MEDDOCS Open Access Publisher

ISSN: 2637-8027

Journal of Psychiatry and Behavioral Sciences

Open Access | Review Article

Different Intervention Strategies for Adolescent Non-Suicidal Self-Injury: A Review

Wanting Hao[1]; Qiaorui Fu[1]; Yao Zhang[1]*

Military Medical Center, first affiliated hospital of Air Force Medical University, China.

***Corresponding Author(s): Yao Zhang**

Department of The First affiliated hospital, Air Force Medical University, Xi'an 710032, China.

Email: 12409858@qq.com

Received: Dec 11, 2025

Accepted: Jan 06, 2026

Published Online: Jan 13, 2026

Journal: Journal of Psychiatry and Behavioral Sciences

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Adolescent; Non-suicidal self-injury; Intervention strategies; Risk factors; Protective factors; Psychological resilience.

Abstract

Non-Suicidal Self-Injury (NSSI) is prevalent among adolescents and has become a severe global public health issue. NSSI not only causes direct harm to the physical and mental health of adolescents but is also a strong predictor of future suicidal behaviors. In recent years, research on NSSI has increased, yet a systematic review of its intervention strategies remains insufficient. This review aims to integrate existing research findings, systematically elaborate on the risk and protective factors for adolescent NSSI, and, on this basis, explore the research progress of current NSSI intervention strategies from multiple levels, including individual, family, school, and society. Studies indicate that childhood maltreatment, school bullying, negative emotions such as depression and anxiety, and maladaptive coping styles (e.g., emotion-focused coping, rumination) are major risk factors for NSSI. Conversely, psychological resilience, adaptive coping strategies (e.g., problem-solving, cognitive reappraisal), and good family function and social support are important protective factors. Based on these factors, existing intervention strategies mainly include: 1) individual-centered psychotherapies, such as Dialectical Behavior Therapy (DBT) and Cognitive Behavioral Therapy (CBT), aimed at enhancing emotion regulation skills and coping mechanisms; 2) family-based interventions, focusing on improving parent-child relationships and the family support system; and 3) school-based prevention programs, such as anti-bullying education and mental health awareness campaigns. Future research should focus more on multi-dimensional, systemic intervention models, develop and validate personalized intervention plans for adolescents with different risk profiles, and strengthen the long-term evaluation of intervention effectiveness to more effectively address the problem of adolescent NSSI.

Introduction

Non-Suicidal Self-Injury (NSSI) is defined as the deliberate, direct destruction of one's own body tissue without suicidal intent, with common forms including cutting, burning, scratching, and hitting [1,10]. Adolescence is a period of high vulnerability for the onset of mental health problems, with many disorders first emerging during this critical developmental stage [21]. Epidemiological data confirms that NSSI is a significant public health concern among this demographic. A meta-analysis covering studies from 2010 to 2021 reported a global lifetime prevalence of NSSI among non-clinical adolescent samples at 22.0% [3]. In China, the prevalence is similarly alarming, with detection rates among secondary school students ranging from 22.37% to 29% [19,21]. In clinical populations of adolescents with depression, the rate is even higher, with studies reporting detection rates between 41.07% and 76.06% [9,11].

Cite this article: Zhang Y. Different Intervention Strategies for Adolescent Non-Suicidal Self-Injury: A Review. J Psychiatry Behav Sci. 2025; 9(1): 1096.

The clinical significance of NSSI is underscored by its strong association with a range of adverse outcomes, most notably Suicidal Thoughts and Behaviors (STBs). Longitudinal studies have consistently identified NSSI as a potent predictor of future suicide ideation, attempts, and death, with some evidence suggesting it is a more powerful predictor than a history of prior suicide attempts [5,14]. Beyond its link to suicidality, NSSI is also associated with poorer social relationships, psychosocial impairment, and an increased risk for developing other mental disorders such as depression, anxiety, and personality disorders [6,20]. Given the high prevalence and severe consequences of NSSI, understanding its underlying mechanisms and developing effective intervention strategies are urgent priorities for adolescent mental health research and practice.

