



Minimize Risks of COVID-19 Infection

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EDITORIAL

The first wave of COVID-19 spread across the globe, rapidly during the first half of the year 2020 [1]. Since August 2020, the second wave of COVID-19 has been rampaging across most countries. A third wave may likely occur during the late spring of 2021. These in part coincide with the annual winter flu season in countries located in northern and later, the southern most latitudes, during their respective winter periods. One exception is the summertime peak in the middle-east when most people, near totally avoid exposure to sunlight due to extremely hot weather. During these vulnerable periods, body stores and the serum 25(OH)vitamin D [25(OH)D] concentration reduce; in parallel, the immune system weakens, thus increasing the risks for respiratory viral illnesses, including COVID-19.

Many tropical countries reporting fewer infections, which is mostly due to conducting significantly less (i.e., less than 5%) PCR testing per million population compared to the west). In addition, inevitable exposure to sunlight of people living in equatorial countries prevent the occurrence of severe vitamin D deficiency. The combination is responsible for low number of PCR positivity and COVID-related deaths reported in tropical countries, not due to lockdowns, curfew, or healthcare.

Why certain groups of people develop complications and dying from COVID-19?

While the reported prevalence and the deaths from COVID-19 are lowest in most tropical counties, it is not necessary the high temperature and high humidity alone responsible for this [2]. People in these regions get exposed to a reasonable amount of Ultraviolet B Rays (UVB) from the sunlight, facilitating the generation of vitamin D through the skin [3]. Consequently, they can maintain a reasonably active immune system preventing COVID-19 infections and complications [4]. Because food contains insufficient amounts of vitamin D, one must depend on UVB exposure and/or taking adequate doses of supplements to maintain optimum serum 25(OH)D concentration to maintain good health [5].

Having low vitamin D concentration weakens the immunity thereby increasing the risk of contracting COVID-19 [6], and associated complications and deaths [7-9]. While the first wave of COVID-19 could have affected anyone, the elderly and those in nursing homes had the brunt of developing complications, the use of ICU facilities, and [10] and most of the deaths. Those who were most vulnerable (elderly with chronic comorbidities and very low serum 25(OH)D concentrations) had the worst outcomes. The second wave, however, was also affecting the middle age and an increasing number of younger people who are relatively protected during the first wave of COVID-19. While the exact reason is unknown, human behavior generating higher viral loads are likely to have had an impact [11]. The latter was in part due to over-relaxation of restrictions by governments and the younger people take it for granted and began excessive socialization without taking public

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health precautions [12]. While certain strains demonstrating increased virulency, most others either remain the same or, becoming less virulent, perhaps due to ongoing mutations of the viruses and the remaining non-infected people having a higher degree of immunity.

Steps that individuals could take to prevent COVID-19

There are several straightforward steps that individuals and families should take to reduce the risk of contracting COVID-19. These can be categorized into three groups: avoiding the viral infection and the viral load (protecting self), preventing infecting others and enhance / strengthen immunity (protecting others), enabling to fight against the virus (boost the immunity and the use of vaccines). The first group includes wearing effective facemask such as N95, each time one goes out of home or from the office, washing hands with soap and water when return home and back to the workplace, avoiding crowded situations, minimize the use of public transportation and travelling (Figure 1).

The second group includes avoiding infecting others. This includes, avoid getting exposed to high-risk persons (who have a fever, coughing, or sneezing), and keeping a minimum of a four-meter distance from elder parents and relatives from younger children and grandchildren, who could be asymptomatic carriers. Nevertheless, the relationships between the elders and the youngsters should be strengthened using social media, video calling, and virtual visits, several times a day. Similarly, staying at home when has signs and/or symptoms of respiratory tract illness, strictly wearing effective facemasks, use a clean tissue or bend elbow if one has to cough or sneeze, and seeking appropriate medical assistances appropriate (Tele-

medicine first, calling a local emergency healthcare number for advice before rushing to a hospital).

The third group of action necessary is to strengthen the immune system using natural means. Despite the use of macro-nutritional remedies, syrups, and herbal mixtures that sell, and propagated by television, radio, the social media, and newspaper advertisement virtually has little or no effect on strengthening the immune system, that is capable of overpowering COVID-19. These are no better than a placebo. Nevertheless, there are other rational steps one can take to boost the immune system. Vitamin D also protects against all acute, viral respiratory infections [13-15]. These include maintaining micronutrient adequacy, especially vitamin D, vitamin C, K2, zinc and selenium, essential fatty acids such as omega-3, and magnesium [16].

Additive beneficial effects of these facilitate maintaining a robust immune system. The body also needs adequate rest and sleep as well as reasonable daily physical activity to maintain not only the mental and physical well-being but also the optimal function of the immune system [17]. Figure 1 illustrates the common modes of actions one should adhere to during the current COVID-19 pandemic to reduce the risks of acquiring the infection.

