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REVIEW

Identifying and Managing Suicidality in Children and Adolescents with Chronic Pain: Evidence-Based Treatment Strategies

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Abstract: Children and adolescents with chronic pain are at an increased risk of suicidality. This narrative review article aims to inform clinical practice in the assessment and management of suicidality in youth with chronic pain. The article begins with a survey of the background and prevalence of youth with chronic pain. A review of the current evidence behind the increased risk of suicidality in youth with chronic pain follows. Contextualization of this data with general tenets of child and adolescent suicide risk and risk assessment is provided. Suicidology theory including the interpersonal theory of suicide is overviewed to help clinicians to conceptualize the reviewed data. Guiding parameters for the suicide risk assessment and management planning is presented. Concluding recommendations are made to guide clinical practice in the assessment and management of suicidality in youth with chronic pain.

Keywords: chronic pain, suicidality, suicide risk, suicide assessment, children, adolescents

Introduction

Considerable evidence suggests that pain regardless of type is an independent risk factor for suicidal ideation and behavior in individuals of all ages.[1–4] It has been suggested that depressive symptoms, alcohol and drug abuse, a history of childhood or adulthood adversities, family history of depression, and/or prior suicidal behavior are risk factors for future suicidal behavior in individuals with pain. Inadequately managing pain has been identified as a risk for suicidal behavior. The incidence of chronic pain disorders among youth often increases with time and persists into adulthood,[5] positioning childhood and adolescence as an important developmental period in which to consider the lifetime implications of chronic pain, including on suicidality. In addition, the implication of increased risk of suicidality in individuals with pain disorders is an important, as according to updated 2020 data among youth in the United States, suicide is the second most common cause of mortality among youth in late childhood and early adolescence (youth aged 10–14) and the third most common cause of mortality among youth in late adolescence (youth aged 15–24).[6]

Chronic pain disorders in children and adolescents relative to adults are less well-appreciated and understood. The assessment and management of suicidality is a crucial task of comprehensive care for youth with chronic pain.[7,8] To date, no work provides clinical guidance specifically focused on the assessment and management of suicidality in this population.

This narrative review is written for the wide range of clinicians who provide care for this population. This includes pediatricians, family physicians, nurse practitioners, physical and occupational therapists, social workers, psychologists, and child and adolescent psychiatrists and pain specialists. Many children and adolescents with chronic pain will already be linked with specialist providers. Others will require immediate assessment, management, and referrals to the correct level of mental health care. Referrals can include for routine outpatient appointment, for a crisis appointment within

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several days, or for a direct transfer to an emergency department setting. It is important for all involved front-line clinicians to be familiar with suicidality in this special population.

Background and Prevalence of Chronic Pain

Chronic pain is defined as pain lasting for more than three months.[9] It may be persistent or recurrent. Common types of community chronic pain among children and adolescents include headaches and migraines, abdominal pains including dysmenorrhea, oral and dental pain, limb or "growing" pains, back pains, chest pains, and multiple pains.[10] Youth pains commonly encountered in hospital settings, such as cancer-related pain or that related to sickle cell disease, are also significant.

A 2011 systematic review of 41 published papers on the epidemiology of chronic pain in children and adolescents found generally low- to moderate- quality studies with wide ranges in estimated prevalence by the type of pain (11 to 38%).[11] Commentary on the review[12] nonetheless noted the methodological progress of this review relative to the existing literature. Efforts to further advance methodology and to update the results are underway,[13] though limitations presented by methodological heterogeneity in the existing studies and heterogeneity among surveyed populations may continue to preclude further specification of true prevalence. Nonetheless, the studies reviewed demonstrate general themes across the types of child and adolescent pain disorders.

First, there are age-dependent considerations. Most studies find that pain disorders increase in prevalence with age.[11] A notable exception is abdominal pain, which has a peak prevalence in childhood. In this common type of childhood pain, the prevalence increases linearly from infancy through late childhood at about 6% per year.[14] Amongst all pain disorders, the trend towards greater prevalence in chronic pain with increasing age may be more significant among girls than among boys.[15]

Second, the prevalence of chronic pain is gender-specific. The prevalence of chronic pain in female adolescents is higher than that in males.[11] Whereas most pain types do not differ in prevalence by gender, lower limb chronic pain was significantly more common among boys than among girls, whereas diffuse pain was more common among girls than among boys.[15] Severe pain is more commonly experienced by girls relative to boys.[15]

