



**Turkish Dietetic Association's
Recommendations on Nutrition
and COVID-19**

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1.General Nutrition Recommendations

Coronavirus disease (Covid-19), which the World Health Organization now considers a pandemic, also poses an important public health threat in our country. Although no food could prevent or treat coronavirus transmission alone; a healthy and balanced diet has been proven to strengthen the immune system along with physical activity and healthy sleeping habits.

When healthy eating is evaluated in the context of coronavirus pandemic, recommendations for healthy individuals for our country are as follows;

1.1. Healthy Eating Is Important in Quarantine Applications

Since the clearest known practice for Covid-19 is social isolation, where all kinds of contacts are minimized, many global health care providers recommend keeping at least two weeks of medicine and food for everyone as part of quarantine practices. The food needs to be nutritious, durable with a long shelf life. Balanced nutrition is highly important during these times with a diet that is rich in proteins, fibers, vitamins, minerals, and antioxidants.

1.2. Vegetable and Fruit Consumption Should Be Prioritized

Even if vegetables and fruits do not come to mind as durable foods; their daily and adequate consumption should be maintained for every major meal. Turkey Dietary Guidelines were prepared by nutrition and dietetic professors and experts with the initiative of the Turkish Ministry of Health as the most current food-based dietary guideline in Turkey. According to Turkey Dietary Guidelines, a Healthy Meal Plate is recommended, in which one-quarter of the plate per main meal would comprise of vegetables, the other quarter is from whole grain products and the remaining half from fruits, high-protein foods (dried legumes, meat, eggs, fish, chicken, oily seeds, etc.) and dairy products (milk, yogurt, ayran, cheese, etc.) in equal three pieces (Figure 1). Besides, it is recommended to ensure adequate water consumption and use of olive oil in daily nutrition.



Figure 1. “Healthy Food Plate: Healthy Food Plate According to Food Groups” from Turkey Dietary Guidelines

In the light of this information, food purchases should focus on vegetables and fruits. In order to maintain the continuity of healthy eating, fresh vegetables and fruits could also be kept frozen or pre-cooked for the times of full-quarantine.

1.3. Seasonal and Durable Vegetables and Fruits Should Be Purchased

In Turkey, some examples to durable seasonal vegetables for winter and spring are cauliflower, cabbage, zucchini, broccoli, peppers, radish, carrots, and potatoes; and seasonal fruits are apples, oranges, grapefruit, tangerines, and non-ripe bananas. Since citrus fruits are rich in vitamin C, which supports the immune system, the consumption of these fruits should especially be higher. If possible, fresh lemon could be squeezed on the appropriate dishes right before eating. Durable vegetables must be stored in the refrigerator without washing and cutting to prolong their shelf life. Also, keeping fiber and mineral-rich foods with a long shelf life at home such as dried fruit, dried okra, eggplant, pepper, tomatoes would be recommendable.

1.4. Legumes Could Be Consumed Every Day

Another very durable, plant-based protein source alternative with a nutritional value is legumes. Green and red lentils, chickpeas, and beans varieties could be consumed every day.

However, these products, which can have a long cooking time, can be boiled in large quantities beforehand and then stored in a freezer so that they can be cooked and consumed more efficiently afterwards. The preparation of these products at home rather than purchasing canned versions would be more suitable for reducing salt consumption, which is already well above the recommendations in Turkey. This recommendation is very important since there are some products that could only be purchased in canned or fermented form during the times of quarantine.

1.5. Twice A Week Fish Consumption Is Important

Since fish needs to be consumed at least twice a week, frozen or canned versions could be stored at home when fresh fish is out of reach during the times of quarantine. Compared to red meat and poultry, which are rich sources of protein, fish might contain more fat, but in general, it has less energy than the same amount of red meat and poultry. Thus fish consumption should be increased.

1.6. Importance of High-Quality Animal Protein Consumption

Eggs and different types of cheese are durable foods that contain high-quality animal protein when they are stored under optimal conditions. Adequate protein consumption should be maintained every day in order to ensure the performance of antibodies, which are the important defense mechanisms of the body against viruses and pathogen bacteria. In addition, beneficial microorganisms found in probiotic products such as functional yogurts, kefir, supplements, etc. could also support the immune system, so they can be consumed especially during this period.

