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REVIEW

Adolescent suicide: a major mental health issue in pediatric care

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ABSTRACT

Adolescent suicide is a major public health problem, as suicide is one of the leading causes of death for adolescents. Predicting and preventing suicide represent very difficult challenges for clinicians. Youth suicide might be prevented by identifying risk factors for adolescent suicidal behavior. Diagnostic assessment involves identification of multiple factors including gender differences, psychopathology, comorbidity, interpersonal problems, family discord, family psychopathology, accessibility of lethal suicide methods, exposure to suicide, previous attempt, social support, life stressors, and protective factors. The literature clearly indicates a need for suicide awareness and prevention programs and for early identification of adolescents at risk for suicidal behaviors. However, many health care professionals who have frequent contact with adolescents are not sufficiently trained in suicide evaluation techniques and approaches to adolescents with suicidal behavior. Pediatricians and other health professionals involved in adolescents' care need more in-depth information about the characteristics and the warning signs for suicide.

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Suicide means the act of a person intentionally causing his or her own death. The act of suicide has been documented since antiquity. In ancient Greece, Orphic and Pythagorean philosophers condemned suicide as an act that defies the will of God. Aristotle denounced suicide as a crime committed against oneself and against one's country, as an act of cowardice in the face of life's adversities. In his *Laws*, Plato claimed that suicide is disgraceful and its perpetrators should be buried in unmarked graves. However, Plato states that in certain cases, such as when one is suffering from an extreme and unavoidable personal misfortune (*e.g.* a fatal illness) or when the self-killing results from shame at having participated in grossly unjust actions and one's honor or reputation has been severely afflicted, the act of suicide can be regarded as justified and absolved of disgrace.[1]

Suicide is one of the leading causes of death for children and adolescents.[2] The World Health Organization[3] estimates that 62,000 adolescents died in 2016 as a result of self-harm, which is the third leading cause of death among those aged 15 to 19 years. Among European countries, in the 5-year period (2014-2018), the suicide rate among 15- to 19-year-olds in Sweden (6.9 per 100,000 people aged 15-19 years) was higher than in Denmark (3.7) and Germany (4.7), but lower than in Finland (8.6). The highest rates for the same age group and period were reported in Estonia (13.3) and Iceland (17.0), while Greece had the lowest rate of 1.5.[4]

Adolescence is a crucial developmental period

to examine suicidality, as it appears to gather several risk factors of suicide.[5] Adolescents' desire and efforts to be independent from their family, as well as the "identity crisis" they have to cope with, constitute a risky framework, in which a vulnerable teenager can turn into self-destructive ways of coping and exhibit suicidal behaviors. Adolescence and emerging adulthood are characterized by increases in a number of suicide risk factors such as substance abuse,[6] depression,[7] sensation seeking and risky behaviors.[8]

Furthermore, the global crisis generated by the COVID-19 pandemic is raising concerns about the risk for increased suicide rates all over the world.[9] Even if children are clinically less affected by COVID-19, they are over-exposed to the indirect effects of the pandemic, such as separations, losses, disruption of school and social services.[10] One recent USA study reported higher rates of suicidal ideation and suicide attempts among youth aged 11 to 21 years in a pediatric emergency department during the first 6 months of the COVID-19 pandemic compared with the same period a year earlier.[11] Psychiatrically healthy adolescents may also have experienced a sustained increase in depression and anxiety symptoms at later stages of the COVID-19 pandemic, as well.[12] The study of Cochran *et al.*[12] provides good evidence of an exacerbation in severe mental distress and resultant emergency department presentations over the course of the COVID-19 pandemic among children and adolescents.

However, it should be noted that epidemiological data may not reveal the magnitude of the problem, because many incidents of suicide attempt or death by suicide may be attributed to accidents due to religious and social prejudices. Suicide and suicide attempts may be highly stigmatized acts. In addition, sometimes, it is difficult to determine whether an adolescent's death is intentional or unintentional, *e.g.* in the case of an accident, drowning or fall.[13]

The current study aimed to raise awareness of adolescent suicidal behavior by reviewing the related literature and deepen knowledge by examining the risk and protective factors associated with adolescent suicidal behavior, as well as the process of suicide risk screening among adolescents. Starting from a case study focusing on a girl, named Christina, who committed suicide at the age of 15 by hanging, a literature review was performed using PubMed and Google Scholar database to determine what factors may lead adolescents to end their pain by choosing death over life. The following case presentation illustrates the difficulties faced by physicians who work with adolescents.

Description of a case

Christina, a 15-year-old patient, was the last child of a five-member family (*in-vitro* fertilization, triplet pregnancy). Doctor had suggested termination of the pregnancy because of significantly less intrauterine development of the fetus. Christina was vulnerable to death from intrauterine life. She has been long-term emotionally and sexually abused by her father, after her mother's death. Her mother died from ovarian cancer when Christina was 9 years old. Christina lived under miserable living conditions and neglect. Her father's attitude was that he owned her because it was him that had not allowed the termination of pregnancy. As a result, he believed that Christina was alive thanks to him; so, she had the obligation to serve him. Christina had adopted the role of spouse and mother, by taking care of her father and siblings, although she was the least physically developed. She experienced her first psychiatric hospitalization, lasting for 7 months, when she was 10 years old, diagnosed with eating disorder. She, also, had a history of substance and alcohol abuse.

As far as her current diagnosis, she had been admitted involuntarily in psychiatric department with the diagnosis of severe major depression and active suicidal ideation. Referring to her clinical status, she exhibited very intense and deep depressive feelings, substance and alcohol abuse, despair, memory loss, flashbacks and daily self-destructive behavior by refusing to receive all food and liquids for a long period of time (voluntary stopping of eating and drinking/electrolyte disturbances), by shallowing of objects and chemicals and by causing head injuries. Christina had, also, exhibited aggressive and hostile behavior by being physically violent and easily

involved in quarrels. During the 8-month period of her hospitalization, she made a serious suicide attempt by hanging. After the suicide attempt, Christina was unable to walk and speak, so she was transferred to a physical rehabilitation center, where she died by totally stopping of eating and drinking. Christina was feeling ashamed and was not talking easily about her sexual abuse. She voluntarily stopped of eating and drinking in order to destroy her "disgusting" body. She felt relieved by using the wheelchair because no one could abuse her.

The developmental "crisis" of adolescence

Adolescence has been an age period characterized of experimentation and relative lack of critical thinking. That is to say, adolescents may not be able to filter out the biases in their representations of the world and get their subjective representations, not being able to see things objectively. The system of critical thinking, determined by prefrontal cortex matures slowly until first adult life. On the contrary, the system of social-emotional action, determined by amygdala is fully functioning during adolescence. As a result, there is clearly an imbalance between prefrontal cortex (which still develops) and amygdala that is fully functioning in puberty. This means that emotions prevail over logic and influence negatively critical thinking and rational decisions making, despite the fact that adolescents may be knowledgeable of the risk. Teenagers are extremely sensitive to environmental influences, because the cognitive processes and functions needed to filter out all received information are not fully developed.[14]

Adolescents, being attached to the present, may not have a clear perspective of the future. As a result, adolescents do not easily realize the consequences of their actions in the future and may consider that their present traumatic experiences will last forever. They find it difficult to recall in their memory happy moments of the past or to imagine a future without problems. In addition, they are prone to idealize their peers (romantic partner, friends), while strongly questioning any type of power and above all their parents. Adolescent pathways make them realize that their parents are vulnerable and human like everyone else, on the one hand. One the other hand, adolescents should gradually assume more responsibilities and make decisions for their life. The aforementioned changes may contribute to the appearance of a subconscious mourning that many teenagers externalize with various ways (depressive symptomatology, anxiety, aggression, etc.). Additionally, adolescents may feel external pressure from their peers, as being accepted from their peer groups and popular have become the basic motivator that determine their behavior.[14]

Undoubtedly, adolescence is one of the most difficult developmental periods. However, there are some specific features in modern societies that make adolescents' lives even more difficult. Family difficulties, poor family cohesion, impersonal relationships, low peer connectedness, bulling, extensive media and internet influences, migration, multicultural societies, parents' unemployment or overworking and lack of parent-child communication complicate even more the already complicated reality of adolescence and may lead to adolescents' increase of depression, hopelessness, anger and hostility.[15]

Gender

Gender is one of the most important predictors of suicide attempts and completed suicide. Findings from a recent study suggested that female adolescents were 2.16 times more likely to experience suicidal ideation than their male counterparts.[16] Female youth with suicidal ideation is also more likely to make an attempt[17] but adolescent males are more likely to go on to complete suicide.[18] This gender paradox may be partially explained by a finding that men engaging in self injury were more likely to have intent to die, whereas females were more likely to engage as a means of communication. Additionally, boys usually choose more violent and fatal methods than girls to commit suicide, such as hanging, firearms and explosives.[19] Boys have a higher incidence of suicide, referring to particular features of their behavior, such as spontaneity and aggression. Boys more often exhibit deviant be-

havior, use alcohol, illicit drugs and psychiatric medication with or without medical prescription. In the last years, there has been a narrowing of the gap between male and female suicide rates. One likely reason for this change is that female patients are now choosing more lethal methods, such as hanging or suffocation.[20] Adolescent girls who died by suicide had a higher rate of depressive symptoms and a history of self-injury and suicide attempts, compared with adolescent boys.[21] This is exactly the case of Christina who exhibited depressive symptoms and deviant behavior, consumed alcohol and other substances, had a long history of self-injury and suicide attempts and used the violent method of hanging in order to commit suicide.