Third, psychosocial factors are notable. Most studies show that low socioeconomic status confers risk for most pain disorders.[11] Other studied social factors which appear to increase the prevalence of chronic pain conditions include low parental education, and mental health status, type of residence, and time spent watching television.[11] Amongst children with abdominal pain, lower emotional control in toddlerhood and higher parental concern and parental stress are also risk factors.[14]

The severity of chronic pain is important. Approximately 5% of chronic pain disorders manifest with pain that is so severe that it impacts daily functioning for the child or adolescent in daily life.[15] These youth represent a special group when considering suicide risk. Headaches were the most common pain type to have severe episodes, while limb pain was the least common.[15] The more severe the pain, the more frequent are the episodes.[15]

The data of this landmark 2011 systematic review can be compared to a more recent 2022 review of youth chronic pain in low and middle-income countries.[16] This review analyzed 27 studies representing twenty low- and middle-income countries and found an 8% pooled average prevalence of youth chronic pain. Female youth were again found to have higher chronic pain prevalence relative to male youth.

Youth history and neuropsychological factors affect pain prevalence and presentation. In an animal study, early life factors including maternal separation were found to alter nociception and neurobiological functioning.[17] Amongst patients, previous adverse childhood events raise the risk of pain disorders, and female youth may be more impacted by prior adverse events than male youth.[18] A prior history of trauma may decrease pain sensitivity through the promotion of a capability to dissociate, yet it increases pain catastrophizing.[19] Post-traumatic stress disorder (PTSD) among adults is understood to impact the reward system and related circuits related to pain and pain-relief,[20] and the origins of this association may begin among children and adolescents with childhood trauma. Targeting the stress response through psychosocial interventions such as cognitive-behavioral therapy and mindfulness-based stress reduction in youth show promise through impacting such neuropsychological variables.[21]

In one study, just under a third (28%) of children referred to a specialty pain clinic had diagnosable psychiatric disorders.[22] Internalizing symptoms such as depressive symptoms may precede the onset of chronic pain,[23] and evidence-

based interventions to promote psychological health may help youth with chronic pain and prevent the onset of such disorders.[24] Positive affect is associated with greater activity engagement and less pain interference and activity avoidance.[25] How a youth copes with pain appears important, though conclusions are difficult to draw. The low conceptual clarity among studies published on the topic identified in a recent a scoping review[26] highlights the importance of methodological clarity in further studies.

Adequate sleep may be particularly important,[27] and excessive daytime sleepiness[28] and inadequate sleep[29] has been shown to relate to pain. Sleep deprivation may influence pain progression biologically through its negative impacts on inflammatory markers, the hypothalamic-pituitary axis, and dopaminergic signaling. Sleep deprivation also impacts the youth's psychosocial life: altered receptivity and resilience to the pain's emotional-affective components and decreased availability and reserve to engage in social activities and supports due to the pain are two examples of pathways.[27]

Chronic pain in childhood and adolescence commonly persists into adulthood. Approximately 17% of adults with chronic pain identified their pain as having originated in childhood or adolescence.[30] Headaches in childhood and adolescence persists into the early adulthood in approximately 19% of individuals; in 8.4%, the headaches are weekly or more.[31] Abdominal pain persists at a rate of 35%.[32] Chronic pain in adolescence raises the risk of opioid use disorders in adulthood,[33] which itself is a significant risk factor for suicide.[34]

Further studies will be needed to overcome limitations in heterogeneity and to best reflect the prevalence of chronic pain in our current times. For example, despite the increase in contextual factors associated with pain vulnerability during the COVID-19 pandemic,[35] at least one study to date found prevalence to decrease during the COVID-19 pandemic.[36]

Chronic Pain and Suicide: The Evidence

In 2019, a systematic review concerning the relationship between pain and suicidal vulnerability in adolescence (10–19 years of age)[4] identified 25 relevant observational studies, with 80% of the studies having been published subsequent to 2010. The authors found that chronic pain approximately doubles the risk of suicide in adolescence.[4] This is comparable to the two-to-three times increased risk of suicidality identified in adult populations with chronic pain.[2] The existing evidence is sparse and inconclusive, and it may fail to identify important developmental differences.