Steps that governments should take to prevent COVID-19

Governments and administrations must have a comprehensive common-sense plan for controlling the transmission of COVID-19 based on the biology and the known modes of spread of the virus. In addition to the standard public health measures such as mandating the use of facemasks, adhere to maintaining social distance as COVID-19 is predominantly an airborne disease, expand detection systems using community-based PCR, rapid

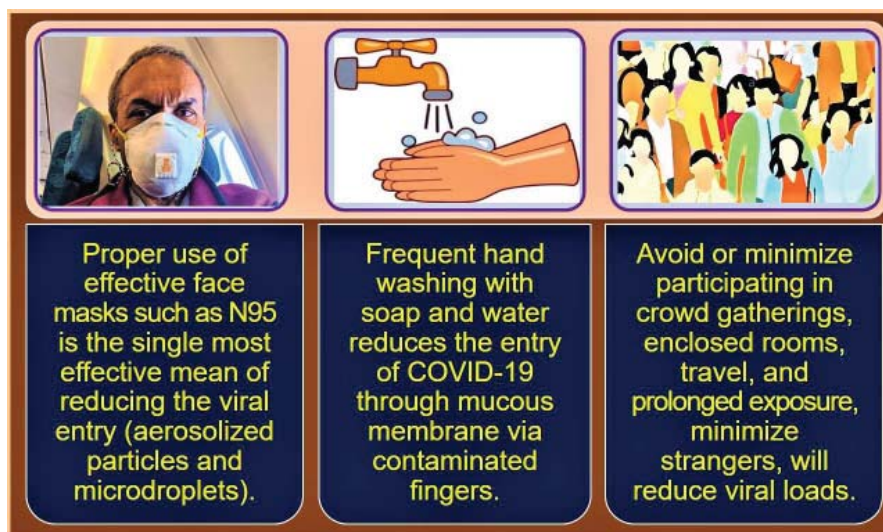


Figure 1 Illustrates the three most important items that one could adhere to minimize COVID-19 infection.

antigen test, and antibody testing, and effective contact tracing using trained public health personnel.

Those who are exposed and even found positive do not necessarily need hospitalization unless they are developing any one of the known complications of COVID. Others can be provided with safe isolation at home under supervision. However, those who do not have such accommodation must be provided humane quarantining at government, health department (not military) run centres, free of charge to minimize cross infections. Meanwhile, it is possible that COVID-virus might mutate to generate a super-bug and the third wave could become out of control and most vaccines might lose their efficacy from late 2021 against COVID. Besides, governments must have an active, real-time surveillance system based on Geographic Information Systems (GIS) to identify locations of persons positive for COVID-19. Such would allow early identification of outbreaks' and COVID clusters, and delineate disease location with higher concentration to protect the most vulnerable people. The latter include nursing homes, disability centres, and elderly homes, and early location of hot spots thus, enabling them to take proactive actions to protect people. The latter include provision of high doses of vitamin D to high-risk communities to rapidly stimulate their immune system, enabling subduing COVID-19.

The need for a humane approach

During the process of controlling COVID, one must strike a balance between the virus spread versus the provision of basic human needs to the populous, the safety of the elders and children, etc. Broader and sensible evaluation of the need for opening of schools and universities versus continuing online schooling, safe transportation of children to school and people to work sites, and implementation of community-based disease prevention measures. Since some of the community spreads are occurring through workplaces and schools, re-structuring work routines and shifts, logistics, encouraging and provision of facilities to work from home for non-essential staff, provide safe transportation and workplace, the safety of staff, availability of free COVID-19 screening facility at work to all employees at free of charge, etc., are crucial for safety, and early identifications of developing cluster and managing them.

Importance of early identification and isolation to stop the spread of COVID-19

The mentioned measures would allow prompt early identifications of positive cases and trace contacts, enabling prompt control of community viral spread. Locking down and curfews are not the answers to controlling COVID-19 [18]. Besides, all ports of entry, such as airports and seaports must have rapid screening facilities (e.g., rapid antigen test and others) for COVID-19 together with affirmative and humane quarantining. In addition, the public must be educated to prevent those who are ill and having a

temperature from travelling out of home, especially using public transportation. None of these will work in isolation in the absence of public education (but not through fearmongering, misleading, and threats) together with empowering them to take care of themselves and local communities.

SUMMATION

At present, the only proven medical or nutritional intervention that reduces COVID-19 infection and reduces its complications and deaths is sun-exposure and higher doses of vitamin D supplementation [19]. Those who are at high risk, following exposure to a person with COVID-19 or a person with symptoms of COVID-19 infection likely to benefit from an upfront loading oral dose, such as between 100,000 and 400,000 IU given as a stat dose or over a few days could mitigate the illness swiftly. The same approach should be considered in all COVID-19 clinical trials conducted using vitamin D as an intervention. Another rescue means following an exposure, is to take 50,000 IU daily for 4 to 7 days, followed with a maintenance dose of 4,000 IU/day. The same approach should be considered in all COVID-19 clinical trials conducted using vitamin D as an intervention. This is especially important as those people with chronic diseases, the elderly, and those in nursing homes, who are known to have a high prevalence of severe vitamin D deficiency and are at high risk.

While the mentioned are highly cost-effective approaches, no government is yet to approve vitamin D as a preventative, adjunct, or a therapeutic agent. The latter is in part due to negative propaganda by the big-pharma, vaccine manufacturers, and their surrogates spreading false and disparaging information on vitamin D and bolstering and exaggerating the putative benefits from expensive antiviral agents and vaccines. Collectively, this propaganda misleads decision-makers and thus, preventing them from taking affirmative right actions to benefit the public.

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