



FOOD BASED DIETARY GUIDELINES

FOR THE KINGDOM OF BAHRAIN



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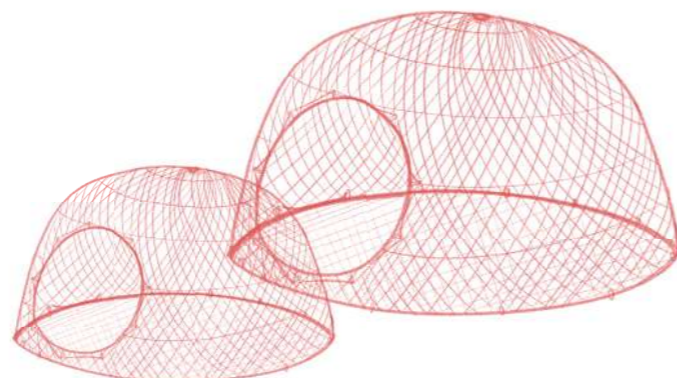
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List of Abbreviations

- BMI:** Body Mass Index
- FBDG:** Food-Based Dietary Guidelines
- FIFO:** First In-First Out
- GHG:** Greenhouse Gases
- HDL:** High-Density Lipoprotein
- LDL:** Low-Density Lipoprotein
- IOM:** Institute of Medicine
- NCDs:** Non-Communicable Diseases
- WHO:** World Health Organization



Foreward

The Kingdom of Bahrain, under the prosperous era of His Majesty King Hamad bin Isa Al Khalifa, with the support of His Royal Highness (HRH) Prince Salman bin Hamad Al Khalifa the Crown Prince and Prime Minister, has had many honorable achievements.

On the health level, the Kingdom of Bahrain represented by the Ministry of Health has strived to develop initiatives and strategies that raise the level of health of the community as the basis and focus of development. This has been directly translated and seen through the commitment to implementing strategies for programs and projects to achieve the 2030 UN Sustainable Development Goals by reducing premature deaths associated with chronic non communicable diseases.

The Kingdom of Bahrain has been at the forefront of implementing vital measures to improve nutritional intake. As the adoption and enforcement of the International Code of Marketing of Breast Milk Substitutes since 1995.

Another current initiative is the issuance of a salt reduction regulation in bakery products. And the issuance of a regulation to control the use of partially hydrogenated oils in food products. Lastly, the adoption of a policy of imposing excise taxes on energy drinks and carbonated drinks. The Kingdom of Bahrain was also honored to have been selected from among 28 countries in the world as a leading country implementing the WHO Acceleration Plan to STOP Obesity.

These initiatives have been able to thrive due to the Government's support, it receives that reflects the wise leadership's keenness on the health and well-being of citizens in the Kingdom of Bahrain, and its deep belief that they are the wealth of this country.

The Kingdom of Bahrain has made great strides for more than two decades in the field of nutrient fortification. Since 2002, a policy was issued to fortify flour with iron and folate which contributed significantly to improving the incidence of anemia and birth defects in the neural tube.

The Kingdom of Bahrain has also paid great attention to food surveys for micronutrient deficiencies, as the World Health Organization declared in 2014 that the Kingdom of Bahrain is free of destitution according to a research study conducted in 2012-2013.

In addition, nutritional surveys continue to be conducted to determine the prevalence of vitamin D deficiency among adults and adolescents and work on developing policies to address the increase in vitamin D deficiency rates.

In recognition of the importance of physical activity, Bahrain has adopted initiatives to promote physical activity and sports by being selected as the host of the International School Sport Federation (ISF) Gymnasiade 2024. Furthermore, the Kingdom of Bahrain annually holds "Bahrain Sports Day", which embodies the importance of adhering to a healthy and active lifestyle with the participation of all segments of society. The Kingdom also received the WHO Award for Healthy Cities.

We are pleased for your participation in the issuance of the Bahraini Food dietary Guideline, which is the latest product carried out by the Ministry of Health represented by the Nutrition Section. This dietary guideline has been conducted in cooperation with the World Health Organization. This guide was prepared in a systematic collaborative manner with national, international and specialized expertise. This collaborative work has formulated a list of proven scientific evidence that reflects the nutritional and health situation in the Kingdom. their aims to improve nutritional intake, and to encourage the health of citizens and prevent diseases. And to raise awareness of the need for food group requirements for different age groups and present it to the community in an innovative way that reflects the Bahraini identity. It is also considered a reference for programs and plans concerned with primary prevention and awareness directed to the Bahraini society.

Food Based Dietary Guidelines of Kingdom of Bahrain

The Bahraini Food-Based Dietary Guidelines (FBDG) represent yet another milestone of the multitude of efforts to promote healthy eating and lifestyle in the Kingdom of Bahrain. Since the discovery of oil in the 1970s, Bahrain has witnessed a marked economic and Financial development. This resulted in significant dietary and lifestyle changes among its population, coupled with a high prevalence of Non-Communicable Diseases (NCDs).

Such a situation triggered national efforts to develop programs and interventions to promote healthy eating and lifestyles, the core of which are country-specific Food Based Dietary Guidelines (FBDG). The developed guidelines are designed to serve policymakers, nutrition, and health professionals, and all individuals and their families in the Bahraini community to promote the consumption of a healthy, nutritionally adequate diet. The information in the Dietary Guidelines can be used to develop, implement, and evaluate nutritional and public health programs

The development of the Bahraini Food-based guidelines followed a participatory methodology with national, international, and technical experts working together towards an evidence-based formulation of these guidelines.

These guidelines stemmed from a triangulated approach that consisted of the following:

1. A situation analysis of the diet-related diseases and food consumption in Bahrain was conducted, using published as well as grey literature.
2. Extensive review and synthesis of cutting-edge and evidence-based research addressing the association of diet with health and diseases, with a focus on the diseases prevalent in Bahrain.
3. International and local experts' vetting of the science using a culture and context specific lens.

The Bahraini FBDG consisted of 11 key messages, which together aim to foster a better health and address the risk factors of the main diseases prevalent in the country. More specifically, the guidelines encourage maintaining a healthy body weight; enjoying a diverse diet rich in fruits, vegetables, and whole grains; minimizing red meat, processed food, sugar, and salt; and increasing the consumption of plant proteins such as legumes and nuts.

The guidelines address not only dietary intake but also the well-being of Bahrainis. By highlighting the importance of exercise, family meals, mindful eating, and connecting with one's culture and heritage, the Bahraini guidelines underscore the importance to consider diet-related behaviors known to be instrumental in supporting mental health and well-being.

At the core of the guidelines are concepts of sustainable food consumption, whereby the consumption of plant-based foods and decreasing food waste are encouraged not only for a better health for humans but also to protect the environment and decrease the environmental footprints of food consumption in the country.

In this booklet, for the 11 guidelines, details explaining the specifics of the guidelines are included. In addition, practical tips for easy adoption and application of the guideline in one's lifestyle are provided. Within each of the guidelines, special population groups (such as pregnant women, school-aged children, adolescents, or the elderly) are considered and addressed.

The main goal of the Bahraini FBDG is to promote health and prevent disease. Given the public health orientation of the guidelines, they are not intended to replace any clinical guidelines for treating chronic diseases. As such, the Bahraini FBDG target mainly the healthy population. People requiring special diets are advised to consult with a Dietitian /Nutritionist or other health professionals for more guidance.

Following the Bahraini Food-Based Dietary Guidelines, you will be capable of:

1. Appreciate the beneficial outcomes of adopting a healthy lifestyle.
2. Plan an overall diet and physical activity regimen conducive to a good health.
3. Select healthy food options from the six food groups (Vegetables, Fruits, Grains, Milk and milk products, Protein foods, and Oils).
4. Be aware of the effect of your food choices on the environment and its sustainability.
5. Follow basic steps to ensure safe food production and consumption.
6. Enjoy eating habits that foster a better connection with one's family and friends and with one's traditions and culture.

Acknowledgements

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Guideline 01

Take care of your bodyweight today to enhance your health tomorrow.



Guideline 02

Move more. Exercise does not only optimize your body, it enhances your mind and mood.



Guideline 07

Pay attention to your intake of salt and sugar, especially the hidden ones



Guideline 08

Stay hydrated with water and healthy fluids.



Guideline 03

Maintain a varied and balanced diet and adopt a healthy lifestyle.



Guideline 04

Keep it simple by sticking to eat fruits and vegetables daily.



Guideline 09

Follow the recommendations for safe food production and consumption.



Guideline 10

Contribute to protecting the environment, feeding the hungry and saving money by decreasing food waste.



Guideline 05

Switch to healthier animal proteins, and incorporate low fat milk and dairy products as well as fish/sea food.



Guideline 06

Replace processed meat with vegetarian alternatives such as legumes and unsalted nuts.

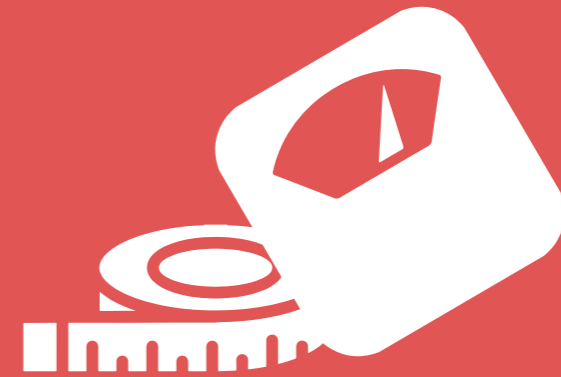


Guideline 11

Eat homemade foods with your family to promote enjoyment and connect with cultural heritage.

Guideline: 01

Healthy Bodyweight



Take care of your bodyweight today to
enhance your health tomorrow

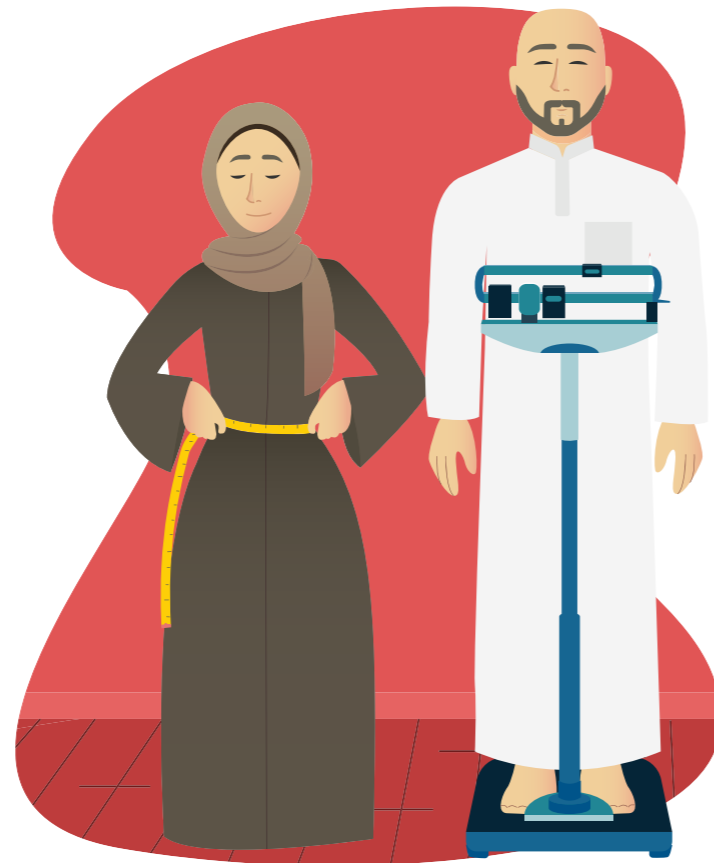
Guideline: 01

Take care of your bodyweight today to enhance your health tomorrow

Reaching and maintaining a healthy body weight is essential for overall health and wellbeing among all age groups. In addition to reducing the risk of short- and long-term morbidity and mortality, a healthy body weight enhances the mental status as well as optimizes growth and development among children. [1-6]

On one hand, being overweight or obese predisposes you to chronic illnesses, while, on the other hand, being underweight increases your risk of nutrient deficiencies, anemias, bone loss, and early mortality. [7]

In the Kingdom of Bahrain, alarming rates of overweight and obesity have been reported, where one in every three adult Bahrainis is either overweight or obese. Equally disconcerting are the prevalence rates reported among children and adolescents (25-40%). [8]



1. How body weight is assessed

Anthropometric measurements, including weight, height and waist circumference, are usually used to assess the status of body weight.