The review found that the association between pain and suicidal ideation was studied in 11 articles.[37–47] The association between pain and suicidal behavior was studied in 9 articles,[38,41,48–54] and two studies explored the association between pain and death by suicide.[50,55]

Beyond the finding of a doubling of suicide risk among youth with chronic pain, several key points concerning youth suicide risk emerge from these findings.

First, in both community and clinic settings, the risk of suicidal ideation and of suicidal behaviors are elevated among youth with chronic pain. However, the statistical significance of these risks is mostly lost when controlling for depression. This demonstrates the importance of evaluating and assessing for depression when working with youth with chronic pain. Depression is a major predictor of suicidal behavior.[56]

Second, one study found that the probability of suicidal ideation is raised when multiple pains are reported.[39] This encourages special attention to youth with multiple pain sites or concurrent (eg, headache and abdominal pain) conditions.

Third, more frequent pain is associated with suicidal ideation,[43] behavior,[54] and future hospitalization for self-harm.[48] In addition to pain multiplicity, frequency is also important.

Fourth, recurrent pain is associated with suicidal behavior.[51] In a 2022 study[3] that was not available to be included in the 2019 systematic review, persisting or recurrent pain was found to predict future suicidality at a level of statistical significance. Female youth were four times as likely to demonstrate this pain course relative to male youth.[3] Youth with histories of psychological trauma or of psychiatric disorders were also more likely to have persisting or recurring pain.[3]

Fifth, pain severity is a risk factor for suicidal behaviors[50,52] but not for suicidal ideation.[46] Pain intensity was also not found to increase the risk of suicidal ideation.

Sixth, pain duration raises the risk of suicidal ideation.[46] Depression mediates this association.[46]

Seventh, pain distress and pain sensitivity have relationships with suicidality. Emerging adults with suicidal ideation have higher levels of pain distress than those with suicidal behaviors or healthy controls.[57] This means that adolescents who engage in suicidal behaviors may have an increased comfort and reduced anxiety in considering suicide and its

associated pains. While this study unexpectedly found that emerging adults with suicidal behaviors to have higher pain sensitivity,[57] another study found that adolescents with suicidal behavior have higher pain tolerance relative to healthy controls.[58]

Eighth, studies which explored the impact on disability secondary to pain upon suicidality were mixed. Of six studies evaluating disability, two[40,43] found increased risks of suicidal ideation among adolescents with greater disability, although these findings became insignificant upon controlling for variables including depression. Two other studies did not find a significant association between suicidal ideation and disability,[44,46] and another did not find mobility impairment to serve as a moderator of suicidality.[38] Higher reported quality of life did associate with reduced suicidality.[40]

Youth and Suicide Risk

The heterogeneity of the populations sampled within the studies included in the systematic review complicate abstracting points of clinical relevance. For example, findings drawn from samples of older adolescents do not necessarily apply to younger children. These findings specific to youth with chronic pain are best considered within the context of general knowledge of child and adolescent suicidology. Here we focus on two key demographic variables, age and gender.

Age

Older adolescents are at an elevated risk of suicide relative to younger adolescents.[59] This fact is important in light of the increased prevalence of pain disorders with advancing age.[11] Older adolescents more commonly have increased means of access to harm by virtue of their more capable adult bodies, have less supervision, and have a greater incidence of substance use disorders and other psychiatric conditions.

Suicide rates not only increase as youth age but also change in nature, including in their methods and precipitants.[60] Younger adolescents more commonly die by suicide through hanging relative to older adolescents.[60] Precipitants amongst younger adolescents are more often parent-child conflict, bullying, and abuse, while amongst older adolescents' relationship issues and alcohol intoxication are more common precipitants.[60] Younger adolescents are less likely to have psychiatric disorders than older adolescents who die by suicide.[60] There is mixed data concerning whether age plays a role in whether adolescents have suicidal ideation or a history of attempts prior to a suicide.[60]

Taken together, these findings emphasize the importance of incorporating social and developmental factors in risk assessment.

Gender

Gender has repeatedly been identified as an important variable in child and adolescent suicidology.[61] Female youth attempt suicide more frequently than male youth,[62–64] though male adolescents more commonly die by suicide.[62,64] Pain disorders are more common among female adolescents relative to male adolescents, and so the clinician treating youth with chronic pain disorders may more commonly encounter female adolescents who have a history of suicide attempts. Clinicians will need to pay particular attention to suicide risk when working with male adolescents with chronic pain disorders, as males are at an increased risk of death by suicide.

