafel’, ‘Escalope’, and fried Arabic sweets such as ‘Katayef’).

• Go easy on sweets such as chocolate, chocolate-containing confectionaries, cakes, cookies, Arabic desserts (such as ‘Knafeh’, ‘Baklawa’, and ‘Maa’mool’) and ice cream.

• Choose home-made pastry products and sweets over commercially bought ones.

• Consume on average not more than one egg a day, as eggs can contribute to dietary intake of cholesterol.

• For cooking, choose vegetable oils that are high in unsaturated fats, such as canola, sunflower, corn, soy, or olive oil. Limit the use of solid fats (such as butter and animal ghee) and vegetable ghee which is made from plant fats that contain saturated fat (such as palm and coconut oils).

• For frying, choose vegetable oils that are heat tolerant fats, such as canola, sunflower, and corn oil.

• Include a variety of omega-3 fatty acid-rich foods in your diet such as salmon, tuna, sardines, nuts (preferably raw and unsalted), and seeds (such as flaxseeds).
<table>
<thead>
<tr>
<th>Name and Type</th>
<th>Fat (g/100 g)</th>
<th>Cholesterol (mg/100 g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Akkawi’, full fat</td>
<td>14.5</td>
<td>60.3</td>
</tr>
<tr>
<td>‘Akkawi’, low fat</td>
<td>11.3</td>
<td>59.5</td>
</tr>
<tr>
<td>‘Akkawi’, fat free</td>
<td>3.4</td>
<td>25.1</td>
</tr>
<tr>
<td>‘Halloumi’, full fat</td>
<td>22.7</td>
<td>69.3</td>
</tr>
<tr>
<td>‘Halloumi’, low fat</td>
<td>17.6</td>
<td>67.9</td>
</tr>
<tr>
<td>‘Halloumi’, fat free</td>
<td>3.3</td>
<td>33.4</td>
</tr>
<tr>
<td>‘Double-crème’, full fat</td>
<td>19.4</td>
<td>81.5</td>
</tr>
<tr>
<td>‘Double-crème’, low fat</td>
<td>2.6</td>
<td>35.9</td>
</tr>
<tr>
<td>Braided Cheese (‘Mjaddal’), full fat</td>
<td>19.3</td>
<td>56.1</td>
</tr>
<tr>
<td>Braided Cheese (‘Mjaddal’), low fat</td>
<td>8.9</td>
<td>31.5</td>
</tr>
<tr>
<td>‘Labneh’, full fat</td>
<td>8.8</td>
<td>29.5</td>
</tr>
<tr>
<td>‘Labneh’, low fat</td>
<td>4.3</td>
<td>18.8</td>
</tr>
<tr>
<td>‘Labneh’, fat free</td>
<td>0.6</td>
<td>6.6</td>
</tr>
</tbody>
</table>

**Note:**
30 g cheese equals in size 2 fingers of a hand → 100 g cheese = 7 fingers
50 g ‘Labneh’ = 2 tablespoons → 100 g ‘Labneh’ = 4 tablespoons 'Labneh'
Box 11.3 Tips

How to Reduce Total Fat and Saturated Fat in the Diet

- Increase the flavor of food by using tomato paste, vinegar, lemon juice, garlic, onions, herbs, and spices, instead of using high amounts of fats and oils
- Control the amount of oils added to salads, especially ‘Fattoush’ and ‘Tabbouleh’ which tend to contain a lot of added oil
- Follow the method of baking, broiling, grilling, roasting, boiling, or sautéing food instead of frying
- When frying, use only small amounts of vegetable oil and do not deep fry
- Discard fat drippings from cooked meat
- Peel away chicken skin before cooking and eating
- For ‘Fattoush’, brown the bread in the oven instead of frying it
- As a spread for bread, choose olive oil (rich in MUFAs) or canola oil (rich in omega-3 fatty acids). When not available, choose vegetable margarines that are low in trans-fats, rather than solid fats such as butter, hard margarines, animal ghee, or vegetable ghee
- When eating out:
  - Ask for the salad dressing to be on the side, and use sparingly
  - Opt for baked potatoes, steamed vegetables or a salad as a side dish rather than French fries
  - Limit the intake of mayonnaise-containing food items such as the traditional garlic dip
- Read nutrition information labels on packaged foods and avoid products high in total fat, saturated fat, and cholesterol as well as those containing “hydrogenated” oils (refer to Table 11.3 on total fat, saturated fat, and cholesterol content of selected food items and Table 11.4 for understanding food-label claims regarding fat and cholesterol content of packaged food items)
### Table 11.3

