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### Immunity and lifestyle changes during Covid-19

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#### ABSTRACT

Coronavirus was proclaimed as a worldwide pandemic by the World Health Organization. Every one of the nations is battling with this infection which has been appalling to humankind. Coronavirus had affected individuals with low resistance and poor way of living. We are encountering an uncommon test due to the Covid disease. Thus, we need to beat the infection by changing our way of life and further developing immunity to bring down the risk of being affected by the infection. Although the whole population has been affected, we have adapted to social distancing, wearing masks, frequent sanitation, maintaining a healthy lifestyle and cleanliness. There were both positive and negative impacts in the case of diet but we haven't forgotten to intake immunity building foods during the pandemic and being fit has been carried forward even after the pandemic. Studies show that there was a subtle decrease in smoking patterns and a great increase in mental health issues. We have survived among all the odds making the air cleaner and the earth warmer.

**Keywords:** Lifestyle changes, immunity, covid-19, coronavirus and pandemic

#### INTRODUCTION

Coronavirus was proclaimed as a worldwide pandemic by the World Health Organization. Every one of the nations is battling with this infection which has been appalling to humankind. Coronavirus had affected individuals with low resistance and poor way of living. We are encountering an uncommon test due to the Covid disease. Thus, we need to beat the infection by changing our way of life and further developing immunity to bring down the risk of being affected by the infection. This article further describes immunity and lifestyle changes we have developed during the pandemic.

#### Immunity

Immunity is perhaps one of the most discussed topics during this time of the COVID-19 pandemic. The main reason for this is because we haven't yet discovered how to prevent the disease and there is no vaccine or treatment yet to fight the novel coronavirus. Additionally, recent studies have suggested that many people who have been infected with the Coronavirus did not show any symptoms of the disease. All of this may be an indication that our immune system holds the key to fight the virus, if we are infected.

We will understand what immunity is and how it could be enhanced naturally to fight any infection,

including the Coronavirus. The ability of our body to defend against disease-causing microorganisms is known as immunity and the organs/cells that help in this process comprise the immune system. There are two types of immunity – innate and adaptive.

Innate immunity is our body's first line of defence against germs and offers protection during the initial critical hours of being exposed to a pathogen. Physical barriers like skin, eyelashes, body hair, saliva, tears, sweat, bile, etc. are some of the components of the innate immune response.

Adaptive or acquired immunity, on the other hand, is activated when the innate immunity is not enough to fight the pathogen. This type of immunity develops as we are exposed to diseases or when we get vaccinated. Adaptive immunity is memory-based which means that when the same pathogen attacks again, it will remember it and kill it with the help of antibodies.<sup>1-5</sup>

Based on a body's ability to produce antibodies, adaptive immunity can be either active or passive. Active immunity is when your body produces antibodies to fight the infection while passive immunity is when you are given antibodies extracted from the blood of others who recovered from the infection.

How can we strengthen our immunity naturally?

For its normal functioning, there should be harmony and balance between the various components of the immune system. To make that happen, you can make certain lifestyle changes that will enhance your immunity and your general wellbeing. We've outlined few of these lifestyle changes for you below:

- Be physically active –The cells of the immune system can carry out their functions effectively if there is efficient blood circulation. Exercising boosts blood circulation and in turn, the immune system. Indulging in physical activities can enhance your cardiovascular health, help you manage weight, lower your blood pressure, and lower your risk of diseases. Staying physically fit can also be beneficial for your mental health and help you cope with stress, anxiety, depression, etc. Stress is known to impair normal immune system function.
- Eat a balanced diet – Appropriate and adequate nutrition is needed for all cells in the human body, including the immune system, to function optimally. Eating a balanced diet, which is one that contains the right amount of nutrients like vitamins, minerals, dietary fibre, protein, and antioxidants, can go a long way in strengthening the immune system. You can include fresh fruits, vegetables, nuts, legumes, whole grains, and lean proteins in your diet to get the nutrition you need to keep your immune system healthy.