Suicide methods: availability of lethal agents

Previous research has found that intentional overdose, wrist cutting, using firearms, hanging are the most common methods of attempting suicide in Western adolescent psychiatric inpatients.[19, 20] Of course, as already mentioned, male and female adolescents use different means and methods in order to commit suicide. The vast majority of boys who commit suicide usually choose firearms are hanging, while girls usually choose less violent methods, such as intentional overdose of drugs and substances.[19] Berman and Jobes[14] referred to factors that influence the choice of method:

• availability of lethal agents: compared with adolescent suicide attempters or non-suicidal adolescent psychiatric patients, adolescent suicide victims more frequently had firearms in their homes.[22] The introduction of blister packaging of paracetamol in the UK was associated with a 21% reduction in overdoses and a 64% reduction in severe overdoses.[23] These differences in methods of suicide between countries may be related to the methods' availability;

• knowledge, experience and intimacy: for example, an adolescent living in a rural area is more familiar with activities related to the use of weapons, such as hunting;

• meaning, symbolism and culture importance: the method chosen to commit suicide seems to be determined by culture.[11]

Means restriction counseling, conducted in pediatric emergency settings, has been found to result in parental behavior changes, focused on removing dangerous items from the environment and make it difficult for youth to access lethal weapons, medications, or environments.[24] Suicide can often be an unpredictable and impulsive act, and reducing access to immediate means of suicide can reduce suicide rates.[25] Furthermore, adolescents often have inaccurate perceptions of the risks associated with an attempt.[26]

Risk factors for suicide among adolescents

Family background

Family relationships

Family structure and the relationships between family members influence significantly both suicidal thoughts and suicidal behavior. Research underscores the importance of family conditions and the negative impact of ongoing family quarrels, parents' separation as well as adolescents' abuse by family members. Four specific characteristics of families, including broken homes, a family history of psychiatric difficulties, a family history of suicidal behavior, and childhood maltreatment have been identified as common factors in adolescent suicides.[27] A family history of parental separation or divorce and parental death from external causes, especially when it occurs in childhood, is strongly associated with increased risks of suicide or attempted suicide.[28] In our case presentation, Christina experienced during childhood the absence of maternal care, because of her mother's death. There are suggestions that impaired parent-child relationships, poor family communication styles and lack of perceived parental support or availability is also associated with adolescent attempted suicide. When parent–child conflicts have become a chronic condition, a greater suicide risk has been noted. A parental bonding characterized by a low level of care and affectionless control is consistently reported to be associated with suicidal behavior among adolescents. Alienation and lack of meaningful communication between members are a common feature of many families with suicidal adolescents.[29]

Parents who are indifferent, cold and reluctant to develop an honest and affective relationship with their children, make them feel hopeless, isolated and rejected, while at the same time these parents have excessive expectations and requirements from their children. Because of the lack of adequate parental support, adolescents of such families feel helpless and desperate. They might consider suicide as a way of escaping from unavoidable family conflicts.[30]

Suicidal ideation in adolescence is positively associated with psychological control and harsh control.[31] Suicide risk in adolescents was increased when their parents were more controlling and indifferent towards them, in a study conducted in South Australia in 681 teens who were suicidal or attempted suicide.[32] Increased parental stress due to COVID-19 pandemic could lead to the deterioration of family or parent-child relationships, and consequently could cause conflicts and violence between family members.[33]

Family history of suicidal behavior and psychopathology

Among the most important and frequently reported risk factors for suicide is a family history of suicidal behavior, psychopathology or substance use. In a study comparing parents of suicidal and non-suicidal adolescents, Blumenthal[34] found that parents of suicidal adolescents were more depressed, consumed more alcohol, had lower self-esteem, were more anxious, and had more suicidal ideation than parents of non-suicidal adolescents. It is probable that adolescents whose parents are suffering from emotional illness or alcoholism perceive their families and themselves in a negative way. These perceptions may lead to low self-esteem, anger, and a belief that it is impossible to cope effectively with their life events, which further diminish their self-esteem. Children living in families with alcohol abusing parents are more likely than other children to have an unpredictable home life and to carry a burden of secrecy as a result of their attempts to hide the alcohol abuse from others. Parental suicidal behavior is also a risk factor for adolescent suicidal behavior, especially when the exposure happens at a young age.[35] Besides the inheritance of biological vulnerability to impulsivity, aggression and mood disorders, other mechanisms may play a role in the familial transmission of suicidal behavior, such as attachment features, modeling, and imitation.[36]

Sexual, physical and emotional abuse from family members

Child maltreatment including bullying in schools, sexual, emotional and physical abuse within families could cause trauma, which, in turn, could worsen depression and suicidality. Childhood traumatic experiences including sexual, physical and emotional abuse are associated with subsequent suicide attempts,[37] with sexual abuse and emotional abuse playing an important role in adolescent suicidal behavior.[38] Adolescents who report sexual abuse involving intercourse being 12 times more likely to make suicide attempts than those who do not report such abuse. In our case, Christina experienced long-term sexual and emotional abuse by her father, repeatedly. Child maltreatment is associated with increased post-traumatic stress disorder, depression, suicide and substance use. In particular, emotional abuse tends to lead to major depressive disorder[39] and internalizing difficulties,[40] whereas sexual abuse tends to lead to post-traumatic stress disorder[41] and psychosis.[42] Finally, rates of suicide attempt appear to be elevated among young people and adults exposed to childhood physical abuse. Symptoms resulting from physical abuse are more often associated with externalizing problems such as aggression, anger, and law-breaking behaviors.[43] The fact that Christina carried the burden of taking care of her father and her three siblings and household completely on her own without any help, although she was the least physically developed, could be noted as a form of physical neglect and maltreatment.

Psychopathology and suicidality

Mood disorders, especially major depressive and bipolar disorders, disruptive/conduct disorders, and substance abuse disorders involving alcohol or drug abuse are the most common diagnoses reported in adolescents who died from suicide. Comorbidity, especially between affective and substance use disorders, is associated with a higher suicide risk.[44]

Major depressive disorder

Major depressive disorder is the most common psychopathology diagnosed among adolescents, and it is associated with the greatest risk of suicide attempts. A great number of suicide attempts occur in the context of a depressive episode.[19] In a study of 173 New York adolescent suicide victims, Shaffer[45] concluded that males diagnosed with major depressive disorder were 8.6 times more likely to commit suicide than males who were not, while depressed females were 4.9 times more likely to commit suicide than non-depressed females. There was greater risk to commit suicide in adolescents with depressive disorder and suicidal ideation or whose families were disorganized.[46] Christina meets all the above standards.

Psychotic symptoms

Youth with psychotic symptoms have an even higher risk of suicidal ideation than those without psychotic symptoms. Both depressed adolescents and those with bipolar disorder are, also, more likely to attempt suicide if they experience psychotic symptoms.[47] Another important risk factor for suicidality is insight (awareness of nature of illness, of needing treatment and of the consequences of the disorder). Adolescent patients with better insight are more likely to be depressed and suicidal.[48]

Substance and alcohol abuse

Fleischmann *et al.*[49] found youth with substance abuse disorders to be 5 to10 times more likely and youth with conduct disorder to be 6 to 11 times more likely to complete suicide than those without the diagnoses. Christina had a history of substance and alcohol abuse. Alcohol consumption may be a predisposing factor for adolescents' suicidality. Alcohol is a central nervous system depressant that can impair decision-making skills and lower inhibitions.[50] According to several studies,[51-53] a great percentage of adolescents attempting to commit suicide overuse drugs or alcohol and in fact are under their influence during the suicide attempt. The adolescent may overuse substances in order to draw courage to perpetrate a contemplated suicide. Comorbid substance overuse/alcoholism and depression are associated with increased suicidality. Interactions between substance abuse and manic depression, anxiety, difficult social and intra-family relationships and history of a previous suicide attempt also increase adolescent suicide risk. Consumption of alcohol or other hallucinogens could reduce adolescents' ability to judge and resist, increase impulsivity, cause difficulties in their personal and social life, worsen mental disorders and increase the likelihood of adopting life-threatening behaviors.

Cannabis use has become more prevalent, especially among adolescents. There are concerns about its impact on the developing brain, particularly regarding cognitive functions and mental health. One significant concern is the increased potency of contemporary cannabis products. High-THC cannabis strains have been associated with greater risks, including mental health problems and a potential association between frequent cannabis use in adolescents and an increased risk of suicidal ideation, planning, and attempts.[54]

The opioid epidemic has shown that misuse of these substances, whether prescription or illicit like heroin, is associated with an increased risk of suicidal ideation, overdose (which can sometimes be a form of suicide attempt), and completed suicides.[55]

It is crucial for healthcare providers, educators, and parents to understand these associations to identify warning signs early and provide the necessary interventions. However, it is worth noting that the relationship between substance use and suicidal behaviors is multifaceted. Other factors, including underlying mental health conditions, environmental factors, and personal histories, play a significant role.