**Total Fat, Saturated Fat, Cholesterol, and Energy Content of Selected Food Items (per serving)**

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Total Fat (g)</th>
<th>Saturated Fat (g)</th>
<th>Cholesterol (mg)</th>
<th>Calories (kcal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk, whole (1 cup†)</td>
<td>8.6</td>
<td>2.5</td>
<td>31</td>
<td>159</td>
</tr>
<tr>
<td>Milk, low fat (1 cup)</td>
<td>2.3</td>
<td>1.5</td>
<td>12</td>
<td>102</td>
</tr>
<tr>
<td>Ground beef, regular, cooked (100 g*)</td>
<td>21.8</td>
<td>8.8</td>
<td>84</td>
<td>295</td>
</tr>
<tr>
<td>Ground beef, lean, cooked (100 g)</td>
<td>12.04</td>
<td>4.8</td>
<td>12</td>
<td>230</td>
</tr>
<tr>
<td>Lamb, ground, cooked (100 g)</td>
<td>19.65</td>
<td>8.12</td>
<td>97</td>
<td>283</td>
</tr>
<tr>
<td>Lamb ribs, cooked (100 g)</td>
<td>27.5</td>
<td>11.6</td>
<td>96</td>
<td>341</td>
</tr>
<tr>
<td>Chicken thigh, fried (100 g)</td>
<td>16.53</td>
<td>4.4</td>
<td>93</td>
<td>277</td>
</tr>
<tr>
<td>Chicken breast, no skin, roasted (100 g)</td>
<td>3.6</td>
<td>1.0</td>
<td>85</td>
<td>165</td>
</tr>
<tr>
<td>Beef liver, pan-fried (100 g)</td>
<td>4.68</td>
<td>1.49</td>
<td>381</td>
<td>175</td>
</tr>
<tr>
<td>Chicken liver, cooked (100 g)</td>
<td>6.51</td>
<td>2.06</td>
<td>563</td>
<td>167</td>
</tr>
<tr>
<td>Cheddar, regular (100 g**)</td>
<td>30.1</td>
<td>19.2</td>
<td>96</td>
<td>365</td>
</tr>
<tr>
<td>Cheddar, low-fat (100 g)</td>
<td>6.4</td>
<td>3.8</td>
<td>19.2</td>
<td>157</td>
</tr>
<tr>
<td>Butter (1 teaspoon***</td>
<td>4.06</td>
<td>2.5</td>
<td>31</td>
<td>36</td>
</tr>
</tbody>
</table>

† 1 cup = 240 ml  
*100 g equals in size to slightly more than the size of a deck of playing cards or the palm of a hand  
**30 g cheese equals in size 2 fingers of a hand → 100 g cheese → 7 fingers  
***1 teaspoon = 5 ml

