


COMMENTARY

Suicide in the Time of COVID-19: A Perfect StormSabrina Brown, DrPH ¹ & Donna L. Schuman, PhD²¹ Kentucky Injury Prevention and Research Center, College of Public Health, Department of Epidemiology, University of Kentucky, Lexington, Kentucky² College of Social Work, University of Kentucky, Lexington, Kentucky

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In this commentary, we consider a convergence of suicide risk factors amid an international crisis and introduce a new approach in understanding and preventing suicidal behaviors. Our approach is a novel theoretical framework that can guide future research to include this added dimension.

Suicide is a leading cause of death in the United States and Kentucky. In the United States, suicide rates have steadily risen over the past 2 decades by an estimated 30%.¹ Between 2005 and 2017 suicide was the second leading cause of death in ages 25-34 and the third in 10- to 24-year-olds. Suicide rates in the United States are consistently highest for white males between 25 and 34.² In Kentucky, suicide was the second leading cause of death in ages 15-34 and the third in 10- to 14-year-olds.² White males age 18-40, who used a firearm and lived in a rural Kentucky county, made up the group with the consistently highest suicide rate; 13% of this group were known to have ever served in the military.³ Pre-

cipitating suicide circumstances between 2005 and 2017 most often included depressed mood; mental health, intimate partner, and physical health problems; and substance misuse.³

On January 31, 2020, Health and Human Services Secretary Alex Azar declared the novel coronavirus (COVID-19) a public health emergency.⁴ To reduce the viral spread to limit loss of life, the White House's Coronavirus Task Force recommended that persons aged 60 and over and those with serious underlying health conditions engage in social distancing. Social distancing is a traditional public health practice to reduce disease spread by reducing interactions between people in a community.⁵ In accordance with Task Force recommendations, on March 7, Kentucky Governor Andy Beshear called for social distancing for high-risk persons; 4 days later, he extended Stay Healthy at Home recommendations to encompass all Kentuckians.⁶ In weighing his decision to reopen parts of the country out of concerns for the economic impact

versus continued social distancing practices through April, President Donald Trump warned of a potential uptick in suicide. Given the gravity of the COVID-19 pandemic in terms of its suicidogenic potential, it is critical to explore the Commonwealth of Kentucky's social distancing policy implications in terms of self-directed violence (SDV; fatal and nonfatal suicide-related outcomes).

Encompassing intrapersonal (eg, comorbid physical and psychiatric illnesses), interpersonal (eg, relationship), and extrapersonal (eg, community, cultural, geographical) determinants, Finkel's I-cubed (I^3) model, not previously applied to suicide,⁷ offers enhanced explanatory potential over prevailing suicide theories for examining the impact of the COVID-19 pandemic on suicide.

Suicide: Risk Factors in Rural Communities

Steelesmith and associates found that from 1999 to 2016, suicide rates were higher and increased more rapidly in rural than in large metropolitan counties.⁸ They attributed these findings to low social capital, high social fragmentation, an increasing percentage of the population without health insurance, and an increasing percentage of veterans. They recommended improving social connectedness, health insurance coverage, and meaningful contributions to community while limiting access to lethal means. Results from other studies show suicide rates for adolescents and young adults were higher in rural than in urban communities regardless of the method used and those disparities were found to increase over time.⁹

I^3 Model and Perfect Storm Theory

Including elements of the Interpersonal Theory of Suicide and Durkheim's suicide theory, Finkel's I^3 model⁷ is a novel and validated meta-theoretical framework that goes beyond these prevailing suicide theories and introduces modeling of multiple and interacting risk and protective factors. These factors are operationalized as instigators, impellers, and inhibitors, which increase or reduce the proclivity to suicide. *Instigators* are immediate environmental stimuli that produce context affording proclivity to enact SDV. *Impellers* are situational or dispositional qualities on proclivity to enact SDV. The net strength of instigators and impellers determines the level of SDV proclivity. *Inhibitors* are forces that decrease or inhibit the likelihood of SDV, whereas disinhibitors are those forces that increase or strengthen the possibility that SDV would occur. Perfect storm theory (PST), a midrange theory arising out of the I^3 model, offers a way to test these 3-way interaction processes through a

mediator (SDV proclivity) and an outcome (SDV), illuminating how at-risk individuals progress from thoughts of suicide to ending their lives. According to PST, pandemic SDV is more likely to result in death to the degree that instigators (eg, pandemic-related environmental factors such as increased social isolation due to social distancing) and impellers (eg, dispositional or situational factors, such as heightened severity in mental health problems from pandemic-related dread and uncertainty) are strong in the face of weak inhibitors (eg, availability of effective treatment and ready access to help) and strong disinhibitors (eg, alcohol intoxication). Alternatively, to the extent that instigation and impellance forces are weak and inhibition forces (eg, the ready availability of telehealth visits from physical and mental health providers) are robust, SDV would be less likely to occur.¹⁰

Pandemic-Related Suicide Factors

At the Kentucky Injury Prevention and Research Center, we have begun observing the convergence of multiple suicidogenic risk factors in Kentucky and nationally since the onset of the COVID-19 pandemic in the United States.

