HHS Public Access

Author manuscript

Int Rev Psychiatry. Author manuscript; available in PMC 2020 May 01.

Published in final edited form as:

Int Rev Psychiatry. 2020 May ; 32(3): 254–264. doi:10.1080/09540261.2019.1693351.

Suicide in the pediatric population: screening, risk assessment and treatment

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Abstract

The number of children and adolescents dying by suicide is increasing over time. Patterns for who is at risk are also changing, leading to a need to review clinical suicide prevention progress and identify limitations with existing practices and research that can help us further address this growing problem. This paper aims to synthesise the literature on paediatric suicide screening, risk assessment and treatment to inform clinical practice and suicide prevention efforts. Our review shows that universal screening is strongly recommended, feasible and acceptable, and that there are screening tools that have been validated with youth. However, screening may not accurately identify those at risk of dying due to the relative rarity of suicide death and the associated research and clinical challenges in studying such a rare event and predicting future behaviour. Similarly, while risk assessments have been developed and tested in some populations, there is limited research on their validity and challenges with their implementation. Several promising suicide-specific treatments have been developed for youth, but overall there is an insufficient number of randomised trials. Despite great need, the research evidence to support screening, risk assessment and treatment is still limited. As suicide rates increase for children and adolescents, continued research in all three domains is needed to reverse this trend.

Keywords

Suicide; paediatric; treatment; screening; risk assessment

Introduction

Suicide rates overall, in every state, and across multiple sociodemographic groups, including among children and adolescents, are on the rise in the United States (Centers for Disease

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Disclosure statement

No potential conflict of interest was reported by the authors.

Control [CDC], 2018; Suicide Prevention Resource Center, n.d.). For youth (10–24 year olds), suicide was the second leading cause of death in 2017, accounting for 6,758 deaths. Suicide patterns are also changing with groups historically at lower risk now at increased risk—the suicide rate for females 10–14 years old tripled from 1999 (0.5/100,000) to 2014 (1.5/100,000), narrowing the gap between male and female rates of suicide (Ruch et al., 2019). The suicide rate among black boys and girls younger than 13 years was approximately 2 times higher than white children from 2001–2015 (Bridge et al., 2018). In addition to mortality, indicators of suicide morbidity are following a similar trend with the proportion of Emergency Department (ED) and inpatient visits for suicidal ideation and attempts nationally nearly doubling between 2008 (0.66%) and 2015 (1.82%) among youth 5–17 years old (Dueweke, Marin, Sparkman, & Bridges, 2018).

The purpose of this paper is to synthesise paediatric suicide screening, risk assessment and treatment implementation and research to inform psychiatric practice across a variety of service settings. This review and the epidemiological data are focussed on the United States. Specifically, what suicide screening and risk assessments tools are commonly used with children and adolescents, and what is the evidence supporting their use? What brief and longer-term interventions have been developed to treat children and adolescents with suicide ideation and attempts?

Screening

Overview

While there is currently little to no data to show that screening decreases suicide attempt or deaths rates (i.e. that if an adolescent who died by suicide had been screened there could have been a different outcome), characteristics of youth who make suicide attempts underscore the potential importance of this strategy. Studies indicate that most youth with ideation or attempts don’t reveal their thoughts or behaviours on their own (i.e. without being asked); furthermore, almost all of their parents did not know about their attempts (Negron, Piacentini, Graae, Davies, & Shaffer, 1997; Sheftall et al., 2016; Simon et al., 2002). Research has also shown that most adolescents who die from suicide have contact with a medical professional in the 3 months prior to their death (80%), and half have been to the Emergency Department (ED) in the year beforehand (50%) frequently presenting with somatic complaints (Rhodes et al., 2013); however, we do not know if they were screened for suicide. Screening children and adolescents for suicide risk is an important approach from both clinical and public health perspectives to identify youth who need psychiatric services and to prevent suicide attempts and deaths. Screenings are often administered by nurses, other non-mental health providers and community workers in primary care, EDs and schools to identify individuals in need of further evaluation and or treatment by a psychiatrist or other mental health provider (e.g. psychologist or social worker).