Conduct disorder: oppositional defiant disorder

According to our case description, Christina exhibited aggressive and hostile behavior, became physically violent and was easily involved in quarrels. Frequent disputes with adults, non-compliance with requests, violent outbursts, and displays of spitefulness or irritability may indicate oppositional defiant disorder. Conduct disorder may include aggression, destruction of

property, deceitfulness, theft, or violations of social and cultural sanctions. Suicide completers showed a higher number of the above symptoms compared to non-completers. In adolescents with conduct disorder symptoms and substance abuse, legal and disciplinary problems are common precipitants for suicidal behavior and suicide. The contribution of impulsivity, aggression, and substance use to suicidal risk increase is noted for one more time.[56]

Eating disorder

Christina experienced her first psychiatric hospitalization lasting for 7 months when she was 10 years old, diagnosed with eating disorder. Across studies, approximately 20% to 40% of deaths in anorexia nervosa are thought to result from suicide.[57, 58] Individuals with anorexia nervosa may be more physically compromised, more physically vulnerable and perhaps, as a result, more reconciled with the idea of doing physical harm to themselves. Additionally, they may make severe and lethal suicide attempts, due to underlying personality traits or axis I or II comorbidity. People with anorexia nervosa often experience poor quality of life, social isolation, loneliness and emptiness, which may confer suicide.[57] It should be noted that anorexia nervosa is a chronic condition associated with impulsive and anxious personality traits or childhood trauma, such as sexual abuse. These features are linked with increased vulnerability to suicidal behavior in general.[58]

Sleep disturbances

Sleep disturbances, which can range from insomnia to hypersomnia to nightmares, have long been associated with various mental health conditions. Anxiety, depression, post-traumatic stress disorder (PTSD), and bipolar disorder, among others, can present with disturbed sleep patterns.[59] Sleep problems could predict suicidal ideation and attempts. Insomnia and nightmares, in particular, have been shown to be linked to a heightened risk for suicidal ideation and behaviors.[60] Adolescence is a critical period where both sleep disturbances and risky behaviors, including suicidal behaviors, become more prominent. The potential effects of sleep disturbances during this life stage can be especially concerning given the myriad of other challenges adolescents face, such as hormonal changes, academic pressures, and social stressors. Given the association between sleep disturbances and dangerous behaviors, it is essential for pediatricians and other healthcare providers to screen for these disturbances. By identifying and addressing sleep problems early on, it may be possible to reduce the risk of associated dangerous behaviors, including self-harm and suicide attempts.[61]

Belonging to gender and sexual minority who identify as lesbian, gay, bisexual, transgender and queer (LGBTQ)

Individuals who identify as LGBTQ have been consistently shown to have a higher risk of suicidal ideation, suicide attempts, and completed suicides compared to their heterosexual and cisgender counterparts. This elevated risk is especially pronounced during adolescence and young adulthood.[62]

One of the primary frameworks used to explain these disparities is the minority stress theory. This theory suggests that members of stigmatized minority groups experience unique stressors related to their marginalized status. For LGBTQ individuals, these stressors include experiences of discrimination, rejection, internalized homophobia, and concealment of identity. These stressors can compound over time, leading to adverse mental health outcomes, including suicidal behaviors.[63] Positive family acceptance and support, school safety, and being connected to LGBTQ communities or organizations can be protective against suicidal behaviors for LGBTQ individuals.[64, 65]

Personality and cognitive characteristics

Personality disorders

Adolescent self-harm, non-suicidal self-injury and suicidal behaviors have been associated with borderline personality disorder traits including identity problems, frequent questioning of other peoples' loyalty, insecure attachment, self-reports of feelings of emptiness, emotional and relational instability, instability in interpersonal relationships, oppositional behavior, and inap-

propriate displays of anger or impulsivity. Borderline personality disorder patients are known to suffer from an enhanced emotional reactivity to stressful events that may provoke suicide attempts. The diagnosis of personality disorder traits should impact the mental health professional's assessment of suicide risk.[66]

Impulsivity

Impulsivity is conceived as a relative inability to control one's behavior. Impulsivity can manifest as physical aggression, fights at school, and risk-taking activities. An impulsive teen might act quickly on suicidal thoughts. Completed suicide is more likely among teens who act impulsively. Several studies reveal an association between impulsivity and adolescent suicidal behavior. Adolescents display more impulsivity overall. Moreover, substance use can impair judgment and exacerbate impulsivity. Chronic and acute use of alcohol, stimulants (*e.g.*, cocaine, methamphetamine), benzodiazepines, hallucinogens (*e.g.*, LSD, PCP), cannabis, opioids is known to impair judgment and exacerbate impulsivity, especially combined with borderline personality disorder.[67, 68]

Impulsive aggression

Impulsive aggression, defined as a tendency to react to frustration or provocation with hostility or aggression, is a psychological trait that has been shown to be associated with an increased risk for suicide especially in young people.[69]

Hopelessness

Hopelessness, has been found to be highly predictive of adolescent suicide risk[70] and depression.[71] When hope is absent, suicide is often viewed by adolescents as an acceptable escape. Lack of positive expectations for one's future predispose for suicidal behavior among adolescents.[72]

Loneliness

Research has also shown that loneliness is directly linked to suicide ideation even when controlling for depression. Those who think about suicide often feel very lonely and social connectedness should be a focus of suicide prevention efforts, but also depression prevention efforts.[73] During adolescence, people become less reliant on parents and more reliant on their self and peers. Moreover, adolescents seem to need more their peers' acceptance and understanding and become more sensitive as far as their social relationships is concerned. Therefore, it is more likely to experience loneliness.[74]

Emotion dysregulation

Emotion dysregulation is the inability to respond flexibly to, and control, emotions. Among 407 Hungarian children and young adolescents with major depressive disorder, it was found that maladaptive emotion regulation predicted suicidal behaviors.[75] In addition, emotional dysregulation seems to be involved in several risk factors such as impulsivity[76] and substance abuse.[77]

Impaired problem-solving ability

Low levels of functional problem-solving ability and impaired decision-making has been found in both adult and adolescent suicide attempters. Suicidal patients are often unable to differentiate between important and unimportant sources of distress and thus have difficulty finding practical solutions to the stressors in everyday life. Living in families with high emotional instability makes extremely difficult for adolescents to improve their coping skills to manage their challenging interpersonal problems.[78]

Previous suicidal behavior

Christina had several previous suicide attempts and self-harm incidents. The predictive power of a previous suicide attempt is supported by a number of research studies.[79, 80] Furthermore, adolescents, who have made multiple past attempts, are significantly more likely to make a future attempt in comparison to adolescents with one past attempt or only suicidal ideation.[81] Suicide attempters, who make attempts of high lethality (*e.g.*, hanging, shooting, or jumping), are at extremely high risk for completed suicide.[82, 83]

Stressful life events and poor social relationships

Level of social support and recent loss of a loved one were found to be the two variables that

most distinguished adolescent attempters from non-attempters displaying similar levels of depression.[84] D'Attilio *et al.*[85] noted that the adolescent's perception of relationship quality and support is a more predictive factor in assessing suicidal behavior than is the actual number of social supports.

Direct forms of bullying include aggressive behaviors that occur in the presence of the victim, including physical force and harmful communication targeting the victim. Indirect bullying isolates the victim through rumors or social exclusion. Cyberbullying, often perpetrated through email or social media, may be viewed as indirect bullying. Adolescents victims become isolated, anxious, frightened, insecure and lonely. These feelings may persist for years, even after adulthood. They may experience psychosomatic disturbances (such as abdominal pain, headaches, etc.), depressive symptoms, and even self-destructive behavior. Longitudinal analyses show a bi-directional association between different types of bullying victimization and suicide ideation and attempts.[86, 87] This underscores the importance of early use of anti-bullying programs.

Exposure to suicidal behavior

Family history of suicidal behavior

Suicidal behavior is transmitted within families. Family studies have shown that individuals who have a family member (especially a first-degree relative) who died by suicide are at a higher risk of dying by suicide themselves. Exposure to parental suicide seems to be a risk factor for adolescents who may imitate or mimic the act, by using even the same suicide method.[35, 36] In families where one member has died by suicide, other family members might be exposed to similar environmental risk factors such as familial conflict, abuse, or parental psychopathology.[88] Children of parents who have made a suicide attempt have a significantly higher risk of depression, anxiety, and suicide attempts compared to children of parents with no history of suicide attempts.[89] Additionally, adolescent and parent who live in the same household are exposed to the same accessible lethal suicide agents; therefore, they are likely to use the same method of suicide. Restricting access to lethal suicide methods has been proposed as one of the most effective suicide prevention strategies.[90]

Internet and media influences

As internet is an increasingly popular source of information, concerns have been raised about the existence of sites that promote suicide as well as suicide sites claimed to have facilitated suicide pacts among strangers.[91] Adolescents with suicidal ideation have access to information related to suicide and self-harm methods. Additionally, adolescents being motivated to commit suicide by strangers in a chat room have been reported. In some cases, adolescents announce their intentions to commit suicide online (*e.g.* by chatting in a chat room or posting suicide notes). Celebrity suicides that generated massive public reaction on social media (*e.g.*, Twitter) could subsequently increase suicides compared to those covered by traditional media. The amount of publicity about suicide, whether through newspaper, social network accounts or television news reports could increase the likelihood of imitation.[92]

Protective factors for suicide among adolescents

Across cultures, strong interpersonal relationships are protective. Family cohesion, family and social connectedness, which include perceived caring, support, and quality of communication, are described as a major protective factor against suicide, considering that social isolation and loneliness can be reduced and suicidal thoughts and behavior among children and adolescents can be mediated.[93] Adolescents who are involved in school activities, who have intimate relationships with classmates and teachers, and feel accepted, are more likely to seek out friends and confidants in the school environment. In addition, adolescents having a trusting relationship with parents and teachers are more likely to turn to them for help when they have a problem. Some families might develop strong connections, cohesion, and social support between members by spending more time together. These

positive influences can reduce risk of suicide in adolescents.[94]

Adolescent's personality is an important factor that protect against suicidal behavior. It should be noted that when an adolescent has confidence in oneself and abilities, can identify and manage emotions, has developed effective social skills, asks for help and advice when facing difficulties or when important decisions should be made, has stable relationships, stable lifestyle, goals for the future and is not easily disappointed when facing difficulties, may be more protected from suicidal ideation.

