Review Article

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Suicidality in Youth During COVID-19: A Narrative Review

Tiffany Field, PhD

University of Miami/Miller School of Medicine, Fielding Graduate University

ABSTRACT

This narrative review on COVID-19 youth suicidality (ideation, attempts and completed) summarizes research that is primarily on prevalence and risk factors derived from survey and medical records data. The prevalence of suicidality has been highly variable across different countries at different times during the pandemic, although it has been more prevalent after a couple weeks into lockdown periods. Inactivity and excessive time on social media have been risk factors, but loneliness, anxiety and depression were the most frequently reported risk factors for suicidality at all levels. Protective factors have included school closures that were thought to lead to less academic pressure, peer conflict and bullying. The studies are limited by being cross-sectional, not longitudinal, making it difficult to determine causality or directionality of effects.

*Corresponding author

Tiffany Field, University of Miami/Miller School of Medicine, Fielding Graduate University; E-mail: tfield@med.miami.edu

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Introduction

During the second week of March 2021 COVID-19, two mass shootings occurred (eight killed at Atlanta spas and ten at a Boulder grocery store), and during the next few weeks, at least 50 additional mass shootings occurred. Again, during the second week of March 2021 COVID-19, two women were raped and killed (one old and one young) during the spring break at Miami Beach. A news report further noted that an extra 4,000 murders had occurred in 2020 in what experts have suggested was the worst single year increase in murders (25% increase across the country) since the beginning of recorded murders in 1960 (The Guardian March 24, 2021). These are against a backdrop of the violence of the January 6 insurrection and many protests that turned violent across the pandemic years. A quieter form of violence has been occurring in homes. Domestic violence has been referred to as “the other pandemic” or “Danger in Danger” [1].

Violence against others has been paralleled by violence against self. A significant increase in suicides has accompanied the increase in homicides. The quietest form of violence, suicidal ideation, has been increasingly occurring and is disproportionately distributed among youth during the COVID-19 pandemic [2]. The recently increasing prevalence of COVID-19 infection in youth may lead to an even greater incidence of suicidality in this age group.

This narrative review is based on some of the larger sample studies and systematic reviews on youth suicidality that have appeared on PubMed for the years 2019-2021. The terms suicide, youth and COVID-19 were entered into the advanced search which yielded 57 papers. Inclusion criteria were peer-reviewed studies and systematic reviews. Case reports and non-English papers

were excluded. Following these criteria, 21 papers were selected for this brief overview. The resulting review that reflects the current literature includes prevalence data, risk factors, protective factors and potential underlying mechanisms. Consistent with the literature and with the aims of this review, this paper is divided into sections on prevalence, risk factors, protective factors, potential underlying mechanisms and methodological limitations.

Prevalence Data

Prevalence data in this literature have been given in the form of both the increasing and the decreasing prevalence of suicidality during COVID-19. Although most of the papers reviewed here (15 of 20 from many different countries) have documented increased prevalence of suicidality during COVID-19, others have reported and/or cited other studies on decreased prevalence. The variability appears to be related to the period of time, e.g., lockdown versus non-lockdown, the origins of the data, e.g., emergency room presentations versus survey data, and the nature of the suicidality, e.g., the focus on ideation versus attempts versus deaths.

Decreased Prevalence of Suicidality

Several reports have appeared in the recent COVID-19 literature suggesting a decrease in the prevalence of suicidality among youth during the pandemic. In one study, emergency room records were reviewed for the beginning weeks of the pandemic (the first 12 weeks) as compared to the same period of time in the previous year [3]. A decrease of 14% was noted in self-poisoning and self-injury. The authors attributed this to a decrease in depression that occurred at the same time. They also framed it in terms of being similar to the decrease noted during wartime that has been attributed to an increase in social cohesion. Surprisingly, in this study, the rate for females was twice that of males (61% versus 29%). However, only 75% of the records were included in this

study because only 75% of those records were accompanied by psychological assessments.