In response to the growing concern about youth suicide rates, the above literature, and the rare but devastating occurrence of hospital-based suicides, there have been national calls for suicide screening across different medical settings, including by the Joint Commission (JC). Suicide deaths are ranked as a top-five Sentinel Event reported to the JC. In 2007, the Joint Commission issued National Patient Safety Goal #15A which is to identify behavioural

health patients at risk for suicide through screening in the ED (also referred to as “indicated screening”). A Sentinel Event Alert was later released to expand the focus in two ways: 1) to include all patients at elevated risk in the ED (also referred to as “universal screening”); and 2) to expand suicide screening requirements to medical/surgical units. The Joint Commission outlined broadly the types of protocols that need to take place in conjunction with screening: 1) conduct a risk assessment that identifies specific individual characteristics and environmental factors that may increase or decrease suicide risk; 2) address the immediate safety needs and most appropriate disposition plan and treatment setting for the at-risk individual; and 3) provide suicide prevention information, such as a crisis hotline, to the youth and his or her family when there is a care transition (see Joint Commission website for latest information).

It is generally recommended by the developers to give the screening tool without a parent present whenever possible. There are strengths and limits to giving screening instruments as a self-report (e.g. more efficient, youth may be more likely to be honest about stigmatised topics) vs. provider administered (e.g. helps to ensure that youth understand the questions, builds rapport); however, no study has evaluated differences in administration to date. We will discuss several suicide screening tools that have the most robust validation data and have been utilised widely across a variety of settings, including with children and adolescents.

Screening tools

Patient health questionnaire-9 (PHQ-9)—The Patient Health Questionnaire-9 (PHQ-9) (Kroenke, Spitzer, & Williams, 2001) is a freely available, standard self-report instrument designed to screen for major depressive disorder (MDD). It assesses the frequency in the past two weeks of the nine symptom features that make up the diagnostic criteria for MDD. The ninth item relates explicitly to suicidality and asks about how often the person has thought they were better off dead, or of hurting themselves in the last two weeks. Response options range from 0 “Not at all” to 3 “Nearly every day.” The PHQ has been shortened to a two-item screener and been validated in adolescents (Richardson et al., 2010). However, the PHQ-2 alone has been shown to miss a substantial number of people who are at risk of suicide (Dueweke et al., 2018). In efforts to overcome these challenges, health systems have sometimes administered the PHQ-2 and PHQ-9 sequentially (e.g. If positive on the PHQ-2, the rest of the items are administered) (Arroll et al., 2010). More recently, with increasing demands for universal screening for suicide, health systems have taken a hybrid approach – using the PHQ-2 combined with the 9th item on the PHQ-9 that asks about suicidal ideation, in an effort to screen patients quickly for risk of suicide. However, to date there is little empirical evidence on the utility of this approach in identifying those at risk for suicide (Bennett, 2018). There is a PHQ-A (adolescent) version, which includes wording that is more relevant to an adolescent population and has been validated to detect a variety of mental disorders (e.g. depression and anxiety) (Johnson, Harris, Spitzer, & Williams, 2002), but to our knowledge has not been validated as a suicide screener.

Columbia suicide severity rating scale (C-SSRS) – screen version—Another suicide risk screening tool is the Columbia Suicide Severity Rating Scale (C-SSRS) – Screen