### Table 11.4

**Understanding Food-Label Claims**

<table>
<thead>
<tr>
<th>Food-Label Claims</th>
<th>What They Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat Free</td>
<td>&lt; 0.5 g of fat/serving</td>
</tr>
<tr>
<td>Low fat</td>
<td>≤ 3 g of fat/serving</td>
</tr>
<tr>
<td>Reduced Fat</td>
<td>At least 25% less fat/serving than the regular food product</td>
</tr>
<tr>
<td>Less Fat</td>
<td>At least 25% less fat/serving than the regular food product</td>
</tr>
<tr>
<td>Low in Saturated Fat</td>
<td>1 g of saturated fat or less/serving, with no more than 15% of calories coming from saturated fat</td>
</tr>
<tr>
<td>Lean</td>
<td>&lt; 10 g total fat, 4.5 g saturated fat and 95 mg cholesterol/serving</td>
</tr>
<tr>
<td>Light (lite)</td>
<td>Not more than ½ the fat of the regular food product/serving</td>
</tr>
<tr>
<td>Cholesterol Free</td>
<td>&lt; 2 mg cholesterol and ≤ 2 g saturated fat/serving</td>
</tr>
<tr>
<td>Low Cholesterol</td>
<td>≤ 20 mg cholesterol and ≤ 2 saturated fat/serving</td>
</tr>
<tr>
<td>Reduced Cholesterol</td>
<td>At least 25% less cholesterol/serving than the regular food product and ≤ 2 g saturated fat</td>
</tr>
</tbody>
</table>

**Note:** > : greater than; ≥ : equal to or greater than; < : less than; ≤ : equal to or less than
Limit Intake of Table-Salt and High-Salt Foods

The aim of this guideline is to encourage the reduction of excess salt in the diet, as a protective means against hypertension, as well as cardiovascular and kidney disease.

Salt (i.e. sodium chloride) is one of the major contributors to sodium intake. Excess sodium intake is associated with increased blood pressure, which in turn, increases the risk of chronic diseases such as hypertension, stroke, ischemic heart disease and kidney disease.

In Lebanon, sodium intake among adults is higher than the recommended maximum intake level of 2,300 mg per day. Data from food composition tables indicate that the amount of salt/sodium in the diet of most Middle Eastern countries, including Lebanon, is high, and that an increasing trend in the levels of sodium in food is documented. The high sodium levels in food are mainly a result of the addition of table-salt and spices used in cooking. Some spices such as cumin, cloves, and spice mixes are high in sodium content. With the high consumption of salt in the adult population and the prevalence of cardiovascular disease and hypertension in the country, salt intake needs to be controlled. Presented below is the maximum limit for daily salt intake (Box 12.1), key recommendations for decreasing salt consumption (Box 12.2), and tips on how to reduce salt intake (Box 12.3).
### Box 12.1

**Maximum Limit for Daily Salt Intake**

- 1 teaspoon salt per day (i.e. 2,300 mg sodium per day) for healthy individuals
- ¾ teaspoon salt per day (i.e. 1,500 mg sodium per day) for individuals with hypertension, type II diabetes, chronic kidney disease, or those older than 50 years old

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### Box 12.2

**Key Recommendations for Decreasing Salt Consumption**

- Spread and divide your sodium intake evenly throughout the day
- Get used to eating lower amounts of salt, as salt preference is an acquired taste that can be unlearned
- Minimize the consumption of processed food items, and choose low-salt or no salt food items
- Prepare food at home with little salt, while making sure to use iodized salt. Iodized salt contains added iodine (an essential mineral for thyroid function), the deficiency of which is one of the most commonly preventable causes of goiter, mental retardation, and developmental disability
- Read food labels carefully. The high sugar content in some products may mask the high sodium content. Compare brands of the same food item and choose the one with the lowest sodium content (refer to Table 12.1 for sodium content of selected food items, Table 12.2 for the classification of white cheeses and ‘Labneh’ available on the Lebanese market according to sodium content, and Table 12.3 for understanding food-label claims regarding salt content of packaged food items)
### Table 12.1 Sodium Content of Selected Food Items

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Serving Size</th>
<th>Sodium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breads, all types</td>
<td>30 g (1/4 loaf)</td>
<td>95 - 210</td>
</tr>
<tr>
<td>Pizza, plain, cheese</td>
<td>1 large slice</td>
<td>450 - 1,200</td>
</tr>
<tr>
<td>Frozen vegetables, all types</td>
<td>1/4 cup</td>
<td>2 - 160</td>
</tr>
<tr>
<td>Salad dressing, regular fat, all types</td>
<td>2 tablespoons (30 ml)</td>
<td>110 - 505</td>
</tr>
<tr>
<td>Tomato juice</td>
<td>1 cup (240 ml)</td>
<td>340 - 1,040</td>
</tr>
<tr>
<td>Ketchup</td>
<td>1 tablespoon</td>
<td>167</td>
</tr>
<tr>
<td>'Manaeesh'</td>
<td>100 g</td>
<td>735</td>
</tr>
<tr>
<td>Croissant</td>
<td>1 item (57 g)</td>
<td>424</td>
</tr>
<tr>
<td>Potato chips</td>
<td>10 pieces</td>
<td>120 - 180</td>
</tr>
<tr>
<td>Pretzels, salted</td>
<td>30 g (5 twists)</td>
<td>407</td>
</tr>
</tbody>
</table>