Reasons for the disparity between male and female adolescents in suicide attempt and suicide death prevalence include that male adolescents' more frequently use more lethal means in their suicidal behaviors to female adolescents.[65,66] For example, among a population of Swiss adolescents, males more commonly died by suicide through firearm relative to females.[67] Adult men have greater suicidal intent relative to women,[68] and this may apply to adolescents as well. American adolescents perceive nonfatal suicidal behavior as more feminine and less potent than killing oneself, and these cultural narratives may influence male adolescents' decisions concerning their suicidal behavior.[69] Adolescents may be very susceptible to these narratives on account of the incomplete maturation of their capacities for decentered and abstract thinking. Adolescents' active developmental work of identity formation and consolidation creates an open-system relative to adults which may also increase their susceptibility to such narratives.

Other factors such as greater impulsivity, aggression, and disruptive behaviors in males; male-specific risk factors for suicide include drug abuse, externalizing disorders, and access to means.[64] As adolescents age, the rates of male suicide increase to a greater degree than the rates of female adolescents.[60]

An evaluation of trends in youth suicide over approximately the last half-century shows that there is a trend towards dissipation of the increased risk of suicide among male adolescents for both younger and older youth.[70] The rates of youth suicide are also increasing.[70] Data will need to be continually updated to provide the most accurate depiction of trends amongst youth today. For the clinician caring for youth with chronic pain disorders, attention must be taken with both male and female adolescents.

Theory

Theory may help the clinician to organize their thoughts in assessing the specific adolescent for suicide risk. The interpersonal theory of suicide[71,72] is one theory of suicidality that merits special attention in relation to pain disorders. This theory posits that suicidal individuals experience perceived burdensomeness and thwarted belongingness and progress to action through an acquired capability for suicide. It has accrued substantial evidence.[73]

Adolescents with chronic pain may perceive being a burden due to their pain, and that their pain may separate them from belonging to a group of healthy individuals. They may conceal pain to avoid judgement, avoid being a burden, or through a desire to be treated normally.[74] The higher pain tolerance found in adolescents with suicidal ideation and behavior[58] may facilitate their tolerance of pain associated with suicide attempts.

Additionally, adolescents with chronic pain may be provided access to medications. Opioids to reduce pain may further increase their tolerance of pain associated with suicide. Benzodiazepines to reduce anxiety may also reduce emotional barriers to considering suicide and impair judgement. Youth with chronic pain may misuse opioids,[75] and emotion regulation deficiencies may underly both pain and opioid misuse.[76]

Females with lower pain severity scores were significantly more likely to use pain medication than males.[15] This may have implications for suicide attempts relative to desensitization of taking medication.

Pain-, stress- and analgesic drug-induced opponent and proponent states of the mesolimbic dopaminergic pathways may render reward and anti-reward systems vulnerable to sensitization, cross-sensitization and aberrant learning of contents and contexts associated with suicidal acts and behaviors.[77] These findings suggest that pain patients exhibit alterations in the brain circuits mediating reward (depressed function) and anti-reward (sensitized function) that may affect their proclivity for suicide and support pain and suicidality classification among other "reward deficiency syndromes" and a new proposal for "enhanced anti-reward syndromes". Pain and suicidal tendencies may be potentially explained by recursive partly shared neural systems. Interventions intended at restoring the balance between the reward and anti-reward networks in patients with chronic pain may help decreasing their suicide risk. It may be helpful to treat adolescent suicidal patients with pharmacological agents that mitigate sensitization. For example, mood stabilizing anticonvulsants (carbamazepine and divalproex sodium) are effective for suicidality in bipolar disorder.[78]

The Suicide Risk Assessment

A pediatric suicide risk assessment[79,80] entails a formulation of risk through a consideration of multiple modifiable and static risk factors for suicide. This can be complicated in youth with pain disorders. For example, youth may present to emergency departments with use of medication at a level of life-threatening danger yet may state that medications were taken for pain relief. Some patients will deny suicidal thoughts for various reasons, such as shame or lack of trust in the questioning clinician. Others will withhold information about planned suicidal behavior, for reasons such as to ensure that the clinician will not prevent them from suicide. These factors contribute to the fact that an accurate suicide risk assessment is a complex task. In what follows we guide the clinician to assess for key risk and protective factors and provide recommendations for management and suicide prevention.

