Depression and Suicidal Behavior in Adolescents



Aliza Grossberg, MD, MPH, Timothy Rice, MD*

KEYWORDS

- Adolescence Depression Suicide Nonsuicidal self-injury Development
- Gender Adverse childhood experiences Substance abuse

KEY POINTS

- Adolescent depression is a highly prevalent disorder with high lifetime morbidity and mortality.
- While accurate suicide prediction remains difficult even among experts, risk factors for adolescent depression and suicide are increasingly understood and can be surveyed and addressed by clinicians.
- Therapeutic interventions reduce not only risk in adolescence but also lifetime risk as well
 as lifetime clinical burden and negative developmental progression.

INTRODUCTION

Depression is one of the leading causes of morbidity and mortality globally and in the United States. Depression affects individuals of all ages. Among adolescents aged 13 to 18, the lifetime prevalence of major depressive disorder (MDD) in the United States is 11.0%. The many unique social, psychological, and physical changes and stressors that youth experience at the personal and interpersonal levels impact the mental health of and risk of developing depression among adolescents. Recurrence of depressive episodes is common: After the first episode of depression, approximately 40% to 70% of adolescents have a subsequent depressive episode within 3 to 5 years. Experiencing depression in adolescence often indicates ongoing depression into adulthood. Depression in adolescence has been shown to be associated with several other risk factors such as increased substance use, difficulties with school performance, challenges in interpersonal relationships, and increased suicide rates. 74

Several studies in various settings have demonstrated a link between depressive symptoms, suicidal ideation, and attempted suicide among adolescents. Completed suicide is the second leading cause of death among people between the ages of 10

Department of Psychiatry, Icahn School of Medicine at Mount Sinai, 1111 Amsterdam Avenue, Babcock Building 5 West, New York, NY, USA

* Corresponding author. 1090 Amsterdam Avenue, 13th floor, Suite A, Office 5, New York, NY 10025.

E-mail address: Timothy.Rice@mountsinai.org

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and 34.9 In 2014, 17% of deaths among people ages 10 to 24 in the United States—almost 1 in 5—were due to suicide. ¹⁰ Moreover, in a 2019 survey of more than 13,000 US high schoolers, 18.8% reported having seriously considered suicide in the 12 months preceding the survey, 15.7% made a plan about how they would attempt suicide in that same time period, and 8.9% attempted suicide at least once in the year leading up to the survey. ¹¹

In this article, we introduce the importance of understanding adolescent depression and its developmental and gendered presentations. We elaborate on several important risk factors of adolescent depression, including nonsuicidal self-injury, adverse childhood experiences, and substance abuse. We describe protective factors and contemporary special topics of COVID-19 and adolescent use of social media. This article includes recommendations for assessment and management and conclusions including a commentary on barriers to care.

GENDER AND AGE DIFFERENCES

Several studies document a significant gender difference in the prevalence of adolescent depression. A 2-fold increase in the prevalence of depression among adolescent girls after the age of 15 compared with boys of the same age has been noted. Of note, adolescent girls are more likely to experience suicidal ideation and suicide attempts compared with adolescent boys; however, adolescent boys die by suicide at higher rates than adolescent girls. 12

Older youth, when compared with younger adolescents, are more likely to die by suicide. For children and early adolescents younger than 14, the global incidence of completed suicide is 0.6 completed suicides per 100,000 individuals.¹³ This is significantly lower than the global suicide rate among 15 to 19-year-old adolescents, which is 6.9 completed suicides per 100,000 individuals.¹⁴

Theoretic underpinnings to adolescent suicide have been proposed. 13,14 Developmental theory can help to understand these differences. The increase in suicide rates from childhood to adolescence relates to the adolescent's attainment of greater capability to effect action through greater independence, physical strength, and planning. In addition to hormonal changes and their impacts on emotion regulation, the awareness of gaining strength and independence can also unsettle adolescents from previous childhood stability and equilibrium. Adolescent young men more commonly choose more lethal methods of suicide which underlay their higher suicide rates despite lower rates of suicide attempts; issues of proving their assertiveness, dedication to an act, and active rather than passive stance intertwined with conceptualizations of masculinity can partly account for this. The meanings of suicidal acts are unique to each adolescent; self-destruction can represent fragile responses to rejection or to a disappointment, alienation from the changing body, counterphobic attitudes against vulnerability, disrupted mourning of old relationships, distorted attempts at self-soothing or bearing painful effects, or a reaction to internalized traumatic objects, among many other meanings.