### Table 12.2 Classification of Common White Cheeses and 'Labneh' Available on the Lebanese Market According to Sodium Content

<table>
<thead>
<tr>
<th>High-Salt</th>
<th>Medium-Salt</th>
<th>Low-Salt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akkawi, full fat</td>
<td>Akkawi, low fat</td>
<td>Akkawi, fat free</td>
</tr>
<tr>
<td>Braided Cheese ('Mjaddal'), full fat</td>
<td>Halloumi, full fat</td>
<td>Halloumi, fat free</td>
</tr>
<tr>
<td>Braided Cheese ('Mjaddal'), low fat</td>
<td>Halloumi, low fat</td>
<td>Double-crème, low fat</td>
</tr>
<tr>
<td></td>
<td>Double-crème, full fat</td>
<td>'Labneh', full fat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>'Labneh', low fat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>'Labneh', fat free</td>
</tr>
</tbody>
</table>

**Definitions:** High-Salt: greater than or equal to 1,400 mg of sodium/100 g cheese; Medium-Salt: 700 - 1,400 mg of sodium/100 g cheese; Low-Salt: less than or equal to 700 mg of sodium/100 g cheese

**Note:** Most low-fat and fat-free cheeses available on the Lebanese market are lower in sodium than the full-fat versions, except for braided cheese.

### Table 12.3 Understanding Food-Label Claims

<table>
<thead>
<tr>
<th>Food-Label Claims</th>
<th>What They Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Free</td>
<td>&lt; 5 mg of sodium/serving and no sodium chloride in ingredients</td>
</tr>
<tr>
<td>No Sodium</td>
<td>&lt; 5 mg of sodium/serving and no sodium chloride in ingredients</td>
</tr>
<tr>
<td>Very Low Sodium</td>
<td>≤ 35 mg sodium/serving</td>
</tr>
<tr>
<td>Low Sodium</td>
<td>≤ 140 mg sodium/serving</td>
</tr>
<tr>
<td>Reduced Sodium</td>
<td>At least 25% less sodium/serving than the regular food product</td>
</tr>
<tr>
<td>Less Sodium</td>
<td>At least 25% less sodium/serving than the regular food product</td>
</tr>
<tr>
<td>Unsalted, No Salt Added</td>
<td>No artificial salt added, but product may contain natural sodium as part of the product</td>
</tr>
</tbody>
</table>

**Note:** > : greater than; ≥ : equal to or greater than; < : less than; ≤ : equal to or less than
How to Reduce Salt Intake

- Remove the salt shaker from the table
- Limit the consumption of processed cheeses and high salt cheeses such as ‘Bulghari’ and ‘Shankleesh’
- Soak high-salt cheeses (such as ‘Halloum’ or ‘Akkawi’) in water over night to decrease the salt content
- Minimize the consumption of pickled vegetables (such as carrots, turnips, and cucumbers) and olives
- Limit the consumption of fast food and processed food items that are high in salt (such as ‘Mankeesh’, ‘Fatayer’, ‘Sambousik’, pizza, and foods eaten with soy sauce)
- Limit the use of canned food items (such as canned tomato sauce and canned vegetables), as they usually contain salt as a preservative. Use fresh tomato sauce or vegetables, or rinse the canned vegetables with water several times to reduce the salt content
- Limit the consumption of cold-cuts and luncheon meats (such as ‘Sujuk’, ‘Makanik’, ‘Martadella’)
- Limit the use of stock (broth) cubes (chicken or beef), ketchup, mustard, soy sauce, and other ready-made sauces or dressings, as these are usually high in salt
- Use vinegar, lemon juice, garlic, onions, and herbs for food seasoning, while limiting the use of salt in cooking
- Choose unsalted nuts and seeds, and avoid snacking on potato chips, crackers, and pretzels that are high in salt
- Choose bread types that are low in salt or that are salt free
- Consume food items that are rich in potassium such as potassium-rich fruit and vegetables (such as apricots, bananas, oranges, prunes, dates, green leafy vegetables, sweet potatoes, potatoes, mushrooms, broccoli, and peas), legumes, nuts, and dairy products, since potassium is an important mineral that may help lower blood pressure