Version. The screen version of the C-SSRS is freely available and designed to measure suicidal ideation over recent months and provide a classification of low, moderate or high risk based on responses. The C-SSRS Screen Version includes five items, rated either yes or no, and ask about ideation and/or behaviour in the last month only. The sixth and last item on the tool asks about any lifetime history of preparations and/or plans to end one's life, and if yes, whether these have been done in the last six months. We could find only one specific validation study of the C-SSRS – Screen Version (The Columbia Lighthouse Project, n.d.) among adults (Wilson, 2017), although the longer risk assessment version of the C-SSRS has been validated across several settings and among children and adolescents (see below) (Brent, Emslie, et al., 2009; Conway, Erlangsen, Teasdale, Jakobsen, & Larsen, 2016; Gipson, Agarwala, Opperman, Horwitz, & King, 2015; Horwitz, Czyz, & King, 2015; Posner et al., 2011). There is a version of the C-SSRS Screener with triage points for schools (Heise, York, & Thatcher, 2016; The Columbia Lighthouse Project, n.d.) suggesting its applicability to an adolescent population. However, validation studies specific to this or any of the C-SSRS paediatric versions have not been done.

The Ask Suicide-Screening Questions (ASQ)—The Ask Suicide-Screening Questions (ASQ) is a four-item non-proprietary suicide screening tool from the National Institute of Mental Health that can be administered to patients 10–21 years old across a variety of settings—EDs, inpatient medical/surgical units, outpatient/primary care clinics and specialty clinics. A "yes" response to any of the items results in a positive screen, and, if positive, the patient is asked, "Are you having thoughts of killing yourself right now?" The initial validation study was comprised of 524 patients with psychiatric or medical chief complaints from three paediatric EDs and used the Suicide Ideation Questionnaire (SIQ) as the criterion standard (Reynolds, 1987). In this study, the ASQ had a sensitivity of 96.9%, a specificity of 87.6%, and a negative predictive value of 99.7% for the psychiatric patients specifically (Horowitz et al., 2012). The ASQ also demonstrated a sensitivity of over 80% to predict return ED visits for suicide-related complaints within six months of nurse screening for patients 8 through 18 years (Ballard et al., 2017). Additional qualitative and quantitative studies with the ASQ highlight that ED suicide screening of both psychiatric and non-psychiatric patients is feasible in terms of acceptability to parents, practicality to ED flow, and patient opinion (Ballard et al., 2012; Horowitz et al., 2010). While the ASQ is valid up to age 21, there is an adult 2-item version, the asQ'em, validated from age 18 and older (Horowitz et al., 2013).

Synthesis

There are few "gold-standard" suicide screening tools for paediatric populations. Strengths of the PHQ include; was one of the first tools, developed so practitioners have more experience with it and it has been included in more research studies to date; has been used widely across medical and other settings as a depression screener; and meets both depression and suicide screening requirements. Limits include: only one question is specifically about suicide; it has not been validated for suicide specifically among children and adolescents; while depression is an important risk factor for suicide not all patients at risk for suicide are depressed; and there is one study showing the brief version (PHQ-2) is inadequate for detecting suicide ideation (Dueweke et al., 2018). Strengths of the CSSR-S is that it is

focussed directly on the spectrum of suicidal behaviours, from ideation to an actual attempt, and is part of a package of suicide assessment tools for a variety of age groups and settings. Limits include that there is no published validation data specific to the CSSRS- Screener Version for its use with children and adolescents. Strengths of the ASQ include that it was developed specifically for children and adolescents, has been studied with paediatric populations, and has easily accessible resources that facilitate implementation. Limits of the ASQ could include its specificity (Horowitz et al., 2012) and that much of the implementation and research focus to date has been in the ED setting (Ballard et al., 2017; Horowitz et al., 2012).

The body of research on suicide screening continues to grow, but there are little to no published studies on how many youth screen positive when implemented large scale in medical settings, or on the effectiveness of suicide screening to prevent suicide attempts or deaths. From an implementation perspective, a compliance rate of 79% has been reported for nurse ED screening (Ballard et al., 2017). In this same study, nurses uniquely identified 237 patients who screened positive yet did not present to the ED with suicide-related complaints (~2–3 patients per week); these patients were more likely to be male, African American and have externalising behaviour diagnoses (Ballard et al., 2017). From a patient perspective, almost all patients (both psychiatric and non-psychiatric, ages 10–21) in a study to determine the feasibility of screening patients presenting to the paediatric ED (~96%) endorsed that nurses should ask youth about suicide in the ED. The five most frequently reported reasons listed were: identification of at-risk youth (20%); desire to feel understood by clinicians (18%); connection with help and resources (18%); prevention of suicidal behaviour (16%); and lack of other individuals to speak with about these issues (12%) (Ballard et al., 2012).