Other researchers in other parts of the world have reported decreases. For example, in France, a decrease was noted in a sample of hospital admissions for suicidal behavior [4]. In this sample that averaged 13 years of age (only 28% male), a significant increase in hospital admissions to the hospital occurred but a decrease in the number of suicide admissions. This was also true for a study from Japan in which hospital records were reviewed for the entire country during the first five months of the pandemic [5]. Decreased suicide rates were noted and were interpreted as being due to the increase in grant subsidies from the government, as well as shorter work hours and school closures. Although this was reported for the first five months of the pandemic (February to July), suicide prevalence increased during the later months of the pandemic (July to October). The authors then attributed the increase in suicide rates to the government subsidies not being sustained.

At least one state in New England reported no increase in suicidal behavior during the early months of the pandemic. In this Massachusetts study that was based on youth age 10 and older, the suicide death data were compared for March to May 2020 with equivalent data for the same time period in 2019 [6]. Although the authors called these “deaths of despair”, they suggested that the incidence of suicide was being “offset by the sense of shared purpose”. This sample was skewed on gender with 76% of the deaths being male. These data also differed from those of the previously discussed samples in that they were deaths from suicide rather than suicidal behavior. In another study on completed suicides (from Germany), the prevalence was lower during lockdown versus non-lockdown periods and it was attributed to three lockdown factors including “barriers to outdoor suicide methods” and an “increased awareness of one another at home” as well as “increased social cohesion” [7].

In a study from the U.S. that used a suicide questionnaire as opposed to a single question on suicide, a decrease in suicide was again noted during the beginning of the pandemic (Fitzpatrick et al, 2020). The Suicide Behavior Questionnaire included the questions on 1) lifetime ideation and attempts, 2) the frequency of ideation over the last 12 months, 3) the threat of suicide behavior and 4) the likelihood of suicide behavior. The Center for Epidemiological Studies Depression Scale was also administered in this study. These authors attributed the decrease in the suicide rate to the difficulty visiting hospitals during the lockdown phases of the pandemic. But the depression scores were also decreasing during the beginning of the pandemic, and depression has been one of the most significant correlates of suicidality.

Timing has also been a significant factor in the decreases noted in suicidality during COVID. An example comes from Japan where suicidality decreased by 4% early in the pandemic and then increased 16% later in the pandemic [5]. And in a sample from Greece, there was a greater rate of suicidal ideation during the last two weeks of lockdown versus the first two weeks [8]. These data are not surprising given that greater depression and suicidality might be expected as lockdowns increased in duration.

Increased Prevalence of Suicidality

According to the CDC (Center for Disease Control in the U.S.), non-suicidal self-injury has increased 8% each year from 2001 to 2015 in the age group 15 to 19, and the suicide rates have increased 76% from 2007 to 2017 in the same age group [9]. In

a sample of adolescents (M= 15 years) who were psychiatrically hospitalized during COVID and pre-COVID, a historical chart review suggested that half of the COVID sample reported suicidal ideation [10]. The suicide rate increased from 16% in 2019 to 25% in 2020. Although these samples were matched for the COVID and pre-COVID periods, they did not include lockdown months. This is also another small, cross-sectional study (N= 142) and it had no valid or reliable measures of COVID. Further, the sample seemed to be self-selected given that the more acute suicidal ideation adolescents would be those who risked infection by being admitted to a psychiatric hospital during COVID.

In a large sample from China (N=56,932), suicidal ideation was significantly more prevalent in young people as well as in males [11]. The authors suggested that the greater prevalence in males was related to their greater rate of infection and that the higher suicide rate in young people was associated with their lesser activity. This study was limited by the use of a single item for suicidality in a cross-sectional survey with the inherent bias of self-selection for suicide and social desirability. Also, the participants were younger, more educated and “technologically savvy”, although these factors may have been tempered by the stigma of reporting psychological problems. Reputedly, adolescents have a lower propensity to report addictive behaviors [12].