Note: Salt substitutes containing potassium chloride may be useful for some individuals. However, these substitutes may be harmful to subjects with certain medical conditions. A health care provider should be consulted prior to their use
Drink Plenty of Safe Water Every Day

The aim of this guideline is to encourage adequate intake of drinking water, to ensure proper hydration and normal physiological body functions, while making sure the water is safe.

Water is essential for the body’s normal physiological functions. It constitutes 60 - 70% of the body, and is required for digestion, absorption, and transportation of nutrients, and elimination of waste products. Water is crucial for proper body hydration, as it is important for thermoregulation, cardiovascular function, physical work capacity and exercise performance. It has been shown that dehydration on the long term may be associated with the development of chronic diseases, such as kidney stones and some types of cancer, namely bladder cancer.

In Lebanon, water intake may be decreasing at the expense of high-sugar beverages, such as soft drinks and sweetened juices. Also, evidence in the country points to possible mineral and microbiological contamination of some drinking water sources. As safe drinking water is important for overall health and proper hydration, it is advised to increase water intake, while making sure there is access to safe drinking water. Presented below is the recommended daily intake of water and other fluids (Box 13.1), as well as key recommendations for the consumption of water (Box 13.2) and recommendations on the consumption of fluids for hydration (Box 13.3). Also presented are important recommendations on water consumption for special population groups (Box 13.4).
At least 12 cups per day (up to 3.7 liters) for men
At least 8 cups per day (up to 2.7 liters) for women

Note: Water needs increase in hot and humid climates and when engaging in physical activity

- Get your home tap water checked for microbial and mineral contamination. If it is not safe for drinking, drink safe bottled-water
- Drink the recommended amounts of water every day, distributed throughout the day
- Choose water as the main hydrating fluid over other types of fluids such as coffee, tea, carbonated beverages, and sugar-sweetened juices (refer to Box 13.3)
- Drink more water in hot weather and when physically active
- Drink water before, during, and after a work-out
- Drink water even when not thirsty
### Recommendations on the Consumption of Fluids for Hydration

- Water is the preferred fluid to fulfill the body’s daily fluid needs, and is followed (in decreasing order) by:
  - Tea and coffee
  - Low-fat and fat-free milk
  - Non-sugar sweetened beverages that contain some nutritional benefits (such as fruit and vegetable juices)
  - Sugar-sweetened and nutrient-poor beverages (such as sweetened fruit juices and soft drinks)

- Although tea and coffee contain a good amount of water, these fluids contain caffeine which increases urine excretion. As such, these fluids lead to loss of water from the body if consumed in high amounts.

- Consumption of sugar-sweetened beverages has been linked to overweight, obesity, type 2 diabetes, and dental caries. Since fluid-derived energy is an important consideration in weight gain, drinking water should be the preferred beverage for hydration purposes.
**Box 13.4 Important Recommendations for Special Population Groups**

**BREASTFEEDING WOMEN**

Fluids lost in breast milk must be replaced, as 87% of breast milk is water, and the average milk production in the 1st 6 months of breastfeeding is 750 ml per day. Fluid needs of breastfeeding females are, therefore, 3 – 4 cups per day above the basic needs of 8 cups per day.

**PREGNANT WOMEN**

An additional 1 cup of fluids above the basic requirements of 8 cups per day are needed.