1.7. There Are Foods and Beverages That Should Be Limited

Foods and beverages that should be limited during this period are sugar and sugar-containing foods and beverages which increase blood sugar rapidly, pastries including white bread, processed meat products, and foods containing excessive salt (sauces, salty foods like chips, popcorn, salty cookies, etc.). Since alcoholic beverages have adverse effects on vitamin and mineral absorption and are associated with sleep problems, their consumption should be as limited as possible. There is no evidence that alcohol consumption prevents coronavirus infection. Additionally, the consumption of adulterated beverages containing methyl alcohol instead of ethyl alcohol can cause very serious poisoning reactions.

1.8. Maintaining Hygiene During Food Preparation and Cooking Well Is Highly Important

Although there is no indication that coronavirus can be transmitted through foods, maintaining the highest level of hygiene during food preparation processes, especially for meat products is crucial. Also, foods must be cooked well, meaning they should reach high inner temperature.

1.9. Daily Adequate Vitamin and Mineral Intake Should Be Maintained

Finally, even if adequate intake of vitamins and minerals should be mainly provided from foods such as vegetables, fruits, whole grains, and seeds; for people who are not able to consume according to the "Healthy Food Plate" (as recommended by the Turkey Dietary Guidelines), it may be recommendable to take vitamin and mineral supplements cautiously as an alternative in this special temporary period.

2. Nutrition Recommendations for Health Professionals

2.1. A nutritious diet should be provided to improve the immunity of health professionals. The most important step to strengthen the immune system is to provide an adequate and balanced diet **every day and every meal** for the health professionals.

2.2. Health professionals should pay extra attention to the consumption of fruits and vegetables during this period in which coronavirus pandemic poses an important public health threat in our country.

2.3. Health professionals need to have a balanced diet at all times, and if necessary, they can supplement their food intake with nutritional supplements such as vitamin-minerals, probiotics and prebiotics in order to ensure the sustainability of their duties.

2.4. Health personnel should be careful about not creating crowded groups and use digital platforms as much as possible for meetings.

3. Recommendations for Food Service Systems

The nutritional requirements of the employees in facilities such as clinics, hospitals, and workplaces are provided with meal boxes/rations due to Covid-19.

3.1. Recommendations for the preparation of meal boxes;

3.1.1. The serviced meal should meet the nutritional requirements of the group served.

3.1.2. Nutrient diversity should be ensured.

3.1.3. Hygiene steps should be maintained throughout the production chain, packaging and shipping phases.

3.1.4. Ready-to-eat fruits and vegetables (such as tomatoes and cucumbers) should be served after being disinfected with no further need of re-washing.

3.1.5. The meal boxes should contain disposable service materials (forks, spoons, knives, etc.), napkins, wet wipes, etc.

3.1.6. The meal boxes should be prepared as close to the time of service as possible in order to meet the consumers' nutritional needs

Sample Meal Box Menu:

Tuna sandwich, cold cut vegetables (tomato, cucumber), fruit juice, tahini halva

Grilled meatballs, cold cut vegetables (tomato, cucumber), Ayran (traditional Turkish plain yogurt drink), Şekerpare (traditional flour-based Turkish dessert)

3.2 Dining Hall and Kitchen Cleaning

In this period, since all dining halls and food preparation halls (i.e. kitchens) should be considered as a high-risk places, they should be cleaned and sanitized frequently according to the ISO 22000 principles.

3.3 Food Distribution for the Quarantine Hospitals

3.3.1. Food distribution in the quarantine hospitals should be conducted with disposable apron, mask, gloves, sleeves and if possible with food overalls.

3.3.2. Food delivery to patients should be done with disposable serving bowls.

3.3.3. The food service should be planned in a way that prevents health care professionals' congregation in the dining halls. Meal service hours could be extended for preventing the crowds.

3.3.4. At least one-meter distance must be ensured between the tables of the dining halls during the meal service to health care professionals.

3.3.5. Utensil, including forks, spoons, and knives should be placed in one-person serving packs, water should be served in sealed containers or bottles. Salt, and other spices must be provided in single-use packages.

4. Clinical Nutrition Therapy for COVID-19

(The recommendations below were taken from Zhejiang University Medical Faculty's Handbook of COVID-19 Prevention and Treatment.)