The etiology of NSSI is multifactorial, involving a complex interplay of individual vulnerabilities and environmental stressors. Adolescence is characterized by significant neurodevelopmental changes, particularly an imbalance between a still-maturing prefrontal cortex responsible for executive functions like emotion regulation and impulse control, and a more developed limbic system driving emotional reactivity. This developmental mismatch makes adolescents more susceptible to emotional dysregulation and impulsive behaviors when faced with stress [16,17]. Key risk factors identified across numerous studies include Adverse Childhood Experiences (ACEs) such as emotional and physical maltreatment [11,12,18], peer victimization and school bullying [3,4,13], and individual psychological traits like depression, anxiety, rumination, and alexithymia [9,10,15]. Conversely, factors such as psychological resilience, adaptive coping strategies, high self-esteem, and strong social support from family and peers serve as crucial protective mechanisms [3,11,16]. This review will synthesize the current understanding of these risk and protective factors to provide a comprehensive overview of the research progress on intervention strategies for adolescent NSSI, structured around individual, family, and school-based approaches.

Key risk and protective factors for adolescent NSSI

A thorough understanding of the factors that either increase or mitigate the risk of NSSI is fundamental to designing effective interventions. These factors span multiple ecological levels, from individual traits to broad social contexts.

Risk factors

Adverse childhood experiences and family environment

The family environment is the primary context for early development, and adverse experiences within it are among the most robust predictors of NSSI. Childhood maltreatment, encompassing emotional, physical, and sexual abuse, as well as emotional and physical neglect, is consistently linked to a higher risk of NSSI [12,18]. A study of 355 depressed adolescents found that scores for all five types of childhood trauma were significantly higher in the NSSI group compared to the non-NSSI group, and these scores were positively correlated with the frequency of NSSI [11]. Network analysis has identified emotional abuse as a particularly central node, connecting other forms of trauma and depressive symptoms to NSSI, suggesting it may be a critical target for intervention [22]. The mechanisms linking trauma to NSSI are complex, potentially involving neurobiological alterations, such as reduced gray matter volume in brain regions like the calcarine cortex, which in turn impairs psychological resilience [17]. Beyond overt abuse, a dysfunctional family environment characterized by factors like parental psychopathology, harsh or invalidating parenting styles, and poor parent-child relationships also contributes significantly to NSSI risk [2,10].

Peer victimization and school bullying

As adolescents spend more time with peers, the school environment and peer relationships become increasingly influential. School bullying, in its various forms - including physical, verbal, relational, and reputational aggression—is a major stressor strongly associated with NSSI [4,6]. Studies show that both victims and perpetrators of bullying are at an elevated risk [6,13]. For instance, one study found that adolescents who experienced school bullying were twice as likely to report NSSI compared to their non-bullied peers [3]. The experience of being victimized can lead to feelings of social exclusion, hopelessness, and depression, which are direct antecedents of self-harm [5,13]. Furthermore, bullying victimization can indirectly increase NSSI risk by fostering maladaptive coping strategies, such as emotion-focused coping and expressive suppression, and hindering the development of effective emotion regulation skills [3].

Individual psychological vulnerabilities

Individual differences in temperament, cognitive style, and emotional processing play a crucial role in determining an adolescent's response to stress. Difficulties in emotion regulation are considered a core mechanism underlying NSSI [10,20]. The Emotional Cascade Model posits that individuals ruminate on intense negative emotions, leading to an upward spiral of distress that becomes unbearable, prompting impulsive behaviors like NSSI as a means of distraction and temporary relief [10]. Rumination, the tendency to passively and repetitively focus on negative feelings and their causes, has been identified as a key cognitive vulnerability. It not only amplifies the negative impact of stressors like childhood maltreatment on sleep problems but also moderates the link between sleep problems and subsequent NSSI [20]. Other significant psychological risk factors include low self-esteem, which can be exacerbated by stressful life events [16], and alexithymia, a difficulty in identifying and describing one's own emotions, which is strongly correlated with NSSI in depressed adolescents [9].

Protective factors

Psychological resilience

Psychological resilience, the capacity to adapt successfully in the face of adversity, is a cornerstone of mental health and a powerful protective factor against NSSI [8,11]. A systematic review and meta-analysis confirmed a small to moderate inverse relationship between resilience and NSSI, indicating that more resilient individuals are less likely to self-injure [8]. Resilience is not a single trait but a dynamic, multi-dimensional construct encompassing personal competencies and social resources. Studies have shown that specific facets of resilience, such as goal focus, positive cognition, and emotional control, are negatively correlated with NSSI frequency [11,16]. Resilience can act as a buffer; for example, it mediates the relationship between childhood trauma and depression, thereby reducing the indirect pathway to NSSI [17]. High levels of resilience can mitigate the negative impact of bullying and other stressors, promoting positive adaptation and reducing the likelihood of maladaptive coping behaviors [13,16].