In a study from Korea, 30% of adolescents were expressing suicidal ideation during the pandemic versus a five-year average of 5% for the years previous to the pandemic [13]. The authors attributed this to the adolescents experiencing domestic violence which tripled during the long periods of school closure. This study had the limitation of being a review of medical records and a univariate study as opposed to the many multivariate studies in this COVID literature.

Unlike most of the COVID suicidality studies that have been conducted in urban areas, a study from a rural area in China reported very high rates of suicidality in high school seniors including that 32% were showing suicidal ideation and 8% suicidal attempts [14]. Many of the students had several other problems including that 55% had poor academic records, 67% reported low exercise, 72% depression, 55% anxiety and 86% posttraumatic stress. These data highlight the significance of pre-existing and comorbid conditions variables.

In a somewhat unusual study from the U.S., an Amazon Mechanical Turk survey explored the possibility that youth were exposing themselves to the virus with the intent to kill themselves [15]. Questions that were used in the study were “in the past month have you had thoughts of killing yourself?”, “have you attempted to kill yourself?” “how often have your thoughts of suicide/killing yourself been linked to coronavirus?”. The coronavirus items included physical safety, social distancing, impacting your mental health, and distress in general. Then the final question was “have you done anything intentionally to increase your chance that you would get Covid?”. The five different reasons for doing so included a break from life, punishing self, hurting self, didn’t want to be alive anymore, and wanted to kill yourself. Suicidal ideation was expressed by 18% and 5% reported suicidal attempts. Suicidal ideation was related to exposing self to the virus and for all the death reasons and for all the stressors.

In a study from France, as already mentioned, a significant increase in hospitalizations for suicidal behavior occurred during the lockdown [4]. In one of the only survey studies in a country with low COVID rates (New Zealand), suicidality rates were

low including 6% for suicidal ideation, 2% for plans and 2% for attempts [16]. These low rates were surprising given a 16% rate for anxiety, 22% for excessive alcohol use and 39% for “low well-being”. Poorer outcomes were noted for younger participants, those who were unemployed, those with poor health and those with a diagnosis of depression. In a study that was carefully timed for the incidence of suicidality in the U.S., the time period January to July 2020 was compared with the same period one year earlier (January to July 2019) [17]. The suicide ideation and attempt rates were higher during the 2020 pandemic period with 1.6 times higher odds noted for suicide ideation in March 2020 versus 2019 and 2.3 times higher odds for suicide attempts in March 2020.

Risk Factors

Given that suicide is a prevalent cause of death in youth and given that increases have been noted in their suicidality during COVID, there is surprisingly little literature on risk factors. Some have suggested that suicide is the third most prevalent cause of death for young people (15 - 19-year-olds), for example, in a U.S. study [18]. Others have reported that it is the second most prevalent cause of death for youth including in samples of 10-17-year-olds from the U.S. and from Italy as well as a claim that it is the second most prevalent cause of death for youth in the entire world. The paucity of risk factor data is demonstrated by the absence of meta-analyses and the paucity of systematic reviews found in this literature search on PubMed [17,19].

The press has highlighted isolation, living alone and being touch deprived as risk factors for suicidality, although only 10-21% have been living alone as self-reported on various surveys and the terms touch deprivation do not appear in the COVID-19 literature [20]. Others have cited unemployment and financial difficulties, although none of the research has focused on those problems. School closures and separation from peers have been listed as problems by the adolescents presenting with suicidal ideation, but again those have not been studied as underlying risk factors.

Demographic risk factors have included gender, with 3 studies documenting greater risk in females and 2 citing a greater prevalence for males. Mixed data have also been given for ethnicity as a risk variable. The other risk factors reviewed here include: 1) one paper on infection/pre-existing conditions and one on PTSD as risk factors for suicidality; 2) two papers each for family problems, inactivity and substance abuse as risk factors; 3) four papers each for excessive exposure to social media, loneliness and anxiety; and 4) six papers that attribute suicidality to depression. Although these risk factors are likely interrelated as in a multivariate risk problem, only a few of the papers have explored their interrelationships.