**ELDERLY**

As the elderly are more vulnerable to changes in water and electrolyte gain or loss, it is important to ensure the intake of proper amounts of water to maintain hydration. Aging is associated with limited mobility and impaired physiological functioning, including a decline in cardiac and renal function and decreased thirst perception.
Food-borne illnesses, which result from the presence of bacteria, viruses or bacterial toxins in food, are usually associated with the development of fever, vomiting and/or diarrhea. Health consequences of food-borne illnesses may become detrimental, especially where vulnerable population groups are involved, such as pregnant women, elderly, and those with compromised immune systems.

In Lebanon, food safety is an issue of public health concern, as microbial contamination of commonly consumed food items, such as ‘Kashta’ and meat-based fast foods such as ‘Shawarma’, has been identified. Making sure to take safety precautions at all stages of the ‘food chain’ (including purchasing, storage, cleansing, preparation, cooking, and serving) can decrease the incidence of food-borne illnesses. Presented below are key recommendations for cleaning (Box 14.1), food purchasing (Box 14.2), food storage (Box 14.3), and food preparation, cooking and serving (Box 14.4). Also presented are important recommendations on food safety for special population groups (Box 14.5).
## Key Recommendations for Cleaning

- Thoroughly wash your hands with liquid soap before starting to prepare food, with particular attention to areas between fingers and under fingernails.
- Thoroughly dry hands using a clean towel or a disposable paper towel (which cannot spread bacteria).
- Wash kitchen cloth towels frequently and make sure to replace old sponges regularly, to prevent build-up of food matter and the harboring of bacteria.
- Avoid using wooden cutting boards, and use ones made from resin or good-quality plastic instead. Also, avoid using old cutting boards with grooves, as food residues may build up over time.
- Thoroughly clean cutting boards and utensils with warm water and detergent before food preparation.
- Make sure that cooking utensils and other kitchen equipment are completely dry before using.
- Keep appliances, such as microwaves, ovens, toasters, can openers, blenders, and mixer blades clean of food residues.
- Make sure to regularly clean refrigerator and freezer shelves and doors, and to immediately clean up incidental spills.

## Key Recommendations for Food Purchasing

- Check the expiry date of packaged foods before purchasing.
- Do not purchase food items that have defective packaging, that are improperly sealed, or that present signs of spoilage.
- Keep the purchasing of chilled and frozen foods until the end of a shopping trip, to avoid warming or thawing of these products.
- Always read the label on food items for storage instructions.
### Key Recommendations for Food Storage

#### IN THE CUPBOARD
- Follow the FIFO rule (First In-First Out) in organizing your food items in the cupboard. Arrange older food products upfront, to be used before newly purchased items.
- Store dried food items in a sealed container, in a cool and dry place, away from direct heat or sunlight.
- Make sure that your cupboards are clean, and that food is stored in food-grade containers away from chemicals and non-food items.
- Regularly inspect dried food items for insect infestation.

#### IN THE REFRIGERATOR
- Make sure that the temperature of the refrigerator is maintained at 4°C or less.
- To prevent cross-contamination, store raw foods separately from ready-to-eat foods, cover cooked foods and store them on a shelf above uncooked foods, and keep fresh produce (fruit and vegetables) in closed bags on the bottom shelf or in the drawers of the refrigerator.
- Refrigerate milk-based desserts and consume within 1 or 2 days after purchase or preparation.
- Once opened, refrigerate canned foods in a covered bowl or plastic container, not in the can.
- Eat leftovers and ready-to-eat meals within 1 or 2 days.
- Thaw frozen meats in a plate or bowl placed on the bottom shelf of the refrigerator to prevent any dripping onto other food items.
- When the power is out, keep the fridge closed as much as possible. Stored food will remain safe for consumption for about 4 hours if the fridge has maintained its chill and has not been opened much. If the power is out for more than 2 hours and the temperature of the fridge has risen to 7°C of higher, discard perishable food items such as meats, dairy products, and leftovers.