Adaptive coping strategies and social support

The strategies adolescents use to manage stress are critical determinants of their mental health outcomes. The adoption of adaptive, problem-focused coping strategies and cognitive reappraisal is associated with a lower risk of NSSI [3]. These strategies involve actively addressing the source of stress or changing one's cognitive interpretation of a stressful event to reduce its emotional impact. In contrast, maladaptive strategies like avoidance and emotional suppression are linked to higher NSSI risk [3]. Strong social support from family, peers, and the school community is another vital protective factor. High-quality parent-child relationships, parental warmth, and perceived support from family and friends can buffer the effects of stress and reduce feelings of isolation and hopelessness, thereby lowering NSSI risk [2,12,15].

Different intervention strategies for adolescent NSSI

Building on the understanding of NSSI's risk and protective factors, a variety of intervention strategies have been developed. These can be broadly categorized into individual-centered psychotherapies, family-based interventions, and school-based prevention programs.

Individual-centered psychotherapies

Individual psychotherapy remains the cornerstone of NSSI treatment, focusing on equipping adolescents with the skills to manage distressing emotions and change maladaptive behaviors.

Dialectical behavior therapy (DBT)

Originally developed for Borderline Personality Disorder, Dialectical Behavior Therapy (DBT) has been adapted and proven effective for adolescents with NSSI [18,20]. DBT's core principle is the balance between acceptance and change. It systematically teaches skills across four modules: mindfulness (observing thoughts and feelings non-judgmentally), distress tolerance (surviving crises without resorting to NSSI), emotion regulation (understanding and changing unwanted emotions), and interpersonal effectiveness (maintaining relationships and self-respect). By learning these skills, adolescents can find alternative ways to cope with intense emotional pain, reducing their reliance on self-injury [10]. Studies have shown that DBT can significantly decrease the frequency and severity of NSSI and improve overall emotional and social functioning [18].

Cognitive behavioral therapy (CBT) and rumination-focused CBT (RF-CBT)

Cognitive Behavioral Therapy (CBT) targets the dysfunctional thoughts and beliefs that drive NSSI. It helps adolescents identify cognitive distortions (e.g., "I am worthless and deserve to be punished") and challenge them through cognitive restructuring and behavioral experiments [9]. A specific adaptation, Rumination-Focused CBT (RF-CBT), directly addresses the process of ruminative thinking. A meta-analysis confirmed a small but significant association between rumination and NSSI [10]. RF-CBT teaches adolescents to recognize their ruminative patterns and shift from abstract, evaluative thinking to more concrete, process-focused awareness, thereby breaking the cycle of negative affect and rumination that often precedes self-injury [10].

Resilience-enhancing interventions

Given that psychological resilience is a key protective factor, many interventions aim to bolster it. These programs are often multi-faceted, targeting both internal resources and external support systems. For instance, interventions may focus on enhancing positive cognition, goal-setting, and problem-solving skills—all components of resilience that are negatively correlated with NSSI [11,16]. Improving self-esteem is another critical component, as research shows that self-esteem can buffer the stress-sensitizing effect of childhood maltreatment on NSSI, particularly for adolescents who experience dependent stressful life events [16]. By strengthening these psychological assets, adolescents are better equipped to navigate adversity without resorting to self-harm.

Family-based interventions

The family system plays a pivotal role in an adolescent's emotional life. Therefore, involving family members in the treatment process is often crucial for sustainable recovery.

Improving parent-child relationships and parenting skills

Interventions often focus on modifying dysfunctional interaction patterns within the family. This can involve training parents in supportive and validating communication, helping them to respond to their child's emotional distress with empathy rather than criticism or dismissal [2]. Improving the quality of the parent-child relationship and fostering parental warmth have been shown to be protective against NSSI [2,13]. Psychoeducation for parents about the nature and function of NSSI can also reduce blame and increase understanding, creating a more supportive home environment conducive to recovery [2].

Supporting parental well-being

Discovering that a child engages in NSSI can be profoundly distressing for parents, often leading to their own experiences of anxiety, depression, and guilt [2]. A study of parents of adolescents with NSSI found clinically significant symptoms of anxiety and depression in 35.3% and 40.1% of them, respectively [2]. Addressing parental mental health is therefore a critical, though often overlooked, component of intervention. Providing support for parents helps them manage their own emotional reactions, which in turn allows them to be a more stable and effective source of support for their child [2].