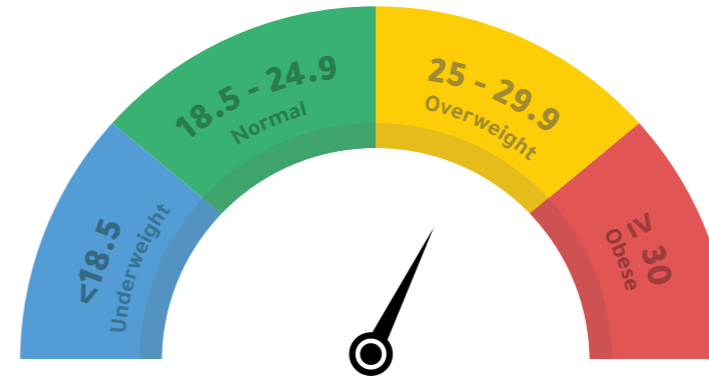


Table 1. Body weight according to BMI [9, 10]

BMI (kg/m ²)	Classification
< 18.5*	Underweight
18.5 - 24.9	Normal
25-29.9	Overweight
≥ 30**	Obese

* Underweight (smaller than 18.5kg/m²)

** Obesity (equal to or greater than 30kg/m²)

● **Body mass index (BMI)** is an indicator of whether your weight is adequate for your height. It is calculated by dividing your weight in kilograms (kg) by your height in meters squared (m²) (BMI= Body weight in kilograms /Square of height in meters). This tool is used for adults and is generally not applicable for athletes or individuals with a lot of muscle nor for children or adolescents. Table 1 shows the classification of the body weight based on BMI. It is recommended that you aim for a normal BMI, between 18.5 and 24.9 kg/m². [9, 10]



● **Waist circumference** is another useful tool to assess central (or abdominal) obesity, which is strongly associated with increased health risks particularly cardiovascular diseases. It is recommended that you aim for a waist circumference below 102 cm if you are a male or below 88 cm if you are a female. [11]

2. The effect of weight status on health

● Overweight and obesity

Being overweight or obese may increase the risk of many health problems as shown in figure 1-1. [12, 13]

Figure 1-1: Risk of being overweight and obese



You can prevent and at least partially reverse many of those obesity-related conditions if you follow a healthy weight loss strategy including the adoption of a nutritious dietary pattern and an active lifestyle. [12-14]

● **Underweight (Thinness)**

Being underweight can negatively affect your health. For instance, it may weaken your immunity and muscle strength and increase your risk of osteoporosis. [15]

Consulting with your healthcare provider and licensed dietitian/nutritionist is advisable to detect and manage possible underlying causes of obesity or underweight and to provide a personalized weight program, especially in the presence of a health condition.

3. Potential causes of being overweight and obesity in the population

While the risk of being overweight and obesity traces back to your genes [17], a considerable proportion of this risk relates to the behavioral, environmental and social factors, as outlined below:

- Energy intake that exceeds energy expenditure [18]
- Increased consumption of food high in calories, fat, and sugar [18]
- Sedentary lifestyle and lack of physical activity [18, 19]
- Eating behavior disorders such as binge-eating and night-eating syndrome [20]

Box 1.1. Tips for preventing and managing overweight and obesity [21-25]

- Adhere to a safe, gradual weight loss program
- Consume a healthy diversified diet on a daily basis
- Replace energy-dense foods with nutrient-dense foods
- Control your portion sizes
- Be more physically active and opt for a more active lifestyle
- Pay attention to your mental health
- Follow the recommendations of the Bahraini Food-Based Dietary Guidelines
- Consult with your healthcare provider and licensed dietitian/nutritionist, especially in the presence of a health condition.

4. Special population groups

1. Children and adolescents

A healthy body weight among children and adolescents is crucial for optimal growth and health during childhood and into adulthood. [26]

● **Consequences of inadequate body weight among children and adolescents:**

A major long-term consequence is that childhood overweight or obesity most likely persists into adulthood leading to an elevated risk of chronic diseases and early mortality. [27, 28] Moreover, one of the most immediate consequences of being overweight and obese in children and adolescents is the increased risk of developing negative body image and eating disorders mainly due to social discrimination. [14]

Undernutrition during infancy and early childhood, including wasting, stunting and underweight, is associated with impaired physical and cognitive development, elevated risk of infections, and increased risk of morbidity and mortality. [26, 29] These conditions most commonly result from inadequate socioeconomic factors but can also occur due to inappropriate dietary restrictions. [30]

● **How to assess growth and body weight?**

Children's body weight and growth are commonly assessed using growth charts as follows:

► **Under-five children (Boys and girls): [31, 32]**

- The Length/height-for-age growth chart is used to indicate stunting (if below -2 standard deviation).

- Weight-for-age growth chart is used to indicate underweight (if below -2 standard deviation).

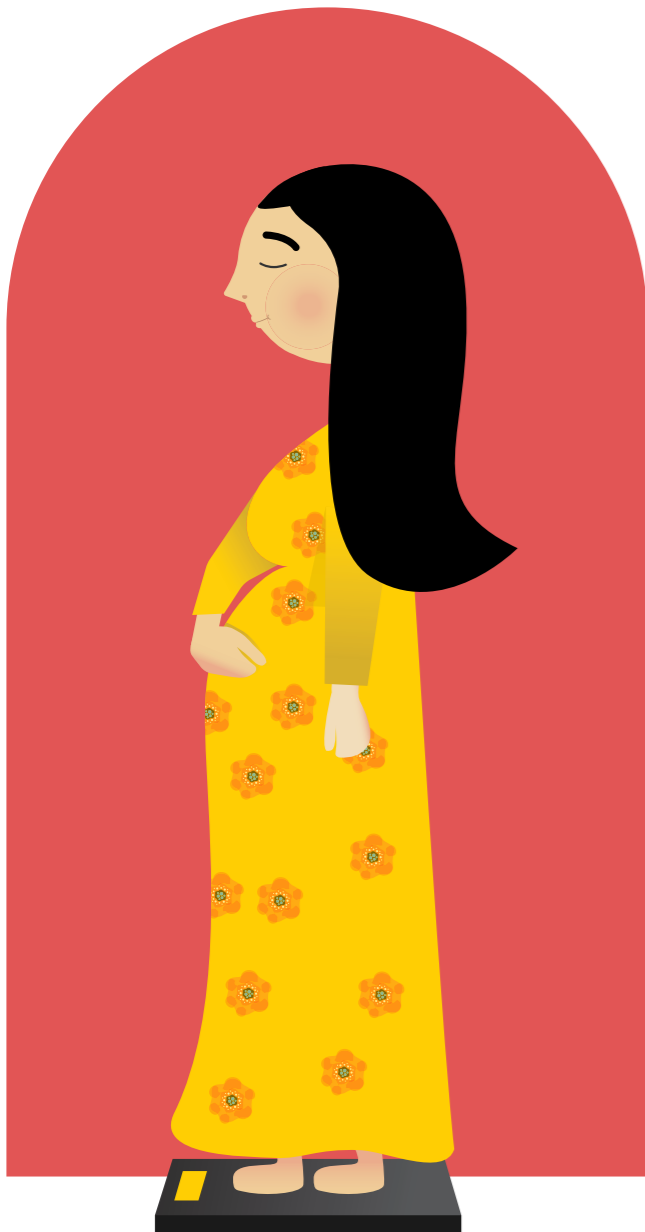
- Weight-for-height growth chart is used to indicate wasting (if below -2 standard deviation) or overweight/obesity (if above +2 standard deviation).

► **School-aged children (Boys and girls) and adolescents: [33]**

- BMI-for-age is used to indicate thinness (if below -2 standard deviation) or overweight/obesity (if above +1 standard deviation).

Box 1.2. Tips for achieving and maintaining a healthy body weight among children and adolescents [34, 35]

- Help your children develop healthy eating behaviors and dietary patterns
- Encourage an active lifestyle and physical activity
- Replace high-fat, high-sugar, or salty snacks (such as sweetened beverages, sweets, chips, etc) with nutrient-dense foods (such as fruits and vegetables)
- Based on the individual recommended intake (as shown in Table 3 of Guideline 3)
- Limit screen time
- Ensure adequate sleep
- Be good role models
- Consult with your child's healthcare provider and licensed dietitian/nutritionist



2. Pregnant women

In order to optimize pregnancy and birth outcomes, it is important that you focus on having a healthy pre-pregnancy body weight (normal BMI), adhere to a healthy diet and lifestyle, and incorporate more physical activity prior to getting pregnant. During pregnancy, maintaining healthy weight gain is essential to decrease the risk of complications and reduce the risk of fetal adverse effects. [36, 37]

Box 1.3. Tips for achieving healthy weight gain during pregnancy [38-40]

- Adhere to the recommended gestational weight gain ranges that are specific to your pre-pregnancy BMI (shown in Table 2).
- Eat a balanced and varied diet (additional details are presented throughout the guidelines).
- Emphasize the intake of nutrient-dense foods, while controlling portion size. It is not about 'eating for two'.
- Stay physically active, unless advised otherwise by your healthcare provider.
- Monitor your weight gain throughout your pregnancy

Table 2.

Recommended gestational weight-based according to pre-pregnancy BMI [41]

Pre Pregnancy BMI Category	Recommended gestational weight gain for mothers of singleton	Recommended gestational weight gain for mothers of twins
Underweight (<18.5 kg/m ²)*	12.5-18 kg	---
Normal weight (18.5-24.9 kg/m ²)	11.5-16 kg	16.8-24.5 kg
Overweight (25-29.9 kg/m ²)	7-11.5 kg	14.1-22.7 kg
Obese (≥30 kg/m ²)**	5-9 kg	11.3-19.1 kg

* Underweight (smaller than 18.5kg/m²)

** Obesity (equal to or greater than 30kg/ m²)

3. Older adults

Among older adults, being underweight may be more serious than being overweight or obesity. Unintentional weight loss, inability to consume foods, and undernutrition should be communicated with your healthcare provider. For obese older adults who are required to lose weight, individualized programs which maintain muscle and bone mass are recommended through a specialist. [15, 37]

Box 1.4. Tips for achieving healthy weight gain among older adults. [42]

- Eat a balanced and varied diet (additional details are presented throughout the guidelines).
- Emphasize the intake of nutrient-dense foods such as food that contain protein healthy fat and fiber.
- Limit the intake of harmful foods such as those rich in salt, fat, and sugar.
- Stay physically active, unless advised otherwise by your healthcare provider.
- Eat with friends and family.
- Avoid skipping meals.
- Have your meals delivered in case you are unable to prepare your own food. While ensuring that these meals are healthy, they contain protein, fiber and healthy fats.

