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Personal Protective Equipment: Dietary Challenges toward Optimal Hydration and Nutrition during Use

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Introduction

The wearing of personal protective equipment (PPE) is essential during the care of a patient positive or suspected for coronavirus disease 2019, as the transmission is mainly through the respiratory route or contact with infected secretions or droplets.[1] A practical concern that has emerged over the last few weeks has been the performance of duties for long hours donning the PPE. The customary clinical and laboratory shifts are 6 to 8 hours, a period often quoted that of an endless hunger and thirst.[2] Energy and hydration during this shift are an issue as the PPE precludes any intake once donned, until doffing. In high-intensity workplaces such as intensive care units, improper nutrition and hydration can affect decision-making. Being at the forefront of caring for these patients, good immunity is essential, too. In endurance workouts such as long distance running and cycling, a rigorous routine to achieve optimal nutrition, maintain hydration, and develop immunity through diet is often resorted to. An approach of similar nature can help during the long duty hours with PPE.

The human body is alkaline and maintains a pH between 7.35 and 7.45. The pH of the body is influenced by any food or liquid intake. Like many food items containing large amounts of nitrogen, chlorine, and phosphorus (such as meats), which tend to be acidic, the food we consume can be modified to make it alkaline. Foods rich in calcium, potassium, sodium, and magnesium (e.g., leafy greens) tend to be alkaline forming. Lemon, despite being acidic (pH 2.0), has an alkaline effect on the body.[3] The stress of the current pandemic, uncertain times added to the duty, can lead to unhealthy eating habits, further affecting overall health. Attention to adequate hydration, diet, and intake of immunity building nutrition is fundamental.

Hydration

Adequate hydration must be ensured throughout the day, especially in the period of 6 to 8 hours before the duty. The day should start with the intake of warm water with lime. As regular tea or coffee is acidic, it is beneficial to switch to herbal or green tea.[4] The addition of ginger, cardamom, basil, mint, or jaggery to the herbal tea is encouraged.

Intake of a large quantity of liquids before duty might lead to early micturition reflex. Instead, wet foods such as dal khichdi, kidney beans (*Rajma*), thick soups, and vegetables such as brinjal, tomatoes, and cucumber contain a high percentage of water (77–97%). Avoid too much salt in diet as this may enhance thirst. Instead, consume natural salt-containing foods such as spinach, beetroot, and carrots.

It is good to ensure water intake of at least 3 L of fluid in the period before and after the duty hours.

Nutrition

The dietary aspect can be modified for optimal nutrition as well as energy during the strenuous period of duty with PPE. It is important to incorporate, as much as possible, three meals per day. The timing of the major meals can be adjusted as per duty timings. The main meal before duty should be ~2 hours prior. This timing of the major meals gives the body the basic energy needs. A snack, portion of which is one-third of the main meal, can be consumed 20 to 30 minutes before donning the PPE. This helps to top up the energy levels. For the main meals, complex carbohydrate diets with a combination of protein are excellent for giving sustained energy for long hours of duty. Breakfast can include oatmeal, broken wheat (*Dalia*), cheese, beaten rice preparations (*Poha*), and eggs. Whole millets or brown rice along with lentils

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(*Dals*) are ideal for the main meals. Eggs and chicken can be included in the main meals. Greens such as beans, spinach, broccoli, and different kinds of vegetables should form the backbone of the diet. Vegetables give vitamins and fiber and increase the water content in the body. A small snack just before donning the PPE can be dry fruits such as dates, dried figs, almonds, and pistachios.[5] Rich carbohydrate fruits such as a banana, mango, grapes, and papaya or even a small meal such as a sandwich, steamed rice cakes (*Idli*), yogurt, or an extension of lunch can give sustainable calories as top-up energy for the duty hours.

Similar foods should also be kept handy post shifts along with adequate hydration. This is beneficial as the rituals of doffing, compulsory shower, travel back from the workplace, and the necessary precautions before entering the place of stay may delay the main meal.

Immunity

The importance of good immunity cannot be undermined during this stressful period. As a healthcare worker, along with external protection with appropriate PPE, good immunity is essential. The immunity of the body can be increased by dietary modifications. The inclusion of ginger, cinnamon, organic honey, and lime boosts immunity.[6] Hence, lime can be added to meals that increase the absorption of iron, too. Probiotics such as curds, yoghurt, and fermented foods such as *Idli* or rice pancakes (*Dosa*) improve the gut immunity.[7] Herbs such as garlic, ginger, turmeric, and black pepper improve the immunity of the respiratory tract.[8] Foods and fruits rich in vitamin C, such as lime, capsicum, guava, broccoli, and tomatoes and those rich in vitamin A such as carrots, pumpkin, sweet potato, mangoes, and papaya are excellent additions to the diet. Supplements of vitamin C, vitamin E, omega-3 fatty acids, and zinc are good for overall immunity.[9,10]

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Conflicts of Interest
There are no conflicts of interest.

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