Healthy coping strategies are protective. Youth with more problem-solving skills and better conflict resolution skills may be more protected from suicidal thoughts.[95] One temperament trait, namely, cooperativeness, indicates how well the individual is able to get along with other people in a fair and flexible manner and was associated with a lower risk of suicidal behavior. Lower scores of cooperativeness have been found in personality and mood disorders.[96]

Positive self-esteem also acts as a protective factor, especially when the interaction with perceived social support is considered.[97] Hard work and achievement is a productive coping skill and refers to the adolescent's work and, more specifically, to schoolwork and study achievement. Success at school continues to be a protective factor.[15] Religious and cultural beliefs may be protective as well. These beliefs often discourage suicide and support the principle of preservation of life. It is possible that because religion promotes increased social cohesion and morally prohibits suicide, could function as a protective factor.[13]

Treatment and prevention

Adolescent suicide prevention is a priority for many countries around the world. The strategies and recommendations may vary based on cultural, social, and healthcare infrastructure differences. Here is an overview of what various European and non-European countries have implemented, as well as a brief look at the American Academy of Pediatrics' (AAP) recommendations.

The United Kingdom

The UK's National Health Service (NHS) offer guidelines on identifying and managing depression in children and young people, with a focus on early intervention. The Child and Adolescent Mental Health Services (CAMHS) provide dedicated services for young individuals who have attempted suicide or display other mental health concerns. Multi-agency self-harm protocols have been established in many regions, ensuring a consistent approach to care and support for adolescents who self-harm.[98]

Norway

The Norwegian Directorate of Health has established guidelines for the prevention of suicide, emphasizing early identification of mental health disorders in adolescents. The government has also promoted school-based educational programs to teach adolescents coping skills and resilience.[99]

France

France has implemented a national suicide prevention strategy that includes setting up a national observatory of suicide, promoting research, and ensuring early detection and appropriate care for young people at risk.[100]

Germany

Network for Early Help (NeTZ) is an initiative that provides rapid assistance to children and adolescents with suicidal tendencies by bringing together a network of outpatient therapists, clinics, and pediatricians.[101]

Australia

Headspace is a significant initiative offering resources, counseling, and support for adolescents dealing with depression, anxiety, and suicidal thoughts. Headspace provides early intervention mental health services to 12-25-year-olds. The service has centers across Australia for adolescents and young adults facing mental health challenges, including following suicide attempts.[102] ReachOut is an online mental health organization for young people and their parents,

offering resources and support for those who have attempted or are at risk of attempting suicide.[103] The country has a National Suicide Prevention Strategy, emphasizing community-based interventions and support for vulnerable groups, including adolescents.[104]

Canada

The Canadian Association for Suicide Prevention (CASP) provides guidelines and resources for communities to develop their suicide prevention programs. Many provinces have their strategies emphasizing early intervention, access to mental health care, and public education.[105] Crisis intervention services are available across provinces, often linked with hospitals to address immediate concerns post-suicide attempt. Integrated community services give emphasis on creating a community network of services, including school-based interventions, outpatient therapy, and family-based interventions.[106]

Japan

Japan has implemented school-based programs aimed at promoting mental health and reducing stigma associated with seeking help. Initiatives at schools, including counseling services and peer-support clubs, help address the emotional challenges faced by students. There is also a national emphasis on gatekeeper training to help teachers, community leaders, and others identify and support at-risk individuals. For acute cases, hospitalization and psychiatric evaluations are prioritized, followed by community-based support upon discharge.[107]

The American Academy of Pediatrics (AAP) recommend routine suicide risk screening as well as mental health screening among adolescents in all medical settings. Screening should be a routine part of care to prevent suicide. This point of view highlights the critical role of health care providers in identifying at risk youth and suicide prevention. Efforts to prevent suicide in adolescence focus on identifying high-risk adolescents and their repeated monitoring for signs of suicidal ideation. Providing training to health care professionals, establishing suicide risk screening as a routine part of the clinic visit, and improving coordination between pediatricians and mental health professionals (such as child psychiatrists, psychiatric nurses, psychologists, social workers, etc.) are important parameters in order to overcome many barriers to screening for suicide risk, and provide appropriate guidance and referral to specialized mental help, when it is necessary. The importance of interdisciplinary team collaboration should be emphasized. The AAP emphasizes the need for pediatricians to screen for risk factors associated with suicide during routine health maintenance visits and for acute warning signs when seeing patients with urgent mental health concerns. The AAP encourages pediatricians to educate families about the risks and benefits of media, including social media, and to promote media literacy. They also recommend safe storage and reduction of access to lethal means, such as firearms and medications.[108]

All health professionals, especially pediatricians should be appropriately trained and must be knowledgeable of the suicide risk factors, as outlined in Table I to ensure that they are able to recognize potentially high-risk adolescents.

Risk assessment of suicidal behavior

Health professionals should be able to assess adolescents' risk to commit suicide. Clinician should be initially informed about psychiatric and family history. As mentioned above, several studies indicate that the suicide risk is increased when adolescents have made a previous attempt or have expressed their intention to commit suicide. Examination of adolescents' emotional and cognitive state as well as their parents' mental state should be evaluated. Attention should be given to behaviors of misconduct, substance abuse, sexual abuse, serious delinquent behavior, interpersonal isolation, academic decline, impaired communication, and signs of impaired judgement. An early identification of psychopathological symptoms is of key importance in youth suicide prevention, especially when considering that even subthreshold symptomatology may confer an increased suicide risk.[109] In particular, since mood disorders are an important factor of early onset suicidal behavior among youth, prevention and treatment of mood disorders to avoid suicide are warranted. This assessment is probably the most difficult part of the treat-

TABLE I.—*Risk factors of suicidal behavior.*

Category	Risk factor
Demographics	• Age (late adolescence is a higher risk period) • Gender (although males die by suicide more often, females attempt suicide more frequently) • LGBTQ+ identity • Specific ethnic or cultural groups (some groups may be at higher risk due to stigmatization or other factors)
Clinical factors	• Previous suicide attempts or self-harming behavior • Mental health disorders (*e.g.*, depression, anxiety, conduct disorder, psychosis) • Substance use and abuse • Chronic medical illness or disability • Family history of suicide or psychiatric disorders
Psychosocial factors	• Exposure to suicidal behavior of others (peers, family, media) • Recent loss (death, relationship, parental separation/divorce) • History of abuse (physical, sexual, emotional) • Lack of social support or social isolation • Poor family relationships or conflict • School problems (bullying, academic issues)
Behavioral factors	• Recent or severe interpersonal conflicts • Reckless or impulsive behaviors • Giving away prized possessions • Writing or talking about death and dying • Decline in academic performance
Environmental factors	• Access to lethal means (*e.g.*, firearms, medications, poisons) • Unstable living situation or homelessness • Incarceration or legal problems
Cognitive factors	• Hopelessness • Low self-esteem or self-worth • Rigid/problem-solving skills
Warning signs	• Verbal or written threats of suicide • Expressions of hopelessness or worthlessness • Dramatic mood swings • Preoccupation with death

ment process. Clinicians' information could be proved misleading when suicidal patients wish to hide their intentions. That is the reason why observations made within a clinical interview and reports from third-party individuals are so essential. Distressed, depressed and suicidal adolescents frequently report physical symptoms and do not tell clinicians about their emotional state. Potentially high-risk adolescents who present with non-psychological complaints should, also, be recognized. Regardless adolescents' initial request for pediatrician's examination, exploratory questions about mental difficulties and suicide ideation should be asked in the context of each adolescent's holistic approach.[110]

Pediatricians are undoubtedly close to family and adolescent and their sensitivity to psychosocial issues is crucial while taking care of adolescents' health. Essential information related to psychosocial history and emotional state can be obtained using the HEEADSSS method of interviewing adolescents. The HEEADSSS interview focuses on assessment of the Home environment, Education and employment, Eating, peer-related Activities, Drugs, Sexuality, Suicide/depression, and Safety from injury and violence (Table II). The HEEADSSS psychosocial interview for adolescents related to Suicide/ depression and Safety is illustrated in Table III.[110] Positive attributes obtained by using the HEEADSSS method suggest the presence of resilience in adolescents (Table IV),[110] while negative attributes create suspicions for the presence of vulnerability in adolescents, which need further evaluation regarding depression and suicide risk.[110]