Guideline: 02

Physical Activity

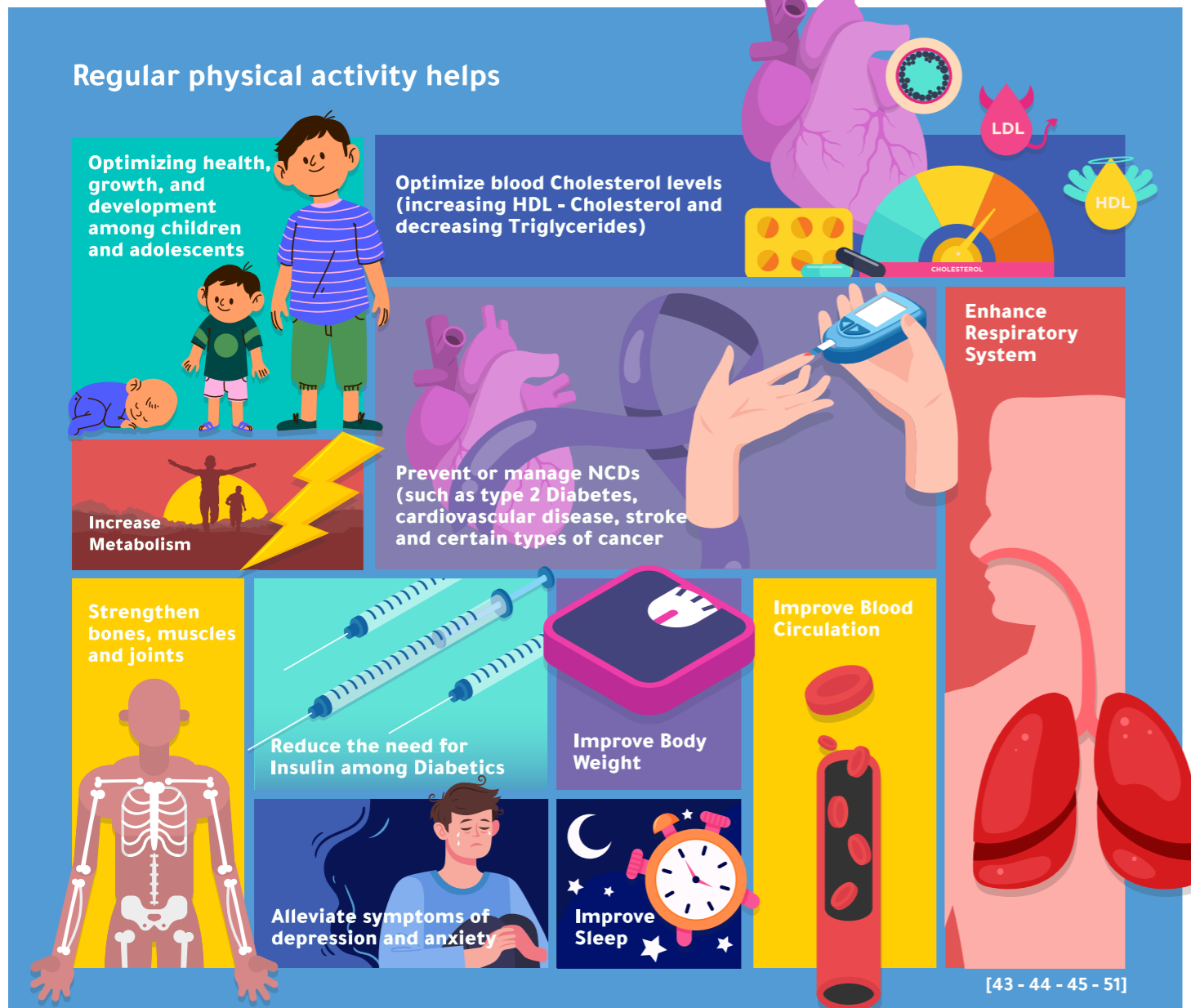


Move more. Exercise does not only optimize your body, it enhances your mind and mood

Guideline: 02

Move more. Exercise does not only optimize your body, it enhances your mind and mood.

Figure 2-1: Benefits of physical activity on health outcomes



Physical activity has significant benefits on physical, metabolic, and mental health as shown in figure 2-1. [43-45] In the kingdom of Bahrain, half of the population was reported to have insufficient physical activity (< 150 minutes per week). [46]

Box 2.1. Recommendations for the time and types of physical activity [44, 45]

- Aim to be active daily. Throughout each week, it is recommended that you reach at least 150 to 300 minutes (2.5 to 5 hours) of moderate intensity aerobic physical activity (see Box 2.2). For example, this could be accomplished by exercising for 30 minutes a day, 5 days a week.
- Alternatively, you could engage in at least 75 to 150 minutes (1.25 to 2.5 hours) of vigorous intensity aerobic physical activity (see Box 2.2), or an equivalent combination of moderate and vigorous intensity activity spread across the week.
- At least two days per week, include activities for muscle-strengthening.
- Overall, limit the time you spend being inactive (sedentary). Some physical activity is better than none.

Box 2.2. Examples of physical activities based on the level of intensity and type [47, 48]

- **Moderate intensity:**
 - o Brisk walking
 - o Cycling, light effort
 - o Heavy cleaning (washing the windows, vacuuming, mopping)
- **Vigorous intensity:**
 - o Running or jogging
 - o Hiking
 - o Cycling, fast effort
 - o Playing football, soccer, basketball

Box 2.3. Tips to help you get active [49, 50]

- Plan for regular walks with your family
- Take the stairs instead of the elevator or the escalator.
- Park farther than your destination and walk.
- Reduce sedentary activities and screen time.
- Start slow and gradually build up the duration and intensity of physical activity, to reach the weekly recommendations.
 - Be a role model for your family, especially your children.
- Join a fitness group and the gym or exercise classes.
- Engage in active play with your kids.

1. Children and adolescents

Box 2.4. Physical activity recommendations for children and adolescents [44]

- Infants (0-11.9 months):
 - Several times throughout the day, infants should be physically active in a variety of ways. These include interactive floor-based play and at least 30 minutes of tummy time.
 - Restraining the child (example on strollers or high chairs) for more than an hour is not recommended.
 - Sedentary screen time is not recommended.
- Children aged 1-4 years:
 - Children need to engage in different types of physical activities for at least 180 minutes, of which at least 60 minutes is moderate to vigorous intensity physical activity (for 3-4 year-olds)
 - Restraining the child (example on strollers or high-chairs) for more than an hour is not recommended.
 - Sedentary screen time is not recommended for 1 year-old children and should be limited to less than an hour for 2 to 4 year-old children.

- Children and adolescents aged 5-17 years old:
 - It is recommended to engage in at least 60 minutes per day of moderate-to-vigorous intensity throughout the week.
 - Vigorous-intensity aerobic activities for example muscle/bone strengthening exercises need to be incorporated at least 3 days a week.
 - Sedentary activities should be limited.

2. Pregnant women

Overall, physical activity is safe and recommended for pregnant women, unless otherwise indicated by your healthcare provider. Being physically active during pregnancy helps decrease common gestational conditions including back pain, constipation, bloating, and gestational diabetes. It also enhances your energy, mental health, and quality of sleep, as well as helps optimize your bone health, posture, gestational weight gain, and preparation for labor. [44, 52, 53]

3. Older adults

Box 2.6. Physical activity recommendations and tips for older adults [44, 54-56]

- Obtain approval from your physician prior to engaging in physical activity.
- It is recommended that, across the week, you participate in at least 150 minutes of moderate intensity aerobic activity or at least 75 minutes of vigorous intensity aerobic activity or an equivalent combination of both.
- Engage in activities that improve your balance and flexibility at least 3 days per week. These could include yoga and pilates.
- Engage in activities that strengthen your muscles at least 2 days per week. These could include working with resistance bands, and exercise using your own body weight.
- Aim to be active daily. Any activity is better than none.
- Add some physical activity to your daily routines, such as taking the stairs instead of the elevator and walking your dog.
- Limit sedentary activities, unless otherwise indicated by your physician.
- Wear comfortable clothing and well-fitted workout shoes.
- Ask for support from your family and friends.

Box 2.5. Physical activity recommendations and tips for pregnant women [44, 52, 53]

- When pregnant, obtain approval from your physician prior to initiating physical activity.
- It is recommended to engage in at least 150 minutes of moderate-intensity physical activity, including aerobic and muscle-strengthening activities.
- Be cautious while exercising and avoid activities that put you at risk of injury, including:
 - Activities that put you at risk of falling
 - Activities that put you at risk of abdominal trauma or injuries
 - Activities that require extensive jumping or bouncing
- Avoid exercising in hot, humid environments
- Wear loose-fitting clothes, a supportive bra, and well-fitted workout shoes.
- Stay hydrated with plenty of water before, during and after your exercise.

Guideline: 03

Varied/Balanced Diet



Maintain a varied and balanced diet
and adopt a healthy lifestyle

Guideline: 03

maintain a varied and balanced diet and adopt a healthy lifestyle

The consumption of a varied diet, balanced between healthy choices from the different food groups is key to providing the body with the essential nutrients, optimizing overall health, and preventing and managing chronic diseases. [57, 58] In the Kingdom of Bahrain, evidence has shown high prevalence rates of consuming unhealthy, imbalanced dietary patterns. [46, 59-63]

1. Setting the scene for enjoying a wide variety and balanced amount of nutritious foods

Consuming diverse food options from the different food groups, while emphasizing the intake of nutrient-dense foods. [64] More specifically, such a dietary pattern includes consuming whole-grain products, legumes, fruit, vegetables, fish, and low-fat milk and dairy products, while reducing refined products, high-fat foods, sweets, empty calories. [65] Details of the different food groups and their recommendations are presented below. [24, 66-68]



Table 3
recommended serving intake from each food group based on recommended calories requirements

The recommended daily servings from each food group according to age and gender						
Age	Calories	Grains and Their Derivatives 1 Ounce (grams 30)	Vegetables 1 cup	Fruits 1 cup	Milk & Dairy Products 1 cup	Protein Foods
Months 12 - 23	700 - 1000	1 ¾ - 3	¾ - 1	½ - 1	1 ¾ - 2	2
Girls 2 - 4	1000 - 1400	3 - 5	1 - 1 ½	1 - 1 ½	2 - 2 ½	2 - 4
Boys 2 - 4	1000 - 1600	3 - 5	1 - 2	1 - 1 ½	2 - 2 ½	2 - 5
Girls 5 - 8	1200 - 1800	4 - 6	1 ½ - 2 ½	1 - 1 ½	2 ½	3 - 5 ½
Boys 5 - 8	1200 - 2000	4 - 6	1 ½ - 2 ½	1 - 2	2 ½	3 - 5
Girls 9 - 13	1400 - 2200	5 - 7	1 ½ - 3	1 ½ - 2	3	4 - 6
Boys 9 - 13	1600 - 2600	5 - 9	2 - 3 ½	1 ½ - 2	3	3 - 5 ½
Girls 14 - 18	1800 - 2400	6 - 8	2 - 3 ½	1 ½ - 2	3	5 - 6 ½
Boys 14 - 18	2000 - 3200	6 - 10	2 ½ - 4	2 - 2 ½	3	5 ½ - 7
Women 19 - 30	1800 - 2400	6 - 8	2 - 3 ½	1 ½ - 2	3	5 - 6 ½
Men 19 - 30	2400 - 3000	8 - 10	3 - 4	2 - 2 ½	3	6 ½ - 7
Women 31 - 59	1600 - 2200	5 - 7	2 - 3	1 ½ - 2	3	5 - 6
Men 31 - 59	2200 - 3000	7 - 10	3 - 4	2 - 2 ½	3	6 - 7
Pregnant and breast feeding women	1800 - 2800	6 - 10	2 ½ - 3 ½	1 ½ - 2 ½	3	5 - 7

Ranges of food serving size vary based on calories and physical activity.

