The impact of the COVID-19 pandemic on suicide rates

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Abstract

Multiple lines of evidence indicate that the COVID-19 pandemic has profound psychological and social effects. The psychological sequelae of the pandemic will probably persist for months and years to come. Studies indicate that the COVID-19 pandemic is associated with distress, anxiety, fear of contagion, depression, and insomnia in the general population and among health care professionals. Social isolation, anxiety, fear of contagion, uncertainty, chronic stress, and economic difficulties may lead to the development or exacerbation of depressive, anxiety, substance use, and other psychiatric disorders in vulnerable populations including individuals with pre-existing psychiatric disorders and people who reside in high COVID-19 prevalence areas. Stress-related psychiatric conditions including mood and substance use disorders are associated with suicidal behavior. COVID-19 survivors may also be at elevated suicide risk. The COVID-19 crisis may increase suicide rates during and after the pandemic. Mental health consequences of the COVID-19 crisis including suicidal behavior are likely to be present for a long time and peak later than the actual pandemic. To reduce suicides during the COVID-19 crisis it is imperative to decrease stress, anxiety, fears and loneliness in the general population. There should be traditional and social media campaigns to promote mental health and reduce distress. Active outreach is necessary, especially for people with a history of psychiatric disorders, COVID-19 survivors, and older adults. Research studies are needed of how mental health consequences can be mitigated during and after the COVID-19 pandemic.

Key words: coronavirus disease, COVID-19, suicide, anxiety, depression, economy

Coronavirus disease pandemic

The coronavirus disease 2019 (COVID-19) pandemic began at the end of 2019 in China and has quickly spread globally.[1] Millions of people around the world are infected and hundreds of thousands have died.[1] The clinical manifestations of COVID-19 vary from asymptomatic forms to severe clinical conditions characterized by respiratory failure, sepsis, septic shock, and multiple organ dysfunction syndromes.[1] Understandably, medical professionals and public health specialists are focused on taking care of individuals who are very sick, while containing the coronavirus's spread in the general population. Less attention is given to the psychiatric consequences of the COVID-19 crisis.

Multiple lines of evidence indicate that the COVID-19 pandemic has profound psychological and social effects.[1,2] There is a pervasive awareness of uncertainty over the future and an understanding that the pandemic is far from over. It is possible that there will be economic privation and political upheaval. The psychological sequelae of the pandemic will probably persist for months and years to come. In this paper, I suggest that the COVID-19 pandemic may increase the prevalence of psychiatric disorders and suicide rates during and after the pandemic.

Previous epidemics and suicide

Nothing in our lifetimes can be compared to the magnitude of the COVID-19 disaster. The last comparable crisis was the pandemic of Spanish Flu in 1918-1919 caused by H1N1 viruses with genes of avian origin.[3] About 500 million people or one-third of the world's population were infected with the Spanish Flu viruses and at least 50 million people perished around the world including about 675,000 in the U.S.[3] The Spanish Flu epidemic was associated with an increase in death by suicide.[4] It has been proposed that a decrease in social integration and interaction during the epidemic and the fears caused by the epidemic likely increased suicide.[4] It is important to note that social isolation and fears are common during the current COVID-19 epidemic.[2] There was a significant increase in suicide deaths among people aged 65 and over during the 2003 SARS outbreak in Hong Kong.[5] Research indicates that this increase in

suicides can be attributed to fears of contracting the illness, fears of being a burden to the family, general anxiety, social isolation, and psychological distress.

The psychological impact of COVID-19

A number of studies have been performed to examine the effect of the COVID-19 crisis on the mental health of the general population, health care professionals and individuals with psychiatric disorders.[6-16] Wang et al.[6] examined psychological responses during the initial stage of the COVID-19 epidemic in the general population in China. The authors found that 53.8% of 1210 respondents rated the psychological impact of the outbreak as moderate or severe, 16.5% reported moderate to severe depressive symptoms, and 28.8% reported moderate to severe anxiety symptoms. Qiu et al.[7] performed a countrywide survey that included 52,730 people in China during the COVID-19 epidemic and found that about 35% of the participants had psychological distress. This is consistent with the results of a recent Kaiser Family Foundation survey indicating that 45% of adults in the U.S. report that their mental health has been negatively impacted due to worry and stress over the coronavirus.[8]

