Post-print Interpretation of the 2022 U.S. Preventive Services Task Force Recommendation Statement on Screening for Depression and Suicide Risk in Children and Adolescents

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Abstract

The U.S. Preventive Services Task Force (USPSTF) published in JAMA in 2022 the "Recommendation Statement on Screening for Depression and Suicide Risk in Children and Adolescents" (hereinafter referred to as the USPSTF Statement), along with the latest evidence report and systematic review results, recommending screening for depression in adolescents aged 12-18 years. However, due to insufficient evidence, the USPSTF Statement is currently unable to determine the benefits and harms of screening for suicide risk in children and adolescents. This article interprets the content of the USPSTF Statement by integrating domestic and international literature, and provides an overview of concepts of depression and suicidal behavior, risk factors, screening tools, benefits and harms of early screening, treatment and interventions, and the guiding value of the USPSTF Statement for primary care clinicians, aiming to serve as a reference for clinicians in the clinical practice of screening for depression and suicide risk in children and adolescents.

Full Text

Interpretation of the 2022 US Preventive Services Task Force Recommendation Statement on Screening for Depression and Suicide Risk in Children and Adolescents

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Abstract

In 2022, the United States Preventive Services Task Force (USPSTF) published a recommendation statement on Screening for Depression and Suicide Risk in Children and Adolescents in JAMA, accompanied by an updated evidence report and systematic review results (USPSTF statement). The statement recommended screening for major depressive disorder (MDD) in adolescents aged 12 to 18 years. However, due to insufficient evidence, the USPSTF statement could not determine the balance of benefits and harms of suicide risk screening in children and adolescents. This article interprets the content of the USPSTF statement in the context of national and international literature, providing an overview of the concepts of depression and suicidal behavior, risk factors, screening tools, the pros and cons of early screening, treatment and interventions, and the value of the USPSTF statement in guiding primary care providers. The aim is to serve as a reference for clinical healthcare professionals involved in the screening of children and adolescents for depression and suicide risk.

Key words: Major depressive disorder; Suicide; Children and adolescents; Screening; United States Preventive Services Task Force; Statement

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Major depressive disorder (MDD) is one of the more common psychiatric illnesses among children and adolescents. Due to rapid physiological development and psychological sensitivity and vulnerability, children and adolescents are more susceptible to MDD [1]. The China National Mental Health Development Report (2021-2022) [2] shows that in 2022, the detection rate of depression risk among Chinese adolescents was 14.8%, with 4.0% showing severe depression risk. This data indicates that Chinese adolescents are facing a relatively high level of mental health risk. The onset of MDD is trending younger, and society urgently needs to pay attention to the mental health of children and adolescents [3]. Overall, the manifestations of MDD in children and adolescents are similar to those in adult patients, but characteristics vary by age group. For example, in preschool children, caregivers may observe diminished interest in play, which can be an important warning sign [4]; for school-age children, irritability, temper outbursts, low frustration tolerance, and somatic symptoms may be more prominent; while in adolescents, sadness, physiological dysfunction, and suicidal behavior may be more common [5]. These developmental differences across age groups increase the complexity of MDD diagnosis.

1.1 Concept of MDD

MDD is a common and serious mental illness. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria, MDD is defined as persistent sadness ranging from mild to severe, and loss of interest

in daily life experienced by an individual for at least two weeks. Additional manifestations may include irritability, difficulty concentrating, and somatic problems such as sleep disturbances, decreased energy, and changes in appetite [14]. MDD is a common recurrent disease that places a heavy burden on families and society [15]. The USPSTF statement focused specifically on screening for MDD and did not involve screening for other depressive disorders.

1.2 Concept of Suicidal Behavior

The USPSTF statement defines the term "suicidal behavior," which encompasses suicidal ideation, suicide attempts, and suicide completion [8]. Suicidal ideation refers to thinking about, considering, or planning suicide; suicide attempts refer to non-fatal, self-directed, potentially injurious behavior with intent to die; and suicide completion refers to death resulting from self-injurious behavior where the intent was to cause death.

The USPSTF statement applies to children and adolescents who have not been diagnosed with mental illness or who do not exhibit recognized depressive symptoms or signs of suicide risk [8].