Screening for depression often involves administering questions about suicide risk. One of the more commonly used screening methods is the Patient Health Questionnaire-9 (PHQ-9).[111] The American Academy of Child and Adolescent Psychiatry has a PHQ-9 that has been modified for teen use. One example of an additional screen-

TABLE II.—*Screening HEEADSSS. The HEEADSSS interview is a widely recognized psychosocial assessment tool for adolescents. It allows healthcare professionals, including pediatricians, to gather information in a structured yet conversational manner, focusing on the major domains of an adolescent's life.*

Acronym	Questionnaire
H - Home	• Who lives with you at home? • How do you get along with your family members? • Are there any recent or significant changes in the household? • Do you feel safe at home?
E - Education and Employment	• How is school going? Any recent changes in grades? • How do you feel about school? • Are you involved in any extracurricular activities? • Do you have a job? If yes, what do you do?
E - Eating	• How do you feel about your weight and body shape? • Have there been any significant changes in your appetite or weight? • Do you have any eating restrictions or diets? • Have you ever forced yourself to vomit, used laxatives, or restricted your eating?
A - Activities	• What do you like to do in your free time? • Are you involved in any clubs, teams, or organizations? • Do you have close friends? • How do you usually spend time with your friends?
D - Drugs	• Do you smoke or have you ever tried cigarettes/vaping? • Do you drink alcohol? If so, how often and how much? • Have you ever tried or regularly use recreational or prescription drugs? • Have family or friends ever expressed concern about your substance use?
S - Sexuality	• Have you ever been sexually active? • Do you use protection? If so, what kind? • Have you ever been tested for STIs? • How do you identify in terms of sexual orientation? (Ask this sensitively, ensuring the adolescent feels safe and comfortable)
S - Suicide and Depression	• Have you ever felt down, depressed, or hopeless in the past few weeks? • Have you lost interest or pleasure in things you used to enjoy? • Have you ever thought about or attempted to hurt yourself? • Do you have a family history of depression or suicide?
S - Safety	• Do you always wear seatbelts in cars? • Do you have access to guns or other weapons at home or elsewhere? • Have you ever been bullied or bullied someone else? • Have you ever been in a situation where you felt you might get hurt?

er would be the Ask Suicide Screening Questions (ASQ),[112] which is validated screening tool for patients aged 10-24 years and the Columbia-Suicide Severity Rating Scale (CSSRS),[113] which has also shown reasonably good psychometric properties for the prediction of adolescents' visits for suicide-related complaints.

The PHQ-9 is a 9-item questionnaire used to assess the presence and severity of depressive symptoms. The ninth question specifically addresses suicidal or self-harm ideation: "Thoughts that you would be better off dead, or of hurting yourself." Routine administration of the PHQ-9 in primary care can help in identifying individuals at risk. Its widespread adoption can therefore lead to timely intervention and potentially reduce adverse outcomes.[111]

The ASQ is a brief instrument designed to identify young individuals at higher risk for suicide. It consists of four questions aimed at determining if a more in-depth assessment is necessary. In emergency departments, the ASQ has been demonstrated as effective in identifying individuals at high risk of suicide, enabling timely intervention.[112]

The Columbia-Suicide Severity Rating Scale (C-SSRS) is a widely used and validated tool for the assessment of the full range of evidence-based suicidal ideation including any wishes to be dead, non-specific active suicidal thoughts, active suicidal ideation with methods but without intent to act, active suicidal ideation with some intent to act but without a specific plan, and active suicidal ideation with a specific plan and intent as well as suicidal behavior, such as suicide attempts, interrupted attempts, aborted attempts, and preparatory acts or behaviors.[113]

TABLE III.—*The HEEADSSS psychosocial interview for adolescents related to suicide/depression and safety (modified from Goldenring* et al.*).*[110]

Category	Potential first-line questions	Questions if time permits or if situation warrants exploration
Suicide/depression	• Do you feel "stressed" or anxious more than usual (or more than you prefer to feel)? • Do you feel sad or down more than usual? • Are you "bored" much of the time? • Are you having trouble getting to sleep? • Have you thought a lot about hurting yourself or someone else? • Tell me about a time when someone picked on you or made you feel uncomfortable online.	• Tell me about a time when you felt sad while using social media sites like Facebook. • Does it seem that you've lost interest in things that you used to really enjoy? • Do you find yourself spending less time with friends? • Would you rather just be by yourself most of the time? • Have you ever tried to kill yourself? • Have you ever had to hurt yourself (by cutting yourself, for example) to calm down or feel better? • Have you started using alcohol or drugs to help you relax, calm down, or feel better?
Safety	• Have you ever been seriously injured? (How?) How about anyone else you know? • Do you always wear a seatbelt in the car? • Have you ever met in person (or plan to meet) with anyone whom you first encountered online? • When was the last time you sent a text message while driving? • Tell me about a time when you have ridden with a driver who was drunk or high. When? How often? • Is there a lot of violence at your home or school? In your neighborhood? Among your friends?	• Do you use safety equipment for sports and/or other physical activities (for example, helmets for biking or skateboarding)? • Have you ever been in a car or motorcycle accident? (What happened?) • Have you ever been picked on or bullied? Is that still a problem? • Have you gotten into physical fights in school or your neighborhood? Are you still getting into fights? • Have you ever felt that you had to carry a knife, gun, or other weapon to protect yourself? Do you still feel that way? • Have you ever been incarcerated?

TABLE IV.—*Characteristics of resilient teenagers (modified from Goldenring* et al.*).*[110]

Category	Characteristics
Suicidality	• No personal history of attempted suicide • No family history of attempted or accomplished suicide • Access to a confidant • Successful coping skills • Substance-free
Safety	• Seat belt and helmet use • Conflict resolution skills • Substance-free • Refusal to ride in cars with potentially intoxicated driver

Direct questioning of adolescents about suicidality

From the beginning, clinicians should try to develop a warm atmosphere and a trusting relationship with the adolescent based on acceptance and understanding, which may facilitate linking adolescents to needed treatments.[114] At this stage, heath providers should not hesitate to ask adolescents directly about suicidality. Adolescents often respond with honesty and admit suicidal thoughts when asked directly from a health provider they trust. In the past, there was a false belief that by asking there is the possibility of "guiding" an already vulnerable adolescent to exhibit suicidal behavior. Nowadays, however, it has become clear that this is not the case. On the contrary, direct questions may lead to early detection and intervention in order to avoid committing suicide. Screening for suicide risk include standard questions such as: "Have you ever felt that life is not worth living?" and "Have you ever felt like you wanted to kill yourself?".

Assessment of ideation, intent, and plan could determine the effectiveness of assessing adolescent risk for suicide. Assessment includes a thorough examination of adolescents and their family, as reports from third-party individuals could supplement health professionals' evaluation of suicide risk. Ideation can be assessed by asking directly, "Are you thinking about hurting yourself?" and "Are you in so much pain that ending your life seems to be the only thing left for you to do to change how you feel?" Affirmative answers to these questions call for further assessment of the frequency, duration, and intensity of these ideations. Suicidal intent can be assessed by us-

ing questions as "Do you believe that you will try to kill yourself?" and "If you felt like killing yourself would you try to stop yourself or ask someone to help you?" Perhaps the most effective method of measuring client determination is to provide the adolescent with a rating scale of intent and to ask them to place themselves at a point on that scale or continuum. Further assessment of the degree of suicide risk is conducted through questioning regarding the adolescent's plan. Specific questions include "How do you plan to kill yourself?", "Have you taken any steps according to your plan?", "Do you have access to the things that you would need to kill yourself?", and "Do you have a date planned for your suicide (if, so when)?" It is important to assess underlying reasons for suicidal intent (*i.e.* to escape life, to enact revenge on significant others, to evoke guilt, or to cry for help) as they may provide insight as to the severity of the intent. If the youth responds affirmatively to questions about previous attempts, the specific attempt(s) should be assessed to determine both the actual lethality and perceived lethality of each attempt.[110, 114-116]

Hospitalization

Immediate therapeutic intervention is recommended when adolescents appear to have organized a specific suicidal plan. High risk of repeating suicidal behavior and absence of adequate family support constitute indicators of adolescents' urgent psychiatric hospitalization. The risk assessment needs to be repeated until the risk of committing suicide attempt is minimized.

In-patient hospitalization is a frequently chosen treatment option for suicidal adolescents. Presence of intense anxiety, anger, panic and uncontrollably violent behavior, treatment refusal and especially absence of a support network from the family or friendly environment are indicators for adolescent hospitalization. Those with repeated suicide attempts and those with mood disorders were at increased risk of post-hospitalization suicidal behavior. Treatment of the underlying psychiatric disorder, provision of a structured and safe environment that will minimize the immediate risk of recurrence, training family to understand adolescents' problems, treatment of parental psychopathology and appropriate choice of adolescents' support network are benefits that may result from hospitalization. Other benefits, that may result from hospitalization, may be quality in-patient care, and establishment of a therapeutic alliance, which may improve future adherence to management plans and minimize negative beliefs about psychiatry.[117]

Pharmacological treatment and potential link to suicidal ideation/attempts

The topic of pharmacological treatments, particularly selective serotonin reuptake inhibitors (SSRIs), and their potential links to suicidal ideation and attempts, especially in adolescents, is complex and has been debated extensively in the medical and psychiatric communities.

