Smoking enhances suicide risk - a significant role in the COVID-19 pandemic?

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Abstract

The COVID-19 outbreak has severely affected the whole world. Considerable evidence suggests that tobacco smoking is associated with increased severity of COVID-19 and death in COVID-19 patients. Tobacco smoking cessation is necessary to decrease COVID-19 – related hospitalizations and deaths. In this commentary, I suggest that tobacco smoking cessation is also needed to reduce suicidal behavior during and after the COVID-19 pandemic. Significant evidence suggests that the COVID-19 pandemic leads to increased tobacco consumption as smokers use more tobacco to cope with pandemic related stress, anxiety, depression, and loneliness. Multiple studies have demonstrated that tobacco smoking is associated with suicidal ideation, suicide attempts, suicide death, and a contributing factor in the pathophysiology of suicide. Smoking may increase the probability of development of post-COVID syndrome because it increases severity of COVID-19. Suicide risk may be increased in individuals with post-COVID syndrome. Smoking prevention and cessation should be a target of suicide prevention interventions during and after the COVID-19 pandemic. The COVID-19 pandemic enhances the need to act to integrate tobacco smoking cessation in the health care as a standard of patient care.

Key words: tobacco smoking, COVID-19, suicide

The COVID-19 outbreak has severely affected the whole world. COVID-19 is a serious, life-threatening infectious illness which may lead to long-lasting health problems.[1] Considerable evidence suggests that tobacco smoking is associated with increased severity of COVID-19 and death in COVID-19 patients.[2] Tobacco smoking cessation is necessary to decrease COVID-19 – related hospitalizations and deaths.[2] In this commentary, I suggest that tobacco smoking cessation is also needed to reduce suicides during and after COVID-19.

COVID-19 and tobacco smoking

Significant evidence suggests that the COVID-19 pandemic leads to increased tobacco consumption as smokers use more tobacco to cope with pandemic related stress, anxiety, depression, and loneliness.[3-6] According to a North American Quitline Consortium report issued in March 2021, cigarette sales increased in the U.S. in 2020.[3] At the same time, the number of people in the U.S. seeking help to quit smoking fell 27% in 2020. A study in the U.S. conducted in Spring 2020 found that self-identified, non-Hispanic Black/African American adult cigar smokers reported smoking cigars in higher frequency and quantity during COVID-19.[4] Very few study participants were motivated to stop smoking during the pandemic.

A study of a large, representative sample of Italian adults showed that during a lockdown in 2020, 5.5% of the overall sample quit or reduced smoking, but 9.0% of the sample started, relapsed smoking or increased their smoking intensity. In total, the lockdown increased cigarette consumption by 9.1%.[5] A survey of about 3,600 adults in Belgium showed that people smoked more cigarettes during COVID-19 than before the COVID-19 pandemic.[6]

Tobacco smoking and suicide

Multiple cross-sectional and longitudinal studies have demonstrated that cigarette smoking is associated with suicidal ideation, suicide attempts, and suicide death.[7-9] For example, Breslau et al.[7] examined the association between smoking and suicidal thoughts or attempt in a longitudinal 10-year study. Current daily smoking predicted the subsequent incidence of suicidal thoughts or suicide attempt, adjusting for

suicidal susceptibility, indicated by prior suicidality, and controlling for prior psychiatric disorders. A meta-analysis of studies performed in 1966-2011 has shown that cigarette smoking significantly increases the risk of suicide death.[8] The authors found significant dose-response relationship between smoking and suicide. The risk of suicide was increased by 24% for each increment of 10 cigarettes smoked per day. Another meta-analysis demonstrated that compared to nonsmokers, the current smokers were at higher risk of suicidal ideation (odds ratio (OR) = 2.05; 95% confidence interval (CI): 1.53, 2.58), suicide plan (OR = 2.36; 95% CI: 1.69, 3.02), suicide attempt (OR = 2.84; 95% CI: 1.49, 4.19) and suicide death (relative risk (RR) = 1.83; 95% CI: 1.64, 2.02).[9]

