Suicide accounts for approximately 800,000 deaths worldwide annually, which is a serious global public health issue that urgently needs to be addressed. Identifying factors that are associated with a higher risk of suicide is valuable for suicide prevention. Early detection and timely intervention of individuals with suicidal behaviors is crucial for reducing suicide cases. The coronavirus disease 2019 (COVID-19) pandemic, one type of bio-disasters, is a tremendously traumatic event that may increase suicide risk. Managing negative effects of bio-disaster with timely and proper interventions is of paramount importance.

The COVID-19 pandemic has been spreading dramatically worldwide, putting people in distress due to high risk of infection and quarantine. The pandemic not only harms physical and mental health of the public but also has a major adverse economic impact.
within a short period of time because of disruptions in employment, daily transportation, global industrial and supply chains, and international trade. Such adverse consequences, in turn, can cause tremendous psychosocial stress which may increase the possibility of suicide. During the COVID-19 crisis, suicide cases have been reported in many countries, including United States, Italy, Germany, England, and India. Most of the suicide victims were frontline healthcare workers and individuals with suspected or confirmed COVID-19 infection. In the early period of COVID-19 pandemic, a top emergency room doctor at Manhattan Hospital and the Finance England, has found that insomnia severity fully accounted for the positive model to regularly screen vulnerable populations and follow-up risk of suicide. Nordt et al have conducted an estimated model to explore the association between suicide and unemployment and found that suicide risk associated with unemployment was elevated by 20%–30%. Therefore, governmental financial assistance and debt relief policies are urgently needed to lower unemployment rate and ensure basic daily needs for families in economic crisis.

Third, positive and objective information about COVID-19 needs to be widely disseminated to the public. Social network services have been flooded with negative information and misinformation during this extraordinary time for certain political purposes, which can result in mental health problems for high-risk groups and vulnerable individuals. Moreover, media reports of people committing suicide may be followed by copycat suicides, especially when details of the method of suicide are specified. To minimize the negative impacts of rumors and misinformation, mass media, healthcare organization, clinicians, researchers and scientists must work together to conduct health education to disseminate accurate information about the COVID-19 pandemic and dispel the rumors and misinformation in time, and for rumor mongers, relevant laws and regulations should be strictly implemented. These measures could make rumors and misinformation under control, and consequently abate suicide risk.

Fourth, association between suicide and mental disorders (i.e., depression, bipolar disorder, insomnia, and drug addiction) is well established. Anti-epidemic measures, such as mass quarantine, transportation restrictions, and city lockdown, during the COVID-19 pandemic increased possibility of interrupting psychiatric patients’ maintenance treatment and making more substance addicts to suffer from withdrawal symptoms, which may increase suicide risk of these populations in this special period. Besides, sleep disturbance is an independent risk factor for suicidality, and a recent study has found that insomnia severity fully accounted for the positive association between COVID-19-related fear and suicidal ideation. Treating insomnia by evidence-based interventions, such as cognitive behavior therapy for insomnia, would facilitate suicide prevention. Managing psychiatric symptoms and maintaining treatment of psychiatric patients is crucial for reducing suicide risk.

Fifth, a history of suicide attempts is the strongest predictor of subsequent suicide, identification, and intervention of suicide behavior as early as possible was shown conducive to suicide prevention. Using widely validated and uncomplicated scales, such as the Columbia Suicide Severity Rating Scale, to perform regular screening for vulnerable populations was an effective means for early detection of suicide risk. In addition, an individualized psychiatric evaluation would be further conducted by mental health professionals when the screenings were positive. Although screening tools have promising application foreground, the evidence to support routine use of suicide screenings in emergency departments and in primary care is weak. One possible reason was that 45%–76% individuals who committed suicide sought help from primary care providers who were not ready to cope. Combining with objective markers including brain imaging and gene polymorphisms, establishment of a more clinically valued suicide risk prediction model to regularly screen vulnerable populations and follow-up
may effectively reduce COVID-19 related suicide cases. Equally important is the need to add referral systems as an adjunct to managing individuals with suicidal behavior.

Sixth, improving the availability of mental health services for people during COVID-19 is necessary. Chinese government has successively set up more than 600 free counseling hotlines to help with mitigating individuals’ psychological stress and fear of being infected, including eleven 24-hour hotlines that provide free psychological services for healthcare workers. Many psychiatric hospitals established platforms to provide online mental services for existing patients with diagnosed mental disorders, in order to lessen the rate of self-reduced or self-stopped medication. Additionally, 415 mental health professionals from other provinces went to Hubei province to provide face-to-face interventions for high-risk individuals. Easier access to mental health services can also effectively prevent suicide.

Seventh, appropriate and effective interventions as well as strong social support and mobilization are needed to reduce suicide risk. COVID-19 infection is a traumatic life event that can make people feel hopeless and heighten suicide risk, hence, it is necessary to help infected individuals build up faith and confidence to fight against the disease. Besides, increased access to lethal means was associated with a heightened risk for suicide. For extremely high risk individuals, restricting access to means of suicide including decreasing access to pesticides and reducing availability of firearm are highly recommended. Government and community support as well as adequate access to personal protective equipment and medical supplies are vital to protect individuals from succumbing to fear and worry, thereby lessening the risk of suicide that is associated with this pandemic. Moreover, appropriate personalized interventions are also needed.

