

Editorial

COVID-19 and Smoking

Severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) is transmitted by respiratory droplets generated when people cough, sneeze, sing, talk or breathe. The COVID-19, a corona virus outbreak that started in Wuhan, China in December 2019, that has become pandemic spreading all over the world.^{1,2} COVID-19, a highly infectious disease, involves multi-organs of body and leads to respiratory, physical and psychological dysfunction. The COVID-19 as proved to be no exception, as the country has now more than 9 million cases, second only to the United States.

The COVID-19 patients present with symptoms of influenza-like, such as fever, cough, fatigue, sputum production, dyspnoea, sore throat and headache and with respiratory tract infection. The symptom varies from mild upper respiratory symptom to severe life-threatening pneumonia. The World Health Organization (WHO) estimated that 80% of the cases are asymptomatic or with mild symptoms and 20% of cases have severe symptoms requiring hospitalisation and only 5% requiring ventilator support.^{3,4} The elderly and individuals suffering from diabetes or hypertension have higher mortality.

As of December 03, 2020, a total of 64,953,322 cases of COVID-19 have been reported, including 1,501,602 deaths.⁵ The current pandemic has caused severe morbidity and mortality across the globe.

Tobacco use is a major health risk factor for cardiovascular disease, cancer, chronic lung disease and diabetes. Smoking including second-hand smoke contain over 7000 chemicals out of which more than 70 are cancer causing. Smoking impairs and damages the immune system which increases responsiveness to the infections making smokers more vulnerable to infectious disease.^{6,7} Tobacco users have a higher risk of being infected with the virus through the mouth, while smoking cigarettes, or using other tobacco products, as in the process of smoking, fingers and the lips are in contact. Smokers if contract the COVID-19 virus, they are at a greater risk of getting a severe infection as their lung health is already compromised. Further, same is the smoking by water pipes and *hookah*, as it involves in sharing of the mouth pipes; that may help in the transmission of the virus. Smoking also affects the macrophages and cytokines response, and hence, there is more chances of having the corona infection. The risk of pneumococcal, *Legionella*, tuberculosis and *Mycoplasma pneumonia* infection is high in smokers.

However, the non-peer-reviewed data released from France suggested that smoking might have a potential protective effect against SARS-COV-2 infection, via interaction with acetylcholine receptor, but the data have not been confirmed and should not in any way be an indicator to start or continue smoking.

In smokers, due to delayed viral clearance, patients with COVID-19 infection are prone to have more complications of the disease compared to non-smokers. The increased susceptibility to the infection may be due to the up-regulation of angiotensin converting enzyme-2 (ACE-2) receptor which is the main receptor used by the severe acute respiratory syndrome (SARS-CoV-2) to gain the entry to the host mucus that leads to the active infection.^{8,9} Like-wise TM PRSS2 protease has been shown to be crucial for viral activation, thus facilitating the viral engulfment.¹⁰ The vital entry has been shown to cause cytokine storm that is involving of excessive production of pro-inflammatory cytokine/chemokine interleukin-6 (IL-6), tumour necrosis factor-alpha (TNF- α), interfereon-gamma (IFN- γ), IL-2, IL-7, IP-10, MCP-3 or granulocyte monocyte-colony stimulating factor (GM-CSF), which is augmented by smoking.¹¹

From the published data so far during this pandemic, it has been observed that smokers were 1.4 times more likely to have severe symptoms of COVID-19 and 2.4 times more likely to be admitted to the intensive care unit (ICU), requiring mechanical ventilation or may die as compared to non-smokers.¹²

The two important aspects are to be seen while treating the patients with COVID-19 infection. First, every COVID-19 patient should be asked about status of smoking that may help the treating physician to manage the disease progression including hospital admission, hospital stay, ventilation support, recovery. Secondly, a patient with smoking history should be asked to stop smoking and should be given advise, support and pharmacotherapy to quit smoking. The National Tobacco Quitline Services (NTQLS), which is a telephone-based, free service (telephone no. is 1800-112356) and services of m cessation (telephone no. 011-22901701) can be utilised.

In conclusion, current evidence suggests that the severity of COVID-19 disease is high among smokers, as smoking impairs the lung function, making it more difficult for the body to fight off respiratory disease due to the new corona virus. Recently, the Centers for

Disease Control and Prevention (CDC) recommend community use of non-valved multi-layer cloth masks for the prevention of COVID-19. Cloth masks not only block the transmission of large droplets (*i.e.*, 20-30 microns and larger), but also block the exhalation of fine droplets and particles (often referred as aerosols) smaller than 10 microns.^{13,14} Role of inflammation and immune response, protease epithelial cell permeability by smoking alone SARS-CoV2 infection with future direction for the research and clear evidence.

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