School-based prevention and intervention

Schools provide a unique and vital setting for large-scale prevention and early intervention efforts.

Anti-bullying programs and creating a safe school climate

Given the strong link between bullying victimization and NSSI, comprehensive anti-bullying programs are a key preventive strategy [3,13]. Effective programs move beyond simply punishing perpetrators and aim to change the school culture by empowering bystanders to intervene and by fostering an environment of respect and inclusion [16]. Educating all students about the harmful impact of bullying and promoting prosocial behaviors can reduce the incidence of victimization and its associated mental health consequences, including NSSI [4].

Early identification and referral systems

Schools are well-positioned to identify students at risk. This can be achieved through universal mental health screening using validated instruments to assess for depression, anxiety, and NSSI [1,15]. Machine learning algorithms, such as XGBoost, are being explored to create more accurate risk prediction mod-

els based on a wide range of variables, including psychological symptoms and coping styles [15]. Once at-risk students are identified, a clear and confidential referral pathway must be in place to connect them with appropriate support, whether it be the school counselor, psychologist, or external mental health services [4,15]. Training teachers and staff to recognize warning signs and respond appropriately is an essential part of this system [4].

Conclusion and future directions

Adolescent non-suicidal self-injury is a complex public health challenge resulting from the interplay of individual, familial, and social factors. This review has synthesized a substantial body of research, confirming that experiences like childhood maltreatment and school bullying, combined with psychological vulnerabilities such as emotion dysregulation and rumination, constitute significant risk factors. Conversely, psychological resilience, adaptive coping, and robust social support emerge as critical protective factors. Based on this evidence, multi-level intervention strategies targeting the individual, family, and school have been developed and show promise.

Individual psychotherapies, particularly DBT and CBT, provide adolescents with essential skills for emotion regulation and cognitive restructuring. Family-based approaches that improve parent-child communication and support parental well-being create a more conducive environment for recovery. School-based programs focusing on anti-bullying and early identification form a crucial first line of defense. Together, these strategies offer a comprehensive framework for addressing NSSI.

However, significant gaps remain. First, most interventions are studied in isolation. Future research should prioritize the development and evaluation of integrated, "ecosystemic" models that combine individual, family, and school components to create a seamless web of support [4]. Second, there is a pressing need for more personalized interventions. Adolescents are not a homogenous group; interventions should be tailored to their specific risk profiles, such as the type of bullying experienced or their dominant cognitive vulnerabilities [4,19]. The use of machine learning to build predictive models may facilitate this move toward precision mental healthcare [15]. Third, the long-term effectiveness of current interventions is not well-established. Longitudinal studies are needed to track recovery trajectories, understand relapse mechanisms, and assess the durability of treatment gains. In conclusion, tackling adolescent NSSI requires a systemic, multi-disciplinary effort. By integrating insights from psychology, education, neuroscience, and data science, future research can refine and enhance intervention strategies. The ultimate goal is to build a comprehensive system of care—spanning prevention, early detection, specialized treatment, and long-term support—to safeguard the well-being of all adolescents.