2.1 Screening for MDD in Children and Adolescents

The USPSTF statement updated the 2016 USPSTF recommendation on MDD screening in children and adolescents. The updated statement expanded the scope of the target population to include not only individuals aged 18 years and younger who have not been diagnosed with MDD, but also children and adolescents who do not show obvious depressive symptoms or signs of suicide risk. Overall, the 2022 updated USPSTF statement is consistent with previous recommendations, advising screening for MDD in adolescents aged 12 to 18 years (Grade B recommendation). However, for children aged 11 years and younger, the existing evidence is insufficient to assess the balance of benefits and harms of MDD screening, and therefore no recommendation can be made (Grade I statement) (Tables 1 and 2).

Children and adolescents with MDD often fail to receive necessary screening, diagnosis, and treatment in a timely manner, with at least 50% of adolescents with MDD not being diagnosed until adulthood [6]. MDD in children and adolescents is a common, chronic, recurrent, and debilitating condition that leads to impairment in academic and social functioning [7-8]. The recurrence rate of MDD is high, with 20%–60% of adolescents experiencing recurrence within 1–2 years and 70% within five years [9]. MDD also increases the risk of suicidal ideation, suicide attempts, and suicide completion [10], and suicide has become the second leading cause of death among adolescents aged 10–19 years [11], making early systematic screening for children and adolescents particularly critical.

On October 11, 2022, the United States Preventive Services Task Force (USPSTF) published the Screening for Depression and Suicide Risk in Children and

Adolescents recommendation statement in JAMA [8] (hereinafter referred to as the USPSTF statement). This statement updates the 2014 Screening for Suicide Risk in Adolescents recommendation statement [12] and the 2016 Screening for MDD in Children and Adolescents recommendation statement [13], summarizing the latest evidence and providing results from systematic reviews. This article interprets the key content of the USPSTF statement in combination with domestic and international clinical research, aiming to provide a reference for healthcare professionals in the clinical practice of screening children and adolescents for MDD and suicide risk.

2.2 Screening for Suicide Risk in Children and Adolescents

The USPSTF statement updated the 2014 Screening for Suicide Risk in Adolescents recommendation statement [12]. The 2014 USPSTF statement indicated that evidence was insufficient to assess the balance of benefits and harms of suicide risk screening in adolescents (Grade I recommendation) [12]. The 2022 USPSTF statement again concluded that the current evidence on the benefits and harms of suicide risk screening in children and adolescents remains insufficient to determine the balance of screening (Grade I recommendation) (Tables 1 and 3).

The USPSTF statement identified key evidence gaps and emphasized the urgent need for more randomized controlled trials (RCTs). These studies should evaluate the benefits and harms of suicide risk screening for children and adolescents in primary care settings compared with no screening or usual care. Additionally, future research should provide more detailed information on the performance characteristics (accuracy, sensitivity, specificity, etc.) of suicide risk screening tests to enhance the selection and application of screening tools.

3 Assessment of Risk Factors

3.1 Risk Factors for MDD The etiology of MDD is not fully understood and may involve a combination of genetic, biological, and environmental factors [13], such as family history of MDD, previous history of MDD or other psychiatric disorders, or behavioral problems. Risk factors for MDD in children and adolescents include female gender, older children and adolescents, family members (especially mothers) with a history of MDD, previous depressive episodes, other mental health or behavioral problems, chronic diseases, and overweight and obesity [3,13]. Other psychosocial risk factors for MDD also include childhood abuse or neglect, exposure to traumatic events, bullying behavior (whether as perpetrator or victim), adverse life events, early exposure to stress, insecure parent-child relationships, ambiguous sexual orientation, and poor academic performance [8,13]. In response to these risk factors, the USPSTF statement recommends that researchers conduct more studies on MDD screening in specific populations defined by gender, race and ethnicity, sexual orientation, and gender identity. This call is based on the recognition of different risk factors for

MDD and aims to promote more precise prevention and intervention measures to reduce the incidence of MDD among children and adolescents.

3.2 Risk Factors for Suicidal Behavior Suicide risk varies by gender or sexual orientation [8]. A study on the characteristics and trends of suicide among Black children and adolescents aged 5–17 years used data from the Centers for Disease Control and Prevention's (CDC) Web-based Injury Statistics Query and Reporting System (WISQARS). The data showed that from 2003 to 2017, the proportion of suicide deaths among Black male adolescents (71.77%) was higher than that among female adolescents (28.23%), while the annual percentage increase in suicide rates among Black female adolescents was more than double that of male adolescents [16]. LGBT adolescents (lesbian, gay, bisexual, transgender) show higher rates of suicidal ideation and suicide attempts compared with non-LGBT adolescents [8,17]. Other important risk factors for suicidal behavior also include history of mental illness and adverse childhood experiences (family history of suicide or mental illness, suicide attempts, life stress, history of psychological trauma, parent-child conflict, legal problems) [8].