Food groups serving size

Vegetables [24, 67]

❖ One serving of vegetables is equivalent to:

- **2 cups** of green leafy vegetables (such as lettuce, parsley, mint, purslane)
- **1 cup** of raw vegetables (such as cucumbers, tomatoes, cauliflower, cabbage, onions, broccoli)
- **1 cup** of cooked vegetables (such as spinach, squash, cauliflower, cabbage, pumpkin)
- **1 cup** of fresh vegetable juice
- **2 cups** leafy salad greens
- **½ cup** dried vegetable
- **1 large** or **2 small** tomatoes
- **2 medium** carrots
- **1 large** bell pepper



Fruits [24, 69]

❖ One serving of fruits is equivalent to:

- **1 cup** raw or cooked fruits
- **½ cup** dried fruit
- **½ large** or 1 small apple
- **½ large** banana
- **1 large** orange
- **1 medium** grapefruit
- **1 medium** pear
- **Small 32** grapes
- **8 large** strawberries
- **1 cup** of fresh fruit juice
- **3-5** dried dates



Food groups serving size

Grains [24, 68, 70]

- ❖ **Whole grains may include** brown rice, barley, buckwheat, bulgur, oats, popcorn, quinoa, whole-wheat bread, and whole-grain cereals.
- ❖ **1 serving of grains is equivalent to:**
 - **½ cup** cooked rice or pasta
 - **½ cup** of cooked bulgur
 - **1 medium** slice of bread, tortilla toast.
 - **30 grams** markouk
 - **¼ tannour** bread
 - **1 cup** unsweetened cereals



Milk and dairy products [24, 66, 70]

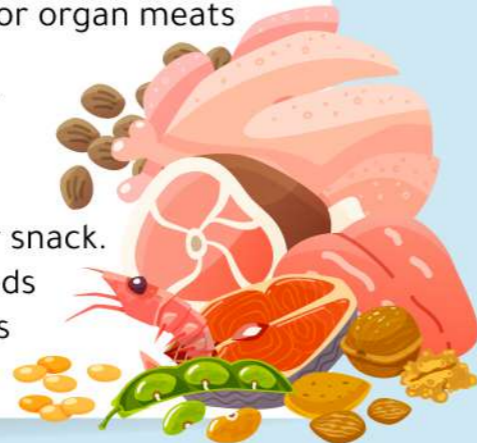
- ❖ **Items of the milk and dairy products include** milk, yogurt, cheeses, dairy desserts, lactose-free and lactose-reduced products, and fortified soy beverages.
- ❖ **1 serving is equivalent to:**
 - **1 cup of liquid milk**, yogurt, or calcium fortified soymilk.
 - **3 tablespoons** of powdered milk
 - **1 ½ ounces (45 grams)** of natural cheese such as cheddar cheese
 - **2 ounces (60 grams)** of white cheese, Mozzarella, Parmesan
 - **3 tablespoons of lowfat labna**
 - **1 cup laban**
 - **2 ounces (60 grams)** of white cheese
- ❖ **Emphasize the intake of low-fat and skimmed milk and dairy products**, and choose white cheeses over yellow, hard and processed cheeses.



Food groups serving size

Protein Foods [24, 71]

- ❁ **1 serving of protein foods is equivalent to:**
 - **1 ounce (30 grams)** of lean meats, poultry, or seafood
 - **1 egg or 2 egg whites**
 - **¼ cup** cooked beans (such as chickpeas, kidney beans, white beans), peas, and lentils.
 - **1 tablespoon** of nut or seed butter (such as peanut butter)
 - **½ ounce (15 grams)** nuts or seeds (such as 12 almonds or 7 walnut halves)
 - **1 ounce (30 grams)** of cooked beef, goat, lamb, or organ meats (like liver)
 - **1 ounce (30 grams)** of cooked chicken or turkey
- ❁ **Select lean meats and skinless poultry.**
- ❁ **Limit the intake of processed meats.**
- ❁ **Choose unsalted nuts** and seeds as part of your snack.
- ❁ **Emphasize the intake of legumes, nuts and seeds** as alternative protein sources to animal proteins
- **½ ounce (15 grams)** raw nuts.



Oils [24, 72, 73]

- ❁ **Choose sources of unsaturated fat**, including most vegetable oils (such as olive, canola, corn, or sunflower oils), olives, avocado, fatty fish, nuts, and seeds).
- ❁ **Reduce or moderate your saturated fat intake** Such as (Adani fat, coconut oil, animal butter and palm oil)
- ❁ **Limit the intake of trans fat** (e.g. partially hydrogenated oils) such as those found in baked goods (vegetable ghee, margarine, vegetable butter)



2. Special population groups

1. Children and adolescents

The recommended daily servings of the different food groups for children and adolescents are presented in Table 4. [24, 66-68]



Table 4. **Recommended daily amounts^a of food groups for children and adolescents, according to age [24, 66-68]**

Age	Calories	Grains and Their Derivatives 1 Ounce (grams 30)	Vegetables 1 cup	Fruits 1 cup	Milk & Dairy Products 1 cup	Protein Foods
Months 12 - 23	700 - 1000	1¾ - 3	¾ - 1	½ - 1	1¾ - 2	2
Girls 2 - 4	1000 - 1400	3 - 5	1 - 1½	1 - 1½	2 - 2½	2 - 4
Boys 2 - 4	1000 - 1600	3 - 5	1 - 2	1 - 1½	2 - 2½	2 - 5
Girls 5 - 8	1200 - 1800	4 - 6	1½ - 2½	1 - 1½	2½	3 - 5½
Boys 5 - 8	1200 - 2000	4 - 6	1½ - 2½	1 - 2	2½	3 - 5
Girls 9 - 13	1400 - 2200	5 - 7	1½ - 3	1½ - 2	3	4 - 6
Boys 9 - 13	1600 - 2600	5 - 9	2 - 3½	1½ - 2	3	3 - 5½
Girls 14 - 18	1800 - 2400	6 - 8	2 - 3½	1½ - 2	3	5 - 6½
Boys 14 - 18	2000 - 3200	6 - 10	2½ - 4	2 - 2½	3	5½ - 7

Ranges of food serving size vary based on calories and physical activity.

2. Pregnant women

The recommended daily servings of the different food groups for pregnant women are presented in Table 5. [24]

Table 5.
Recommended daily amounts ^a of food groups for pregnant women [24]

Age	Calories	Grains and Their Derivatives 1 Ounce (grams 30)	Vegetables 1 cup	Fruits 1 cup	Milk & Dairy Products 1 cup	Protein Foods
Pregnant and breast feeding women	1800 - 2800	6 - 10	2 ½ - 3 ½	1 ½ - 2 ½	3	5 - 7

^a Examples of serving size equivalents are presented in Box 3.1.

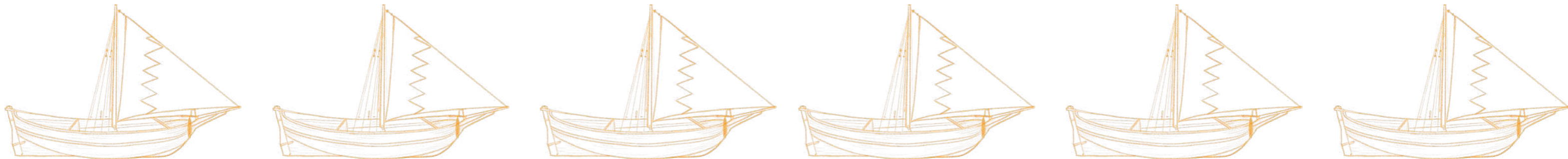
3. Older adults

The recommended daily servings of the different food groups for older adults are presented in Table 6. [24, 66-68]

Table 6.
Recommended daily amounts ^a of food groups for older adults [24, 66-68]

Age	Calories	Grains and Their Derivatives 1 Ounce (grams 30)	Vegetables 1 cup	Fruits 1 cup	Milk & Dairy Products 1 cup	Protein Foods
Women 60+	1600 - 2200	5 - 7	2 - 3	1 ½ - 2	3	5 - 6
Men 60+	2000 - 2600	6 - 9	2 ½ - 3 ½	2	3	5½ - 6½

^a Examples of serving size equivalents are presented in Box 3.1.



Guideline: 04

Fruits & Vegetables



Keep it simple by sticking to eat fruits and vegetables daily.

Guideline: 04

Keep it simple by sticking to eat fruits and vegetables daily

A diet rich in fruits and vegetables provides the body with essential nutrients, prevents malnutrition in all its forms, and protects against diseases including NCDs and obesity. [74-76] According to the latest national study conducted in 2018, the insufficient intake of fruits & vegetables (<5 servings per day, i.e. <400 g/day) was highly (85%) prevalent in the Kingdom of Bahrain. [46]

1. The benefits of fruits and vegetables on health

A diet rich in fruits and vegetables also helps decrease the likelihood of digestive complications. These protective effects may be attributed to key nutrients present in fruits and vegetables including antioxidants, phytochemicals, vitamins, minerals, and fibers. [74, 75] It is important to diversify the types and colors of fruits and vegetables ingested in order to provide your body with a variety of essential nutrients. [77] Table 7 presents the different colors of fruits and vegetables and their health benefits.

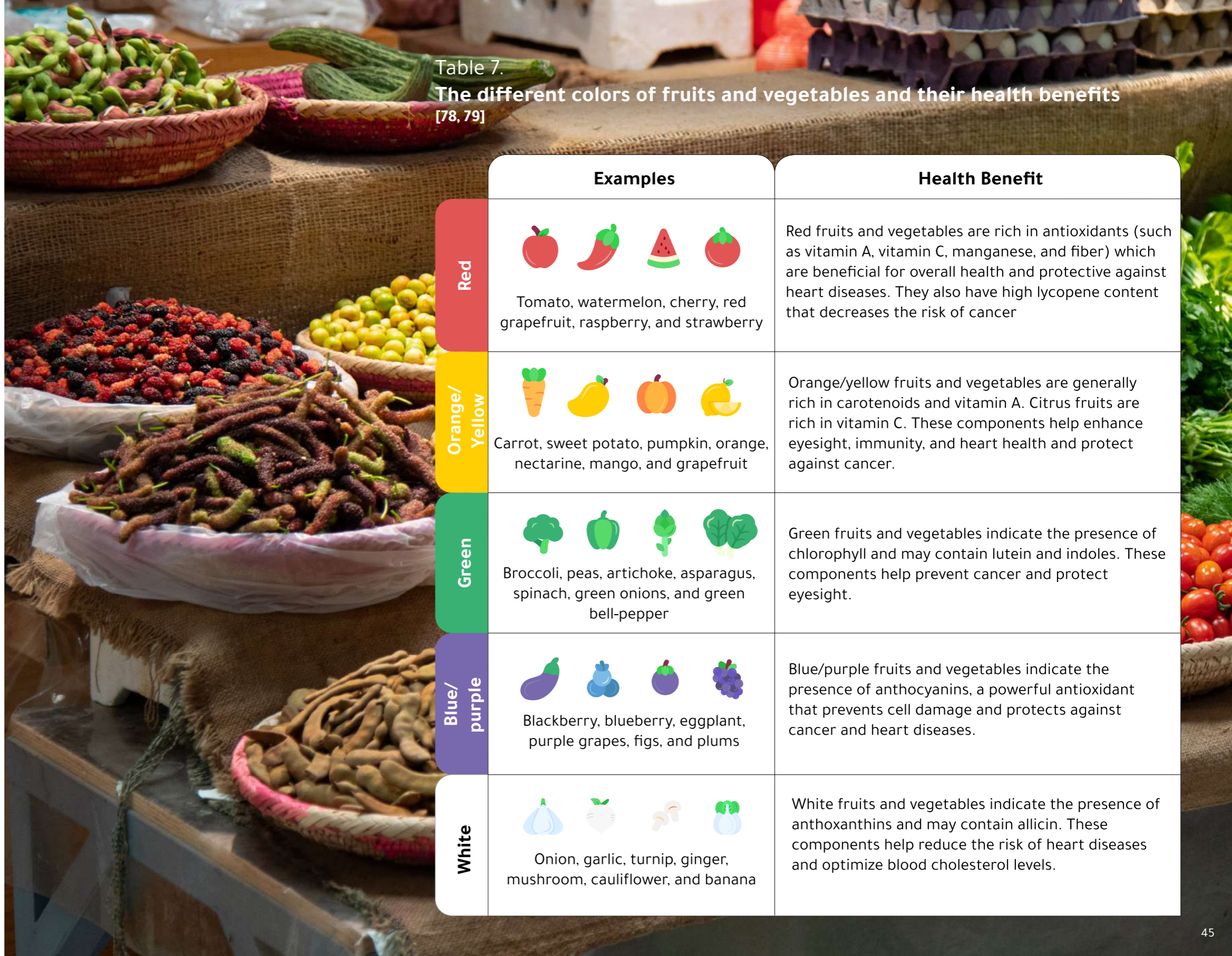






Table 7. The different colors of fruits and vegetables and their health benefits [78, 79]

	Examples	Health Benefit
Red	 <p>Tomato, watermelon, cherry, red grapefruit, raspberry, and strawberry</p>	Red fruits and vegetables are rich in antioxidants (such as vitamin A, vitamin C, manganese, and fiber) which are beneficial for overall health and protective against heart diseases. They also have high lycopene content that decreases the risk of cancer
Orange/ Yellow	 <p>Carrot, sweet potato, pumpkin, orange, nectarine, mango, and grapefruit</p>	Orange/yellow fruits and vegetables are generally rich in carotenoids and vitamin A. Citrus fruits are rich in vitamin C. These components help enhance eyesight, immunity, and heart health and protect against cancer.
Green	 <p>Broccoli, peas, artichoke, asparagus, spinach, green onions, and green bell-pepper</p>	Green fruits and vegetables indicate the presence of chlorophyll and may contain lutein and indoles. These components help prevent cancer and protect eyesight.
Blue/ purple	 <p>Blackberry, blueberry, eggplant, purple grapes, figs, and plums</p>	Blue/purple fruits and vegetables indicate the presence of anthocyanins, a powerful antioxidant that prevents cell damage and protects against cancer and heart diseases.
White	 <p>Onion, garlic, turnip, ginger, mushroom, cauliflower, and banana</p>	White fruits and vegetables indicate the presence of anthoxanthins and may contain alliin. These components help reduce the risk of heart diseases and optimize blood cholesterol levels.