Li et al.[9] analyzed online posts made by 17,865 Chinese social media customers before and after the declaration of COVID-19 in China on January 20, 2020. The authors observed that negative emotions including anxiety, depression and anger rose, while the positive emotions and life satisfaction diminished. Xiao et al.[10] studied a relationship between social capital as measured by the Personal Social Capital Scale 16 (PSCI-16) and sleep characteristics in person who were isolated during the COVID-19 epidemic. Researchers observed that anxiety was associated with stress and reduced sleep quality, and the combination of anxiety and stress reduced the positive effects of social capital on sleep quality. Xiao et al.[10] wrote that “anxiety and stress of isolated individuals were at high levels, while the sleep quality was low.”

Ahmed et al.[11] did an online survey of 1074 Chinese people and found elevated rates of anxiety, depression, harmful alcohol use and decrease in mental wellbeing.[11] Rates of anxiety and depression were higher among young people aged 21–40 years in comparison to other age groups. Huang and Zhao[12] conducted a web-based survey of 7,236 individuals in China. The overall prevalence of generalized anxiety disorder,

depressive symptoms, and sleep abnormalities were 35.1%, 20.1%, and 18.2%, respectively. This study also showed that health care professionals were more likely to have poor sleep quality in comparison to other occupational groups.

Lai et al.[13] examined a state of mental health of 1257 health care professionals in China. 50.4% of study participants reported depression, 44.6% anxiety, 34.0% insomnia, and 71.5% distress. Frontline health care professionals who were taking care of patients with coronavirus disease had a higher risk of having symptoms of depression, anxiety, insomnia, and distress in comparison to other medical professionals. In March 2020, Ahmed et al.[14] did an online study to examine anxiety and fear of getting infected among dentists. The authors received responses from 669 dentists from 30 countries. An overwhelming majority of study participants reported anxiety and fear of contagion. Some dentists closed their practices for an indefinite period of time.

Hao et al.[15] compared the psychological impact of the COVID-9 epidemic on individuals with or without mood and anxiety disorders. Worries about their physical health, anger, impulsivity and suicidal ideation were significantly higher in psychiatric patients than in healthy controls.

Probably, alcohol consumption increases during the COVID-19 crisis.[2,16] According to a market research firm Nielsen, U.S. sales of alcoholic beverages rose 55% in the week ending March 21, 2020 compared to the same period last year.[16] Online alcohol sales jumped 243%.

Multiple cases of COVID-19 related suicides in the U.S., U.K., Italy, Germany, Bangladesh, India, and other countries have been reported in mass media and psychiatric literature.[17-22] For example, a 19-year-old waitress in England died in a hospital after a suicide attempt because of fears of the “mental health impacts” of isolation.[17] A 66 year-old man with throat cancer hanged himself in a New York City hospital after testing positive for the coronavirus.[18] A man in Illinois who feared that he and his girlfriend contracted the coronavirus fatally shot his girlfriend and then killed himself.[19] They tested negative for the coronavirus. A 36-year-old Bangladeshi man killed himself because he and people in his village thought that he was infected with COVID-19 because he had fever and cold symptoms.[20] A postmortem examination

showed that he did not have COVID-19. The 49 year-old head of the Emergency Department in a New York City hospital died by suicide after telling her family about the tremendous suffering and death she witnessed while taking care of coronavirus patients.[21] Also, there is a huge increase of calls to suicide prevention hotlines in the U.S. during the current COVID 19 epidemic.[22]

In summary, studies indicate that the COVID-19 pandemic is associated with distress, anxiety, fear of contagion, depression, and insomnia in the general population. Health care professionals are especially distressed.

