



## Review Article

## Healthy life style practices to combat COVID-19 pandemic– A mini review

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## ABSTRACT

**Introduction:** Corona virus disease (COVID-19) is a pandemic which has spread globally effecting lots of human lives. Maintaining healthy lifestyle is very important to safeguard ones' physical and mental health. The major components of healthy life style practices are: Nutrition, Physical activity, Rest and Sleep, Hygiene and Stress management. The aim of this review article is to aware general public about the healthy lifestyle practices which can be incorporated in day to day life so as to keep oneself physically and mentally fit.

**Results:** It was found that T-lymphocyte, micronutrients vitamins A, B, C, D, and E, and minerals iron, selenium, zinc, plays a major role to boost immunity. "Bhramari" pranayama has anti-inflammatory actions in body.

**Conclusion:** The findings concluded that incorporating healthy lifestyle practices in daily life can help one to come out of this situation safely.

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## 1. Background

Corona virus disease (COVID-19) is a pandemic which has spread globally effecting lots of human lives. India's response to the COVID-19 pandemic is one of the most stringent in the world, based on data received from 73 countries.<sup>1</sup> Anxiety and fear among the general public is common due to many reasons. One of the reasons is how to manage and react in this present situation? Health has now become the priority in everyone's life. World health organization (WHO) has given guidelines to be followed regarding preventive measures to spread disease transmission. Healthy lifestyle is one of the valuable resources in reducing the incidence, impact of health problems, for recovery, for coping with life stressors, and for improving quality of life.<sup>2</sup> Maintaining healthy lifestyle is very important to safeguard ones' physical and mental health. The aim of this review article is to disseminate knowledge among general public regarding evidenced based

healthy lifestyle practices which can be incorporated in day to day life so as to keep oneself physically and mentally fit.

## 2. Methods

Articles were searched and extracted using MeSH terms i.e Healthy lifestyle, COVID-19, Pandemic, Micronutrients, Hygiene, Mental Health, Exercise, Sleep from PubMed, Google Scholar search engine between 2009 to 2020. In addition to obtain more information freely available open access articles and books were also reviewed.

## 2.1. Nutrition and Health

Nutrition is one of the most important factors which helps to play major role during and after infection. It is known fact that COVID-19 is an infection caused by virus which attack the immune system. Researchers in China and New York Blood Centre, have studied the action of virus action on T-lymphocyte cells. T-lymphocyte cells helps to protect the body from infection.<sup>3</sup> It is very important to eat diet which boost up immunity. Micronutrients play the essential

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role to fight against infection. These micronutrients include vitamins A, B, C, D, and E, and the minerals iron, selenium, and zinc.<sup>4</sup>

It is also true that yet there is no evidence which can specifically prove the role of particular food item which can combat COVID-19. However, many articles suggest intake of few nutrients which helps to boost up immunity. Dietary sources are shown in Table 1.

**Table 1:** Dietary sources

<b>Nutrient</b>	<b>Dietary Sources<sup>5</sup></b>
Vitamin A	Green leafy vegetables, drumstick, amaranth, papaya, carrot, jackfruit, Milk, Ghee, Curd.
Vitamin B2 (Riboflavin)	Green leafy vegetables, eggs, liver.
Vitamin B3 (Nicotinamide)	Dried yeast, rice polishing, peanut, whole cereals, legumes, meat, fish.
Vitamin D	Dietary sources include fortified foods and supplements
Vitamin C	Fresh citrus fruits like Amla, Guava, Orange, Lemon, Mousambi, and pineapple. Vegetables sources include broccoli, capsicum, cabbage and turnips also contains Vitamin C.
Vitamin E	Vegetable oils (safflower oil, mustard oil, sesame oil), cereal grains, wheat gum, sunflower seeds, butter and eggs.
Selenium	Grains, eggs and garlic.
Zinc	Whole grains, legumes, chickpea, nuts, beans, dairy products, egg.
Iron	Ragi, green leafy vegetables, jaggery, dried fruits, eggs.