2. Recommended daily intake of fruits and vegetables

It is recommended that you consume 1.5 - 2.5 servings of fruits and 2.5 - 4 servings of vegetables every day, while varying the types of fruits and vegetables consumed. [24, 67, 69] Box 3.1 of guideline 3 presents examples of fruits and vegetables equivalent to one serving. Box 4.1 presents tips on how to increase your intake of fruits and vegetables.

*Based on the individual recommended intake (as shown in Table 3 of Guideline 3)

Box 4.1. Tips to increase the intake of fruits and vegetables [70, 78]*

- Choose a wide variety and color of fruits and vegetables, especially those that are in season.
- Keep a bowl of washed, ready to eat fruits and vegetables in your kitchen and fridge.
- Choose fruits and vegetables as healthy snack options.
- Moderate the intake of dried fruits and choose those without added sugar.
- Have fruits as desserts.
- Choose whole fruits (rich in fibers) over fruit juices.
- Limit the intake of canned fruits and vegetables.
- Include more vegetables with your meals and as part of your snacks.
- Select vegetables prepared with little or no added fat or salt.
- Add grilled vegetables (such as tomatoes, onions, green pepper, and mushrooms) to your grilled meat or chicken.

*Based on the individual recommended intake (as shown in Table 3 of Guideline 3)

3. Special population groups

1. Children and adolescents

The recommended intake of fruits and vegetables are presented in Table 4 of Guideline 3.

Infants before the age of 12 months should not drink fruit or vegetable juices, even if 100% fresh. At the age of 2 years, it is recommended to emphasize the intake of whole fruits over fruit juices, while avoiding sugar sweetened beverages. [24]

Box 4.2. Tips to increase fruits and vegetables among children and adolescents [80]*

- Add fruits and vegetables to the school lunch box.
- Stuff sandwiches with vegetables.
- Include fruit salad as dessert in the child's diet.
- Keep trying with vegetables. Your child will probably change their mind about vegetables eventually.
- Use praise when your child tries new fruits and vegetables.
- Get your child involved while cooking vegetables and preparing fruits.
- Eat as a family whenever possible to encourage consumption of fruits and vegetables.

*Based on the individual recommended intake (as shown in Table 4 of Guideline 3)

2. Older adults

Adequate fruits and vegetables intake is paramount among older adults, as these foods are rich sources of vitamins and minerals and are also full of water, all of which much needed in this age group. Furthermore, vitamin C, present in many fruits, can help with iron absorption, which is a common problem for many older adults. Adequate intake of fruits and vegetables (As shown in table 6 of Guidelines 3 have also been associated with lower incidence of dementia and cognitive decline. [81] The requirements for fruits and vegetables among older adults are similar to those for adults. Tips for increasing intake of fruits and vegetables among older adults are presented in Box 4.3

Box 4.3. Tips to increase fruits and vegetables intake among older adults [82]*

- Try adding fruits and vegetables to your favorite dishes.
- If denture health is an issue, try mashed fresh fruits and vegetables.
- Consider a fruit or vegetable smoothie as a breakfast or snack
- Add a dip (hummus, peanut butter or yogurt) to vegetable and fruit sticks
- Stock fresh product and eliminate junk for your food cabinet.

*Based on the individual recommended intake (as shown in Table 6 of Guideline 3)



Guideline: 05

Healthier Animal Proteins



Switch to healthier animal proteins,
and incorporate low fat milk and
dairy as well as fish/sea food

Guideline: 05

Switch to healthier animal proteins, and incorporate low fat milk and dairy as well as fish/sea food

Consuming adequate amounts of proteins is crucial for health and development. Complete protein sources include meats, poultry, fish, eggs, milk, and dairy products.

Animal proteins are generally of high quality because of their provision of all essential amino acids and efficient digestibility. [83] However, given that some animal sources are high in saturated fat, which is associated with health risks, it is important to choose lean protein sources. [71, 84] In the Kingdom of Bahrain, studies have shown high consumption of red meat, processed meat, and unhealthy fats, with suboptimal intakes of milk and dairy products and inconsistent data on fish and seafood [59, 61, 85]



Box 5.1. Tips to decrease the intake of saturated fat [24]

- Decrease the consumption of high fat, protein-based sandwiches such as burgers and hot dogs.
- Decrease the intake of high fat dishes such as Baja.
- Emphasize the intake of plant-based proteins such as legumes.
- Replace cheeses and high fat dressings with avocado, nuts, or seeds. Without excessive consumption
- When preparing foods, rather than butter, shortening, or coconut or palm oils, use oils higher in unsaturated fat moderately (such as corn, olive, peanut, safflower, soybean, and sunflower).

1. Low-fat or skimmed milk and dairy products

Milk and dairy products provide various health benefits, particularly building and maintaining bone health and strong teeth. These foods are good sources of nutrients such as protein, calcium, potassium, phosphorus, vitamin D, vitamin A, and vitamin B12 which

are essential for overall health. [66, 86] It is recommended to consume 3 servings of milk and dairy products per day. [24, 66] Box 3.1 of guideline 3 presents examples of milk and dairy products equivalent to one serving

Box 5.2. Tips to consume the required intake of low-fat milk and dairy products [87]

- Select lean meats and low-fat cheeses and dairy.
- Avoid full-fat dairy (such as full-fat milk, ice-cream, and cheeses).
- Incorporate low-fat or skimmed milk or dairy products in cooking.
- Choose lactose-free or fortified plant based milk and dairy if you are lactose intolerant.
- Emphasize the intake of unsweetened milk and dairy products.
- Replace full-fat hard and processed cheeses (such as yellow or spreadable cheeses), with low-fat and white cheeses such as halloumi.
- Use low-fat or skimmed cream when cooking cream-based dishes, puddings, smoothies, or desserts.

2. Fish

The consumption of fish provides key nutrients essential for overall health, including high-quality proteins, micronutrients, and omega-3 fatty acids. [88] It is recommended to limit the consumption of fish of high mercury levels. [89] The recommended intake of fish and seafood is 2 servings (180 g) per week, [90] with at least one serving of fatty fish. [24]

Box 5.3. What is equivalent to one serving of fish or seafood? [71]

- **1 serving** of fish or seafood is equivalent to:
 - o **1 ounce** (30 gram) of cooked shellfish (such as crab, lobster, oysters, scallops and shrimp)
 - o **1 ounce** (30 gram) of canned fish (such as anchovies, freshwater trout, herring, light tuna, salmon, or sardines)
 - o **1 ounce** (30 gram) cooked fish (such as catfish, cod, flounder, freshwater trout, herring, light tuna, mackerel, or salmon)



Box 5.4. Tips to increase the intake of fish [24, 89, 91]

- Consume at least one serving of fatty fish per week, such as salmon and sardines, maid, chan`ad, yanam.
- Incorporate fish in meals and sandwiches.
- Stock some canned fish, with emphasis on water-based products.
- Pay attention to fish of high methylmercury levels such as king mackerel, marlin, orange roughy, shark, swordfish, tilefish (gulf of mexico), and tuna.
- Prepare baked or grilled fish while adding seasonings such as lemon, herbs, and spices.

Box 5.5. Tips related to the intake of red meat and poultry [95]

- Before cooking, remove the skin from poultry.
- Remove the visible fat and a lean cuts of meat such as lean ground beef and beef tenderloin.
- Discard cooked fat drippings.
- To tenderize lean cuts, use slow cooking methods such as stewing and add marinate to the meats.
- Choose healthy cooking methods such as grilling, boiling, roasting, or broiling.
- In case of frying, use minimal oil.
- Minimize the use high fat dressings and gravies in dishes.
- Segregate the consumption of tea from meals by around 30-minutes to allow for proper nutrient absorption especially iron.

3. Lean red meat and poultry

Red meat and poultry are great sources of high-quality proteins and rich sources of a variety of essential nutrients, such as iron and zinc, which may prevent anemia, helps in the formation of red blood cells, optimizes growth and development, and enhance the immune system. [24, 92, 93] The recommended intake of lean meat and poultry, along with eggs, is 3-4 servings per day. [24] Box 3.1 of guideline 3 presents examples of milk and dairy products equivalent to one serving

4. Special population groups

1. Children and adolescents

The recommended intakes of subgroup protein foods for children and adolescents are presented in Table 8. [24]

Table 8.

Recommended intake a of subgroup protein food for children and adolescents [24]

Food groups	Recommended Amounts			
	12 - 23 months ^b	2 - 8 years	9 - 13 years	14 - 18 years
Meats & Poultry	1 - 1 ¼ Servings/day	-1 ½ - 3 ¾ Servings/day	-2 ¾ - 4 ½ Servings/day	3 ¼ - 4 ¾ Servings/day
Eggs	2 - 2 ½ Servings/day			
Seafood	2 - 3 Servings per week	2 - 8 Servings per week	6 - 10 Servings per week	8 -10 Servings per week
Nuts, seeds, & Soy products	1 - 1 ¼ Servings per week	2 - 5 Servings per week	3 - 5 Servings per week	4 - 6 Servings per week

^a Examples of serving size equivalents are presented in Box 3.1.

^b Who are no longer receiving breast milk or infant formula

For the consumption of milk, before the age of 12 months, infants should not consume cow milk or fortified plant based milk. Around the age of 12 months, plain unflavored milk can be offered without the addition of sugar. [24]

2. Pregnant women

The recommended intake of subgroup protein foods for pregnant women are presented in Table 9. [24]

Table 9.
Recommended intake of subgroup protein for pregnant women [24]

Food Group	Recommended intake per day
Meats, poultry, eggs	3 ¼ - 4 ¾ servings
Seafood	1 - 1 ½ servings
Nuts, seeds, and soy products (ounces per week)	½ - 1 servings

^a Examples of serving size equivalents are presented in Box 3.1.



3. Older adults

The recommended intake of subgroup protein foods for older adults are presented in Table 10. [24]

Table 10.
Recommended intake ^a of subgroup protein foods for older adults [24]

Food Group	Recommended intake per day
Meats, poultry, eggs	3 ¼ - 4 ½ servings
Seafood	1 - 1 ½ servings
Nuts, seeds, and soy products (ounces per week)	½ - ¾ servings

^a Examples of serving size equivalents are presented in Box 3.1.