Demographic Risk Factors

Gender has been a differentiating demographic factor in pre-COVID studies. In that literature, female adolescents were noted to more frequently express suicidal ideation, but young males were more frequently noted to commit suicide [21]. This was reputedly related to the effectiveness of the different forms of suicide which were more often hanging and pesticides for females and firearms for males. In contrast, in the COVID literature, females have engaged in both more suicidal ideation and suicide attempts. For example, in a data base derived from medical records, 61% of the suicide attempts were by females [3]. And in one of the only regression analyses, female gender was a significant contributor to the variance in suicidal ideation as well as suicide attempts in a sample from China [14]. However, in another sample from China, a 16% greater rate was noted in males, which was attributed to males being more frequently infected with the virus [11]. This

was surprisingly the only study that focused on infection as being a pre-existing risk factor for suicidal behavior in young people except for the study that explored suicide related to exposing oneself to the virus [15].

Although ethnicity would seemingly be a factor given various religious views on suicide as well as cultural differences, this has not been mentioned as a factor in most of these studies. Ethnicity would certainly be a factor in the U.S. studies given the widespread ethnic heterogeneity but the findings are mixed. In one U.S. study, for example, greater suicidal behavior based on the Suicide Behavior Questionnaire was noted in blacks, Native Americans and Hispanics [22]. In contrast, in a U.S. sample from Texas, lower rates were noted in Hispanics [17]. And, in still another U.S. sample, the greatest rate of youth suicide was noted in non-Hispanic blacks [23].

It is not surprising that family functioning has been a risk factor (as well as a protective factor) given the proximal living situations of families during COVID. Family functioning was a significant suicide risk factor in a study from Greece [8]. And, family conflict was a suicide risk factor in a study from Italy that focused on divorce and separation effects [19]. Domestic violence, which reputedly tripled in Korea during the pandemic, was understandably a significant risk factor for adolescent suicide [13]. But even youth who stayed home alone were at risk. Having parents who were frontline workers, for example, was a significant risk factor in a U.S. study [22]. These data highlight the protective factor that has been noted for more surveillance when family members are isolated together.

Physical Risk Factors

Pre-existing conditions were noted in 42% of a suicide sample from China [11]. In the same sample, infection was noted in 63%. This was surprisingly the only sample that referred to pre-existing conditions and infection as risk factors. It may be that prolonged hospitalizations of those with pre-existing conditions or infection has typically averted potential suicides. At least attempts would be more difficult even if ideation would persist or be exacerbated by physical conditions.

Psychological Risk Factors

Psychological problems were the most prevalent suicide risk factors in this literature including loneliness, depression, anxiety and post-traumatic stress disorder which were interrelated in many of the studies. Surprisingly, loneliness which is generally thought to contribute to depression, has only been addressed in a few studies in this literature. In a multivariate study from New Zealand, for example, loneliness was said to occur in 12% of those experiencing suicidality [16]. But an even greater number experienced anxiety in that sample (16%). Loneliness was the focus of a paper entitled “Rapid systematic review of social isolation and loneliness effects on mental health of children and adolescents in the context of COVID-19” [10]. In a couple studies, loneliness has been related to depression and anxiety [8,24]. But in the latter Greek study, loneliness together with anxiety, depression and lack of friends contributed to only 5% of the variance in suicidal ideation. In contrast, in a U.S. sample, anxiety and depression contributed to 31% of the variance in suicidal ideation [23]. And, in another study, depression was the most significant risk factor for suicide [25].

Although posttraumatic stress disorder has typically been associated with natural disasters like pandemics, depression has been more frequently noted in this COVID suicidality literature.

In one of the only extensive discussions on depression, 12% were noted to be depressed in a Japanese university student sample [2]. This author noted significantly high rates of depression across the world when using the PHQ-9 assessment including 9% in China, 19% in Slovakia, 32% in Ukraine and 47% in the UK.