Exposure to the COVID-19 pandemic is associated with individuals’ increased risk of suicide. Making efforts from whole society to minimize the negative impact of infectious disease-related risk factors would facilitate suicide prevention. Early detecting suicide behaviors and providing proper and timely interventions are vital to prevent the tragedy of suicide in various high-risk groups. Suicide is preventable, with early identification of the predictors for suicide and treating it with evidence-based measures. Policy makers, psychiatrists, psychologists, and other healthcare professionals need to be attentive to possible suicide cases during the COVID-19 pandemic and prevent the long-term consequences of COVID-19 pandemic on elevated suicide risk.

CONFLICT OF INTEREST
The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS
JQ and LL proposed the topic and the main idea. JQ and YG collected related literature material. JQ wrote the initial draft. KY, YG, SM, YB, and LL revised manuscript with critical content. YB made the final revision. All authors contributed to the final draft.

DATA AVAILABILITY STATEMENT
Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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REFERENCES
1. World Health Organization. Suicide in the world. https://www.who.int/publications-detail/suicide-in-the-world. Accessed September 9, 2019.
2. Krysinska K, Lester D, Martin G. Suicidal behavior after a traumatic event. J Trauma Nurs. 2009;16(2):103–10.
3. Devitt P. Can we expect an increased suicide rate due to Covid-19? J Psychol Med. 2020;1–5. http://dx.doi.org/10.1017/ipm.2020.46. [Epub ahead of print].
4. New York Times. https://www.nytimes.com/2020/04/27/nyregion/new-york-city-doctor-suicide-coronavirus.html. Accessed April 27, 2020.
5. Voice of Europe. https://voiceofeuropeo.com/?s=suicide. Accessed Mar 29, 2020.
6. Daily Mirror. Coronavirus: Nurse ‘kills herself in UK hospital’ where eight have died from bug. 2020. https://www.mirror.co.uk/news/uk-news/coronavirus-nurse-kills-herself-uk-21749225. Accessed March 24, 2020.
7. Goyal K, Chauhan P, Chhikara K, Gupta P, Singh MP. Fear of COVID 2019: First suicidal case in India. Asian J Psychiatry. 2020;49:101989.
8. Sher L. Are COVID-19 survivors at increased risk for suicide? Acta Neuropsychiatr. 2020;1–1. http://dx.doi.org/10.1017/neu.2020.21. [Epub ahead of print].
9. Liu Y, Cao L, Li X, Jia Y, Xia H. Awareness of mental health problems in patients with coronavirus disease 19 (COVID-19): a lesson from an adult man attempting suicide. Asian J Psychiatry. 2020;51:102106.
10. Sun Y, Bao Y, Lu L. Addressing mental health care for the bereaved during the COVID-19 pandemic. Psychiatry Clin Neurosci. 2020;74(7):406–7.
11. Hoekstra PJ. Suicidality in children and adolescents: lessons to be learned from the COVID-19 crisis. Eur Child Adolesc Psychiatry. 2020;29(6):737–8.
12. Deslandes SF, Coutinho T. The intensive use of the internet by children and adolescents in the context of COVID-19 and the risks for self-inflicted violence. Cien Saude Colet. 2020;25(Suppl 1):2479–86.
13. Chan SM, Chiu FK, Lam CW, Leung PY, Conwell Y. Elderly suicide and the 2003 SARS epidemic in Hong Kong. Int J Geriatr Psychiatry. 2006;21(2):113–8.
14. Cheung YT, Chau PH, Yip PS. A revisit on older adults suicides and Severe Acute Respiratory Syndrome (SARS) epidemic in Hong Kong. Int J Geriatr Psychiatry. 2008;23(12):1231–8.
15. Yip PS, Cheung YT, Chau PH, Law YW. The impact of epidemic outbreak: the case of severe acute respiratory syndrome (SARS) and suicide among older adults in Hong Kong. Crisis. 2010;31(2):86–92.
16. Rana U. Elderly suicides in India: an emerging concern during COVID-19 pandemic. Int Psychogeriatr. 2020;1–2. http://dx.doi.org/10.1017/s1041610220001052. [Epub ahead of print].
17. Hou TY, Mao XF, Dong W, Cai WP, Deng GH. Prevalence of and factors associated with mental health problems and suicidality among senior high school students in rural China during the COVID-19 outbreak. Asian J Psychiatry. 2020;54:102305.
18. Bao Y, Sun Y, Meng S, Shi J, Lu L. 2019-nCoV epidemic: address mental health care to empower society. Lancet. 2020;395(10224):e37–8.