Suicidal behavior in the COVID-19 era

Social isolation, anxiety, fear of contagion, uncertainty, chronic stress, and economic difficulties may lead to the development or exacerbation of stress-related disorders and suicidality in vulnerable populations including individuals with pre-existing psychiatric disorders, low-resilient persons, individuals who reside in high COVID-19 prevalence areas, and people who have a family member or a friend who has died of COVID-19 (Fig. 1). [23,24] Individuals with pre-existing psychiatric disorders include not only patients who are treated by mental health professionals but also a very large number of people with psychiatric conditions who do not receive psychiatric treatment.[25,26] For example, an international study that included the data from countries in Europe, North and South America, Asia, and Australia showed that the median untreated rates for schizophrenia, major depression, and alcohol use disorder were 32.2%, 56.3%, and 78.1%, respectively.[25] Community epidemiological research in the U.S. shows that a majority of individuals with mood disorders are either untreated or undertreated.[26]

Social isolation contributes to the pathophysiology of psychiatric disorders and suicidal behavior.[5,27-30] In his famous book on suicide, Émile Durkheim emphasized that social connectedness is a critical factor in emotional health and social stability.[27] The Irish Longitudinal Study on Ageing as well as other research investigations demonstrated that social isolation and loneliness are associated with major depression and generalized anxiety disorder.[28,29] Studies have shown that both objective social isolation (e.g., living alone) and subjective sense of being alone are associated with

suicidal ideation and behavior.[29] These observations are consistent across diverse cultures and populations. For example, the Quebec Health Survey showed that living alone and having no friends were associated with both suicidal ideation and suicide attempts.[30] Social disengagement played a role in the increased suicide rate during the 2003 SARS epidemic in Hong Kong.[5] One third of SARS-related suicide victims experienced social isolation during the SARS outbreak. From a suicide prevention perspective, it is troubling that the most important public health approach for the COVID-19 epidemic is social distancing.

Anxiety and fear of contagion during the COVID-19 crisis may be related to uncertainty, fear of unknown and panic-inducing stories in traditional and social media.[2,23] Repeated exposure to reports about the coronavirus disease crisis can intensify anxiety. Worries and fears cause various mental and physical symptoms and may lead to the development of anxiety disorders, depression, and sleep disorders.[24] Studies suggest that the relationships between insomnia and depression and insomnia and anxiety are bidirectional.[31] Sleeplessness contributes to symptoms of depression and anxiety, and contrariwise, symptoms of depression and anxiety disturb sleep. Sleep disturbances are a stand-alone risk factor for suicidal behavior.[32]

Uncertainty, especially economic uncertainty is associated with stress-related disorders and suicide.[2,23,33,34] It has been shown that uncertainty is a more stressful state to be in than really knowing something bad will happen.[35] Uncertainty is associated with depression and anxiety.[33] In one research investigation, daily suicide data from England and Wales were matched to a daily economic policy uncertainty index over the period 2001-2015.[34] The authors found that a spike in daily economic uncertainty lead to an immediate impact on suicides which suggest that economic uncertainty may lead to an increase in the risk of suicide.

The impact of economic problems related to the COVID-19 crisis on mental health may be severe. Millions of people around the world lost their jobs.[1,2,23] Measures required to contain the virus, including self-isolation by workers and consumers, shutting of plants and stores, and prohibitions on sports and entertainment events are detrimental for economy. Historically, economic downturns were associated with mental health disorders and suicides.[36-39] Studies observed that increases in the

unemployment rate were associated with higher prevalence of depression, alcohol and other substance use disorders, and suicide deaths.[36] Both perceived job insecurity and unemployment constitute significant risks of increased depressive symptoms in prospective observational studies.[37] In the U.S., suicides increased during the Great Depression.[38] Suicide mortality peaked with unemployment, in the most recessionary years, 1921, 1932, and 1938.[38] Suicide rates also increased in other countries during the Great Depression. For example, Varnik[39] reported a rise in suicide death in Estonia in the early 1930s. Reeves et al.[40] observed that almost all European countries have experienced rising suicide rates during the 2008-2010 recession. The authors estimated that, in total, there were at least 10,000 more economic suicides during the recession in the European Union, Canada and the USA than would have been expected. Economic decline during and after the COVID-19 pandemic will probably have a powerful and harmful effect on mental health and result in an increase in the prevalence of psychiatric disorders and suicidal behavior. It is important to note that financial problems may reduce access to psychiatric treatment.