Depression was noted as a risk factor for suicide in at least 25% of the studies in this COVID suicidality literature. Typically, depression was noted as a comorbid state with anxiety. In the Greek lockdown study, for example, 27% were noted to be depressed while 14% expressed high anxiety [8]. In the study on rural high school seniors in China, even greater percentages were noted for psychological risk factors including 72% for depression, 55% for anxiety and 86% for posttraumatic stress disorder [14]. It was notable that in this study, a moderately high prevalence of suicidal ideation was reported at 32% and suicide attempts at 8%. In a regression analysis, the risk factors that contributed to a significant amount of the variance in suicidal ideation and suicide attempts included female gender, depression, anxiety and posttraumatic stress disorder symptoms. As many as 75% of these high school seniors had psychological problems as risk factors.

Behavior Risk Factors

The youth themselves have described the behaviors that are high risk for suicidality in the Pew report on creative teens [9]. In that report, 70% of creative teens viewed depression, anxiety and suicidality as major problems among their peers. Of these creative youth, 40% were concerned about bullying, drug addiction and alcohol consumption, 61% percent were worried about academics, and 30% about social life and sports. Only 4% felt pressure to do drugs and 6% thought that alcohol was a risk problem. Interestingly, they did not raise the problem of social media which has been a suicidality risk factor in several studies including one from Italy, one from Japan and one from the US [2,19,22]. Additional risk factors in the sample from Japan included smoking and alcohol [2]. And, internet addiction and cyberbullying were significant risk factors in the sample from the U.S [22].

Excessive social media has not only been related to cyberbullying but also to reduced sleep time. And, social media and exercise have been inversely related during COVID-19 [20]. In that survey study, exercise was also inversely related to depression, anxiety and posttraumatic stress. In the rural China study, as many as 67% reported low exercise and this, in turn, was related to high rates of emotional problems (72% depression, 55% anxiety and 86% PTSD) and in turn, to a high suicidal ideation rate of 31%. Low activity levels were likely contributory to the substance abuse, smoking and alcohol use that concerned 40% of the adolescents in the Pew report, although they were not feeling pressured to use alcohol or do drugs [9].

Surprisingly, the creative youth of the Pew study did not mention other risk factors including missing special events, schools being closed which meant limited contact with others as well as being unable to leave home, although those factors were suggested in a study on psychiatrically hospitalized youth during COVID-19 [10]. Worries about getting the virus or about finances were also not mentioned by the youth in these studies, although they have been very significant worries for adults during the pandemic and especially during lockdowns [20]. Both unemployment and the availability of firearms were only raised as risk factors in one of these studies on youth suicide in the U.S. [6]. One of the most significant risk factors is previous hospitalization. In one study in the U.S., for example, 40% of adolescents who were suicidal

had visited an emergency department one year before their death [17]. As these authors suggested, only the very severely ill visited emergency departments during this U.S. lockdown.

Many other risk factors that have been identified in pre-COVID adolescent suicide studies have not appeared in the COVID youth suicide literature. Examples of these include self-harm behavior and the types of self-harm (violent types) and the intensity of suicidal intent which has been a better prognosis for suicide than suicidal ideation [26]. The importance of identifying risk profiles cannot be overestimated. Surprisingly, the Suicide Probability Scale was not used in any of these studies although it has been cited as having predictive validity [26]. Other ways of forming profiles are being developed such as machine classifiers that are designed to classify texts relating to suicide on Twitter [27]. Using lexical, structural, emotive and psychological features extracted from Twitter posts, classifiers have identified suicide ideation including “flippant references to suicide”. This system might help identify youth at risk for suicide given that posts on Twitter and other social media are a popular form of communicating by adolescents.

Protective Factors

Fewer studies have focused on protective than risk factors (5 of 23). These again have included reality factors like “visiting the hospital has been difficult during the pandemic” and government subsidies have been provided to reduce stress [15,22]. The stress reduction factors that have been labeled “silver linings” include working from home, having more time with family and having less environmental pollution [16]. Others have been cited as school closures resulting in less academic pressure, peer conflict and bullying [18]. And still others have credited more time for exercise as stress reduction [2].