A future direction of this work includes studies of tailored screens using item response theory and computer adaptive testing. These approaches potentially allow for a broader array of items but that result in shorter and more accurate assessments, as additional questions are only asked based on how respondents answer previous questions and on the underlying strength of the association of each item to the severity of the trait(s) (e.g. suicidality and/or depression and/or impulsivity) being assessed. This type of screener could then allow for multiple traits to be assessed in a single session, thereby increasing our ability to understand different risk profiles that suicidal children and adolescents may present with (Kroenke et al., 2001).

Suicide risk assessment

Overview

Identifying those at risk for suicide is part of recommended comprehensive approaches to effective suicide prevention (Suicide Prevention Resource Center, 2012; Zero Suicide in Health & Behavioral Healthcare [SPRC], 2019). While healthcare and community providers may encounter individuals at risk for suicide or conduct suicide screening, many do not feel comfortable or knowledgeable about how to assess level of risk appropriately (Betz et al., 2013; Oordt, Jobes, Fonseca, & Schmidt, 2009; Simon, 2006). Risk assessments differ from screening as they are generally more comprehensive and done by a mental health provider

(e.g. psychiatrist, psychologist, social worker) to confirm suspected suicide risk, estimate imminent danger, and decide on a course of treatment. Suicide risk assessments can take very different formats. Structured risk assessments are comprised of specific questions that should be asked standardly of every patient with fewer to no open-ended questions. Other risk assessments take more of the form of a clinical interview with variability in how much guidance is given on which domains providers should cover and tend to include more open-ended questions. We will discuss a validated and structured risk assessment tool—the Columbia-Suicide Severity Rating Scale (C-SSRS)—as well as the SAMHSA SAFE-T assessment which incorporates the C-SSRS, and the Ask Suicide screening Questions (ASQ) brief suicide safety assessment guide which was developed primarily for children and adolescents.

Risk assessment tools

C-SSRS—The C-SSRS risk assessment tool is freely available and designed to measure the severity of suicidal ideation and behaviour. The C-SSRS risk assessment tool is three pages long and asks the person administering it to first rate the presence or absence of risk and protective factors, then to administer the full assessment. The full C-SSRS assessment measures four constructs that have been found to predict attempts and suicide in previous studies including severity of ideation, intensity of ideation, behaviour and actual attempts. Severity of ideation is rated on a 5-point ordinal scale ranging from 1 “Wish to be dead” to 5 “Suicidal intent with plan.” Intensity of ideation includes 5 items related to most severe ideation (e.g. frequency, duration, controllability, deterrents, and reasons for ideation). The suicidal behaviour and actual attempt section consists of yes/no answers related to actual attempts, self-injurious behaviour, interrupted and aborted attempts, preparatory acts or behaviours, and lethality (Posner et al., 2011). Strengths of the C-SSRS include that it has been used and validated with adults and adolescents (Gipson et al., 2015; Posner et al., 2011), and been found to predict short-term suicidal behaviour among high-risk adolescents (Conway et al., 2016). Despite the C-SSRS’ promise, several authors have noted challenges with classifying both intent and imminence (Interian et al., 2018), and with implementation (e.g. unclear navigation instructions and lack of adherence to the full administration protocol) (Giddens, Sheehan, & Sheehan, 2014), indicating a further need to evaluate the scale in different populations and as used in regular practice.