#### IN THE FREEZER
- Make sure that frozen foods are kept hard frozen.
- Store frozen foods in fully sealed packages to prevent ‘freezer burn’ (the drying that occurs on the surface of a product and may negatively affect its quality but not its safety).
- When the power is out, rearrange stored food in the center of the freezer for maximum chilling, and keep the freezer doors closed as much as possible. Most freezers will stay chilled for up to 1 or 2 days if left unopened.
- When the power is back on, do not use appearance and odor as indicators of whether food is still safe for consumption. If frozen food still has ice crystals, it can be refrozen. However, if the food has completely thawed, it should be cooked without delay. Discard any food that has developed an unusual odor or color.
When preparing food

- Do not engage in food preparation if you are suffering from a food-borne illness
- When opening vacuum-sealed jars, make sure a popping sound is emitted to indicate that the jar’s seal was intact
- Throw away cans that are swollen or leaking, and throw out the contents of any can if the food has an unusual odor, color, or texture
- Make sure to thaw food in the refrigerator or a microwave, using the defrost setting
- When handling raw meats, use different chopping boards and utensils than those used for other foods, especially items that will not be cooked prior to consumption
- Thoroughly rinse fruit, vegetables, and salad greens (such as lettuce, parsley, rocket leaves or spinach) under running clean water. Washing with soap or detergent or using commercial produce washes is not recommended. Scrub firm produce well, preferably with a clean scrub brush. For extra protection, soak fruit and vegetables (especially green leafy vegetables) in a solution of vinegar, salt, and drinking water (1 cup vinegar and 1 tablespoon salt for every 2 liters of water) for 20 minutes, or in a solution of drinking water and commercial antimicrobial tablets (follow the instructions of their use). Afterwards, rinse very well with clean drinking water before consumption

When cooking food

- Do not taste food with the same spoon used for cooking
- Do not partially cook meat products; red meat, fish, and poultry must be thoroughly cooked before consumption or storage in the refrigerator
- Boil fresh milk before consumption

When serving food

- Never serve cooked food in plates and utensils that have held raw red meat, poultry, or seafood
- Limit the time during which cooked foods (such as stews and other meat and poultry dishes) are left at room temperature before consumption or storage in the refrigerator
- Do not reheat food more than once. When reheating food, heat until boiling or ‘steaming hot’ throughout
- If raw meat is to be served (such as ‘Kibbeh Nayyeh’), carefully select the meat to be eaten, or the restaurant it is eaten from, and consume immediately after preparation
- Eat takeaway meals within 2 hours of purchase. Otherwise, refrigerate immediately and consume within 1 - 2 days
The following population groups are most susceptible to food-borne illnesses:

- Pregnant women and children
- Older adults
- Individuals with weakened immune systems (such as individuals who are undergoing cancer treatment or organ transplant and those who are HIV-infected)

These population groups should avoid the following food items:

- Unpasteurized fruit juices
- Unpasteurized milk
- Dairy products prepared with unpasteurized milk, such as ‘Baladi’ cheese and soft cheeses (Feta, Brie, Camembert, and Ricotta), unless cooked and served hot
- Raw sprouts (such as bean sprouts)
- Raw or undercooked red meat, poultry, or seafood (fish, shellfish, and Sushi containing raw fish)
- Salads prepared outside home which contain ham, chicken, eggs, tuna, or seafood
- Salads prepared outside home which contain fresh produce (fruit and vegetables) that is improperly washed
The fourteen food-based dietary guidelines presented in this manual are based on sound scientific evidence relating dietary and physical activity practices with health outcomes. These guidelines are tailored to the prevalent nutrition-related public health problems and food consumption patterns identified among the Lebanese adult population, while taking into account the population’s dietary needs and cultural food preferences, as well as food availability in the country. These fourteen food-based dietary guidelines are integrated and should be implemented together. Health benefits can be obtained by even incorporating one change into one’s diet and lifestyle habits, but the more guidelines followed, the more health benefits witnessed! It is never too late to incorporate healthy changes into one’s diet and lifestyle habits, so now is a good time to start!

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