Although the effect sizes for protective factors are lower than the effect sizes for risk factors, they are nonetheless important to consider [18]. Protective factors could be grouped as institutional factors and personal factors. The primary institutional factors include government subsidies, employment closure and school closures [5]. School closures have been interpreted in different ways. For example, in one study from Italy, the closure of schools and spaces were interpreted as risk factors which meant limited peer contact, online learning, less academic achievement, excessive use of social media, greater distress and victimization [19]. And, although not mentioned in that study, the absence of teachers and peers, who have been notable natural sources of support, would also be considered risk factors [26]. However, in a study from the U.S., the closures of schools were considered a protective measure because they were viewed as less academic pressure, less peer conflict and less bullying [18].

The authors of the New Zealand study referred to the “silver linings” as those that were expressed by 63% of their sample including, as already mentioned, working from home, having more time with family and having a less polluted environment [16]. The authors of a study from Japan suggested that the most protective factors there were increased family connectedness as well as a decrease in commuting time [28]. Having more exercise and someone to consult with were considered protective factors in another Japanese study [2]. Even more personal protective factors have been mentioned including resilience, spirituality, positive feelings and relationships with friends [8]. Another protective factor was having siblings and family to closely monitor potentially suicidal youth as well as the simple reality of “difficulty

getting to a hospital during the pandemic” as was noted in the study from Texas [17].

Potential Underlying Mechanisms

Several potential underlying mechanisms have been suggested in a review of pre-COVID adolescent suicide studies [26]. In one study summarized in that review, an interactive model of pain and hopelessness accounted for a significant amount of the variance in suicide ideation [29]. This was true for both genders as well as for all age groups. Connectedness was a protective factor in that sample, but suicide capability predicted suicide attempt history more than current and lifetime suicide ideation.

The most frequently mentioned theory on suicide was originally labeled the Interpersonal Psychological Theory of Suicide [30]. In this theory, individuals have suicidal ideation if they have both the desire to die and the capability to die [31]. Suicidal ideation derives from two psychological states called thwarted belongingness and perceived burdensomeness. If the individual feels hopeless from experiencing these states, the hopelessness may result in suicide ideation. To complete suicide the capability for suicide is necessary which includes fearlessness about death and physical pain tolerance that has resulted from repeated exposure to physical pain and/or fear. These are considered traits in this model. The combination of the suicide states (thwarted belongingness and perceived burdensomeness) and traits (fearlessness and physical pain tolerance) could then result in a completed attempt [31].

This theory, that is now called Interpersonal Theory of Suicide, was assessed in a sample of 147 adolescents on an inpatient psychiatric unit. Hierarchical logistic regressions and mediation analyses revealed main effects for each of the constructs in the theory. Although this study controlled for gender, age, depression and hopelessness, it did not include a pain tolerance measure which is one of the “capability for suicide” measures. Since impulsive behavior has been prevalent during adolescence as well as a sense of invulnerability, it is surprising that these factors have not been included in attempts at profiling youth at risk for suicide. And, other potential confounding variables such as childhood abuse and exposure to violence and suicide were not assessed. In addition, the majority of the sample was female and included both adolescents who frequently thought about suicide and those who had planned suicide.

Violence against others may also influence suicidality during COVID-19 including the violence in public and in private. In addition to a number of rallies that have turned violent in the U.S. across the course of the pandemic, fifty-eight mass shootings have occurred in the U.S. in March 2021, a year away from the start of the pandemic for most countries. According to the New York Times record, mass shootings have increased 73% in the U.S. Significant increases have also occurred in Canada (39%) and in Australia (22%). These unusually frequent mass shootings highlight the wide availability of guns which are the most frequently used means of suicide, especially for young males.