Suicide assessment five-step evaluation and triage (SAFE-T)—The SAFE-T was developed by Screening for Mental Health, Inc. and the Suicide Prevention Resource Centre based on the American Psychiatric Association Practice Guidelines for the Assessment and Treatment of Patients with Suicidal Behaviours (Suicide Prevention Resource Center, 2009). The purpose of the tool, which can be used with adults and adolescents is to guide psychiatrists, mental health clinicians and other health care professionals through five steps for a comprehensive suicide risk assessment: 1) identify risk factors noting those that can be modified to reduce risk; 2) identify protective factors noting those that can be enhanced; 3) conduct suicide inquiry including suicidal thoughts, plans, behaviour and intent (C-SSRS); 4) determine risk level/intervention including a table to guide clinicians in determining high, medium and low risk with possible interventions; and 5) document your assessment of risk, rationale, intervention and follow-up. Strengths of the SAFE-T include a pocket card that

lists what domains clinicians should ask about under each section, and a “Suicide Safe” mobile app based on the SAFE-T is available. Limitations include that while SAFE-T is based on practice parameters, we were unable to find any published studies on its reliability and validity.

ASQ brief safety assessment—The ASQ toolkit includes a brief suicide safety assessment (BSSA) (National Institute of Mental Health, 2019) to further help triage patients after a positive screen as not all patients who screen positive on the ASQ need a psychiatry consultation, comprehensive mental health or psychiatric evaluation, or hospitalisation. The BSSA is designed to be completed in 15 min if the setting, such as an ED, has time constraints. The BSSA consists of the best practices from clinical interviews for suicide risk developed through a combination of consulting the literature and suicide experts. It covers: 1) frequency of suicidal thoughts, suicide plan, past behaviour; 2) symptoms—specifically depression, anxiety, impulsivity/recklessness, anhedonia, isolation, irritability, substance and alcohol use, sleep pattern and appetite; and 3) support and safety which includes support and family networks, school functioning, bullying, suicide contagion and reasons for living. After the patient interview, the BSSA states that the provider should meet with the patient and guardian together, make a safety plan with the patient, determine the triage/disposition plan (e.g. an emergency psychiatric evaluation, non-emergency evaluation, non-urgent mental health follow-up, or no further intervention), and provide hotline and crisis text lines to all patients—a resource list is available in the online toolkit. Strengths are that the ASQ toolkit has a BSSA worksheet to remind providers of all the steps and domains of inquiry, and that it complements the ASQ screening tool if that is what is used in your setting. The BSSA also gives examples for how to ask the questions including helpful probes for talking with parents, for example, your child said X, is this something she has shared with you? Are you comfortable keeping your child safe at home? Limitations include that while the ASQ is based on risk and protective factors specific to children, there is currently no published research on the BSSA.

Synthesis—Despite recommendations on use of these tools, recent systematic reviews have shown that use of these alone, do not necessarily predict who will engage in future suicidal behaviour (Franklin et al., 2017; Lotito & Cook, 2015; Runeson et al., 2017). More recently, the utility of both screening and risk assessments has been questioned. In a major systematic review and meta-analysis, Franklin et al., 2017 found that despite over 50 years of research our ability to accurately predict suicide based on common risk factors that screening and risk assessment instruments are often based on is only slightly better than chance. Moreover, Carter et al. (2017) found that across all suicide predictive instruments the “high-risk” category was not clinically useful, meaning that no instrument was able to classify patients with a level of accuracy that would allow for appropriate treatment allocation.

In response to these findings, relatively new prediction techniques using machine learning algorithms have been developed. These methods examine combinations of a wide-variety of variables to generate risk predictions using different algorithmic approaches (e.g. Penalised Regression, Random Forests). These models are thought to be better at incorporating

complexity than traditional regression approaches. Some of these machine learning approaches have been successful at improving prediction metrics (Walsh, Ribeiro, & Franklin, 2017, 2018), but many have also suffered from low positive predictive value (PPV, or the probability that people with a positive screen, truly have the problem) due to suicide's low base rate and PPV's dependence on prevalence in a population (Belsher et al., 2019). While machine learning algorithms may not single handedly reduce suicide rates to zero, implementing these approaches effectively, ethically, and in combination with other interventions (e.g. safety planning and facilitating support to outside clinical care) or within a public health model (e.g. surveillance, identifying risk and protective factors, and developing, implementing and evaluating interventions) (Haroz et al., in press; Suicide Prevention Resource Center, 2002), may contribute to ultimately driving down suicide rates in the population (Matarazzo, Brenner, & Reger, 2019; Torous & Walker, 2019).