4.1.1 MDD Screening Tools

Multiple screening tools can be used to identify MDD in children and adolescents, some of which have been applied in primary care. Commonly used MDD screening tools in clinical practice include the Patient Health Questionnaire for Adolescents (PHQ-A), Center for Epidemiologic Studies Depression Scale (CES-D), and the primary care version of the Beck Depression Inventory (BDI) [8,13].

The PHQ-A is a revised version based on the 9-item Patient Health Questionnaire (PHQ-9), adapted for adolescents' language expression and life experiences to better assess MDD in adolescents [18]. The PHQ-A is a self-administered tool that can help primary care physicians identify mental disorders such as MDD in adolescent patients [19]. The PHQ-A contains nine items assessing the respondent' s feelings over the past two weeks, with total scores ranging from 0 to 27, where higher scores indicate more severe MDD [20]. The PHQ-A has demonstrated good reliability (Macdonald' s Omega coefficient of 0.87, test-retest reliability of 0.70) and validity [comparative fit index (CFI), goodness of fit index (GFI) of 0.94, root mean square error of approximation (RMSEA) of 0.08] among Chinese children and adolescents with MDD [21]. Compared with semi-structured clinical interviews conducted by mental health professionals, the PHQ-A shows satisfactory sensitivity (73%), specificity (94%), overall diagnostic accuracy (92%), and diagnostic agreement (Kappa value of 0.59) [19]. The PHQ-A can help primary care physicians identify MDD early in adolescent patients, but given the potential risks of labeling, stigmatization, and inappropriate or overtreatment associated with routine use of screening tools in adolescents, physicians are advised to conduct follow-up inquiries for patients diagnosed with MDD through the PHQ-A scale to determine psychiatric symptoms and related functional impairment or distress [19].

The CES-D is a self-report questionnaire developed by RADLOFF [22] at the National Institute of Mental Health in 1977 to assess an individual' s depressive state over the past week. The scale consists of 20 items covering four dimensions: depressive mood, positive affect, somatic symptoms and retardation, and interpersonal relationships [22]. Each item is scored on a 0–3 scale, where 0 indicates rarely or none of the time (<1 day) and 3 indicates most or all of the time (5–7 days), with total scores ranging from 12 to 48. Higher scores indicate higher risk of MDD, with a total score $ $20 generally considered the cutoff for depressive symptoms and $ $28 the cutoff for MDD screening [23-24]. The CES-D has been translated and used in many countries worldwide, showing good reliability and validity (Cronbach' s α coefficient of 0.90, CFI of 0.98, GFI of 0.95, RMSEA of 0.06), and normative data for different genders and age groups have been established in Chinese urban populations [25].

The BDI-II is a self-report scale revised by Beck et al. in 1996 based on the DSM-IV criteria [26]. The BDI-II is one of the most widely used self-report tools for MDD, suitable for assessing depressive symptoms and their severity in both psychiatric patients and normal populations over the past two weeks [27]. The scale contains 21 items scored on a 0–3 scale, with total scores ranging from 0 to 63. Based on the scale scores, MDD is classified into four levels: 0–13 indicates no depression, 14–19 mild depression, 20–28 moderate depression, and 29–63 severe depression [28]. The Chinese version of the BDI-II (BDI-II-C) has demonstrated good reliability (Cronbach' s α coefficient of 0.93) and validity (CFI of 0.97, RMSEA of 0.03) among Chinese adolescents and can serve as a self-report tool for MDD screening and severity assessment in Chinese youth [29].

Currently, the USPSTF statement indicates no evidence that any single tool is optimal, as each MDD screening tool varies in applicable age range, number of items, and time required to complete them. After initial screening using MDD screening tools, physicians should conduct additional inquiries or interviews to comprehensively assess the results and confirm the diagnosis to ensure accuracy and appropriate intervention measures.