Initial concerns

In the early 2000s, concerns arose regarding a potential association between SSRIs and increased risk of suicidal ideation and attempts, especially among children and adolescents. This led to the FDA issuing a black box warning on SSRI prescriptions for people under the age of 25.[118]

Clinical implications

Following the black box warning, there was a notable decline in SSRI prescriptions for children and adolescents. Some studies suggested that this decline might have led to increases in suicide rates due to untreated depression.[119]

Balancing risks and benefits

While the concerns about SSRIs and suicidal ideation cannot be entirely dismissed, the majority of research indicates that the benefits of treating major depressive disorder (MDD) in adolescents with SSRIs outweigh the potential risks. Untreated depression itself is a significant risk factor for suicide.[120]

Monitoring is crucial

One consensus from the medical community is the necessity of close monitoring of children and adolescents initiated on SSRIs, particularly in the early stages of treatment. Regular check-ups can help identify any increase in suicidal ideation or other side effects.[117]

The topic of SSRIs and their potential link to

suicidal behaviors in adolescents is a prime example of the complexities involved in psychiatric pharmacology. On one hand, there is the concern about the safety of these medications in this age group, but on the other hand, untreated depression poses its own severe risks, including a heightened risk of suicide. The key is to ensure that patients and their families are informed about the potential risks and benefits, and that those on treatment are monitored closely, especially during the initial stages of therapy. The decision to start, continue, or stop medication should always be made collaboratively with a healthcare professional, considering the unique circumstances and needs of each individual.

Conclusions

Adolescent suicide remains an important clinical problem and a major cause of death in young people. When we, as a society, have taken constructive action on these issues that are related to adolescents' suicide risk factors, then a firm foundation will be developed on which tormented souls like Christina can flourish. Preventing suicide among adolescents is contingent on identifying early warning signs and intervening towards the minimizing suicide risk factors among adolescents. Health professionals in general and more particularly pediatricians have a key role in identifying, diagnosing, treating, and referring adolescents with mental health concerns and suicidal behavior. Early detection of self-destructive behavior and appropriate intervention could determine their quality of life during adulthood. Improving adolescents' mental health is a prerequisite for development and progress of society. For these reasons, pediatricians should provide adequate care to adolescents in order to ensure their resilience and quality of life in adulthood.

References

1. Asomatou A, Tselebis A, Bratis D, Stavrianakos K, Zafeiropoulos G, Pachi A, *et al.* The act of suicide in Greek mythology. Encephalos 2016;53:65–75.

2. Cunningham RM, Walton MA, Carter PM. The major causes of death in children and adolescents in the United States. N Engl J Med 2018;379:2468–75.

3. World Health Organization. Adolescent mental health; 2021 [Internet]. Available from: https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health [citd 2023, Oct 26].

4. European Commission. Eurostat; 2021 [Internet]. Available from: https://ec.europa.eu/euros tat/web/main/data/database [cited 2023, Oct 26].

5. Nock MK, Green JG, Hwang I, McLaughlin KA, Sampson NA, Zaslavsky AM, *et al.* Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents: results from the National Comorbidity Survey Replication Adolescent Supplement. JAMA Psychiatry 2013;70:300–10.

6. Harford TC, Grant BF, Yi HY, Chen CM. Patterns of DSM-IV alcohol abuse and dependence criteria among adolescents and adults: results from the 2001 National Household Survey on Drug Abuse. Alcohol Clin Exp Res 2005;29:810–28.

7. Reinherz HZ, Paradis AD, Giaconia RM, Stashwick CK, Fitzmaurice G. Childhood and adolescent predictors of major depression in the transition to adulthood. Am J Psychiatry 2003;160:2141–7.

8. Ortin A, Lake AM, Kleinman M, Gould MS. Sensation seeking as risk factor for suicidal ideation and suicide attempts in adolescence. J Affect Disord 2012;143:214–22.

9. Holmes EA, O'Connor RC, Perry VH, Tracey I, Wessely S, Arseneault L, *et al.* Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. Lancet Psychiatry 2020;7:547–60.

10. Clark H, Coll-Seck AM, Banerjee A, Peterson S, Dalglish SL, Ameratunga S, *et al.*; WHO–UNICEF– Lancet Commissioners. After COVID-19, a future for the world's children? Lancet 2020;396:298–300.

11. Hill RM, Rufino K, Kurian S, Saxena J, Saxena K, Williams L. Suicide ideation and attempts in a pediatric emergency department before and during COVID 19. Pediatrics 2021;147:1–19.

12. Cochran G, Cohen ZP, Paulus MP, Tsuchiyagaito A, Kirlic N. Sustained increase in depression and anxiety among psychiatrically healthy adolescents during late stage COVID-19 pandemic. Front Psychiatry 2023;14:1137842.

13. Dervic K, Oquendo MA, Grunebaum MF, Ellis S, Burke AK, Mann JJ. Religious affiliation and suicide attempt. Am J Psychiatry 2004;161:2303–8.

14. Berman Al. Jobes D. Adolescent Suicide. Assessment and Intervention. Washington, DC: American Psychological Association; 1991.

15. Consoli A, Cohen D, Bodeau N, Guilé JM, Mirkovic B, Knafo A, *et al.* Risk and protective factors for Suicidality at 6-month follow-up in adolescent inpatients who attempted suicide: an exploratory model. Can J Psychiatry 2015;60(Suppl 1):S27–36.

16. Rew L, Young C, Brown A, Rancour S. Suicide ideation and life events in a sample of rural adolescents. Arch Psychiatr Nurs 2016;30:198–203.

17. American Association of Suicidology. Youth suicide fact sheet; 2016 [Internet]. Available from: http://www.suicidology.org/Portals/14/ReFormatted%20youth%20suicide%20fact%20sheet.pdf?ver=2016-11-16-105737-160 [cited 2023, Oct 26].

18. Web-based Injury Statistics Query and Reporting System (WISQARS). Leading Causes of Death Reports. Centers for Disease Control and Prevention; 2015 [Internet]. Available from: http://webappa.cdc.gov/sasweb/ncipc/leadcaus10_us.html [cited 2023, Oct 26].

19. Jeong SC, Kim JY, Choi MH, Lee JS, Lee JH, Kim CW, *et al.* Identification of influencing factors for suicidal ideation and suicide attempts among adolescents: 11-year national data analysis for 788,411 participants. Psychiatry Res 2020;291:113228.

20. Ruch DA, Sheftall AH, Schlagbaum P, Rausch J, Campo

JV, Bridge JA. Trends in suicide among youth aged 10 to 19 years in the United States, 1975 to 2016. JAMA Netw Open 2019;2:e193886–193886.

21. Jung S, Lee D, Park S, Lee K, Kweon YS, Lee EJ, *et al.* Gender differences in Korean adolescents who died by suicide based on teacher reports. Child Adolesc Psychiatry Ment Health 2019;13:12.

22. Brent DA, Perper JA, Allman CJ, Moritz GM, Wartella ME, Zelenak JP. The presence and accessibility of firearms in the homes of adolescent suicides. A case-control study. JAMA 1991;266:2989–95.

23. Turvill JL, Burroughs AK, Moore KP. Change in occurrence of paracetamol overdose in UK after introduction of blister packs. Lancet 2000;355:2048–9.

24. Barber CW, Miller MJ. Reducing a suicidal person's access to lethal means of suicide: a research agenda. Am J Prev Med 2014;47(Suppl 2):S264–72.

25. Spirito A, Valeri S, Boergers J, Donaldson D. Predictors of continued suicidal behavior in adolescents following a suicide attempt. J Clin Child Adolesc Psychol 2003;32:284–9.

26. Harris HE, Myers WC. Adolescents' misperceptions of the dangerousness of acetaminophen in overdose. Suicide Life Threat Behav 1997;27:274–7.

27. Crespi TD. Approaching adolescent suicide: queries and signposts. Sch Couns 1990;27:256–60.

28. Hua P, Bugeja L, Maple M. A systematic review on the relationship between childhood exposure to external cause parental death, including suicide, on subsequent suicidal behaviour. J Affect Disord 2019;257:723–34.

29. Goschin S, Briggs J, Blanco-Lutzen S, Cohen LJ, Galynker I. Parental affectionless control and suicidality. J Affect Disord 2013;151:1–6.

30. Campbell NB, Milling L, Laughlin A, Bush E. The psychosocial climate of families with suicidal pre-adolescent children. Am J Orthopsychiatry 1993;63:142–5.

31. Gorostiaga A, Aliri J, Balluerka N, Lameirinhas J. Parenting styles and internalizing symptoms in adolescence: A systematic literature review. Int J Environ Res Public Health 2019;16:1–19.

32. Martin G, Waite S. Parental bonding and vulnerability to adolescent suicide. Acta Psychiatr Scand 1994;89:246–54.

33. Fegert JM, Vitiello B, Plener PL, Clemens V. Challenges and burden of the Coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: a narrative review to highlight clinical and research needs in the acute phase and the long return to normality. Child Adolesc Psychiatry Ment Health 2020;14:20.

34. Blumenthal SJ. Youth suicide: risk factors, assessment, and treatment of adolescent and young adult suicidal patients. Psychiatr Clin North Am 1990;13:511–56.