4.1. The Balance of Intestinal Microecology and Nutritional Support

Some COVID-19 patients have gastrointestinal symptoms (such as abdominal pain and diarrhea) due to direct viral infection of the intestinal mucosa or antiviral and anti-infective drugs. There has been report that the intestinal microecological balance is broken in COVID-19 patients, manifesting a significant reduction of the intestinal probiotics such as lactobacillus and bifidobacterium. Intestinal microecological imbalance may lead to bacterial translocation and secondary infection, so it is important to maintain the balance of intestinal microecology by microecological modulator and nutritional support.

4.2. Microecologics Intervention

- (1) Microecologics can reduce bacterial translocation and secondary infection. It can increase dominant gut bacteria, inhibit intestinal harmful bacteria, reduce toxin production and reduce infection caused by gut microflora dysbiosis.
- (2) Microecologics can improve the gastrointestinal symptoms of patients. It can reduce water in feces, improve fecal character and defecation frequency, and reduce diarrhea by inhibiting intestinal mucosal atrophy. 1
- (3) The hospital with relevant resources can perform intestinal flora analysis. Therefore, the intestinal flora disturbance can be discovered early according to the results. Antibiotics can be adjusted timely and probiotics can be prescribed. These can reduce the chances of intestinal bacterial translocation and gut-derived infection.
- (4) Nutrition support is an important means to maintain intestinal microecological balance. Intestinal nutrition support should be applied timely on the basis of effective evaluations of nutritional risks, gastroenteric functions, and aspiration risks.

4.3. Nutrition Support

The severe and critically ill COVID-19 patients who are in a state of severe stress are at high nutritional risks. Early evaluations of nutrition risk, gastrointestinal functions and aspiration risks, and timely enteral nutritional support are important to the patient's prognosis.

(1) Oral feeding is preferred. The early intestinal nutrition can provide nutritional support, nourish intestines, improve intestinal mucosal barrier and intestinal immunity, and maintain intestinal microecology.

(2) Enteral nutrition pathway. Severe and critically ill patients often harbor acute gastrointestinal damages, manifested as abdominal distension, diarrhea, and gastroparesis. For patients with tracheal intubation, intestinal nutrition tube indwelling is recommended for post-pyloric feeding.

(3) Selection of nutrient solution. For patients with intestinal damage, predigested short peptide preparations, which are easy for intestinal absorption and utilization, are recommended. For patients with good intestinal functions, whole-protein preparations with relatively high calories can be selected. For hyperglycemia patients, nutritional preparations which are beneficial to glycemic controlling are recommended.

(4) Energy supply. 25-30 kcal per kg body weight, the target protein content is 1.2-2.0 g/kg daily.

(5) Means of nutritional supply. Pump infusion of nutrients can be used at a uniform speed, starting with a low dosage and gradually increasing. When possible, the nutrients can be heated before feeding to reduce intolerance.

(6) The elderly patients who are at high aspiration risks or patients with apparent abdominal distention can be supported by parenteral nutrition temporarily. It can be gradually replaced by independent diet or enteral nutrition after their condition improves.

Additional Recommendations of the Turkish Dietetic Association:

1) If the patient's dry cough and sore throat become more severe, solid food intake may decrease. Therefore, soft, enriched foods, and oral enteral nutritional supplements can be useful for meeting the nutrition and energy needs of such patients.

2) In patients with acute respiratory distress syndrome (ARDS), nutritional support can be applied according to ESPEN and ASPEN criteria.

3) If organ failure develops in patients, this condition needs to be addressed when planning the nutrition therapy.

Selected Resources

- 1) Turkey Dietary Guidelines. *Ankara: Ministry of Turkey Health Publication*, (2016).
- 2) Zhejiang University Medical Faculty's Handbook of COVID-19 Prevention and Treatment; link: <https://video-intl.alicdn.com/Handbook%20of%20COVID-19%20Prevention%20and%20Treatment%20%28Standard%29.pdf?spm=a3c0i.14138300.8102420620.download.6df3647fjmGrfF&file=Handbook%20of%20COVID-19%20Prevention%20and%20Treatment%20%28Standard%29.pdf>
- 3) Insel PM. *Discovering nutrition*. Jones & Bartlett Publishers; 2013.
- 4) World Health Organization's official website: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>