19. Liu JJ, Bao Y, Huang X, Shi J, Lu L. Mental health considerations for children quarantined because of COVID-19. Lancet Child Adolesc Health. 2020;4(5):347–9.
20. Aquila I, Sacco MA, Ricci C, Gratteri S, Ricci P. Quarantine of the Covid-19 pandemic in suicide: a psychological autopsy. Med Leg J. 2020;25817220923691.
21. Gonzalez-Diaz JM, Cano JF, Pereira-Sanchez V. Psychosocial impact of COVID-19-related quarantine: reflections after the first case of suicide in Colombia. Cad Saude Publica. 2020;36(6):e00117420.
22. Bhuiany A, Sakib N, Palkour AH, Griffiths MD, Mamun MA. COVID-19-Related Suicides in Bangladesh due to lockdown and economic factors: case study evidence from media reports. Int J Ment Health Addict. 2020;4(5):347–9.
23. Gratz KL, Tull MT, Richmond JR, Edmonds KA, Scamaldo KM, Rose JP. Thwarted belongingness and perceived burdensomeness explain the associations of COVID-19 social and economic consequences to suicide risk. Suicide Life Threat Behav. 2020. http://dx.doi.org/10.1111/sltb.12654. [Epub ahead of print].
24. Bryan CJ, Bryan AO, Baker JC. Associations among state-level physical distancing measures and suicidal thoughts and behaviors among U.S. adults during the early COVID-19 pandemic. Suicide Life Threat Behav. 2020. http://dx.doi.org/10.1111/sltb.12653. [Epub ahead of print].
25. Kawohl W, Nordt C. COVID-19, unemployment, and suicide. Lancet Psychiatry. 2020;7(5):389–90.
26. Inoue K, Hashioka S, Kawano N. Risk of an increase in suicide rates associated with economic downturn due to COVID-19 pandemic. Asia Pac J Public Health. 2020;1010539520940893. http://dx.doi.org/10.1177/1010539520940893. [Epub ahead of print].
27. Mamun MA, Ullah I. COVID-19 suicides in Pakistan, dying off not COVID-19 fear but poverty? · The forthcoming economic challenges for a developing country. Brain Behav Immun. 2020;87:163–6.
28. Monjur MR. COVID-19 and suicides: The urban poor in Bangladesh. Aust N Z J Psychiatry. 2020;4867420937769.
29. Nordt C, Warnke I, Seifritz E, Kawohl W. Modelling suicide and unemployment: a longitudinal analysis covering 63 countries, 2000–11. Lancet Psychiatry. 2015;2(3):239–45.
30. Rezaie L, Schwelbel DC. The COVID-19 pandemic and suicide by self-immolation: is risk increasing? Burns. 2020. http://dx.doi.org/10.1016/j.burns.2020.06.016. [Epub ahead of print].
31. Pfefferbaum B, Newman E, Nelson SD, Nitiémá P, Pfefferbaum RL, Rahman A. Disaster media coverage and psychological outcomes: descriptive findings in the extant research. Curr Psychiatry Rep. 2014;16(9):464.
32. Yi H, Hwang J, Bae HJ, Kim N. Age and sex subgroups vulnerable to copycat suicide: evaluation of nationwide data in South Korea. Sci Rep. 2019;9(1):17253.
33. Tasnim S, Hossain MM, Mazumder H. Impact of rumors and misinformation on COVID-19 in Social Media. J Prev Med Public Health. 2020;53(3):171–4.
34. Sun Y, Bao Y, Kosten T, Strang J, Shi J, Lu L. Editorial: Challenges to opioid use disorders during COVID-19. Am J Addict. 2020;29(3):174–5.
35. Zhou J, Liu L, Xue P, Yang X, Tang X. Mental health response to the COVID-19 outbreak in China. Am J Psychiatry. 2020;177(7):574–5.
36. Jefsen OH, Rohde C, Nørremark B, Østergaard SD. COVID-19-related self-harm and suicidality among individuals with mental disorders. Acta Psychiatr Scand. 2020;142(2):152–3.
37. Killgore WDS, Cloonan SA, Taylor EC, Fernandez F, Grandner MA, Dailey NS. Suicidal ideation during the COVID-19 pandemic: the role of insomnia. Psychiatry Res. 2020;290:113134.
38. Turecki G, Brent DA. Suicide and suicidal behaviour. Lancet. 2016;387(10024):1227–39.
39. Fazel S, Runeson B. Suicide. N Engl J Med. 2020;382(3):266–74.
40. Kuehn BM. Preventing suicide's ripple effects takes coordinated effort. JAMA. 2013;310(6):570–1.
41. National Health Commission of the People's Republic of China. A text version of press conference in Mar 8 2020. 2020. http://www.nhc.gov.cn/xcs/fkdt/202003/a54a40ae28764f35813f36cc31204433c.shtml. Accessed March 8, 2020.
42. Mannix R, Lee VK, Fleegler EW. Coronavirus Disease 2019 (COVID-19) and firearms in the United States: will an epidemic of suicide follow? Ann Intern Med. 2020;173(3):228–9.

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