RISK FACTORS FOR ADOLESCENT DEPRESSION AND SUICIDALITY

There are numerous psychosocial and biological risk factors for adolescents developing depression (**Table 1**).¹⁵ Psychosocial risk factors include childhood neglect or abuse, loss of a loved one, relationship stressors, patterns of cognition, and states of mind such as hopelessness,¹⁶ and socioeconomic stressors. Biological risk factors include a family history of depression, hormonal changes during puberty, chronic medical conditions such as diabetes, female sex, and use of certain medications,

Type of	al, psychological, and social	risk factors for adolescent de	pression
Risk			
Factor	Biological	Psychological	Social
	Family history of depression or suicide	Feelings of hopelessness	Nonsuicidal self- injurious behavior
	Female sex	Other psychiatric diagnoses (can also be considered a biological risk factor)	Being a victim or perpetrator of peer bullying
	Hormonal changes during puberty	Substance Use	Loss of a loved one
	Chronic medical conditions		Relationship Stressors
	Use of certain medications, such as isotretinoin		Socioeconomic stressors
			Other adverse childhood experiences

such as isotretinoin. Additionally, having other psychiatric diagnoses increases the risk of developing depression in adolescents.

Many of these risk factors for depression are also risk factors for adolescent suicidality. For example, substance use is a risk factor for adolescent suicidality. To Comorbid psychiatric diagnoses increase the risk for suicidality. Additionally, feelings of hopelessness and sadness are associated with suicidal ideation and suicide attempts. Other risk factors for suicide include being a victim or perpetrator of violence, a prior suicide attempt, and issues at school.

This article will explore in detail 3 risk factors of increasing relevance: nonsuicidal self-injury, substance abuse including cannabis abuse, and adverse childhood experiences.

NONSUICIDAL SELF-INJURY

Nonsuicidal self-injury (NSSI), which includes intentionally harming one's own body tissue without any suicidal intent, is an important factor when assessing for adolescent depression and suicidality. ^{21,22} The global estimated prevalence of adolescent NSSI in community samples ranges from 14% to 30%. ^{23,24} In depressed adolescents, the incidence is as high as 40% or greater. ²⁵ The presence of NSSI raises the risk of suicidal ideation and suicidal behavior by a factor of 20. ²² Some of the most common forms of NSSI include cutting, scratching, and hitting or banging. ²⁶ Risk factors for NSSI in depressed adolescents include female gender ²⁷ as well as decreased interpersonal functioning, family cohesion, and adaptability. ²⁵

The four-factor model can be helpful to understand the reasons that adolescents self-harm. ¹⁶ The most common factor is automatic negative reinforcement whereby NSSI helps alleviate negative feelings such as tension. Another factor is the automatic positive reinforcement, which involves positive feelings, such as relief, while engaging in self-harm. The third factor is social positive reinforcement, such as receiving

attention for the self-harm behavior. The final factor is social negative reinforcement, which allows adolescents to remove themselves from unwanted social interactions. The interpersonal theory of suicide proposes that engaging in NSSI increases the acquired capability of suicide, which includes a heightened fearlessness toward death and pain tolerance, and which, in combination with suicidal desire, is associated with suicide attempts. ^{29,30}

In addition to the risk factors noted above, histories of childhood emotional abuse and neglect are independent risk factors for NSSI in depressed adolescents, signaling the need to consider adverse childhood experience (ACE) as a fundamental factor in understanding adolescent depression and suicidality.