Management Considerations

Assess for Suicidal Ideation

Youth with chronic pain are at an increased risk of suicidal thoughts.[4] Amongst all adolescents with suicidal ideation, approximately a third will go on to develop a suicide plan, of which just under two-thirds will go on to make an attempt.[81] Healthcare providers should ask all youth with chronic pain about suicidal thoughts.

Suicidal ideation may be withheld if it is not directly assessed.[82] There is no iatrogenic risk to suicide screening:[83] Asking about suicidal ideation does not put the thought into the youth. Suicidal ideation may be delineated as passive (eg, "I wish I could go to sleep and never wake up") or active (eg, "I want to kill myself"). When active suicidal thoughts are present, evaluating for the presence of a plan (eg, "I intend to kill myself by swallowing all of my pain medication") is an important next step.

In the time preceding a suicide, the majority of youth do report suicidal ideation.[84] Direct questioning, simple empathic support, and attentiveness yield the greatest rates of emotional and behavioral disclosure from adolescents.[85] Youth with high levels of pain distress[57] including those who have not yet made a suicide attempt as well as those with more numerous[39] and more frequent pain[51] and pain of a longer duration[46] are particularly worth screening. In contrast, the available evidence suggests that pain severity and intensity do not raise the risk of suicidal ideation, though they do raise the risk of suicidal behaviors.[46,50,52]

Parents and caregivers should also be asked whether they have heard their children make suicidal statements. Again, direct questioning is most conducive to disclosure in discussing psychosocial issues with parents.[86] Parents often may not know about an adolescent's suicidal thoughts, or they may overreport concerns.[87] In a study of psychiatrically hospitalized adolescents and their parents, adolescents reported significantly more suicidal ideation, plans, and attempts than their parents.[88] Parental collateral and report is nonetheless an important data point in constructing a risk assessment.

Though asking about suicidal thoughts may appear obvious, few non-mental health specialists report engaging in screening,[89] and in one study, only 7% of youth in the community reported receiving such screening at their last clinical encounter.[90] Providing this single service to youth with chronic pain may make a sizeable impact. Providers of youth identified with suicidal ideation may require consultation to determine the appropriate level of care for the youth, with referral to an outpatient mental health specialist or to an emergency department for assessment of indication for hospitalization crucial.

Integrate Mental Status Findings

While we believe that all youth with chronic pain should be directly assessed for suicidal ideation, certain signs derived from the mental status examination[91] may help to identify youth who may be at an increased risk of suicidal thoughts and tendencies. In assessing a youth's *appearance*, the presence of any scars or healing injuries suggestive of non-suicidal self-injury (NSSI) is pertinent. While these will most commonly be located on the medial forearm of the nondominant arm, evidence of self-cutting in other areas such as the neck or chest is significant, as self-injury at these sites may confer an even higher suicide risk.[92] In assessing *speech*, soft, slow, and nonspontaneous output may indicate the presence of depression, whereas unanticipated changes in the tone or quality in speech when discussing elements surrounding suicidality may suggest dissimilation or the presence of conflictual feelings. Similarly, in a youth's *behavior*, excessive fidgeting and avoidance of eye contact around questioning about suicide may suggest discomfort with the topic and the need for further questioning. A youth with psychomotor retardation as evidenced by minimal spontaneous movements or a fixed, slumped posture may point to depression, while psychomotor agitation may suggest impulse control deficits or significant anxiety, which are both risk factors for suicide.[93,94] Questioning directly a youth's *mood* is worthwhile to attain their subjective assessment of their emotional wellbeing, whereas noting in a youth's *affect* the presence of any incongruence (eg, a youth who states they are fine but carries a restricted, dysphoric affect) may suggest the need for compassionate further questioning. Inappropriate laughter or rapid fluctuations in affect around questioning about suicidality may be indicative of discomfort with the topic. These signs offer an opportunity to normalize for the youth the practice of creating a space with a caring professional to safely discuss these topics and to access help should it be needed. A *thought process* that becomes more disorganized or erratic upon assessment of suicidality is another sign for concern, whereas *thought content* that includes preoccupations or ruminations around matters of decreased self-worth, hopelessness, or helplessness are three additional cardinal signs of concern.[95] A youth whose spontaneous thoughts turn to loneliness or feelings of not fitting-in are also notable, and as their chronic pain may contribute to self-isolation and disengagement,[96] they are worth questioning. A youth who alludes to romanticization of alcohol and drug abuse or death and morbid topics as two examples of a wide range of potential topics to note would also signal danger. The presence of