Treatments

Overview

Historically, interventions for suicide have focussed on the disorders, such as depression, of at-risk youth (or adults)—with suicide ideation and attempts treated as part of the symptoms or consequences. Recently, treatments have been developed focussed specifically on suicide as the primary treatment target that can be used by psychiatrists and other providers in a variety of clinical settings. Brief treatments may be feasible and acceptable in paediatric primary care and Emergency Department settings when a provider may not be able to have multiple sessions with a patient due to structural barriers or concerns about drop-out, or as a step before longer-term treatments. Long-term treatments (e.g. Dialectical Behaviour Therapy-Adolescent) may be beneficial for chronic suicide ideation and related behaviours. Mobile app and internet technology-based interventions are increasing in number and popularity that target children and adolescent mental health promotion and suicide prevention. However, a recent systematic review concluded there is not current evidence of effectiveness of these technologies (Grist, Porter, & Stallard, 2017). The treatment approaches highlighted below have some evidence demonstrating efficacy and effectiveness. Overall, there continues to be few randomised trials on effective suicide treatment approaches, especially with paediatric populations.

Brief treatments

Safety planning intervention—Safety and crisis response plans are often used in initial treatment sessions when there is a suicide-related crisis. Safety and crisis response plans are written out or documented in some other format and can be referenced throughout the course of existing treatments for both youth and adults. These plans are often part of larger treatment strategies for preventing suicide (e.g. Collaborative Assessment and Management of Suicidality (Jobes, 2016); Cognitive Behaviour Therapy for Suicide Prevention (Stanley et al., 2009). However, Safety Planning Intervention (SPI) has been recommended as a stand-alone treatment and was named a national best practice for suicide prevention (Stanley & Brown, 2012). SPI is a comprehensive, brief (20–45 min) and collaborative approach to ensure the safety of those who experience suicide ideation or behaviours following a suicide risk assessment. To our knowledge, there are not specific recommendations regarding age

groups to use SPI. However, safety planning as a suicide prevention intervention has been included in other treatments with adolescents ages 12–19 (Kennard et al., 2018; Stanley et al., 2009).

SPI involves a stepped process that was intentionally designed (i.e. *patient tries the next strategy if the previous strategies aren't effective*): 1) recognising warning signs that may indicate a suicide crisis and can give the patient insight; 2) identifying internal coping strategies patients can utilise in the short-term when experiencing suicide ideation or behaviours because it builds self-efficacy and is available when social support is unavailable; 3) listing social supports or settings that can serve as a distraction from their thoughts—potentially interrupting their negative cognitive thinking or emotional distress; 4) identifying individuals with whom they are comfortable sharing about their crisis and discussing help-seeking—patients often tend to seek out or prefer non-professional contacts as a first resource; 5) listing professional and agency contacts to intervene with the current crisis; and 6) discussing means restriction (see CALM: Counselling on Access to Lethal Means, Suicide Prevention Resource Center, 2018).

For paediatric patients, it is important to share the safety plan with parents. Parents and other family members may be involved when a safety plan is being completed, which may help facilitate parent education about their child's risk/protective factors, and ways to keep a safe environment at home (Kennard et al., 2018; Stanley et al., 2009). Discussions between therapists and patients may involve identifying roles of parents or other family members within the safety plan and how they can support a patient using this tool (Kennard et al., 2018; Stanley et al., 2009). Safety planning interventions, including means restriction, as a stand-alone option has little evidence with paediatric populations. However, there is increasing evidence that combining safety planning into comprehensive treatment approaches, including mobile app-based interventions with digital safety plans, may be effective in reducing suicide among adolescents (Asarnow et al., 2011; Asarnow, Hughes, Babeva, & Sugar, 2017; Gregory, Sukhera, & Taylor-Gates, 2017; Jobes, 2016; Kennard et al., 2018; Melvin et al., 2019).