ADVERSE CHILDHOOD EXPERIENCES AND SUICIDALITY

Adverse childhood experiences, which include but are not limited to parental interpersonal violence, sexual abuse, parental incarceration, physical abuse, emotional abuse, and neglect, are assayed in the 10-item self-administered ACE questionnaire³¹ and further explored in the broader Pediatric ACEs and Related Life-Event Screener.³²

Adverse experiences in childhood are extremely common, and adolescents with a history of ACEs are at an increased risk of depression. 33 In a study of more than 21,000 youth ages 12 to 17 that explored the impact of ACEs on anxiety and depression, 48% of the study sample had experienced at least one ACE. 34 In a cross sectional-survey of nearly 40,000 children and adolescents between the ages of 8 and 17 being exposed to 2 or more ACEs increased the odds of current depression (adjusted OR = 2.6) compared with those with fewer than 2 ACEs. 35

Several studies have shown the association between ACEs and suicidal ideation and attempts. Adults with ACEs have a higher prevalence of suicidal ideation and attempts. Having just one ACE, while controlling for depression, drug use, problem alcohol use, gender, race, age, urbanicity, can increase the risk of suicidal ideation and suicide attempts in adulthood by 1.4 to 2.7 times. It is also important to note that having more than one ACE increases the incidence of suicidal ideation and attempts and that for those with 3 or more ACEs, while controlling for the same factors, the odds of attempting suicide or seriously considering suicide was 3 times that of those with no ACEs. The adults are advantaged in the same factors.

ACEs and attendant risk need not occur within the home. As an example, peer bullying is a risk factor for depression, suicidal ideation, and suicide attempts prevalent among adolescents.³⁸ Being bullied can contribute to one's sense of belonging, and those who feel less of a sense of belonging are more likely to develop depression. Effects can be longstanding, as both cross-sectional and prospective studies demonstrate that bullying in adolescence predicts depression in early adulthood.^{39,40}

SUBSTANCE USE AND DEPRESSION AND SUICIDALITY IN ADOLESCENCE

Alcohol, nicotine, and cannabis are the 3 most commonly abused substances in adolescence. Prepandemic data from 2019 reveal a 29.3% 30-day prevalence among American high school seniors of alcohol, 22.3% of cannabis, and 25.5% of nicotine vaping.⁴¹ Substance use rates declined as the pandemic progressed. Societal reopening will require new vigilance on adolescent substance use trends.

Large amount of nicotine vaping in adolescents is a relatively new phenomenon with significant data supporting mental health correlates. ⁴² These include depression: As of 2021, of 7 identified quantitative or mixed-methods studies exploring the association between adolescent nicotine vaping and depression, ^{43–48} 6 found positive associations. ^{43–49} One of the studies was of longitudinal design and demonstrated escalating

depressive symptoms over time with sustained nicotine vaping and a bidirectional association in which depression increased nicotine vaping onset across midadolescence as well. 49

Three studies demonstrate that nicotine vaping commonly precedes cannabis use. 50-52 While the association between youth cannabis use and the risk of schizophrenia⁵³ is widely known, perhaps just as important is its association with an increased risk of depression and suicidality.⁵⁴ In a review of 4 different Australian cohort studies, the adjusted difference between mean depression scores for those at age 15 who used cannabis weekly compared with 15 year olds who did not use cannabis had an effect size of 0.31.55 At 15, the highest effect size was noted and the association between cannabis use and depression scores decreased at later ages. This risk is also longitudinal: In a recent meta-analysis of 11 longitudinal and prospective studies and more than 23,000 individuals, the estimated population attributable risk of developing depression between the ages of 18 and 32 from cannabis use before the age of 18 was 7.2%.⁵⁴ This suggests that more than 400,000 young adult cases of depression are potentially attributable to cannabis use.⁵⁴ Risk seems dosedependent: one older cohort study⁵⁶ showed a 2-fold versus a 5-fold increase in the risk of depression and anxiety in young adulthood with weekly versus daily cannabis use in adolescence, respectively. While the recent meta-analysis⁵⁴ did not find an increased risk of anxiety in young adulthood at a level of statistical significance, the increased risk of suicidal ideation (OR: 1.50) and suicide attempt (OR: 3.46) were significant. In the first population-based cohort study exploring predictors of adolescent suicide attempts with suicidal ideation or NSSI, cannabis use was identified as a strong predictor.⁵⁷

Adolescence presents a vulnerability window for development. Up until the age of 25, brain development is ongoing. A recent longitudinal imaging study of 799 cannabis-naïve youth in middle adolescence⁵⁸ demonstrated that cannabis exposure altered normal neurodevelopmental processes and cortical architecture, replicating findings from earlier animal studies.