Domestic violence has also significantly increased. According to a recent systematic review and meta-analysis presented to the Council on Criminal Justice, domestic violence in the U.S. has increased by 8% following the stay at home orders [32]. A similar prevalence is reported for the world (8%) based on 18 studies. These data are derived from logs of police calls on domestic violence, emergency hotline data, emergency room records and other documents. While the findings highlight the increase in domestic violence, the underlying causes are not clear. It has been suggested that economic problems related to the lockdowns may

have exacerbated domestic violence including unemployment, child care problems, homeschooling and financial insecurity in general. The concern has been that isolating parents and children in their homes has also separated the potential victims from teachers, friends and neighbors who would have normally reported signs of abuse and helped those in danger escape the abuse. The concern that this might also contribute to suicidality in youth relates to self-blame or turning anger inward which have often been expressed in suicide notes by adults, although notes are rarely found in youth.

Multiple measures of suicide such as the number of suicide attempts might strengthen the outcome measure. Item analysis and qualitative interviewing might further inform the literature on adolescents’ thwarted belongingness and perceived burdensomeness. Only one of the studies on COVID-related youth suicide mentioned this theory and called it “self-determination theory” but emphasized the lack of the feeling of “belongingness” with peers as a major risk factor for suicide during COVID-19 [19].

The generalizability of these studies is limited by their being clinical samples. Adolescents in clinical samples have typically sought help which may “suggest some ambivalence about dying” [33]. And, the samples were predominantly females who were at least during pre-COVID studies less likely than males to die by suicide and more likely to seek treatment. Also, physiological/biochemical models have not been explored in the COVID youth suicide literature. As in the social pain research literature, physiological and biochemical markers for hopelessness could be assessed [21]. Those individuals who are experiencing hopelessness, for example, may have higher cortisol and lower serotonin levels as well as lower vagal activity than those who are simply depressed with no suicide ideation. Those measure are easily taken from activity watches (vagal activity) and saliva samples (cortisol) [21]. Profiles that included both self-report and physiological/biochemical measures would likely be more predictive than self-reports alone.

Methodological Limitations and Future Directions

Other limitations should be noted for the COVID-19 youth suicide literature. While the samples for most of the studies were sufficiently large to assess multiple variables, the data sets were limited to very few variables and sometimes focused on only one variable. Multivariate models that could be tested by structural equations, moderating/mediating, profile or multiple regression analyses would likely be more informative in determining at-risk profiles for youth suicidality. Studies from an older literature typically featured several measures including, for example, a study that showed that adolescents who reported suicide ideation differed from those who did not on several variables including family relationships, family history of depression, peer relations, emotional well-being, drug use and grade-point average [34]. A stepwise regression on these data indicated that unhappiness explained 46% of the variance in suicidal ideation and number of friends, anger, and marijuana use added another 20% for a total of 66% of the variance. Although 34% of the variance remained unexplained, these multivariate data suggest that at least these four factors should be included in a screening for suicide ideation. Surprisingly, these variables have not been included in studies in the COVID-19 youth suicidality literature. Recent research has instead focused on prevalence of suicide ideation and risk factors that haven’t included touch deprivation or interrupted relationships. Related relationship variables like heartbreak and breakup distress, which are reputedly the most common presenting problems at university counseling centers, have also been missing from this literature [21]. And, somatic symptoms

that accompany this distress, for example, sleep disturbances would also be informative.

Other methodological problems include the frequent use of self-report measures in which the youth may have been under-reporting or “faking good” to avoid embarrassment or shame related to their suicide ideation/attempts. Surprisingly, clinical interviews and qualitative studies that might be more informative about risk factors are missing from this literature. In addition, several of the self-report variables for suicide ideation/attempts were single questions rather than psychometrically sound measures. The use of the Self-injurious Thoughts and Behavior Interview would have been more diagnostic than single suicide questions, although several researchers have noted the reliability of single question items such as the question “Have you thought that you would be better off dead or hurting yourself in some way?” The surveys were likely made short and simple in the interests of compliance.