References

1. Yang R, Yang XJ, Wan JL, Wang LL, Deng H, Chen JX, et al. From East to West: regional disparities in depressive and anxious symptoms among Chinese adolescents. Psychol Res Behav Manag. 2024; 17: 1359–1370.
2. Xia Q, Zhang Y, Huang X. Psychological well-being and associated factors among parents of adolescents with non-suicidal self-injury: a cross-sectional study. Front Psychiatry. 2023; 14: 1253321.
3. Wang Y, Wang T, Wang J, Zeng L, Li G, Li J, et al. School bullying victimization in adolescents with non-suicidal self-injury: the role of coping strategies and emotion regulation. Stress Health. 2024.
4. Wen X, Shu Y, Qu D, Wang Y, Cui Z, Zhang X, et al. Associations of bullying perpetration and peer victimization subtypes with preadolescent suicidality, non-suicidal self-injury, neurocognition, and brain development. BMC Med. 2023; 21: 108.
5. Vergara GA, Stewart JG, Cosby EA, Lincoln SH, Auerbach RP. Non-suicidal self-injury and suicide in depressed adolescents: impact of peer victimization and bullying. J Affect Disord. 2019; 245: 744–749.
6. Serafini G, Aguglia A, Amerio A, Canepa G, Adavastro G, Conigliaro C, et al. The relationship between bullying victimization and perpetration and non-suicidal self-injury: A systematic review. Child Psychiatry Hum Dev. 2021; 53: 716–740.
7. Yu C, Cai Y, Pan M. Correlation analysis of non-suicidal self-injury behavior with childhood abuse, peer victimization, and psychological resilience in adolescents with depression. Actas Esp Psiquiatr. 2024; 52: 289–300.
8. Weedage D, Kool-Goudzwaard N, Meijnckens D, Vermeiren RRJM, Boonmann C. Resilience revisited: a systematic review and synthesis of non-suicidal self-injury and its relation with resilience. BMC Psychiatry. 2025; 25: 6868.
9. Zhang B, Zhang W, Sun L, Jiang C, Zhou Y, He K. Relationship between alexithymia, loneliness, resilience and non-suicidal self-injury in adolescents with depression: a multicenter study. BMC Psychiatry. 2023; 23: 445.
10. Nagy LM, Shanahan ML, Seaford SP. Nonsuicidal self-injury and rumination: a meta-analysis. J Clin Psychol. 2023; 79: 1639–1659.
11. Weng X, Tang R, Chen L, Wang D, Wu Z, Yu L, et al. Pathway from childhood trauma to nonsuicidal self-injury in adolescents with major depressive disorder: chain-mediated role of psychological resilience and depressive severity. Eur Arch Psychiatry Clin Neurosci. 2024.
12. Baiden P, Stewart SL, Fallon B. Adverse childhood experiences as determinants of non-suicidal self-injury among children and adolescents in mental health settings. Child Abuse Negl. 2017; 69: 163–176.
13. **晏克文**, 张彩营, **黄子扬**, **徐丽**, **曾如双**, 张蝶, **等**. **儿童青少年抑郁症患者自**杀未遂与校园欺凌及心理韧性的关系. **中国心理**卫生杂志. 2025; 39: 416–422.
14. Ribeiro JD, Franklin JC, Fox KR, Bentley KH, Kleiman EM, Chang BP, et al. Self-injurious thoughts and behaviors as risk factors for future suicide ideation, attempts, and death: a meta-analysis of longitudinal studies. Psychol Med. 2016; 46: 225–236.
15. Zhong Y, He J, Luo J, Zhao J, Cen Y, Song Y, et al. Machine learning–based prediction of non-suicidal self-injury risk among adolescents in western China. J Affect Disord. 2024; 345: 369–377.
16. Gao Y, Liang C, Liu X, Bai R, Xing S. Self-esteem buffers the stress-sensitizing effect of childhood maltreatment on adolescent non-suicidal self-injury. J Affect Disord. 2024; 345: 85–93.
17. Chen H, Liu P, Chen X, Liu J, Tang H, Tian Y, et al. Gray matter volume mediates the relationship between childhood maltreatment and psychological resilience in adolescents with first-episode major depressive disorder. Transl Psychiatry. 2024; 14: 452.
18. Guo X, Tang G, Lin F, Fang H, Chen J, Zou T. Biological links between psychological factors and adolescent depression: childhood trauma, rumination, and resilience. BMC Psychiatry. 2024; 24: 6369.

19. Lei H, Yang Y, Zhu T, Zhang X, Dang J. Network analysis of the relationship between non-suicidal self-injury, depression, and childhood trauma in adolescents. Ann Gen Psychiatry. 2024; 23: 1729.

20. Zheng X, Chen Y, Zhu J. Sleep problems mediate the influence of childhood emotional maltreatment on adolescent non-suicidal self-injury: moderating effect of rumination. Child Abuse Negl. 2023; 140: 106161.

21. McGrath JJ, Al-Hamzawi A, Alonso J, Altwaijri Y, Andrade LH, Bromet EJ, et al. Age of onset and cumulative risk of mental disorders: cross-national analysis of population surveys. Lancet Psychiatry. 2023; 10: 668–681.

22. Clougher D, De Prisco M, Solé B, Montejo L, Serra-Navarro M, Forte MF, et al. Resilience in bipolar disorder compared with clinical and non-clinical populations: a systematic review and meta-analysis. Acta Psychiatr Scand. 2025.