## 2.2. Role of Vitamin A

Vitamin A helps to make antibodies against pathogens that cause infection and neutralise them. This activity is also possessed by carotenoids found in plants also known as provitamin A. Vitamin A helps in maintenance of epithelial tissue and mucous membrane integrity.

## 2.3. Role of Vitamin B2

Riboflavin) – Vitamin B2 helps in cell metabolism. One study has reported that Vitamin B2 and UV light reduces the titre of MERS-CoV (Middle East respiratory syndrome coronavirus) in human plasma.<sup>6</sup>

## 2.4. Role of Vitamin B3

Nicotinamide)-Vitamin B3 enhance the killing of Staphylococcus aureus with its myeloid-specific transcription factor property. Efficacy of Vitamin B3 is proved both as prophylactically and therapeutically in human. However, treatment with Vitamin B3 significantly inhibit infiltration of neutrophil into the lungs with a strong

anti-inflammatory effect.<sup>7</sup>

## 2.5. Role of Vitamin D

Vitamin D is a fat-soluble-vitamin and human body derives vitamin D from UV light. Daily sun exposure of at least five minutes is sufficient to generate enough amount of vitamin D in body. Bergman et al. included 11 randomized placebo-controlled trials with 5660 individuals (average age was 16 years, ranging from 6 months to 75 years). The results showed that vitamin D supplementation significantly decreased the risk of respiratory tract infections.<sup>8</sup>

According to a study conducted by Charan et al. it was observed that there is reduction in episodes of respiratory tract infections among persons getting vitamin D supplementation compared to the control group.<sup>9</sup>

## 2.6. Role of Vitamin C

As per the reports Vitamin C has important role in regulating the immune system. They play important functions in human body i.e phagocytosis, T lymphocyte cell transformation and interferon production. A review article reported that intake of Vitamin C supplements during a cold can reduce the duration of the illness by 8% in adults and 14% in children i.e. it shortens the duration of a cold by approximately one day.<sup>10</sup>

## 2.7. Vitamin E

Vitamin E is a fat-soluble vitamin acting as an antioxidant. It protects body cells from the damage caused by free radicals and also boost immune system to fight against invading bacteria and viruses.<sup>5</sup> According to studies conducted on older adults it was found that vitamin E intake may lower the risk of bacterial and viral infections.<sup>11</sup>

## 2.8. Role of selenium

Selenium is a trace element having a critical role in the defence against viral infection through its antioxidant property.<sup>5</sup> Researchers in china found that cure rate was significantly associated with selenium status among patients with COVID-19.<sup>12</sup>

## 2.9. Role of Zinc

Zinc is a trace element found in cells of human body. It helps immune system to properly work. Cochrane review article summarized results of 18 randomized controlled trials conducted on 1,781 participants. The study found that zinc particularly in the form of lozenge or syrup inhibits replication of the virus causing common cold. Hence, shortens the average duration of common cold.<sup>13</sup>

### 2.10. Role of Iron

Iron is an essential element that help immune system to fight against infection. Low levels of red blood cells and Haemoglobin are related with COVID-19 in early stages. In late stages, it can cause widespread inflammation and “cytokine storms” that can lead to nerve injury, increase ferritin, and low iron level. A trial conducted on 22 women found that iron deficiency was more common in women with chronic cough. Supplementation with Iron sulfate has improved the symptoms.<sup>14</sup>

### 2.11. Others

Ministry of Health and Family Welfare (MoHFW) has given recommendations to use spices like Haldi (Turmeric), Dhaniya (Coriander), Jeera (Cumin) and Lahsun (Garlic) during cooking. These spices helps to boost immunity.<sup>15</sup>

### 2.12. Physical activity and Health

In view to COVID-19 pandemic government has decided to restricted the public movement so as to reduce the chance of human exposure to virus. Home stay leads to increased sedentary behaviour's and less expenditure of energy. However, to keep oneself fit and stress-free exercise can be done while at home. Home exercises include walking inside the house, stair climbing, sit-ups using a chair or from floor, dancing, gardening and home cleaning. It is recommended that one must undertake at least 30 min of moderate physical activity every day and/ or at least 20 min of vigorous physical activity every alternate day.<sup>16</sup> WHO has recommended 150 minutes of moderate-intensity physical activity throughout the week to stay fit.