4.1.2 Suicide Risk Screening Tools Suicide risk screening tools typically include assessments of current suicidal ideation, self-injurious behavior, and previous suicide attempts and behaviors [8]. The 2014 USPSTF statement mentioned a suicide risk screening tool for children and adolescent populations (Suicide Risk Screen, SRS). This 20-item tool was embedded in high school surveys to identify suicide risk among students in this age group [12]. THOMPSON et al. [30] used the SRS with potential high school dropouts to test its effectiveness in identifying adolescents at suicide risk, finding that suicide risk severity was significantly correlated with categories defined by SRS criteria, with sensitivity of 87%–100% and specificity of 54%–60%. The results suggest that the SRS is an effective and practical method for identifying suicide risk among potential dropout youth in school settings. However, due to its moderate specificity,

clinicians need to conduct detailed follow-up assessments of screening results to ensure accurate diagnosis and appropriate interventions. Other suicide risk screening tools applicable to this population include the Ask Suicide-Screening Questions (ASQ), Suicidal Ideation Questionnaire-Junior (SIQ-Jr), and Beck Scale for Suicidal Ideation (BSSI) [31-33].

Many MDD screening tools include at least one item related to suicidal ideation, but relying on these tools to screen for suicidal ideation may be inadequate [8]. Additionally, although various suicide risk screening tools have been developed, their psychometric properties are often insufficient for use in children and adolescent populations, and the accuracy of these tools compared with clinical interviews remains uncertain [8]. Furthermore, the USPSTF statement notes the lack of data on the frequency with which primary care clinicians screen children and adolescents for suicide risk [8]. For these reasons, the USPSTF statement does not provide specific recommendations for suicide risk screening.

4.2.1 Analysis of Pros and Cons of Early MDD Screening

The USPSTF statement recommends screening for MDD in adolescents aged 12–18 years [8]. Research shows that approximately half of adolescents with MDD are not diagnosed until adulthood [34]. Due to the stigma associated with seeking treatment for MDD, children and adolescents may experience shame, making MDD screening potentially beneficial for the mental health of this population [35]. The USPSTF statement emphasizes that screening should be implemented through appropriate systems to ensure accurate diagnosis, effective treatment, and proper follow-up [8]. For children aged 11 years and younger, the USPSTF cannot definitively assess the pros and cons of MDD screening due to insufficient evidence. Additionally, the USPSTF statement warns of potential harms of MDD screening in children and adolescents of any age, including unnecessary referrals (time costs and economic burden), treatment, anxiety, labeling, and stigmatization resulting from false-positive early screening results. Currently, there is a lack of trials directly assessing the pros and cons of MDD screening in primary care [36]. Therefore, there is an urgent need for large-scale, high-quality RCTs to more comprehensively understand the impact of MDD screening in primary care on long-term health outcomes in children and adolescents, providing more concrete scientific evidence for clinical decision-making. Once antidepressant treatment is initiated, healthcare professionals should closely monitor patients to assess changes in clinical symptoms, suicide risk, or abnormal behaviors.

4.2.2 Analysis of Pros and Cons of Early Suicide Risk Screening

A longitudinal study of suicide deaths across eight Mental Health Research Network (MHRN) health systems from 2000–2010 found that only 16.3% of children and adolescents aged 0–19 years had received a mental health diagnosis within four weeks before death [37]. This finding highlights the urgency of early identification of suicide risk in children and adolescents, especially considering the

inconsistency between parent and child reports of suicidal ideation, as parents are often unaware of their children' s suicidal thoughts [38-39]. Although two RCTs (n=2,675) showed that suicide risk screening did not increase short-term distress, there is currently insufficient evidence to assess the potential harms of suicide risk screening in this age group [40-41]. Therefore, the USPSTF statement concludes that based on current evidence, it is not possible to definitively evaluate the pros and cons of suicide risk screening in children and adolescents, emphasizing the need for further research to support clinical decision-making [8].

5.1 Treatment of MDD

Treatment options for MDD in children and adolescents include pharmacotherapy, psychotherapy, and combined treatment [35]. The USPSTF statement notes that inadequate support and follow-up may lead to treatment failure or harm [8]. Well-developed systems and a sufficient number of trained healthcare professionals are needed to ensure screening of patients. If screening results are positive, appropriate referral and evidence-based care treatment should be provided.