Brief ED interventions—An intervention developed by Rotheram-Borus and colleagues has a solid research base (Rotheram-Borus et al., 1996; Rotheram-Borus, Piacentini, Cantwell, Belin, & Song, 2000) including adaptations (Asarnow et al., 2011; Asarnow, Armm, & McGrath, 2002; Cwik et al., 2016; Donaldson, Spirito, Arrigan, & Aspel, 1997; Hughes & Asarnow, 2013). The original intervention consists of a workshop for ED providers on how to interact with suicidal adolescents and their families, a video about the importance of treatment engagement, a crisis therapy session, access to an on-call therapist, and linkage to existing outpatient treatment (Rotheram-Borus et al., 1996). The intervention has been shown to increase positive maternal attitudes towards treatment and adolescent treatment adherence, as well as decrease adolescent depression and suicidal ideation and maternal symptoms of depression (Rotheram-Borus et al., 1996, 2000). Asarnow et al. (2011) further adapted this intervention to incorporate a compliance enhancement component (Spirito, Boergers, Donaldson, Bishop, & Lewander, 2002; Wells, Tang, Carlson, & Asarnow, 2012) with improved follow-up with treatment (Asarnow et al., 2011). In an adaption for Native American youth, participants reported decreased negative thinking,

depressive symptoms, and suicidal ideation post-intervention, and changes in targeted service use outcomes, including improved attitudes towards counselling, increased outpatient treatment utilisation, and decreased ED visits for mental health (Cwik et al., 2016). While these interventions have research evidence, implementation in non-research settings faces challenges such as space, time and provider shortages in EDs (Cwik et al., 2016).

Motivational interviewing

Motivational Interviewing (MI) (Miller & Rollnick, 2013) may be used to increase motivation to engage in treatment when working with those who may be experiencing suicide ideation or have recent suicidal behaviour. MI is a collaborative approach to increasing an individual's motivation and commitment towards change. MI includes four processes: 1) establishing an effective working relationship; 2) focussing the conversation on change towards a patient's goal; 3)evoking a patient's self-motivation for change; and 4) increasing a patient's commitment to change while developing an action plan (Miller & Rollnick, 2013), with specific skills associated with each process. There have been limited applications of MI for individuals experiencing a range of suicidal behaviours (see Hoy, Natarajan, & Petra, 2016). Motivational Interviewing to Address Suicidal Ideation (MI-SI; Britton, Patrick, Wenzel, & Williams, 2011) was developed to increase motivation for living, including engaging in treatment to enhance reasons for living. Though MI-SI has not been adapted for use with children and adolescents to date, a recent pilot randomised controlled trial examined feasibility and acceptability of "MI-SafeCope" (Czyz, King, & Biermann, 2019). This intervention uses MI to increase adolescents' motivation and self-efficacy in using their safety plans and to promote adaptive coping strategies following hospitalisation (Czyz et al., 2019). Caregiver support is emphasised to promote adolescents' use of their safety plans. Pilot results showed adolescents experienced increased self-efficacy to not engage in suicidal behaviour, increased reliance to engage in self-coping strategies when experiencing suicide ideation, and increased likelihood of using their safety plans to cope with suicide ideation (Czyz et al., 2019).