A 2020 meta-analysis found that nicotine vaping was associated with a 6-fold risk of alcohol use and binge drinking in adolescence. ⁵⁹ Male adolescents and young adults were more likely to engage in both social solitary drinking at the start of the COVID-19 pandemic. ⁶⁰ This is concerning when male adolescents more commonly complete suicide and solitary drinking among late adolescents and young adults is known to be directly associated with depression and suicidal ideation. ⁶¹ In a cross-sectional study of more than 6000 Norwegian adolescents between the ages of 16 and 18, high levels of depressive symptoms were associated with frequent alcohol consumption. ⁶² The highest quartile of youth in the study showed increased frequent alcohol consumption (OR = 1.6 for boys and OR = 1.9 for girls), increased frequent alcohol intoxication (OR = 1.6 for boys and OR = 2.1 for girls). This study also demonstrates that as depressive symptoms worsen, so too do the alcohol-related outcomes above.

PROTECTIVE FACTORS AND RESILIENCE IN ADOLESCENT DEPRESSION AND SUICIDALITY

Protective factors can mediate the impact of stress on adolescent depression and suicidality. Among many, community, peer, and family support warrant emphasis. All provide a protective mechanism against mental health issues faced by adolescents.

Higher social cohesion is associated with less depression and anxiety among adolescents.⁶³ Strong peer relationships not only protect against these mental health

issues but also build resilience.⁶⁴ Strong peer relationships can aid youth in feeling as though they are a part of a group and having a sense of group membership is also protective for youth in mediating depression and the risk of suicide. Mentorship moderates the relationship between stress and depression.⁶⁵

In addition to peer support and a sense of group membership, family support provides a similar function. Adolescents who experienced early life stress, but who had strong family support, showed a reduction in developing depressive symptoms.⁶⁶

ASSESSMENT FOR ADOLESCENT DEPRESSION AND SUICIDALITY

There are several pieces of the assessment that together help inform one's risk of depression or suicidality. Some of these pieces include the clinical interview with the adolescent, observations of the adolescent's behavior, surveying risk and protective factors, both acute and chronic, assessing for suicidal ideation, plan, or intent, and collecting collateral information. Guidelines for the primary care provider in the identification, assessment, and initial management of adolescent depression exist.⁶⁷

There are unique aspects of the adolescent patient encounter to keep in mind in contrast to working with adults. For example, it is important to interview the adolescent alone and to assess for biological factors that may be contributing to the adolescent's presentation, as well as psychosocial aspects, such as work, school, and peer, family, and romantic relationships. These diverse pieces of one's life may be considered risk factors or may be protective in nature.

In addition to symptoms of depression, it is important to ask about suicidality and to distinguish between the types of suicidality to best work with and treat the patient. For example, patients with passive suicidal ideation may have thoughts of wishing they were not alive or that their life would end. This is in contrast with active suicidal ideation, which is defined by the desire, intent, or plan to end one's own life.

There are significant discrepancies between self-reports from adolescents and reports from parents and teachers with regard to adolescent depression and suicidality. For example, in a study of more than 1200 Canadian youth, 13.3% of the adolescents themselves reported suicidal ideation or behavior compared with 2.0% of parents and 1.8% of teachers reporting such ideation or behavior among these adolescents. Despite such discrepancies, it is helpful to retrieve collateral information from parents, teachers, coaches, or other significant figures in the adolescent's life. Completing a comprehensive assessment will help to ensure the safety of at-risk youth.

ADOLESCENT DEPRESSION AND THE COVID-19 PANDEMIC

It is unclear how the many changes brought about by the COVID-19 pandemic have impacted the mental health of adolescents. The pandemic has been associated with a risk of depressive symptoms. For example, in a study of more than 8000 adolescents in China, 43% of youth from the ages of 13 to 18 reported moderate to severe symptoms of depression in March 2020. The long-term effects of the COVID-19 pandemic on adolescent mental health are still being studied and will help inform care for youth moving forward.