Guideline: 06

Vegetarian alternatives



Replace processed meat with vegetarian alternatives such as legumes and unsalted nuts.

Guideline: 06

Replace processed meat with vegetarian alternatives such as legumes and unsalted nuts.

Emphasizing the intake of vegetarian alternatives over unhealthy animal sources has been shown to enhance overall health and prevent or manage diseases including NCDs [24, 96, 97] In the Kingdom of Bahrain, the low consumption of nuts and seeds, coupled with the overconsumption of red and processed meats are deemed unhealthy and contributing to the high burden of NCDs in the country.

1. Health benefits of vegetarian alternatives

Vegetarian alternatives include foods primarily of plant origin such as beans, peas, lentils, nuts, seeds, whole grains, and soy products. These foods are high in fibers, vitamins, and minerals, low in saturated fats, generally lower in calories, and good sources of lean proteins and heart-healthy unsaturated fat. Dietary patterns that include vegetarian alternatives are associated with overall enhanced health particularly through decreasing the risk of heart disease, obesity, hypertension, blood cholesterol, cancer, insulin resistance, diabetes, and gastrointestinal conditions. [24, 96, 97] Therefore, it is important to include these vegetarian alternatives in your balance diet. The recommended intake of vegetarian alternatives, based on a 2,000-Calorie diet, are shown in Table 11.

Table 11. Recommended amounts of vegetarian alternatives, based on a 2,000-Calorie diet [24]

Vegetarian alternative	Recommended intake
Beans, peas, lentils	1 ½ cups per week
Nuts and seeds	5 servings per week



Box 6.1. Portion size guide for vegetarian alternatives [71]

- **1 cup of beans, peas, or lentils is equivalent to:**
 - o 1 cup of cooked beans, peas, lentils, or soybeans
 - o 1 cup of tofu
 - o 4 falafel patties
- **1 serving of nuts and seeds is equivalent to:**
 - o ½ ounce (15 gram) of nuts (such as 12 almonds, 24 pistachios, or 7 walnut halves)
 - o ½ ounce (15 gram) of seeds
 - o 1 tablespoon of almond butter or peanut butter
 - o 1 tablespoon of Tahini



Box 6.2. Tips to increase the consumption of legumes, nuts, and seeds [97, 98]*

- Stock up on legumes, nuts, and seeds in your kitchen. They barely spoil and are good options to keep on hand.
- Add legumes to your stews, soups, and casseroles moderately.
- When short on time, cook lentils as they are the quickest legume to prepare.
- When you have some time to cook, soak some legumes then boil them. Store some of the cooked legumes in your fridge and some in the freezer for later use.
- Before storing, drain the cooked legumes well to help increase their shelf life and improve their quality.
- Add cooked legumes as a side dish to your meal.
- Experiment with legume salads and other legume-based recipes.
- Sprinkle nuts or seeds, such as ground almonds or walnuts, on soups or salads.
- Aim for a variety of legumes, nuts, and seeds to provide your body with a variety of nutrients.
- Snack on a handful of unsalted raw or roasted nuts and seeds.
- To enhance iron absorption from foods of plant origin, add vitamin C sources (such as citrus juices) to your dish.

Box 6.3. Tips to increase the consumption of wholegrains and/or high fiber cereals [99]*

- Select wholegrain products (brown rice, whole wheat pasta and wholegrain bread) instead of refined/white products.
- Don't be misled by the brown color. Read the food label helps to identify 'wholegrain' or 'whole wheat' items.
- Make sandwiches using wholegrain bread.
- Choose breakfast meals based on oatmeal, wholegrain cereal, or whole wheat toast.
- Try new grains and new recipes including buckwheat, quinoa, and bulgur.
- Choose wholegrain snacks such as popcorn.

*Based on the individual recommended requirement.



2. Special population groups

1. Adults following a vegetarian diet

Individuals following a vegetarian dietary pattern, should consult with their health care providers to determine whether or not supplementation is needed especially in regard to iron and vitamin B12 [24]

2. Children and adolescents following a vegetarian diet

Children and adolescents who are consuming a vegetarian dietary pattern may be at risk of some micronutrient deficiencies such as iron and vitamin B12, hence consulting with your child's healthcare provider is crucial to determine whether or not supplementation is needed. [24]



*Based on the individual recommended requirement.

Guideline: 07

Salt and sugar



Pay attention to your intake of salt and sugar, especially the hidden ones

Guideline: 07

Pay attention to your intake of salt and sugar, especially the hidden ones

Globally, rapid urbanization and fast paced lifestyles promoted the production and accessibility to processed and ready-prepared foods, most of which are loaded with salt and sugar which have been reported to be detrimental to health. [100, 101] Similar to other parts of the world witnessing the rapid urbanization, in Bahrain there is a high reliance on ready-made meals and fast foods and hence high intakes of both salt and sugar.

1. Health consequences of salt and sugar

High salt intake, particularly if coupled with low potassium intake, is associated with high risk of elevated blood pressure, heart diseases, and stroke. It is recommended to limit salt intake to less than 5 grams per day (or < 2 grams per day of sodium), which is equivalent to ~1 teaspoon. [101-103]

High consumption of sugar increases the risk of dental caries, overweight and obesity, and other health conditions such as diabetes and heart diseases. It is recommended to limit the intake of sugar (i.e., added sugar) to less than 10% of total energy intake, which is equivalent ~ 12 teaspoons for a healthy person consuming 2000 calories per day. Ideally, decreasing sugar intake to less than 5% of total energy intake offers additional health benefits (According to the American Heart Association, added sugar consumption by male adults must not exceed 9 teaspoons per day and for females must not exceed 6 teaspoons).

This can be achieved by reducing the intake of foods and beverages which are high in sugar, including added sugar (such as fructose, sucrose or table sugar) as well as naturally present sugar (such as honey, syrups, fruit juices and fruit juice concentrates). [24, 100, 102]

Box 7.1. Tips to decrease salt intake [101, 102]

- Limit the intake of foods high in salt such as processed foods (ready-to-eat meals; processed meats such as bacon, mortadella, and salami; pickled vegetables; salty snacks such as chips and pretzels; canned foods, and olives, pickles, achar, salted nuts).
- Limit eating mahyawa, and dried seafood.
- Try soaking salty cheeses (such as Halloum) overnight in water to reduce their salt content.
- Cook meals with lower amounts of added table salt and limited use of bouillon, stock cubes, soy sauce, fish sauce, and other high salt sauces. Instead, flavor the food with condiments such as lemon, vinegar, spices and herbs.
- Avoid adding table salt to your dish during meals and remove the saltshaker from the dining table.
- Check the food label of foods prior to purchasing. Aim for 'low sodium' or 'low salt' foods.
- Increase your intake of fruits and vegetables to optimize your potassium levels.

Figure: 7 - 1 Foods Containing Sugar



Figure: 7 - 2 Foods Containing Salt



2. Special population groups

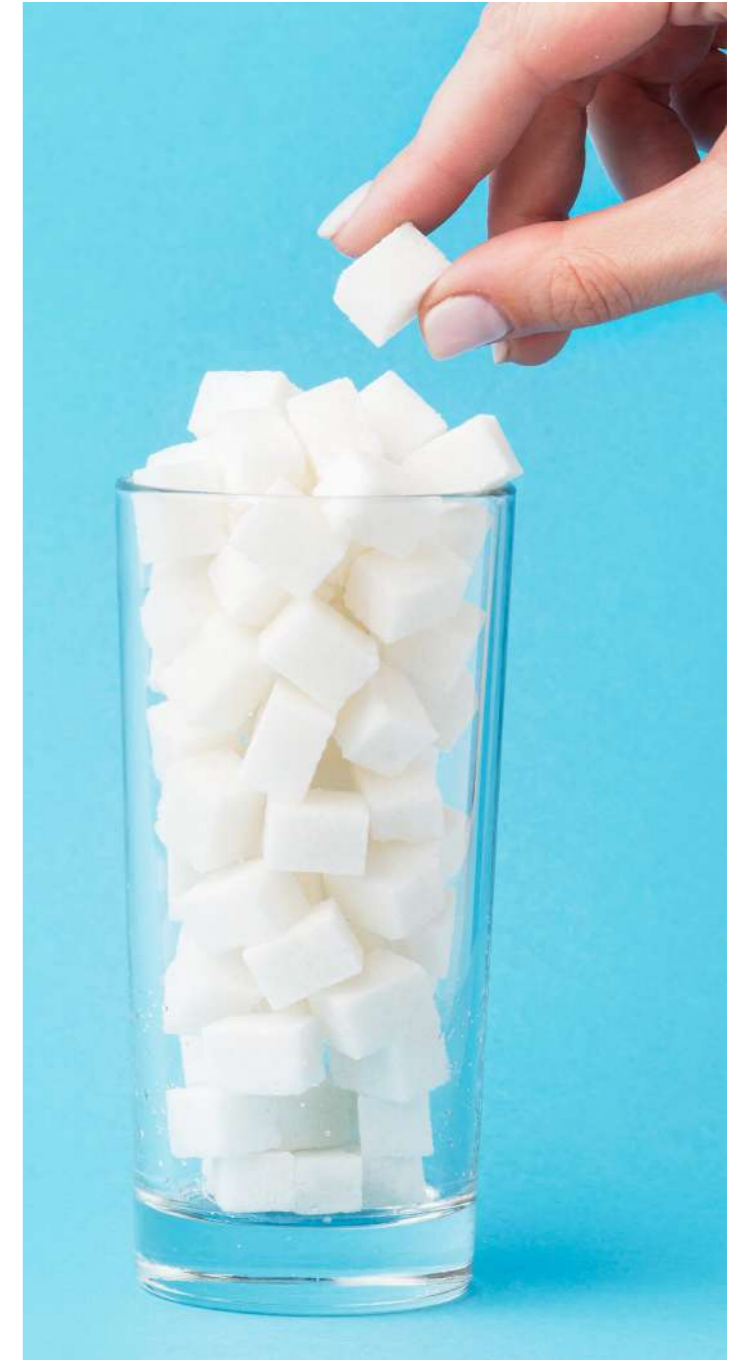
Table 12.

Special population groups salt and sugar intake

Special Population groups	Salt intake		Sugar intake	
	Recommendations	maximum level of intake	Recommendations	maximum level of intake
Children Less than 2 years of age	No need to add salt. [105]	—	Avoid the consumption of added sugars. [106]	—
Children and adolescents: 2 to 15 years	Limit their sodium intake to control blood pressure". [103]	2g/day. [103]	Sugar intake to less than 10% of total energy intake. [24,100]	—
Pregnant Women	less than 5 grams per day (or < 2 grams per day of sodium), which is equivalent to ~1 teaspoon [101, 103]		Limit sugar intake to less than 10% of total energy intake [24]. According to the American Heart Association, added sugar consumption should not exceed 6 teaspoons per day.	
Older Adults	<ul style="list-style-type: none"> - Less than ~2 grams per day, which is equivalent to ~1 teaspoon. [24] - Individuals with high blood pressure are advised to limit their intake of sodium to < 1500 mg per day (equivalent to 2/3 teaspoon of salt). [107] 		Limit their sugar intake to less than 10% of total energy intake. [24]	
<ul style="list-style-type: none"> - Tips to decreasing salt intake are presented in Box 7.1 - Tips to decreasing sale intake are presented in Box 7.2 				

Box 7.2. Tips to decrease sugar intake [24, 102, 104]

- Limit the intake of high-sugar foods such as candies, desserts, sweets, cakes and pastries, sugary snacks, honey, and jam.
- Limit the intake of sugar sweetened beverages including soft drinks, sports drinks, energy drinks, and fruit juices.
- Limit the intake of sweetened coffees and teas (including ready-to-drink hot beverages).
- Emphasize the intake of vegetables and fresh fruits, preferably whole rather than juices or canned.
- Opt for 100% fruit juice (in moderation) rather than commercial or sweetened juices. Preferably whole fruit instead of fruit juice.
- When preparing sweets, decrease the amount of sugar (Sheera and dibs) that is indicated in the recipe. For enhanced flavor, use blossom or rose water and other healthy flavorings, such as cinnamon.
- Check the food label of foods prior to purchasing. Aim for 'sugar free' foods.
- When tempted to drink sugar sweetened beverages, have some sparkling water with a lemon slice and mint leave.
- Choose low-fat yogurt without additives and add natural fruit pieces



Guideline: 08

Water and fluids



Stay hydrated with water and healthy fluids.