35. Goodday SM, Shuldiner J, Bondy S, Rhodes AE. Exposure to parental psychopathology and offspring's risk of suicide-related thoughts and behaviours: a systematic review. Epidemiol Psychiatr Sci 2019;28:179–90.

36. Hua P, Maple M, Hay K, Bugeja L. Theoretical frameworks informing the relationship between parental death and suicidal behaviour: A scoping review. Heliyon 2020;6(e03911):e03911.

37. Zatti C, Rosa V, Barros A, Valdivia L, Calegaro VC, Freitas LH, *et al.* Childhood trauma and suicide attempt: A meta-analysis of longitudinal studies from the last decade. Psychiatry Res 2017;256:353–8.

38. Miller AB, Esposito-Smythers C, Weismoore JT, Renshaw KD. The relation between child maltreatment and adolescent suicidal behavior: a systematic review and critical examination of the literature. Clin Child Fam Psychol Rev 2013;16:146–72.

39. Gibb BE, Chelminski I, Zimmerman M. Childhood emotional, physical, and sexual abuse, and diagnoses of depressive and anxiety disorders in adult psychiatric outpatients. Depress Anxiety 2007;24:256–63.

40. Cecil CA, Viding E, Fearon P, Glaser D, McCrory EJ. Disentangling the mental health impact of childhood abuse and neglect. Child Abuse Negl 2017;63:106–19.

41. Maniglio R. The impact of child sexual abuse on the course of bipolar disorder: a systematic review. Bipolar Disord 2013;15:341–58.

42. Holshausen K, Bowie CR, Harkness KL. The relation of childhood maltreatment to psychotic symptoms in adolescents and young adults with depression. J Clin Child Adolesc Psychol 2016;45:241–7.

43. Petrenko CL, Friend A, Garrido EF, Taussig HN, Culhane SE. Does subtype matter? Assessing the effects of maltreatment on functioning in preadolescent youth in out-of-home care. Child Abuse Negl 2012;36:633–44.

44. Gili M, Castellví P, Vives M, de la Torre-Luque A, Almenara J, Blasco MJ, *et al.* Mental disorders as risk factors for suicidal behavior in young people: A meta-analysis and systematic review of longitudinal studies. J Affect Disord 2019;245:152–62.

45. Shaffer D, Garland A, Gould M, Fisher P, Trautman P. Preventing teenage suicide: a critical review. J Am Acad Child Adolesc Psychiatry 1988;27:675–87.

46. Marttunen MJ, Aro HM, Lönnqvist JK. Adolescence and suicide: A review of psychological autopsy studies. Eur Child Adolesc Psychiatry 1993;2:10–8.

47. Bromet EJ, Nock MK, Saha S, Lim CC, Aguilar-Gaxiola S, Al-Hamzawi A, *et al.*; World Health Organization World Mental Health Survey Collaborators. Association between psychotic experiences and subsequent suicidal thoughts and behaviors: A cross-national analysis from the World Health Organization World Mental Health Surveys. JAMA Psychiatry 2017;74:1136–44.

48. Schwartz-Stav O, Apter A, Zalsman G. Depression, suicidal behavior and insight in adolescents with schizophrenia. Eur Child Adolesc Psychiatry 2006;15:352–9.

49. Fleischmann A, Bertolote JM, Belfer M, Beautrais A. Completed suicide and psychiatric diagnoses in young people: a critical examination of the evidence. Am J Orthopsychiatry 2005;75:676–83.

50. Conner KR, Bagge CL, Goldston DB, Ilgen MA. Alcohol and suicidal behavior: what is known and what can be done. Am J Prev Med 2014;47(Suppl 2):S204–8.

51. Borges G, Bagge CL, Orozco R. A literature review and meta-analyses of cannabis use and suicidality. J Affect Disord 2016;195:63–74.

52. Bohnert KM, Ilgen MA, Louzon S, McCarthy JF, Katz IR. Substance use disorders and the risk of suicide mortality among men and women in the US Veterans Health Administration. Addiction 2017;112:1193–201.

53. Conner KR, Huguet N, Caetano R, Giesbrecht N, McFarland BH, Nolte KB, *et al.* Acute use of alcohol and methods of suicide in a US national sample. Am J Public Health 2014;104:171–8.

54. Gobbi G, Atkin T, Zytynski T, Wang S, Askari S, Boruff J, *et al.* Association of Cannabis Use in Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A Systematic Review and Meta-analysis. JAMA Psychiatry 2019;76:426–34.

55. Ashrafioun L, Bishop TM, Conner KR, Pigeon WR. Frequency of prescription opioid misuse and suicidal ideation, planning, and attempts. J Psychiatr Res 2017;92:1–7.

56. Brent DA, Baugher M, Bridge J, Chen T, Chiappetta L. Age- and sex-related risk factors for adolescent suicide. J Am Acad Child Adolesc Psychiatry 1999;38:1497–505.

57. Selby EA, Smith AR, Bulik CM, Olmsted MP, Thornton L, McFarlane TL, *et al.* Habitual starvation and provocative behaviors: two potential routes to extreme suicidal behavior in anorexia nervosa. Behav Res Ther 2010;48:634–45.

58. Franko DL, Keel PK. Suicidality in eating disorders: occurrence, correlates, and clinical implications. Clin Psychol Rev 2006;26:769–82.

59. Baglioni C, Battagliese G, Feige B, Spiegelhalder K, Nissen C, Voderholzer U, *et al.* Insomnia as a predictor of depression: a meta-analytic evaluation of longitudinal epidemiological studies. J Affect Disord 2011;135:10–9.

60. Pigeon WR, Pinquart M, Conner K. Meta-analysis of sleep disturbance and suicidal thoughts and behaviors. J Clin Psychiatry 2012;73:e1160–7.

61. Gradisar M, Gardner G, Dohnt H. Recent worldwide sleep patterns and problems during adolescence: a review and meta-analysis of age, region, and sleep. Sleep Med 2011;12:110–8.

62. Russell ST, Joyner K. Adolescent sexual orientation and suicide risk: evidence from a national study. Am J Public Health 2001;91:1276–81.

63. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. Psychol Bull 2003;129:674–97.

64. Ryan C, Huebner D, Diaz RM, Sanchez J. Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. Pediatrics 2009;123:346–52.

65. Williams ND, Turpin RE, Akré EL, Boekeloo BO, Fish JN. Disparities in Mental Health Care Access Among Persons Differing in Sexual Identity: Nationally Representative Findings. Psychiatr Serv 2022;73:456–9.

66. Sharp C, Fonagy P. Practitioner Review: borderline personality disorder in adolescence—recent conceptualization, intervention, and implications for clinical practice. J Child Psychol Psychiatry 2015;56:1266–88.

67. Barteček R, Hořínková J, Linhartová P, Kašpárek T. Emotional impulsivity is connected to suicide attempts and health care utilization in patients with borderline personality disorder. Gen Hosp Psychiatry 2019;56:54–5.

68. Terzi L, Martino F, Berardi D, Bortolotti B, Sasdelli A, Menchetti M. Aggressive behavior and self-harm in Borderline Personality Disorder: the role of impulsivity and emotion dysregulation in a sample of outpatients. Psychiatry Res 2017;249:321–6.

69. Turecki G. Dissecting the suicide phenotype: the role of impulsive-aggressive behaviours. J Psychiatry Neurosci 2005;30:398–408.

70. Ribeiro JD, Huang X, Fox KR, Franklin JC. Depression and hopelessness as risk factors for suicide ideation, attempts and death: meta-analysis of longitudinal studies. Br J Psychiatry 2018;212:279–86.

71. Erzen E, Çikrikci Ö. The effect of loneliness on depression: A meta-analysis. Int J Soc Psychiatry 2018;64:427–35.

72. Horwitz AG, Berona J, Czyz EK, Yeguez CE, King CA. Positive and negative expectations of hopelessness as longitudinal predictors of depression, suicidal ideation, and suicidal behavior in high-risk adolescents. Suicide Life Threat Behav 2017;47:168–76.

73. Stickley A, Koyanagi A. Loneliness, common mental disorders and suicidal behavior: findings from a general population survey. J Affect Disord 2016;197:81–7.

74. Crone EA, Dahl RE. Understanding adolescence as a period of social-affective engagement and goal flexibility. Nat Rev Neurosci 2012;13:636–50.

75. Tamás Z, Kovacs M, Gentzler AL, Tepper P, Gádoros J, Kiss E, *et al.* The relations of temperament and emotion self-regulation with suicidal behaviors in a clinical sample of depressed children in Hungary. J Abnorm Child Psychol 2007;35:640–52.

76. Wilson ST, Fertuck EA, Kwitel A, Stanley MC, Stanley B. Impulsivity, suicidality and alcohol use disorders in adolescents and young adults with borderline personality disorder. Int J Adolesc Med Health 2006;18:189–96.

77. Kaess M, Brunner R, Chanen A. Borderline personality disorder in adolescence. Pediatrics 2014;134:782–93.

78. Bridge JA, McBee-Strayer SM, Cannon EA, Sheftall AH, Reynolds B, Campo JV, *et al.* Impaired decision making in adolescent suicide attempters. J Am Acad Child Adolesc Psychiatry 2012;51:394–403.