Long-term treatments

CBT-SP—Cognitive Behaviour Therapy-Suicide Prevention (CBT-SP) was developed to address modifiable risk factors for youth suicide, including depression, with a strong focus on prevention of future suicidal behaviour. Key elements of CBT-SP include: 1) safety plan; 2) a hope kit to help patients remember reasons for living during a crisis and involves identifying objects that represent this reason personally, such as photographs or meaningful quotes; 3) chain analysis to raise awareness of circumstances that resulted in a suicide attempt; 4) the patient and therapist deciding which skills to develop to cope with similar circumstances in the future by identifying immediate precipitants and longer-term risk factors (i.e. case conceptualization); 5) accompanying coping skill development and family sessions (e.g. emotion regulation, mood monitoring, distress tolerance, interpersonal effectiveness, and cognitive restructuring); and 6) finally, relapse prevention which includes revisiting the suicidal event and reviewing the event with new skills in place. CBT-SP was studied in a mixed randomised-patient preference trial with adolescents ages 12–18 years which included CBT-SP alone, medication management (MM) alone and CBT-SP plus MM

—with most patients choosing combination treatment. There was a significant decline in depressive symptoms in all three treatment groups, with combination treatment showing the greatest rate of improvement (58% at week 12 and 72% at week 24). It should be noted that at least one-third of the attempts and 40% of suicide related events occurred in the first 4 weeks of treatment (Brent, Greenhill, et al., 2009; Stanley et al., 2009). This data suggests that providers might recommend seeing patients with a recent suicide attempt more than once weekly at the beginning of treatment.

Dialectical behavior therapy—Dialectical Behaviour Therapy (DBT) was developed to treat individuals with high suicide risk (including those with Borderline Personality Disorder) by focussing on reasons for living (Linehan & Wilks, 2015). Over time this focus shifted to combine behavioural and Zen principles and a philosophy of dialectics (Linehan & Wilks, 2015). DBT is delivered through individual psychotherapy, group skills training, coaching in between sessions, and therapist group consultation meetings (DeCou, Comtois, & Landes, 2019). Treatment goals are achieved through five strategies: 1) dialectical; 2) validation; 3) problem-solving; 4) stylistic; and 5) case management (Miller, Rathus, & Linehan, 2007). Skills training components include mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance (Linehan & Wilks, 2015). A recent meta-analysis showed that across a vast range of samples, including paediatric and adolescent populations, and settings, DBT was found to reduce self-directed violence (i.e. suicidal behaviour and non-suicidal self-injury) and frequency of utilising mental health crisis services, but not suicide ideation (DeCou et al., 2019).

Dialectical Behaviour Therapy for Adolescents (DBT-A) is an adapted version of DBT that may be used with adolescents and young adults ages 11–20 and based in the same theoretical framework as the original treatment (Miller et al., 2007). DBT-A (Miller et al., 2007) includes several adaptations including decreased treatment length from 12 months to 4 months and changing handouts to appeal to this targeted age group. Other key changes include: family members in skills training groups, specific adolescent-family dialectical dilemmas, family sessions as-needed, an optional group following programme completion, and a specific module relating to emotion dysregulation among adolescents and their families (MacPherson, Cheavens, & Fristad, 2013). A recent randomised trial showed DBT-A was more effective than treatment as usual in reducing self-harming behaviours and suicide ideation among adolescents aged 12–18 (Mehlum et al., 2014).

Synthesis—There is a great need to continue to examine the effectiveness of these and other novel interventions specifically to promote safety and protection from suicide over key developmental periods for children and adolescents. In addition, the last few years have shown movement towards innovative approaches. With the advent of technology-based interventions and treatments, research is needed to demonstrate effectiveness of mobile apps that may reduce suicide risk among children and adolescents. These approaches may be an appealing and interactive approach to keep children and adolescents safe from further suicide risk.

Conclusion

While suicide has been an important, and more recently an increasing, concern for providers in medical and psychiatric settings, the research evidence for suicide screening, risk assessment and treatment lags behind the need, especially specific to paediatric populations. This gap exists despite strong implementation in some sectors due to national initiatives (e.g. Zero Suicide and the Joint Commission). Several promising suicide screening tools, risk assessments and interventions can guide clinicians as the paediatric research literature continues to grow.

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