There is a high probability that the COVID-19 survivors especially survivors who had severe COVID-19 are at elevated suicide risk.[41] Stressful experiences such as learning about the diagnosis of COVID-19, fear of infecting others, symptoms of the illness, hospitalization, especially admission to an intensive care unit, and loss of income may lead to the development of anxiety, depressive, and posttraumatic stress disorder.[41,42] A recent study in China indicated that 96.2% of recovering COVID-19 patients had significant posttraumatic stress symptoms.[43] Around 50% of recovered patients remained anxious after the 2003 SARS epidemic in Hong Kong.[44] COVID-19 infection is associated with neurological conditions including acute ischemic stroke, headache, dizziness, ataxia, seizures.[45] A recent review of the impact of the coronavirus disease on the brain show that neurological conditions are present in about 25% of the COVID-19 patients.[45] Many recovering coronavirus disease patients have physical symptoms including pain for a long time.[46] Neurological disorders such as ischemic stroke, headache and seizures are associated with suicidal behavior.[47] Physical symptoms, especially pain also increase suicide risk.[24,48]

Psychiatric conditions including mood, anxiety, sleep, and substance use disorders are associated with suicidal behavior.[24] Studies in the U.S. suggest that more than 90% of suicide victims have a psychiatric disorder.[24,49] For example, depression is a major risk factor for suicide, accounting for up to 60% of suicide deaths.[49] Mental health consequences of the COVID-19 crisis including suicidal behavior are likely to be present for a long time and peak later than the actual pandemic.

There is a high probability that suicide rates will increase in many countries of the world. This problem may be especially difficult in the U.S. Suicide rates have been steadily growing in the U.S. over the last two decades. [50] From 1999 through 2017, the age-adjusted suicide rate in the U.S. grew 33% from 10.5 to 14.0 per 100,000.[50] For women, the rate grew 53% from 4.0 in 1999 to 6.1 in 2017. For men, the rate grew 26% from 17.8 in 1999 to 22.4 in 2017. If suicide rates increase in the U.S., it will add to the trend of rising national rates of suicide. An increase in suicide rates may become a significant public health issue in other countries.

Suicide prevention in the COVID-19 era

In 1994, the Institute of Medicine (now the National Academy of Medicine) Committee on Prevention of Mental Disorders suggested that prevention of psychiatric conditions should be divided into three categories: universal preventive interventions, selective preventive interventions, and indicated preventive interventions.[51,52] Suicide prevention efforts during the COVID-19 crisis can also classified as either universal, selective, or indicated.

A universal approach is designed for everyone in the general population regardless of their risk for suicide.[52] To reduce suicides during the COVID-19 crisis it is imperative to decrease stress, anxiety, fears and loneliness in the general population. There should be traditional and social media campaigns to promote mental health and reduce distress. People need to be encouraged to stay connected and maintain relationships by telephone or video, get enough sleep, eat healthy food, and exercise. It is vital to deliver community support for those living alone and to encourage families and friends to check in. Screenings for anxiety, depression, and suicidal feelings ought to be employed. Transparent, timely, and responsible media reporting is absolutely

necessary. Community or organizational gatekeepers including clergy, first responders, pharmacists, geriatric caregivers, and school employees may have an opportunity to identify individuals at risk for suicide and direct them to proper evaluation and treatment. Suicide prevention helplines should be available and may be very useful in preventing suicides. Integration of basic mental health services into outpatient primary care may help to minimize the harmful psychological effects of the COVID-19 crisis. Whenever possible, governments and non-governmental organizations should provide financial support for people in needs. This may include direct cash payments, postponement of loan repayments, tax credits, etc.

A selective approach is for subgroups at increased risk for suicide, for example, for individuals with a history of psychiatric disorders, persons with symptoms of significant emotional distress, COVID-19 survivors, frontline health care professionals, and elderly people.[52] Active outreach is necessary, especially for people with a history of psychiatric disorders, COVID-19 survivors, and older adults. People with psychiatric disorders should be advised to continue their treatment regimens and to stay in touch with their mental health professionals. Some psychiatric patients may need adjustments in their treatment and increased frequency of contact with their mental health clinicians. Telemedicine can improve accessibility of mental health care. Also, vulnerable individuals should be advised to limit watching, reading, or listening to traditional and social media news stories.