Guideline: 08

Stay hydrated with water and healthy fluids.

Water is essential for life and overall health, as it is involved in most body functions [11, 108, 109] In the Kingdom of Bahrain, high consumption of sweetened beverages was reported [63] which may be at the expense of drinking water and healthy fluids. In addition, the hot weather of the country further underscores the need for optimal hydration.

1. Benefits and recommendations of water and healthy fluids

The daily adequate intake of water is essential to help carry the nutrients and oxygen to your cells, eliminate wastes, prevent constipation, protect the joints, organs, and tissues, regulate body temperature, prevent dehydration, optimize kidney function, and maintain a healthy body weight. [11, 108, 109]

The Institute of Medicine (IOM) recommends the intake of 2.7 liters of fluids per day among women and 3.7 liters of fluids per day for men. These include drinking water and other beverages (3 liters for men and 2.2 liters for women), as well as water from food. [110] It is recommended to emphasize the intake of plain water as a main source of fluids per day and to drink even when not thirsty. [111]

The intake of water is critical in countries with hot and humid weather, such as that in the Kingdom of Bahrain.

Box 8.1. Tips to increase the intake of water and fluids [108, 110]

- Emphasize the intake of plain water as your main source of fluids per day.
- Drink water even when not thirsty.
- Make water more accessible by carrying your water bottle with you as well as placing it near your desk when working.
- Choose low-sugar beverages instead of sugar-sweetened drinks.
- Choose water as a beverage to drink with meals, especially when eating out.
- To flavor your water, add a slice of lemon or lime and mint leaves.
- Drink more water when physically active (before, during, and after exercise).
- Drink more water in hot weather.

2. Special population groups

1. Children and adolescents

For healthy infants aged 0-6 months who are consuming adequate intakes of breast milk (or infant formula), additional water or fluid intake is not needed. [24, 110] For children and adolescents aged 1 through 18 years, the IOM-recommended adequate intake of fluids per day is presented in Table 13. [110]



Table 13. Recommended adequate intake of fluids per day, according to age [110]

	Adequate in take of total fluids per day (including water from food)	Adequate in take of water and beverages per day (including water from food)
7 - 12 months	0.8 liters*	0.6 liters
1 - 3 years	1.3 liters	0.9 liters
4 - 8 years	1.7 liters	1.2 liters
9 - 13 years	2.1 - 2.4 liters	1.6 - 1.8 liters
14 - 18 years	2.3 - 3.3 liters	1.8 - 2.6 liters

*Mainly from milk

Box 8.2. Tips to get your children to drink more water [108, 110, 112]

- Offer your younger child water in colorful and fun cups.
- Flavor water with slices of fruits.
- Pack a bottle of water in your child's school bag.
- Emphasize the intake of water instead of sugary drinks and juices.
- Offer water even when your child is not thirsty.
- Encourage drinking water before, during and after your children's games.
- Be a role model for your child.

2. Pregnant women

According to IOM recommendations, pregnant women are recommended to consume 3 liters of fluids per day, including water, healthy beverages, fluids from food. [110] More specifically, in terms of water and other healthy beverages, 2.3 liters constitute adequate fluid intake among pregnant women. [110]



Box 8.3. Tips to increase the intake of water and fluids for pregnant women [108, 110, 113, 114]

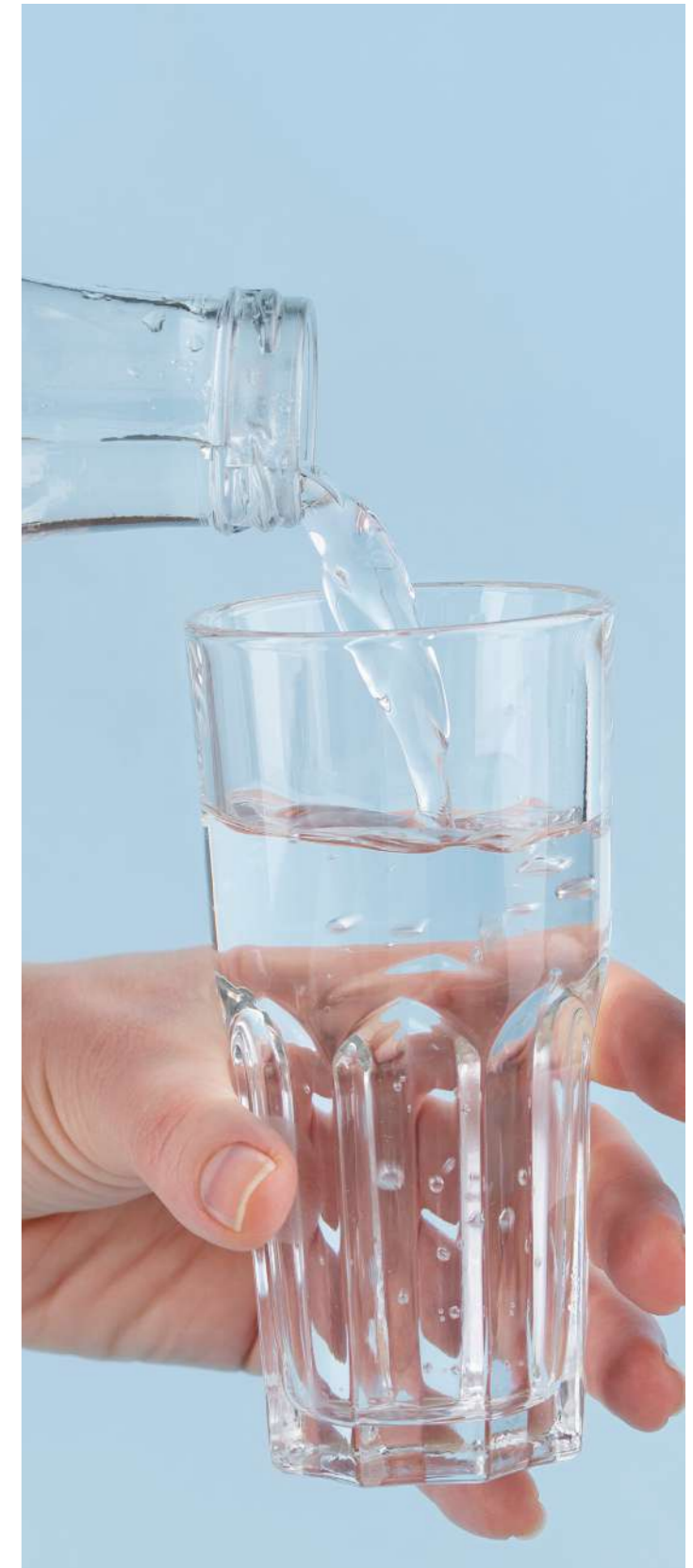
- The tips presented in Box 8.1 also apply for pregnant women.
- In case of indigestion, avoid drinking water and fluids with meals. Instead, drink water in between meals.
- In case of nausea or morning sickness, drink small quantities throughout the day instead of drinking big amounts at once.

3. Older adults

Special attention needs to be given to the decreased intake of fluids among older adults who are at increased risk of dehydration. This may be attributed to their declined sensation of thirst and due to their concerns of bladder control. According to IOM recommendations, older adults are recommended to consume 2.7 liters (for women) and 3.7 liters (for men) of fluids per day including water, healthy beverages, fluids from food. [24, 110] More specifically, adequate fluid intake requires 3 liters and 2.2 liters of water and other healthy beverages for older men and older women, respectively. [110]

Box 8.4. Tips to increase the intake of water and fluids for older adults [108, 110, 113, 114]

- The tips presented in Box 8.1 also apply to older adults.
- The intake of water and fluids should not be decreased unless otherwise indicated by your healthcare provider.



Guideline: 09

Food safety



Follow the recommendations for safe food production and consumption

Guideline: 09

Follow the recommendations for safe food production and consumption

Food-borne illnesses are the direct result of the presence of bacterial or viral toxins in food items. The ingestion of these toxins is associated with the development of high-grade fever, vomiting or diarrhea. [115] The consequences of the ingestion of such toxins may become detrimental, especially among vulnerable groups such as; pregnant women, elderly and those with compromised immune systems. [115] Bahrain has witnessed notifiable enteric diseases along with several mass poisoning cases caused by contaminated food products. [116] As such, the proper handling of food during all stages of its preparation, transportation, and storage is critical to ensure food safety and to prevent future outbreaks in the kingdom of Bahrain. [117]

Box 9.1. Tips for proper food purchasing [118]

- Before purchasing, check the expiry date of packaged foods.
- Avoid items that have defective packaging, or are improperly sealed, or have any signs of spoilage.
- Chilled and frozen foods must be collected at the end of the shopping trip to avoid warming or thawing of these frozen products.
- Purchase fresh vegetables and fruits from safe sources.
- When driving home, after food purchase, try putting the frozen or chilled products inside the car rather than in the trunk to avoid the warming or thawing.

Box 9.2. Tips for proper food storage [119]

- Follow First In-First Out (FIFO) rule when storing food items (arrange older food items 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
- Always read the label on food items for storage instructions
- Regularly inspect dried food items for insect infestation
- 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,
 - 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
- Make sure that frozen foods are kept hard frozen
- Store frozen foods in fully sealed packages



Box 9.3. Tips for proper food handling [120]

- Wash your hands thoroughly with liquid soap before preparing food
- Dry your hands thoroughly using a clean towel or a disposable paper towel
- Replace sponges regularly
- Wash kitchen cloth towels frequently
- Avoid using wooden cutting boards, instead use ones made from resin or good quality plastic
- Clean all cutting boards and food utensils with detergent and warm water and make sure they are completely dry before using
- Keep all food appliances clean of food residues
- Clean refrigerators and freezers regularly
- Ensure that food handlers are compliant with all food handling instructions
- Use a different chopping board to chop vegetables and fruits than those used to chop meat, poultry and fish.

1. Special population groups

1. Pregnant women, children, older adults, and immune-compromised people

In addition to the previously presented recommendations, special population groups such as pregnant women, children, older adults, and immune-compromised individuals are advised to avoid consuming the following foods: [121-123]

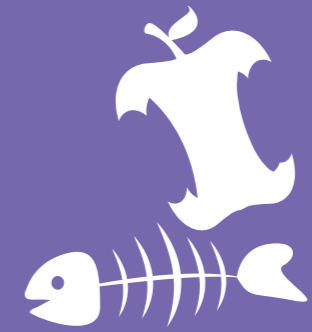
the following food items:

- 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 or undercooked red meat, poultry, or seafood (fish, shellfish, and sushi containing raw fish)
- Salads prepared outside home which contain meat/chicken products, eggs, tuna, or seafood
- Salads prepared outside home which contain fresh produce (fruit and vegetables) that is not washed properly



Guideline: 10

Food Sustainability



Contribute to protecting the environment, feeding the hungry and saving money by decreasing food waste

Guideline: 10

Contribute to protecting the environment, feeding the hungry and saving money by decreasing food waste

Following the release of the Sustainable Development Goals (SDGs) in 2015, dietary guidelines have been reexamined using two lenses; Health and Sustainability. It is not enough to consider the health of humans in isolation from their surroundings. We exist within a complex ecosystem and our health and wellbeing surely depends on the health of every fabric of this ecosystem, including the water, energy and land.

10.1 How is what we eat linked to the environment?

The environmental impact of diet is driven by two main elements: 1- food choices and 2- food waste.