Social Isolation

Extended social distancing increases social isolation for populations of concern. Evidence has linked social isolation and loneliness to mental health problems,¹⁰ and researchers have detected strong associations between social isolation and suicide.¹¹

Mental Health Problems

Depression and other mental health problems are strongly linked to suicide across all demographics. Around the country, suicide hotlines and prevention services are reporting increased numbers of calls, and hotline calls in Kentucky have increased by at least 20%.^{12,13} Increased utilization of suicide hotlines and prevention services suggest mental health problems are growing in the face of amplified dread, fear, and uncertainty related to the pandemic. Increases in mental health problems among Kentuckians could result in higher rates of suicide behavior.

Alcohol and Other Substance Misuse

Alcohol and other substance misuse is often a factor in suicide deaths,¹⁴ and use has historically increased during economic downturns and national disasters.^{15,16} Since the onset of the pandemic, alcohol sales have spiked.¹⁷ Governor Beshear's March 16 order closing nonessential businesses allowed liquor stores to continue operating.⁶

Restaurants are also permitted to deliver beer or wine with takeout orders.¹⁸ The availability of alcohol in the absence of an ability to readily access positive coping outlets (eg, gyms and houses of worship) could contribute to greater misuse during the pandemic.

Unemployment and Financial Loss

Suicide rates have historically increased during economic upheavals.^{19,20} According to the US Department of Labor, a record number of Kentuckians filed for unemployment benefits for the weeks ending March 21 and 28, due to layoffs and furloughs.²¹

Relationship Problems and Loss

Relationship problems are associated with increased suicide risk for both men and women. Intimate partner violence (IPV) is related to intimate partner homicide-suicide.²² In Kentucky and across the nation, reports of IPV and visits to online domestic violence resources have increased since the onset of social distancing.²³

Access to Lethal Means

According to Federal Bureau of Investigation statistics on firearm background checks for March 2020, Americans purchased firearms at record rates,²⁴ an increase of 80% over the previous year.

Preliminary data show that suicides in Kentucky during the weeks of March 13 to March 20 and March 20 to March 27 were about 50% lower than the average of the previous 7 years.¹ The lower rate does not imply that the pandemic will not impact state and national suicide rates. Historically, suicide rates decrease during the early phase—or “honeymoon” period—of a crisis and during periods of high community cohesion.²⁵

Following the honeymoon period, however, based on historical trends, rates will likely increase. Established disaster recovery frameworks can be applied to help predict where we find ourselves as the response to and recovery from this pandemic continues, indefinitely. According to the Substance Abuse and Mental Health Services Administration, the next phase in a disaster is “disillusionment,” as people realize the limits of assistance.²⁶ As the crisis becomes chronic, discouragement, stress, exhaustion, and substance misuse may begin to emerge. Increasing gaps between those that return to business as usual and those that have continued needs lead to feelings of abandonment. This phase can last months and even years.

The convergence of suicide risk factors related to the pandemic, as well as points of intervention, can be understood in terms of the I³ model and PST. The second- and

third-order psychological and social effects of the novel coronavirus are only beginning to emerge in Kentucky and across the nation. Most of the impact remains undiscovered at this time. Due to extended periods of social isolation from social distancing coupled with the extreme economic upheaval, the COVID-19 pandemic creates a “perfect storm” of antecedent conditions for suicide, necessitating week-to-week monitoring of suicide trends in Kentucky and the nation. Further study on the impact of the pandemic on suicide in special populations, such as older persons, veterans, persons with chronic health conditions, and those living in rural areas, will be necessary. As we acclimate to a new way of life, we must be proactive in developing targeted pandemic suicide prevention efforts aimed at our most vulnerable populations.

Note

- i. The decrease could be due to incomplete reporting or investigation.