auditory hallucinations as may occur in severe depression or primary psychotic illnesses in an assessment of *perception* may be surveyed by asking a youth if they ever hear the voice or whispers of people who are not present, particularly at moments when they are feeling down or under duress; noting a youth's internal preoccupied or responsiveness to stimuli that appear internal can be an objective sign of active perceptual disturbances in a youth who may withhold his or her history of experiencing hallucinations. Deficits in *cognition* such as poor attention and concentration may allude to static qualities or to active substance abuse, whereas an overall assessment of *insight* and *judgement* can help to determine a youth's capabilities of understanding and appropriately acting on needs for help. Whereas the mental status examination in youth is complex and carries nuances that are beyond the scope of this brief survey, children and adolescents who raise alarm may be identified as in need for additional attention, including a referral to a behavioral health specialist.

Screen for Depression Specifically as Well as Other Psychiatric Comorbidities

Depression is the strongest risk factor for suicide among the adolescent psychiatric disorders.[97] Psychiatric disorders including depression are commonly comorbid in youth with chronic pain.[98] The interplay between depression and chronic pain is well developed.[99] In many of the reviewed studies, the increased risk of suicidality among youth with chronic pain became insignificant when depression was controlled.[4]

Though depression is very prevalent, only approximately a third of youth with depression or anxiety are detected by their pediatricians.[100] The use of screeners such as the two or nine-item Patient Health Questionnaire (PHQ-2 or PHQ-9) is validated for use amongst adolescents.[101] When the PHQ-9 is employed, the ninth item screens for both passive and active suicidal ideation, although the use of this item may have limitations in patients with chronic medical illness,[102] and direct questioning remains a superior method.[103]

Youth with histories of trauma or of psychiatric disorders are more likely to have persisting or recurring pain, which is a risk factor for suicidal behaviors.[3] Identifying psychiatric comorbidities and including a management plan for their address in the overall treatment planning is crucial for the reduction of suicide risk.

Assess for Non-Suicidal Self-Injury and Prior Suicide Attempts

A history of NSSI[104] and prior suicide attempts[105] are both strong risk factors for future suicide. The two phenomena are closely related.[104] Younger and female adolescents more commonly have prior episodes of NSSI and prior attempts.[60] Engaging in NSSI is the strongest predictor of conversion of suicidal thoughts to attempts among adolescents.[106] Engaging in self-harm increases with age and consists of self-cutting, head-banging, biting, scratching, hitting oneself, self-poisoning, and burning in declining order of prevalence.[107]

Depressed patients with chronic pain and NSSI have a higher pain tolerance.[108] In alignment with the acquired capability for suicide model, this may facilitate their tolerance of pain associated with suicide attempts. This relates to the finding that adolescents with chronic pain and suicidal behavior have higher pain tolerance relative to healthy controls.[58]

Adolescents are more likely to die as a consequence of their first suicide attempt relative to subsequent attempts.[70] However, adolescents who make an attempt and survive are a very increased risk of engaging in a future attempt. A prior suicide attempt is the greatest risk factor for a future attempt.[105] Therefore, clinicians should pay extra attention to youth with histories of prior suicide attempts.

Consider Pain Variables

While all youth with chronic pain are at an increased risk for suicidal ideation,[4] youth with multiple pains,[39] more frequent pain,[43] and prolonged pain,[46] have heightened risk. Pain severity and intensity are not a risk factors for suicidal ideation according to the available evidence,[46] but these qualities raise the risk of suicidal behaviors[50,52] and should be considered and assessed. Reduced quality of life is also associated with increased suicidality.[40] The data is mixed[40,43,44,46] whether other factors such as reduced adaptive functioning specifically raises the risk of suicidal ideation, and further studies are needed.