Many of the risk factors for suicide such as lower income, homelessness, depression, psychotic disorders, or substance abuse are also risk factors for being a smoker.[10] However, multiple lines of evidence indicate that tobacco smoking may be involved in the pathophysiology of suicidal behavior (Fig. 1).[10-12,15] Smoking affects the neurobiological pathways that may increase the risk of suicide.[10-12,15] Several studies indicate that chronic nicotine exposure reduces levels of serotonin and its metabolites.[10-12] For example, in a postmortem study, smokers had lower levels of serotonin and its metabolites in different parts of the brain in comparison to nonsmokers.[12] Observations suggest that smoking worsens mood and increases impulsivity and aggression[10,11] which may be related to serotonergic abnormalities. Multiple research works have demonstrated that depressed mood, elevated impulsivity and aggression, and reduced serotonergic function increase suicidality.[13,14] Also, nicotine activates the hypothalamic-pituitary-adrenal (HPA) system.[15] Smoking of only two cigarettes activates the HPA axis of habitual smokers. HPA axis dysfunction is associated with an increased risk for suicide.[13,14]

It is important to note that smoking may increase the probability of development of post-COVID syndrome because it increases the severity of COVID-19 (Fig.1).[2] Symptoms of psychiatric, neurological and physical illnesses, as well as inflammatory damage to the brain in individuals with post-COVID syndrome may increase suicidal behavior in this patient population.[1]

COVID-19 and suicide

Available evidence indicates that during the first months of the pandemic suicide rates decreased in Australia, Canada, Chile, Ecuador, Germany, New Zealand, South Korea, and United States, did not change in Brazil, China, Croatia, England, Estonia, India, Italy, Mexico, Netherlands, Peru, Poland, Russia, and Spain, and increased in Vienna (Austria), Puerto Rico, and Japan.[16] In some areas where total suicide rates decreased or unchanged, suicide rates among young people, women, and ethnic minorities increased. These observations are related to the earliest months of the pandemic. Suicide rates may increase after the COVID-19 pandemic and/or if the pandemic continues for a very long time.

Smoking cessation during COVID-19

Overall, smoking should be regarded as a contributing factor in the pathophysiology of suicide. Smoking prevention and cessation should be a target of suicide prevention interventions during and after the COVID-19 pandemic.

The COVID-19 pandemic enhances the need to act to integrate tobacco smoking cessation in the health care as a standard of patient care in order to address the smoking cessation needs. Smoking cessation support can be incorporated into different health services including home care. Tobacco smoking cessation support can also be integrated into virtual care via internet and phone consultations. Telemedicine can improve the access and delivery of preventive health services including smoking cessation in rural/remote areas around the world.

Informative and responsible mass media can promote smoking cessation. Tailored messaging and awareness building about the relationship between smoking, COVID-19 and suicidality are necessary.

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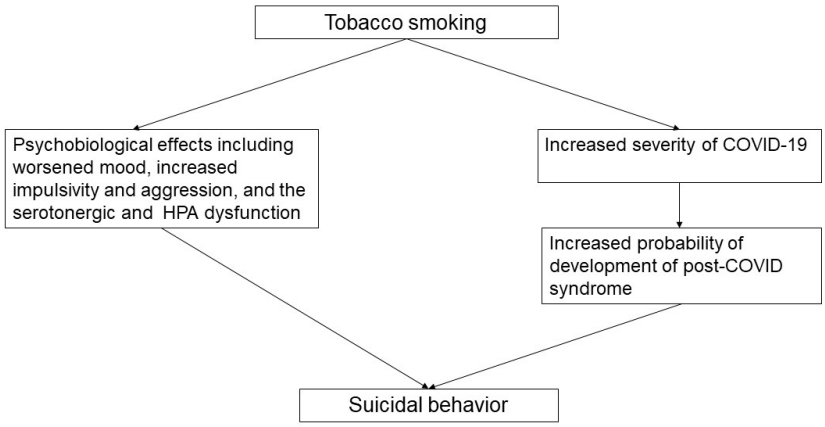

Figure 1. Possible impact of tobacco smoking on suicidal behavior during COVID-19

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