Further, the direction of effects is questionable given that many of the risk factors for suicide ideation could be considered effects of suicidal ideation. For example, suicide ideation could lead to depression and anxiety as much as depression and anxiety could be considered risk factors for suicidality. Longitudinal multivariate studies are needed to address directionality of effects and provide a more comprehensive profile of adolescents at risk for suicide behavior. These might include parent, teacher, sibling and peer assessments as well as in-depth interviews of those youth who have reported suicide ideation/attempts. Most of the studies have been cross-sectional instead of longitudinal, limiting any inferences about causality.

Several of the studies have grouped all levels of suicide behavior together as an outcome variable rather than categorizing different levels of suicide behavior, i.e. non-suicidal self-injury, suicide ideation, suicide plans, suicide attempts and completed suicide. Even the medical records studies cannot be compared as they have reported different levels of suicide behavior.

Sampling problems have included generalizing from samples that are mostly surveys that have been completed by non-Hispanic white participants. Considerable variability across survey versus death records has meant no comparisons across cultures or even within cultures. The variability on suicidal ideation versus attempts versus death by suicide is considerable and the prevalence varies across those factors. The real prevalence may have been underestimated in surveys due to “social desirability” or “faking good” effects or self-selection of those seeking help or assuming the therapeutic value of being in a research study on suicidality even though most surveys have been anonymous, making it impossible to identify those at risk. No comparisons have been made on risk factors nor have any comparisons been made across studies on protective factors. Risk factors have been understandably studied more than protective factors, although data on protective factors would be critical for intervention studies. The absence of intervention studies is remarkable although the pandemic data have only been recently published. Similarly, there haven’t been studies focused on underlying mechanisms for risk or protective factors and the comorbidity of pre-existing conditions which have often been mentioned but not measured.

A factor that is very much missing in these studies is the adolescents’ views or ratings of their significant relationships and how they were sustaining those during the lockdowns.

A significant protective factor in the study on creative adolescents

was their being aware of societal problems and yet still being creative during the pandemic. Other questions are the effects of absence of hospital visitation rights for family members when youth were hospitalized for suicidality.

Longitudinal research is necessary to explore temporal relations between pandemic-related stressors and suicidality. Although surveys may be more racially diverse than convenience samples, ethnicity was often not reported and when it was, it was a white sample that’s not generalizable. This is problematic given that the virus disproportionately affects African-Americans [15]. Many measures were developed for specific studies and they were not psychometrically validated. Another question that has not been addressed is whether psychological distress increases in parallel with symptom severity increases. And, age was typically the only covariate that was entered rather than comorbid physical conditions.

Conclusions

Despite this plethora of methodological limitations, this literature has highlighted the prevalence and severity of suicidality in youth during pandemics. This narrative review reflects the existing literature on COVID-19 youth suicidality (ideation, attempts and completed) and summarizes research that has primarily focused on prevalence and risk factors derived from survey and medical records data.

As noted, the prevalence of suicidality has been highly variable across different countries at different times during the pandemic, although it has been more prevalent after a couple weeks into lockdown periods. Inactivity and excessive time on social media have been notable risk factors, but loneliness, anxiety and depression were the most frequently reported risk factors for suicidality at all levels. Additional risk factors have been witnessing public and domestic violence. Protective factors have included school closures that were thought to lead to less academic pressure, peer conflict and bullying. Other protective factors have included relationships with family and friends and exercise. One of the underlying theories for suicidality, called the Interpersonal Theory of Suicide, relates to combined suicide states (thwarted belongingness and perceived burdensomeness) and traits (fearlessness and physical pain tolerance).

The studies included here are limited by being cross-sectional, making it difficult to determine causality or directionality of effects. Longitudinal, multivariate studies are needed to explore profiles of factors that might lead to suicidal ideation and attempts. Although age has been entered as a covariate in many studies, the prevalence of suicidality in youth suggests that it is a primary variable. The recently increasing prevalence of COVID-19 infections among the youth may lead to an even greater incidence of suicidality in that age group, highlighting the importance of prevention/intervention research and programs targeting youth. Despite the many methodological limitations, these studies are suggestive of profiles of youth at risk and protective factors that could be the focus of interventions to prevent suicidality of youth during pandemics like COVID-19.

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