Attend to Male Youth

Adolescents with chronic pain conditions are more commonly female. When a male adolescent with a chronic pain presents, pay particular attention to suicide risk, as the rate of completed suicide is much higher for male adolescents than female adolescents.[62,64] Female youth are more likely to make suicide attempts, though male youth are more likely to die by suicide.[62,64]

Female adolescents relative to male adolescents are more responsive to existing efforts at suicide prevention.[109] This is true across school-based, community-based, and healthcare-based suicide prevention. Male adolescents show a greater hesitancy to disclose and reduced active engagement in school-based programming, limiting their effectiveness. Female adolescents may benefit to a greater degree by virtue of their increased concern for peers and openness to communication and engagement in curricula. Female adolescents' greater willingness to seek help and greater use of community- and healthcare-based interventions contribute to the greater effectiveness of these interventions for female adolescents relative to males.[109]

Masculine ideals and tendency to independence, autonomy, and stoicism may prevent male adolescents from making use of services.[110] Attention to male youth and their suicide risk[111] may help to overcome these barriers.

Assess for Access to Means of Harm

In one study of a primary care setting, only 13% of adolescents who endorsed a suicidal risk item on screening were subsequently asked whether weapons were present in the home.[112] Asking the family about firearm possession and providing education on its removal or safekeeping is very effective.

As many youths will be prescribed analgesics and other medications for their chronic pain, assessing how these medications and others in the home are stored is important. Though suicide attempts by ingestion are less lethal than other means, they are more common. Use of a firearm is the most lethal method of suicide among children and adolescents,[113] and firearm removal may particularly help young men who more often choose such a means of suicide.

Data shows that interventions to remove access to medication are effective, and more so than firearm removal interventions.[114] Interventions to effect removal of means to access harm are not only effective but can both be received favorably by parents and produce high recall of information by parents.[115]

Assess Family Risk Factors

Factors such as heightened parental concern for the child and increased parental stress are enriched among children with abdominal pain.[14]

A negative parent-child relationship is a risk factor for early emergence of suicidal ideation among children and adolescents.[116] This may be prevalent amongst stressed parents preoccupied with their children. When assessing a youth's safety, it is important to also assess family functioning and integrate assistive interventions into the care and safety planning. A responsible family capable of providing superior youth supervision, following-through with referrals, and sanitizing the home including removing means of harm such as unsupervised access to prescription and non-prescription medications and firearms may evoke less concern than a family unable to provide such functions for a youth.

Anxiety and depressive symptoms are more prevalent in parents of children with chronic pain.[117] Parents' depressive and anxious symptomatology correlate with decreased pain-related functioning in youth with chronic pain.[118] Parental worry about their adolescents' physical pain correlates with adolescent disability.[119] Clinicians should assess for parents' functioning and reactions. Validated measures of negative parental responses to youth pain exist.[120] Parents may receive support and counseling to reduce negative reactions to their children's chronic pain, such as overprotection, and may be referred for psychosocial interventions to increase adaptive responses.[121] For example, in one study, children's fear of pain and parental knowledge of pain were favorably affected by a neuroscience education intervention.[122]

Construct a Safety Plan

Clinicians have positive attitudes about safety planning, but they may not believe in their efficacy to prevent suicide.[123] Only 7% of adolescents who endorsed a suicidal risk item on screening were subsequently asked whether

they had a safety plan.[112] In contrast to a no-suicide contract, an intervention lacking evidence where a patient simply agrees to not kill themselves,[124] a safety plan reminds patients of the tools available to help them through a suicidal crisis.

A commonly used safety plan consists of a list of personal warning signs, coping strategies, people to seek for comfort and distraction and those to ask for help, clinicians available for outreach, and means to keep the environment safe.[125] When a safety plan does not exist, clinicians can use safety planning to collaborate with youth and their families to codify and to secure an internal (warning signs and coping strategies) and external (individuals and home) environment conducive to safe passage to a referral. Discussing an assessment of the youths' risk openly and candidly with children, adolescents, and their families in the rationale for the construction of the plan helps to raise awareness and build trust and security in the treatment relationship.

Clinicians need to be trained in how to construct an efficacious safety plan. Studies such as one conducted from a pediatric emergency department setting suggest that clinicians have a desire for learning evidence-based interventions for adolescent safety planning, as well as that their attitudes towards and knowledge of safety planning increases with training.[126] This Institutions may advance practices for children and adolescents throughout hospital- and clinic-based settings through education and support amongst clinicians in safety planning.