An indicated approach is designed for individuals who have a risk factor or condition that puts them at very high risk for suicide, for example, a recent suicide attempt.[52] Individuals in suicidal crises need special attention. Some suicidal persons might not seek help because of fear that attending face-to-face appointments with a health care professional might put them at risk of contracting COVID-19 or because of other reasons. Therefore, individuals with a recent suicide attempt history need a follow-up. Clinicians should have well-defined guidelines on how to deal with suicidal individuals.

Suicide prevention in the COVID-19 era is an important and difficult issue. Research studies are needed of how mental health consequences can be mitigated

during and after the COVID-19 pandemic. It is to be hoped that the efforts of clinicians, researchers, and policy makers will reduce COVID-19 related suicides.

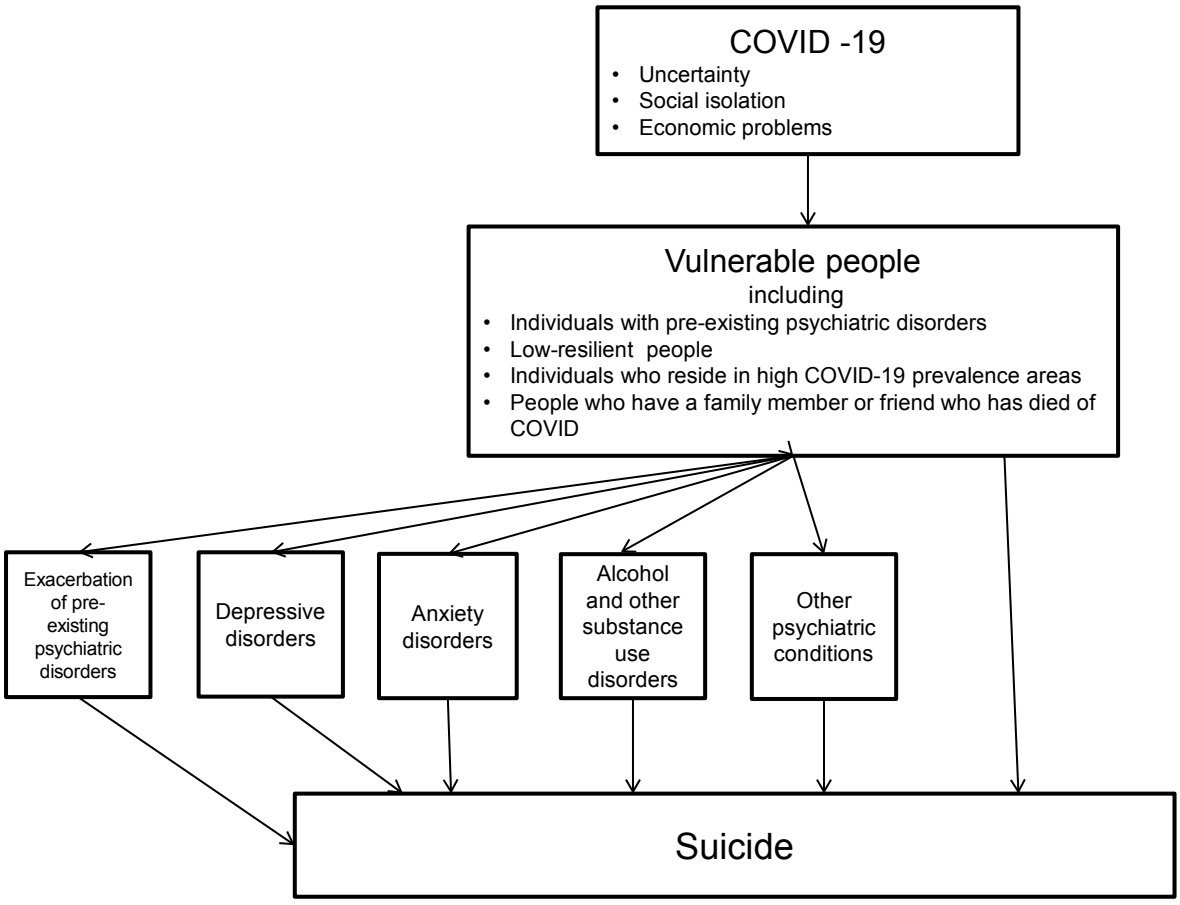

Figure 1: Suicidal behavior in vulnerable populations in the COVID-19 era

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