There are several possible reasons for adolescents experiencing depressive symptoms related to COVID-19. Social distancing protocols, which were put in place to limit the spread of the virus, but which also inevitably limit in-person social interaction, can significantly affect the mental health of adolescents. The However, the effects of adolescents spending an increased amount of time at home have varying effects depending on one's home environment. Adolescents with healthy and positive relationships with those who live at home, such as parents or siblings, may be less negatively

affected by these protocols. However, for many, home is not a safe place and may be whereby an adolescent endures physical, sexual, verbal, or emotional abuse. Overall, due to COVID-19, many adolescents have fewer options for in-person interactions with peers, which can lead to a detrimental effect on their socialization.

During the COVID-19 pandemic, in-person schooling shifted to virtual schooling for children and adolescents. For some, this transition means protection from the social exclusion and bullying they experienced with in-person schooling. However, for others, school is whereby they feel safest, and this safe space was eliminated from their lives for a period of time. This dichotomy demonstrates the varied experiences and the possible protections and challenges that come with suddenly spending less time at school and more time at home.

SOCIAL MEDIA'S INFLUENCE ON ADOLESCENT MENTAL HEALTH

Social media use, which consists of interactive digital participation, has become extremely prevalent among adolescents. Among those aged 13 to 17, 97% are active on at least one social networking site. There seem to be both advantages and detriments to social media use among youth. Some of the negative aspects include no inperson interactions, there can be increased peer pressure from comparisons made with other peers, cyberbullying, and it can be addictive in nature. Positive aspects include feeling more connected to peers, having the ability to connect with diverse peers who can be a source of support, having a platform to explore their identities, and greater access to information. And a platform to explore their identities, and greater access to information. In a sudy of more than 400 students aged 11 to 15, increased social media use and emotional investment in social media were both associated with increased depression.

Given the ever-changing landscape of social media content and participation from adolescents, continued research on this topic will help guide practitioners working with youth.

RECOMMENDATIONS

Whereas 64% and 53% of primary care providers report routinely screening for adolescent depression and suicidal thoughts, only 16% and 7% of their patients reported receiving these services at their last visit, respectively. As noted above, some youth are more susceptible to developing depression and/or suicidality, and a thorough assessment of adolescents can help to mitigate risk factors and to ensure the appropriate level of care. Box 1 includes topics to discuss for the evaluation and screening of adolescent depression and suicidality.

Using the above recommendations will aid in establishing a risk assessment and will help to navigate most adolescent mental health encounters to ensure patient safety.

TREATMENT OPTIONS

A comprehensive assessment will help determine whether a patient would be most safely treated in the outpatient, partial hospitalization, inpatient, or residential setting. With any treatment of depression and suicidality, it is important to include patient and family education and support. The 2 mainstays of treatment of adolescent depression and thus adolescent suicidality include psychosocial interventions such as therapy and medication management.⁵

Box 1 Evaluation and screening recommendations to assess for adolescent depression and suicidality

Adolescent Depression and Suicidality Screening Recommendations:
Assess peer relationships, including bullying
Assess family relationships
Ask about romantic relationships
Screen for nicotine, cannabis, and alcohol use
Ask about social media use
Inquire about the presence of isolation
Inquire about the effects of COVID-19 on mood
Ask family psychiatric history
Evaluate for prior suicide attempts
Screen for nonsuicidal self-injury

The greatest evidence base in psychosocial interventions for adolescent depression exists within cognitive-behavioral therapy and interpersonal therapy. CBT has a wide evidence basis in child and adolescent poopulations. CBT, with a focus on healthy coping skills, can help adolescents address and change maladaptive behaviors, to identify their feelings and to better understand themselves, and to interact more effectively with others. Moreover, CBT helps patients identify and confront the cognitive distortions they maintain regarding how they view themselves and the world around them with guidance on how these cognitive distortions may be contributing to their feelings of depression. CBT which involves parents or which combines behavioral activation with thought challenge is associated with better outcomes. CBT may also be helpful in not only treating, but also preventing, adolescent depression; however, more research is needed on prevention interventions.