- Get enough sleep – There is evidence of sleep being one of the factors affecting the immune system response. Not getting enough sleep can reduce the circulation of white blood cells and lower the activity of the immune system. On the other hand, adequate sleep can elevate the memory of the immune system to previously encountered pathogens.
- Do not smoke – Research has revealed that smoking can decrease your immune function thereby increasing your risk to infections. Besides harmful ingredients like tobacco, there are thousands of free radicals that are released per puff when you smoke a cigarette. As a result, the antioxidant level in smokers is reduced thereby causing cellular damage. Research also indicates that smoking increases the risk of severe illness due to COVID-19.
- Get some sunlight – According to researchers, sunlight plays an important role in immunity by energizing T-cells which are responsible for fighting infections. The blue light emitted by the sun can speed the movement of T-cells to the infection site and initiate a quicker response. You can also get your dose of **Vitamin D**, which plays a crucial role in the functioning of the immune system, from the sun. However, you should avoid direct exposure to the UV rays as it can decrease immune responses and increase the risk of skin cancer.

### **Role of antioxidants in boosting immunity**

We rely on cellular metabolism to live and in the process, free radicals are generated. Free radicals are harmful as it causes damage to membranes, DNA, enzymes, while also leading to decreased immune response. Antioxidants can stabilise these free radicals and enhance the activity of the immune system. Hence, researchers recommend consuming a diet rich in fruits and vegetables as they are good sources of antioxidants. Some of the antioxidants that may help in strengthening immunity are vitamin C, E, carotenoids, and selenium.<sup>6-8</sup>

Recently, many clinical trials have been conducted to study the effect of antioxidant supplements on immune responses. Results from these trials suggest that vitamins C, E, A, and beta-carotene supplements can enhance certain immune responses.

As stated earlier, consuming a balanced diet can help you meet the required antioxidant requirements to maintain a healthy immune system. If you are not sure about which foods contain higher antioxidants, the ORAC value is a good indicator and guideline to follow.

Drinking water majorly hot water and always staying hydrated is one of the best ways in keeping the

risk of the disease lowered. Intake of foods with high Oxygen Radical Absorbance Capacity ORAC value(Cinnamon (ground) – Cloves Turmeric, Peppermint, Basil (dried), Chilli powder, Cumin seed, Curry powder, Mustard seed, Black pepper, Raw plums, Coriander leaves) antioxidants( leafy green vegetables, dill, peppers, apples, grapes, fennel leaf, red onion, oregano, chilli pepper, green tea, and black tea), zinc and magnesium(dark chocolate, black beans, avocados, and whole grains), selenium, elderberry, B complex vitamins, Pelargonium sidoides, vit D, vit C(eggplant, bell peppers, beetroots, spinach, and cauliflower are known to be quite rich in vitamin C and are good for immunity. Green vegetables like broccoli, mushrooms, and even kale). Berries can also be included in the diet along with foods rich in omega-3 fatty acids—beans, flax seeds, and even some nuts.), vit E rich foods, herbs like (garlic, black cumin, and liquorice) medicinal mushrooms Pelargonium sidoides. Use of ayurvedic plant products (moringa, Neem, tulsi, ashwagandha, Triphala, ginger, garlic, cumin) and Chinese medicine (Curcumin, Cinnamaldehyde, honey, probiotics, lactoferrin, Quercetin). Vaccines have been developed for boosting immunity. A positive attitude leads to better immunity, maintain good hygiene habits for increased immunity, older adults should get their flu shots to improve immunity, cutting down alcohol, healthy weight and diet, healthy mind and attitude.<sup>9-12</sup>

### Lifestyle changes

More youthful grown-ups, particularly those matured 18–29 years, are more inclined to both sound and undesirable dietary way of life changes during quarantine. TV is additionally vital in allowing one's escape from the world, Sleep impacts immunity not only sleep amount yet sleep quality was likewise discovered to be influenced because of COVID-19, Exercising, quitting smoking and getting some daylight. Older individuals with conditions, like cardiovascular illnesses, hypertension, diabetes and other diseases, are at a higher danger of death because of COVID-19. Moreover, it can cause extreme complexities among individuals with obesity-related conditions.

The pandemic had serious impacts on emotional wellness, bringing about mental health issues including frustration, disappointment, stress, and anger the most affected among all were students. People managing Seasonal affective disorder (SAD) To overcome the disorder, specialists suggest individuals set up an emotional support system, limit their media exposure, and increase their exposure to daylight and other light sources.

Besides, online media has been utilized all the more regularly as a way to educate people by expanding the presence of specialists in the field of

nutrition like dietitians, nutritionists, specialists and wellbeing workers. A positive way of life changes if continued throughout will help us in decreasing the risk of being affected by diseases. Perhaps the outbreak is eye-opening that we should control diet and adopt positive life changes as a regular routine during all ages.