References

1. Stone DM, Simon TR, Fowler KA, et al. Vital signs: trends in state suicide rates—United States, 1999–2016 and circumstances contributing to suicide—27 states, 2015. *Morbidity and Mortality Weekly Report*. 2018;67(22):617-624.
2. National Center for Injury Prevention and Control, CDC. *Using WISQARS*. Hyattsville, MD: National Statistics System, National Center for Health Statistics; March 2020.
3. *Kentucky Injury Prevention and Research Center, a bona fide agent for the Kentucky Department for Public Health. Kentucky Violent Death Reporting System*, Lexington, KY; March 2020.
4. U.S. Department of Health and Human Services. Secretary Azar declares public health emergency for United States for 2019 novel coronavirus; 2020. Available at: <https://www.hhs.gov/about/news/2020/01/31/secretary-azar-declares-public-health-emergency-U.S.-2019-novel-coronavirus.html>. Accessed April 8, 2020.
5. Wilder-Smith A, Freedman DO. Isolation, quarantine, social distancing, and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J Travel Med*. 2020;27(2).
6. Kentucky’s response to COVID-19; 2020. Available at: <https://governor.ky.gov/covid19>. Accessed April 8, 2020.
7. Finkel EJ. The I³ model: metatheory, theory, and evidence. In *Advances in Experimental Social Psychology*. Vol. 49. New York, NY: Elsevier; 2014:1-104.
8. Steelesmith DL, Fontanella CA, Campo JV, Bridge JA, Warren KL, Root ED. Contextual factors associated with county-level suicide rates in the United States, 1999 to 2016. *JAMA Network Open*. 2019;2(9):e1910936-e1910936.

9. Li JB, Nie YG, Boardley ID, Dou K, Situ QM. When do normative beliefs about aggression predict aggressive behavior? An application of I3 theory. *Aggress Behav.* 2015;41(6):544-555.
10. Leigh-Hunt N, Bagguley D, Bash K, et al. An overview of systematic reviews on the public health consequences of social isolation and loneliness. *Public Health.* 2017;152:157-171.
11. Calati R, Ferrari C, Brittner M, et al. Suicidal thoughts and behaviors and social isolation: a narrative review of the literature. *J Affect Disord.* 2019;245:653-667.
12. Bullington J. Coronavirus is driving up thoughts of suicide as Kentucky prevention hotlines lack staff. *Courier-Journal.* March 23, 2020.
13. Scott E. A down economy could affect mental health, but staying connected can help, expert says. *The Washington Post.* March 30, 2020.
14. Borges G, Bagge CL, Cherpitel CJ, Conner KR, Orozco R, Rossow I. A meta-analysis of acute use of alcohol and the risk of suicide attempt. *Psychol Med.* 2017;47(5):949-957.
15. Kerr WC, Kaplan MS, Huguet N, Caetano R, Giesbrecht N, McFarland BH. Economic recession, alcohol, and suicide rates: comparative effects of poverty, foreclosure, and job loss. *Am J Prev Med.* 2017;52(4):469-475.
16. Flory K, Hankin BL, Kloos B, Cheely C, Turecki G. Alcohol and cigarette use and misuse among Hurricane Katrina survivors: psychosocial risk and protective factors. *Subst Use Misuse.* 2009;44(12):1711-1724.
17. Pellechia T. Nielsen says beverage alcohol retail sales are soaring during the crisis. *Forbes.* March 25, 2020.
18. Eadens S, Gregory K. Booze to-go? Kentucky restaurants can now deliver beer with takeout orders. Here's why. *Courier-Journal.* March 21, 2020.
19. MacMahon B, Johnson S, Pugh TF. Relation of suicide rates to social conditions: evidence from U.S. vital statistics. *Public Health Rep.* 1963;78(4):285.
20. Chang S-S, Stuckler D, Yip P, Gunnell D. Impact of 2008 global economic crisis on suicide: time trend study in 54 countries. *Br Med J.* 2013;347:f5239.
21. Unemployment insurance weekly claims data—report r539cy. 2020. Available at: <https://oui.doleta.gov/unemploy/wkclaims/report.asp>. Accessed April 14, 2020.
22. Salari S, Sillito CL. Intimate partner homicide—suicide: perpetrator primary intent across young, middle, and elder adult age categories. *Aggress Violent Behav.* 2016;26:26-34.
23. Godin M. As cities around the world go on lockdown, victims of domestic violence look for a way out. *Time.* March 18, 2020.
24. Federal Bureau of Investigation. NICS firearm checks: top 10 highest days/weeks. Accessed March 31, 2020.
25. Joiner Jr TE, Hollar D, Orden KV. On Buckeyes, Gators, Super Bowl Sunday, and the miracle on ice: “pulling together” is associated with lower suicide rates. *J Soc Clin Psychol.* 2006;25(2):179-195.
26. Adapted from Zunin & Myers as cited in DeWolfe DJ. Training manual for mental health and human service workers in major disasters, 2nd ed., HHS Publication No. ADM 90-0537. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services; 2000. Available at: <https://www.samhsa.gov/dtac/recovering-disasters/phases-disaster>. Accessed April 16, 2020.