Pharmacological treatments for adult MDD include tricyclic antidepressants (TCA), selective serotonin reuptake inhibitors (SSRI), serotonin-noradrenalin reuptake inhibitors (SNRI), and monoamine oxidase inhibitors (MAOI) [42], but research on pharmacological treatment for MDD in children and adolescents is relatively limited. SSRIs are first-line medications for treating MDD in children and adolescents, with fluoxetine being the only drug currently approved by the Food and Drug Administration (FDA) for treating MDD in children aged 8 years and older [35]. Additionally, the FDA has approved escitalopram for treating MDD in adolescents aged 12–17 years [35]. A meta-analysis showed that fluoxetine achieved significant effects in controlling symptom intensity in children and adolescents with MDD in the short term (6–10 weeks) and had good tolerability. Notably, the analysis showed that fluoxetine treatment did not lead to significant changes in suicidal thoughts but was associated with higher risks of headache and rash adverse reactions [42], which is a key safety consideration. Nevertheless, the FDA found in short-term treatment studies of children and adolescents with MDD that compared with placebo, the use of antidepressants increased the risk of suicidality in children and adolescents [43]. This finding emphasizes that when considering prescribing antidepressants for children and adolescents, medical professionals must carefully weigh the potential suicide risk against clinical needs.

5.1.2 Psychotherapy Psychotherapy shows significant treatment effects for adolescents with MDD aged 8–19 years [44]. For patients with MDD, various psychotherapeutic approaches can be selected, including cognitive behavioral therapy (CBT), interpersonal therapy (IPT), psychodynamic therapy, and family therapy [45]. In the field of psychotherapy for MDD in children and adoles-

cents, CBT and IPT are considered the most effective treatment methods due to their solid evidence base [35,46-47]. When applying CBT and IPT to children and adolescents, treatment strategies should be flexibly adjusted according to their cognitive and psychological developmental characteristics [3]. This means emphasizing the child' s level of autonomy and independence, and adjusting cognitive elements in therapy according to the child' s abstract thinking ability to adapt to the developmental needs of children and adolescents.

5.1.3 Collaborative Care Model The collaborative care model is a multidisciplinary team-based, health care system-level intervention that connects primary care clinicians, patients, and mental health specialists through a care manager [8]. Core features of the collaborative care model include structured management protocols, regular patient follow-up mechanisms, and enhanced interdisciplinary communication systems (written feedback, group meetings, individualized consultation) [48]. This model aims to optimize patient treatment and care processes through multidisciplinary team collaboration, improving the quality and efficiency of medical services. Evidence shows that collaborative care interventions can significantly improve depression outcomes [49-50]. However, current research on collaborative care models has focused primarily on perinatal management of MDD [51-54] and care for adult MDD patients with comorbidities (cancer [55-56], obesity [57-58]), with fewer studies focusing on collaborative care models for children and adolescent populations. Therefore, the USPSTF emphasizes in its statement that future research urgently needs to strengthen collaborative care studies for children and adolescents with MDD to fill existing knowledge gaps and further optimize treatment protocols.

5.2 Interventions for Suicidal Behavior

Interventions for suicidal behavior in children and adolescents include psychotherapy (IPT, CBT, dialectical behavior therapy), pharmacotherapy (antidepressants, antipsychotics, and mood stabilizers), and physical treatments (high-frequency repetitive transcranial magnetic stimulation, modified electroconvulsive therapy) [35,59-60]. In addition to these treatments, caregiver-involved safety planning interventions are equally important, aiming to reduce access to or lethality of suicide means. Specifically, primary care providers can conduct educational programs to guide families of children and adolescents in crisis on how to safely store medications and remove items that could be used for suicidal behavior [35,61].

The USPSTF statement describes existing problems and measures in screening and treatment for MDD and suicidal behavior in children and adolescents, recommending screening for MDD in adolescents aged 12–18 years. However, due to insufficient evidence, the USPSTF notes that in-depth research on the pros and cons of screening and treatment for MDD and suicide risk in children and adolescents is lacking, making it impossible to clarify the best methods for early identification and intervention. Therefore, primary care healthcare profession-

als should combine the characteristics of children and adolescents with MDD in China, family functioning, and the capacity of China' s healthcare system to explore scientifically effective screening and intervention measures, conduct targeted research, and thereby optimize treatment protocols and improve treatment outcomes.

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Note: Figure translations are in progress. See original paper for figures.