79. Lahti A, Harju A, Hakko H, Riala K, Räsänen P. Suicide in children and young adolescents: a 25-year database on suicides from Northern Finland. J Psychiatr Res 2014;58:123–8.

80. Hawton K, van Heeringen K. Suicide. Lancet 2009;373:1372–81.

81. Miranda R, Scott M, Hicks R, Wilcox HC, Harris Munfakh JL, Shaffer D. Suicide attempt characteristics, diagnoses, and future attempts: comparing multiple attempters to single attempters and ideators. J Am Acad Child Adolesc Psychiatry 2008;47:32–40.

82. Brent DA, Perper JA, Goldstein CE, Kolko DJ, Allan MJ, Allman CJ, *et al.* Risk factors for adolescent suicide. A comparison of adolescent suicide victims with suicidal inpatients. Arch Gen Psychiatry 1988;45:581–8.

83. Gunnell D, Hawton K, Murray V, Garnier R, Bismuth C, Fagg J, *et al.* Use of paracetamol for suicide and non-fatal poisoning in the UK and France: are restrictions on availability justified? J Epidemiol Community Health 1997;51:175–9.

84. Morano CD, Cisler RA, Lemerond J. Risk factors for adolescent suicidal behavior: loss, insufficient familial support, and hopelessness. Adolescence 1993;28:851–65.

85. D'Attilio JP, Campbell BM, Lubold P, Jacobson T, Richard JA. Social support and suicide potential: preliminary findings for adolescent populations. Psychol Rep 1992;70:76–8.

86. Brunstein Klomek A, Barzilay S, Apter A, Carli V, Hoven CW, Sarchiapone M, *et al.* Bi-directional longitudinal associations between different types of bullying victimization, suicide ideation/attempts, and depression among a large sample of European adolescents. J Child Psychol Psychiatry 2019;60:209–15.

87. Hinduja S, Patchin J. Connecting adolescent suicide to the severity of bullying and cyberbullying. J Sch Violence 2019;18:333–46.

88. Kim CD, Seguin M, Therrien N, Riopel G, Chawky N, Lesage AD, *et al.* Familial aggregation of suicidal behavior: a family study of male suicide completers from the general population. Am J Psychiatry 2005;162:1017–9.

89. Geulayov G, Gunnell D, Holmen TL, Metcalfe C. The association of parental fatal and non-fatal suicidal behaviour with offspring suicidal behaviour and depression: a systematic review and meta-analysis. Psychol Med 2012;42:1567–80.

90. Florentine JB, Crane C. Suicide prevention by limiting access to methods: a review of theory and practice. Soc Sci Med 2010;70:1626–32.

91. Recupero PR, Harms SE, Noble JM. Googling suicide: surfing for suicide information on the Internet. J Clin Psychiatry 2008;69:878–88.

92. Ueda M, Mori K, Matsubayashi T, Sawada Y. Tweeting celebrity suicides: Users' reaction to prominent suicide deaths on Twitter and subsequent increases in actual suicides. Soc Sci Med 2017;189:158–66.

93. Whitlock J, Wyman PA, Moore SR. Connectedness and suicide prevention in adolescents: pathways and implications. Suicide Life Threat Behav 2014;44:246–72.

94. Ruiz-Robledillo N, Ferrer-Cascales R, Albaladejo-Blázquez N, Sánchez-SanSegundo M. Family and school contexts as predictors of suicidal behavior among adolescents: the role of depression and anxiety. J Clin Med 2019;8:1–16.

95. Burke TA, Connolly SL, Hamilton JL, Stange JP, Abramson LY, Alloy LB. Cognitive risk and protective factors for suicidal ideation: A two-year longitudinal study in adolescence. J Abnorm Child Psychol 2016;44:1145–60.

96. Tschan T, Peter-Ruf C, Schmid M, In-Albon T. Temperament and character traits in female adolescents with nonsuicidal self-injury disorder with and without comorbid borderline personality disorder. Child Adolesc Psychiatry Ment Health 2017;11:4.

97. Kleiman EM, Riskind JH. Utilized social support and self-esteem mediate the relationship between perceived social support and suicide ideation. A test of a multiple mediator model. Crisis 2013;34:42–9.

98. National Institute for Health and Care Excellence (NICE). NICE Guideline. Depression in children and young people: identification and management; 2019 [Internet]. Available from: https://www.nice.org.uk/guidance/ng134 [cited 2023, Oct 26].

99. Mehlum L, Tørmoen AJ, Ramberg M, Haga E, Diep LM, Laberg S, *et al.* Dialectical behavior therapy for adolescents with repeated suicidal and self-harming behavior: a randomized trial. J Am Acad Child Adolesc Psychiatry 2014;53:1082–91.

100. Vaiva G, Vaiva G, Ducrocq F, Meyer P, Mathieu D, Philippe A, *et al.* Effect of telephone contact on further suicide attempts in patients discharged from an emergency department: randomised controlled study. BMJ 2006;332:1241–5.

101. Brunner R, Parzer P, Haffner J, Steen R, Roos J, Klett M, *et al.* Prevalence and psychological correlates of occasional and repetitive deliberate self-harm in adolescents. Arch Pediatr Adolesc Med 2007;161:641–9.

102. Headspace. About Headspace; 2021 [Internet]. Available from: https://www.headspace.com/about-us [cited 2023, Oct 26]

103. ReachOut Australia. About Us; 2021 [Internet]. Available from: https://about.au.reachout.com/what-we-do [cited 2023, Oct 26].

104. Cox GR, Callahan P, Churchill R, Hunot V, Merry SN, Parker AG, *et al.* Psychological therapies versus antidepressant medication, alone and in combination for depression in children and adolescents. Cochrane Database Syst Rev 2012;11:CD008324.

105. Canadian Association for Suicide Prevention. CASP Guidelines for communities to develop suicide prevention plans; 2023 [Internet]. Available from: https://suicideprevention.ca/resource/together-to-live/ [cited 2023, Oct 26].

106. Katz LY, Au W, Singal D, Brownell M, Roos N, Martens PJ, *et al.* Suicide and suicide attempts in children and adolescents in the child welfare system. CMAJ 2011;183:1977–81.

107. Oyama H, Watanabe N, Ono Y, Sakashita T, Takenoshita Y, Taguchi M, *et al.* Community-based suicide prevention through group activity for the elderly successfully reduced the high suicide rate for females. Psychiatry Clin Neurosci 2005;59:337–44.

108. Zuckerbrot RA, Cheung A, Jensen PS, Stein RE, Laraque D. GLAD-PC STEERING GROUP. Guidelines for Adolescent Depression in Primary Care (GLAD-PC): part I. Practice preparation, identification, assessment, and initial management. Pediatrics 2018;141:e1299–312.

109. Balázs J, Miklósi M, Keresztény A, Hoven CW, Carli V, Wasserman C, *et al.* Adolescent subthreshold-depression and anxiety: psychopathology, functional impairment and increased suicide risk. J Child Psychol Psychiatry 2013;54:670–7.

110. Goldenring JM, Rosen DS. Getting into adolescent heads: an essential update. Contemp Pediatr 2004;21:64–90.

111. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med 2001;16:606–13.

112. Horowitz LM, Bridge JA, Teach SJ, Ballard E, Klima J, Rosenstein DL, *et al.* Ask Suicide-Screening Questions (ASQ): a brief instrument for the pediatric emergency department. Arch Pediatr Adolesc Med 2012;166:1170–6.

113. Posner K, Brown GK, Stanley B, Brent DA, Yershova KV, Oquendo MA, *et al.* The Columbia-Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults. Am J Psychiatry 2011;168:1266–77.

114. Farley AM, Gallop RJ, Brooks ES, Gerdes M, Bush ML, Young JF. Identification and management of adolescent depression in a large pediatric care network. J Dev Behav Pediatr 2020;41:85–94.

115. Burstein B, Agostino H, Greenfield B. Suicidal attempts and ideation among children and adolescents in US Emergency Departments, 2007-2015. JAMA Pediatr 2019;173:598–600.

116. Goldston DB, Daniel SS, Reboussin DM, Reboussin BA, Frazier PH, Kelley AE. Suicide attempts among formerly hospitalized adolescents: a prospective naturalistic study of risk during the first 5 years after discharge. J Am Acad Child Adolesc Psychiatry 1999;38:660–71.

117. Olfson M, Marcus SC, Shaffer D. Antidepressant drug therapy and suicide in severely depressed children and adults: A case-control study. Arch Gen Psychiatry 2006;63:865–72.

118. Hammad TA, Laughren T, Racoosin J. Suicidality in pediatric patients treated with antidepressant drugs. Arch Gen Psychiatry 2006;63:332–9.

119. Gibbons RD, Brown CH, Hur K, Marcus SM, Bhaumik DK, Erkens JA, *et al.* Early evidence on the effects of regulators' suicidality warnings on SSRI prescriptions and suicide in children and adolescents. Am J Psychiatry 2007;164:1356–63.

120. Bridge JA, Iyengar S, Salary CB, Barbe RP, Birmaher B, Pincus HA, *et al.* Clinical response and risk for reported suicidal ideation and suicide attempts in pediatric antidepressant treatment: a meta-analysis of randomized controlled trials. JAMA 2007;297:1683–96.

Conflicts of interest

The author certifies that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

Authors' contributions

The author read and approved the final version of the manuscript.

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