### Stop smoking

Urging the novel coronavirus pandemic, it's more important than ever to incorporate positive lifestyle habits that can help you stay healthy and boost your immune system, the body's complex system that fights infection and disease.

While there isn't a magic pill to improve immune function, a healthy lifestyle as a whole is your best defense, according to Dr. Michael Ford. "It's more about the big picture," says Dr. Ford, a primary care internist at New York-Presbyterian Medical Group Hudson Valley and an assistant professor of medicine at Weill Cornell Medicine. "Our genetics make up about half of how well our immune systems function, but the other half is greatly influenced by our everyday habits. So there's plenty of room for improvement."

COVID-19 is a novel respiratory disease that can damage the lining of the air sacs in the lungs. In severe cases, COVID-19 affects breathing, and patients may even need ventilator support. And those with lung disease are more vulnerable. "If you're a smoker and need a reason to quit, let this pandemic be your reason," Dr. Ford says. With lung cancer the leading cause of cancer death in men and women in the U.S., avoiding cigarettes and vaping is always a good rule to follow. "If quitting smoking doesn't save you from coronavirus, it could save your life down the road. So, stop smoking. That's the number-one thing you can do to improve your immune system as a modifiable risk."

### Get enough sleep

"Sleep is when the magic happens; it's when the whole system of the body is revitalized," Dr. Ford says. Scientists are still discovering all the ways sleep improves our health, but the REM (rapid-eye movement) cycle of sleep is particularly important. For instance, people with sleep apnea — a disorder in which an individual awakens right before entering the REM cycle of sleep — have higher rates of memory problems, mood disorders, heart disease, and possibly cancer.

### Reduce stress

Cortisol, the stress hormone, reduces the activity of the immune system. Stress can also impact our sleep. "When you're anxious and you're turning things over in your mind and can't stop thinking about them, your sleep will be negatively affected by that," says Dr. Ford. The same goes for eating habits. When we're

stressed, we're more likely to make bad decisions, like eating unhealthy foods, which can have a domino effect on our overall health. Look for ways to help manage anxiety during the outbreak.

### **Eat a plant-based diet**

"Eating a well-rounded, balanced diet, like the Mediterranean diet, that's packed with vegetables, lean meats, and healthy fats are another way people can improve their immune system," says Dr. Ford. A plant-based diet has similar data behind it in terms of infection prevention.

"The majority of the immune system is found in the lining of your intestine, so it's a good idea to support your gut and microbiome with lots of good bacteria," he says. Many people look to probiotics to supplement their gut with good bacteria, but Dr. Ford stresses the importance of a whole-foods diet rather than taking a probiotic supplement — unless you're taking probiotics for a specific purpose, such as irritable bowel syndrome. Consider adding foods that are rich in probiotics to your diet, such as yogurt or fermented foods like kimchi, miso, and sauerkraut.

### **Be skeptical of supplements**

While there are claims that certain vitamins and supplements like vitamin D, zinc, and elderberry can improve immune function, Dr. Ford says there isn't enough evidence that they help. "I'd also put a word of caution out there: It's one thing to eat elderberries, but it's another thing to take a capsule that *claims* to be elderberry," he says. In fact, one study reported that out of 44 herbal supplements tested, 30 had product substitutions and only two of 12 had products without

any substitution. A large percentage used filler ingredients and other product substitutions that contained allergens.

### **Don't overdo it on the alcohol**

While it may be tempting to enjoy a few more glasses than you normally would while you're spending time at home, too much alcohol could put your immune health in jeopardy. The current U.S. Dietary Guidelines for Americans recommends that, if alcohol is consumed, it should be consumed in moderation — up to one drink per day for women and two drinks per day for men. And don't drink right before bed, as it can disrupt sleep.<sup>13-15</sup>

Integrating healthy habits that encompass the whole body — exercising, eating well, getting enough sleep, and reducing stress — really can help boost the immune system. Dr. Ford adds, "Treat yourself right and you'll maximize what you've got."

### **CONCLUSION**

Although the whole population has been affected, we have adapted to social distancing, wearing masks, frequent sanitation, maintaining healthy lifestyle and cleanliness. There were both positive and negative impacts in case of diet but we haven't forgotten to intake immunity building foods during the pandemic and being fit has been carried forward even after the pandemic. Studies show that there was subtle decrease in smoking patterns and great increase in mental health issues. We have survived among all the odds making the air cleaner and the earth warmer.

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