According to a research article "Humming (low pitch Bhramari) caused a 15-fold increase (range, 8–21) in nasal Nitric Oxide (NO) compared with quiet exhalation".<sup>17</sup> As a vasodilator, NO decreases blood pressure and improves blood flow to the organs, causes anti-inflammatory action in the arteries, boosts immune defense, and aids in the destruction of viruses and parasitic organisms. It also makes mind free from agitation, frustration and anxiety.<sup>18</sup>

### 2.13. Hydration

To stay hydrated, one should drink 8-10 glasses of water daily. Hydration help to flush out toxins from body and also lowers the chances of getting flu. Other alternatives are intake of juices made of citrus fruits and coconut water.<sup>19</sup>

#### 2.13.1. Rest and Sleep

Outbreaks of COVID-19 are associated with psychological distress and symptoms of mental illness. Anxiety is associated with impaired sleep. Research study shows that short duration of sleep is associated with increased incidence of the common cold.<sup>20</sup> According to

a Randomized Controlled Trial conducted on 51 subjects it was observed that experimental group after undergoing 30 mins of progressive muscle relaxation (PMR) daily for 5 consecutive days has reduced the anxiety score and improved quality of sleep among subjects.<sup>21</sup> The Centre of disease control and prevention (CDC) and American academy of sleep medicine recommended seven or more hours of sleep for adults daily to stay healthy.

### 2.14. Hygiene

In this pandemic it is strictly recommended that one must maintain proper hand hygiene techniques to avoid getting contaminated with virus. WHO has recommended hand wash using soap and water (40 -60 seconds) or with alcohol (60-70%) based hand rubs (20 seconds) reduces chances of infection. Hands touches many surfaces and once contaminated, hands can transfer the virus to eyes, nose or mouth and ultimately infect the individual as this virus can live for hours to days on surfaces. So, it is recommended to avoid touching, nose, mouth and eyes. Cough or sneezing etiquettes should be maintained i.e covering mouth and nose with bent elbow or tissue and disposing the used tissue immediately followed by handwashing. One must use face mask to prevent spread of droplets and should maintain social distance of at least 1 metre (3 feet) with others to prevent spread of infection. It is estimated that if people will not follow social distancing then almost 40-70% of the population can be infected. Recent studies also found that infected people without having symptoms also play major role in the spread of COVID-19.<sup>22</sup>

### 2.15. Stress management

Outbreak of COVID-19 and lockdown has created two extreme reactions among public i.e fear and worry due uncertain future. A survey conducted among citizens in China found that nearly forty percentage (42.6%) of respondents experienced anxiety due to coronavirus outbreak in country.<sup>23</sup>

Another survey on people who was quarantined during the outbreak of severe acute respiratory syndrome (SARS) found that nearly one third (29%) of them experienced traumatic stress.<sup>24</sup>

To keep oneself stress free during this time WHO has given few guidelines to overcome this stressful situation. One must minimize watching, reading or listening news about COVID-19 because it causes more anxiety or stress and can seek information from trusted sources. People should communicate with family, friends, and colleagues regularly through phone calls, messages or emails. One should spend time with family members and should express fears or something which is causing stress.<sup>25</sup> This time can be utilized to engage yourself in creative activities or hobbies like cooking, singing, dancing, painting, writing

etc.

### 3. Conclusion

There is no known Immunity against COVID-19 and there is lack of evidence on whether those who have already been infected can relapse or contract the disease again. In this situation Healthy lifestyle practices amid the pandemic can help to boost up immunity.

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### 5. Conflict of Interest

None

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