Referral

In one study, the average time of chronic pain amongst children referred to a specialized pain clinic was 34 months.[127] As many as a quarter (25%) and more than one in ten (13%) of these children had missed diagnoses of anxiety or depression, respectively.[127] Referral to a pain clinic may shorten suffering and provide a means to assess psychiatric health and prevent suicide. The most common reason provided by parents for accessing mental health was a lack of information about where to seek help.[128] Forming relationships with available specialty providers and guiding families to referrals when indicated is important.

A key component of referral is using the information obtained by the assessment of suicidality risk on the acuity of the youth's presentation and need for level of care. Youth with active suicidal ideation and a history of NSSI or suicide attempts may be at the greatest risk. Incorporating the presence of psychiatric symptomatology, access to means of harm, family functioning, and an ability or lack of an ability to safety plan is important.

Referral to a local emergency department is indicated for youth with the highest risk, while a crisis visit in a short duration of time between referral and clinical encounter with an outpatient provider may be appropriate for youth with lower risk. Routine referral may provide the least inconvenience to families, though wait times can often be significant. In one Canadian study, less than one in ten (8.6%) of clinics providing mental health services reported an absence of waiting lists.[129] In another study, the average wait time for entry into a pain clinic was almost two-hundred (197.5) days.[130] Having relationships with psychiatric providers in the community and/or pain specialty clinics with mental health capabilities can reduce time to access of services. When a routine referral is made, the provider must be confident in their risk assessment given the length of time the child or adolescent may be in the community prior to specialty service initiation.

Tailoring the level of intervention to youth risk is crucial, and erring on the side of safety is a valuable mindset for the clinician in working with youth with chronic pain.

Conclusion

As with adult populations,[2] chronic pain raises the risk of suicide in children and adolescents.[4] Familiarity with common tenets of suicide risk assessment and of practice in basic management and referral is crucial for the general provider. When referring youth with chronic pain to specialty care, confidence in risk assessment and comfort with the construction of a safety plan to secure planning while awaiting specialty support is paramount.

This review began with a survey of the background and prevalence of youth chronic pain. We noted in the literature the wide ranges in estimated prevalence by the type of pain (11 to 38%) and the impact of age, gender, and psychosocial factors on prevalence. Pain severity was noted to be of importance when considering prevalence rates, and the clinical significance of a youth's developmental history and psychiatric co-occurring disorders was described. The importance of

sleep on pain progression, and rates of the persistence of youth chronic pain into adulthood, were commented upon. In our next session, we reviewed the evidence associating youth chronic pain with suicidality through summary of a landmark 2019 systematic review by Hinze et al on the topic. The importance of depression, multiple pains, more frequent pain, recurrent pain, pain severity, pain duration, pain distress and sensitivity, and pain disability in suicide risk were surveyed. We proceeded to focus on age and gender as two key demographic variables affecting suicide risk: older adolescents are at increased risk, while male gender confers a lower risk of suicide attempts yet a higher risk of death by suicide. We turned to theory to introduce organizing models supplied by the interpersonal theory of suicide and the reward deficiency theory. We introduced the suicide risk assessment through practice summaries of assessing for suicidal ideation, performing a suicide risk-oriented mental status examination, screening for depression, assessing for NSSI and prior suicide attempts, considering pain variables, attending to male youth, assessing for access to means of harm, assessing family risk factors, constructing a safety plan, and referring at-risk youth to specialists.

The future of pain management and suicidality in children and adolescents will be advanced through future studies to explore specific risk factors within the field of heterogenous pain disorders. This may be particularly important in light of the difference in lived experiences between a youth with recurrent hospitalizations for sickle-cell or cancer-related pain, for example, and those with anxiety-induced functional abdominal pain and other conditions commonly encountered in the community. While Hinz et al noted these differences in their systematic review,[4] additional studies of the former group are needed to arrive at more clear clinical conclusions from the data. Another area meriting further study exists in studying the factors associated with the quality of pain among greater population samples. Understanding if the negative findings surrounding certain qualities of pain hold with increased sample sizes will be enlightening, for example, and whether select characteristics emerge as key markers of interest to clinicians.

As this area is further developed, specific treatment and intervention approaches tailored to the unique situation of the youth with chronic pain will be further developed, guiding the clinician in future assessment and management. Psychiatrists and other specialists in suicide risk assessment will benefit from understanding the impact of pain upon suicidality,[131] including among child and adolescent populations. The area remains in need of further study, and it is hoped this review provides today's clinician with evidence-based material to advance their care of today's youth with chronic pain.

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