1. Human dietary choices are one of the foremost global causes of ecological degradation and deterioration of human health. The increasing use of fossil fuels, the emission of greenhouse gases (GHG), deforestation and the extraction of fresh water by the food industry have triggered worldwide concern about the nutrition transition from traditional dietary patterns to westernized patterns. [124]

The economic development in the Kingdom of Bahrain contributed to the increase in the country's income, living standards, urbanization, and development of the food processing industry. These changes were shown to have an impact on the population's food availability, access and consumption, leading to a nutrition transition towards a westernized dietary patterns, known to impose a heavy burden on environmental resources. [85]

2. Food waste has emerged as a serious public health challenge. According to the UNEP Food Waste Index Report 2021, the Kingdom of Bahrain has ranked number 1 in terms of food waste. [125]

Box 10.1. Tips for environmentally friendly food choices [131]

- Eat more plant-based food products
- Lean on nutritious lentils for plant-based protein
- Eat a varied food pattern
- Opt for unprocessed, nutritious whole grains over those that are refined
- Look for local food products
- Eat Mindfully
- Cut the waste

Box 10.2. Tips for reducing food waste [132]

- Adopt a healthier, more sustainable diet
- Write a shopping list!
- Buy only what you need
- Store food wisely
- Understand food labeling
- Use up your leftovers
- Serve small amounts
- Freeze!
- Turn it into garden food
- Sharing is caring



Guideline: 11

Homemade meals and mindful eating



Eat homemade foods with your family
to promote enjoyment and connect with
cultural heritage

Guideline: 11

Eat homemade foods with your family to promote enjoyment and connect with cultural heritage

One's food choices are tightly linked to their mental health and wellbeing. [133, 134] With the current fast-paced life and various stressors surrounding us, it is critical to leverage the potential of diet and food choices to fuel a better social and psychological health. [135, 136] To that end, with this guideline, four main elements of our food consumption are highlighted:

1. Practicing mindful eating
2. Enjoying home-made meals and limiting eating out and delivery foods
3. Surrounding mealtime with family and friends
4. Recreating and cherishing one's cultural dishes and foods

1. Practicing mindful eating

A person with food skills has the knowledge and ability to obtain healthy food options and prepare meals and snacks at home that are safe and nutritionally adequate. Having the necessary food skills and knowledge may support an individual to practice mindful approaches to eating. These approaches include: making mindful food choices; taking

time to eat; paying attention to feelings of hunger and fullness; and avoiding distractions when eating. A mindful approach to eating can promote attentive eating, which is achieved when distractions are eliminated. [137]

Box 11.1. Mindful eating is [138]

- Recognizing hunger and satiety cues to make decisions about when, what, and how much to eat
- Choosing food options that are nutritious
- Eating slowly
- Eliminating all possible distractions while eating
- Responding nonjudgmentally to food
- Increasing awareness of unmindful eating practices and its consequences

Mindful eating is not only associated with weight loss but also improvements in eating behaviors and physiological indices and reductions in psychological distress. [139]



Box 11.2. Tips on how to practice mindful eating [140]

Principle of Mindful Eating	How to Apply the Principle
<ul style="list-style-type: none"> • Reduce eating rate 	Chew thoroughly before swallowing Take smaller bites Pause between bites
<ul style="list-style-type: none"> • Assess hunger and satiety cues 	Assess the reason for eating (emotion vs. hunger) Assess hunger level
<ul style="list-style-type: none"> • Reduce portion sizes 	Serve less food Use smaller dishes Order half portions at restaurants
<ul style="list-style-type: none"> • Eliminate distractions while eating 	Turn off TV Sit at a table Focus on enjoying the food
<ul style="list-style-type: none"> • Savor Food 	Make eating pleasurable Eat with family at the same table Use all senses to enjoy food Create a positive and pleasant environment to eat

2. Enjoying home-made meals and limiting eating out and delivery foods

Accumulating evidence suggests a major shift in dietary habits among most age groups whereby home-made meals are increasingly replaced by eating out and delivery fast foods. [141] Eating home-made meals frequently is associated with better dietary quality as compared to eating-out or delivery food. People who consume home-cooked meals are more likely to adhere to DASH and Mediterranean diets and consume greater amounts of fruits and vegetables and have higher plasma vitamin C levels, which in return have been associated with better health outcomes. Furthermore, more frequent consumption of home-cooked meals is found to be associated with greater likelihood of having normal range BMI and normal percentage of body fat. [142, 143] In addition, the simple process of cooking at home can be empowering and improve your mood and self-esteem. Taking time out from a busy schedule to cook can also be a great stress reliever.

On the other hand, foods served in restaurants tend to be oversized and rich in sodium and sugar. Below are some tips to improve the diet quality when eating out or when ordering delivery foods.

Box 11.3. Tips for eating out responsibly [141-143]

- Limit eating out to special occasions
- When dining out, choose healthy options from the menu
- Watch out for portion sizes as portions in restaurants tend to be big
- When dining out, share the dessert.
- Be prepared. Before going into the restaurant, look up the menu and examine the options offered.
- Avoid all-you-can-eat buffets as these lead to overeating in most cases.



3. Surrounding mealtime with family and friends

Studies have shown that people who eat alone have poor eating habits than those who eat with others. Eating in isolation is linked to many unhealthy dietary patterns such as stress eating and binge eating. [144] Without social influence people tend to engage in behaviors they would normally refrain from if they were in the presence of friends and family.

On the other hand, communal eating activates beneficial neurochemicals and improves digestion. The dining table provides an opportunity for conversation, storytelling, and reconnection. When you bond with others who share the same cultural heritage and experience a sense of connection, endogenous opioids and oxytocin are released that stimulate pleasant feelings. The neurochemical changes lead to improved well-being and contentedness. Positive states of mind like love, gratitude, and connection induce the relaxation response, which is linked to improvements in digestive function. Proper digestion not only improves the absorption of nutrients, but also prevents symptoms of indigestion like heartburn, flatulence, and bloating. [145]



Box 11.4. Benefits of home-cooked meals
[142]

- Brings family and friends together to share cultural food heritage
- It is personalized
- Saves money
- Saves time
- Easier to keep count of caloric intake
- Avoids food allergies and sensitivities
- Better control over food quality and hygiene
- You become more mindful of what you are eating

With the possibility of adjusting the cooking method by using the air fryer or grilling and not adding any fats to traditional dishes such as Majbous, Salona, Biryani, Harees and Madhrooba. Also reducing the amount of added sugar and fat (using oils instead of butter) as much as possible for sweet dishes such as Balaleet, Khanfaroush, Rankayna and Darmanda, Aseeda and Sago.

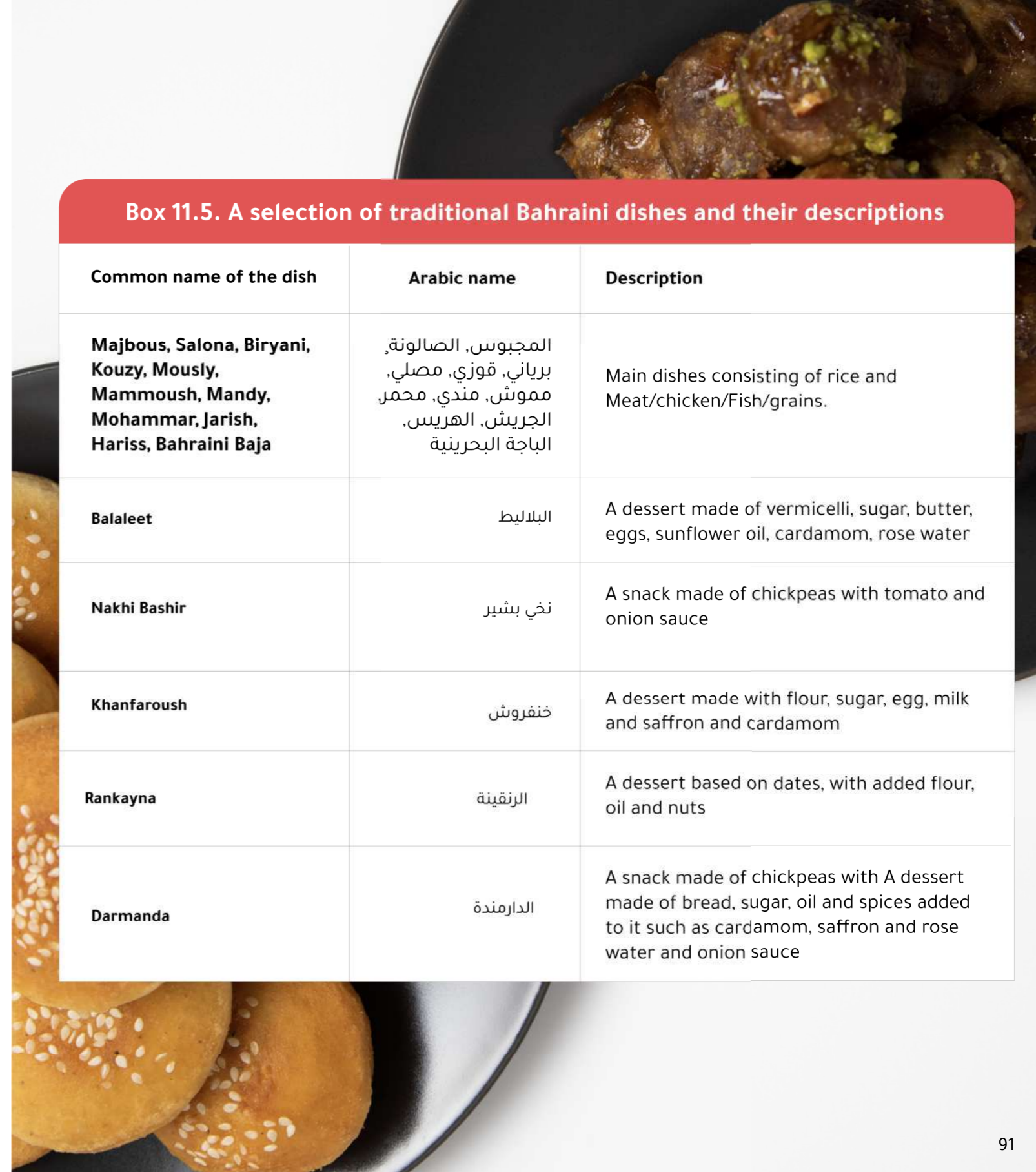


4. Recreating and cherishing traditional dishes and foods

Food is an integral part of our heritage. Eating traditional dishes is a way to keep ourselves connected to our parents and grandparents. It relays a feeling of belonging and a nostalgia to the country and loved ones. The Bahraini traditional diet is a rich repository of a variety of dishes and recipes, some of which are shared with other neighboring countries while others are characteristic and endogenous to Bahrain. While it is important to include Bahraini dishes in one's diet, it is advisable to watch out for the serving size, especially for the desserts and mixed dishes.

Box 11.5. A selection of traditional Bahraini dishes and their descriptions

Common name of the dish	Arabic name	Description
Majbous, Salona, Biryani, Kouzy, Mously, Mammoush, Mandy, Mohammar, Jarish, Hariss, Bahraini Baja	المجبوس, الصالونة, برياني, قوزي, مصلي, مموش, مندي, محمر, الجريش, الهريس, الباجة البحرينية	Main dishes consisting of rice and Meat/chicken/Fish/grains.
Balaleet	البلايط	A dessert made of vermicelli, sugar, butter, eggs, sunflower oil, cardamom, rose water
Nakhi Bashir	نخي بشير	A snack made of chickpeas with tomato and onion sauce
Khanfaroush	خنفروش	A dessert made with flour, sugar, egg, milk and saffron and cardamom
Rankayna	الرنقينة	A dessert based on dates, with added flour, oil and nuts
Darmanda	الدارمندا	A snack made of chickpeas with A dessert made of bread, sugar, oil and spices added to it such as cardamom, saffron and rose water and onion sauce



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