Interpersonal therapy (IPT) with skills training can also be helpful to treat depressive symptoms among adolescents. ⁸² The focus of IPT is on interpersonal roles, personal challenges, and other problems adolescents deal with such as grief, conflict, and transitions. For adolescents with depression, IPT can be particularly helpful in acute treatment. Once remission of depressive symptoms occurs, patients should continue with therapeutic treatment for at least 6 to 12 months to prevent recurrence of depressive symptoms.

Dialectical behavioral therapy (DBT), commonly used in adult populations for individuals with borderline personality disorder, is increasingly studied in adolescent populations at risk for suicide. One recent study demonstrated efficacy in reducing NSSI and suicide attempts in a high-risk population. ⁸³ Further study of this modality may support its inclusion into practice parameters as a first-line treatment approach for depressed adolescents.

In addition to psychotherapy, some adolescents may require pharmacologic interventions to treat their depression. First-line pharmacotherapy treatment of patients with depression not due to bipolar disorder or psychosis includes selective serotonin reuptake inhibitors (SSRIs).⁵ SSRIs are dosed once a day, which can help with easing administration. SSRIs may lead to the improvement of depressive symptoms in the 4 to 6 weeks after initiation, so it is important to talk with patients and their parents or guardians about overall expectations, including expectations in efficacy time course. If there is no improvement by this time period, increasing the dose or changing the medication may be necessary. If the patient is a minor, the patient's parent or legal guardian must provide informed consent to initiate any medication for the patient. Thus, it is important to share the risks and benefits of any medication with the parent or guardian.

In 2004, the Food and Drug Administration's (FDA) review of antidepressants found that among those taking antidepressants, there was a 2% increase in suicidal thoughts or behaviors compared with those taking placebo. ⁸⁴ This prompted the "black box" warning for pediatric patients regarding the increased risk of suicidality with antidepressant use. In addition to discussing the risks of antidepressant initiation, including the black box warning, with parents, it is important to examine the potential benefits of starting an antidepressant for their child so that the parent can make an informed decision on how to best keep their child safe, healthy, and well.

After a suicide attempt, an adolescent often requires a tremendous amount of care and attention to understand the meaning of the event in the service of preventing a future recurrence. Prior suicidal behavior is the strongest predictor of a future suicidal behavior. Adolescents who have completed first-line psychosocial and pharmacologic interventions and who remain at elevated risk will often require expert longitudinal psychotherapy with medication management for years after immediate stabilization and step-down. Relapse is common, and morbidity and mortality remain high. 5

BARRIERS TO CARE

There are several variables that can influence whether one receives treatment of depression. In a sample of more than 1600 nationally representative adolescents, approximately 53% of those with elevated depressive symptoms accessed treatment of any kind, whether in the outpatient, inpatient, or school setting. ⁸⁶ However, adolescents of low socioeconomic status are less likely to access specialty inpatient or outpatient mental health services. ⁸⁷ In addition to socioeconomic status, some of the barriers to accessing or using the treatment of adolescent depression include insurance status, parent challenges in identifying symptoms of depression, the severity of symptoms, mental health stigma, limited communication between the parent and child, and structural limitations such as geographic access, transportation, and financial means. ^{88,89} To achieve equity in access to care, health care systems must focus on minority inclusion and on proactively countering mental health stigma.

SUMMARY

Adolescent depression and suicidality are prevalent throughout society. A comprehensive biopsychosocial assessment, in collaboration with the adolescent and his/her parent, can help distinguish a patient's risk level and what level of care from which the patient will benefit. Identifying risk factors, as well as protective factors, is a significant part of the evaluation. If an adolescent suffers from depression and/or suicidality, treatment options, which include psychotherapy and medication, exist; however, many adolescents face significant barriers to accessing care.

CLINICS CARE POINTS

- When assessing for suicidality in adolescents, it is important to identify and address relevant biological, psychological, and social risk factors.
- When identifying treatment options for adolescent depression, consider therapeutic interventions which can reduce adolescent and lifetime risk of worsening depression.
- Adolescents who remain at elevated risk of suicide after completing first-line psychosocial
 and pharmacologic interventions will often require expert longitudinal psychotherapy
 with medication management for years after immediate stabilization.

DISCLOSURE

The authors have nothing to disclose.

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