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A Review of the Influencing Factors and Development Mechanisms of Non-Suicidal Self-Injury in Adolescents

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ABSTRACT

This paper reviews the influencing factors and pathogenesis of adolescent non-suicidal self-injury (NSSI). NSSI is a major public health problem, and its incidence is increasing year by year, especially among adolescents, with the detection rate of NSSI reaching 28.7%. This paper first introduces the epidemiological characteristics of NSSI and points out that there are significant differences in the incidence of NSSI in different countries and regions. Then, this paper analyzes in detail a variety of influencing factors, mainly including environmental factors (childhood trauma, school bullying, social environment, family dysfunction, etc.), individual factors (mental illness, neurobiological differences, personality traits, inadequate Emotion regulation, etc.) and the interaction between individuals and the environment. This paper also discusses the process of NSSI behavior occurrence, maintenance and termination, and introduces several theoretical models such as empirical avoidance model, four-function model and emotional cascade model. Although some progress has been made in existing studies, the occurrence and development mechanism of NSSI behavior is still unclear in existing studies, and longitudinal studies on long-term changes of NSSI behavior are lacking, and research samples are mostly concentrated in specific groups. Future studies should strengthen the longitudinal tracking of NSSI behavior, expand the diversity of research samples, and deeply explore the mechanism and complexity of NSSI, in order to better understand and intervene this important public health problem.

KEYWORDS

Adolescents; Influencing Factors; Non-suicidal Self-injury (NSSI); Pathogenesis.

1. INTRODUCTION

Non-suicidal self-injury (NSSI), which refers to intentional, self-directed, non-culturally sanctioned harm to the body in the absence of suicidal intent[1], is a major national and international public health problem. The incidence of NSSI has been increasing year by year, with the detection rate of NSSI reaching 28.7% in Chinese adolescents[2]. Common non-suicidal self-injury behaviors include intentionally cutting the skin, hitting a hard object such as a wall or glass with your hand, intentionally pulling out your hair, intentionally burning or scalding yourself, and intentionally rubbing the skin with something to make it bleed or bruise. NSSI not only causes the individual's body to bleed, scar, and damage physical health, but also often causes severe psychological pain. Self-injurers are often accompanied by strong and frequent negative emotions such as anger, irritability and depression, and their emotions are in a state of high arousal. In order to relieve negative emotions, NSSI behaviors are implemented to obtain inner peace or pleasure. NSSI behavior has serious consequences for individuals and society: first, the behavior itself may endanger an individual's life; Second, the self-injured have a higher risk of future suicide [3]. In addition, this behavior will also bring great pressure to the family, friends, and even medical staff around the self-injured. Therefore, this paper aims to analyze the influencing factors related to NSSI in adolescents and its occurrence and development

process, so as to provide scientific basis for early detection, diagnosis and intervention of NSSI in adolescents.

2. EPIDEMIOLOGICAL CHARACTERISTICS

2.1. Incidence

Many countries and regions have investigated the incidence of NSSI behavior, and the results show that there are significant differences in the incidence of NSSI in different countries and regions. A study in the US showed that 17.59% of adolescents had at least one NSSI behavior in the past 12 months[4]; Studies have shown that 28.8% of Italian adolescents have at least one NSSI behavior, 13.7% have more than one NSSI behavior, and 1.4% have repetitive NSSI behavior[5]. Relevant data show that the reported rate of NSSI among adolescents in European countries ranges from 5% to 9%, the incidence of NSSI among adolescents in Southern Europe is significantly lower than that in northern Europe, and the detection rate of NSSI among 14-24 year olds in the UK is lower than that of adolescents in South Asia [6]. In China, adolescents have a high incidence of NSSI [7]. Compared with the incidence survey of a single region, scholars are more inclined to sample different cities or provinces to collect more representative data. Xu Huiqiong et al. selected six cities to conduct a stratified cluster sampling survey on middle school students, and the detection rates of NSSI, suicidal ideation and suicide attempt were 7.9%, 17.7% and 5.0%, respectively[8]. Ma Ying et al. investigated 15,538 middle and high school students in 5 provinces, and the detection rate of NSSI reached 28.7%[2]. At present, the incidence rate of NSSI behavior in adolescents in China presents the following characteristics: First, compared with foreign countries, the detection rate of NSSI behavior in adolescents in China is higher than that in foreign countries [9]. As for the differences at home and abroad, scholars believe that the reason is that different studies have different definitions of NSSI and broader inclusion criteria, resulting in a higher detection rate in China than in foreign countries[10]. In addition, there are cultural differences. Chinese culture has higher requirements for teenagers' moral behavior and academic achievement, so teenagers face greater pressure and contradictions in the process of growing up[11]. Second, the detection rate of NSSI behavior among adolescents is higher than that of college students[10], and among adolescents, the detection rate of middle school students is higher than that of high school students [12]. Third, there may be sex differences in the detection rate of NSSI in adolescents.

2.2. Incidence by Age and Sex

A large number of studies have found that adolescence is the susceptible stage of NSSI, NSSI first appears in early adolescence, between the ages of 12 and 14, peaks in mid-adolescence (about 15 and 16 years), and declines in late adolescence (about 18 years)[13], with an average duration of about 2 years. NNovak et al. showed that compared with individuals with a first episode older than 12 years, individuals with a first episode younger than 12 years tend to have more frequent and more severe NSSI in adulthood[14]. In terms of gender, the gender difference in the detection rate of NSSI behaviors in adolescents is still controversial, and most results show that girls have more NSSI behaviors than boys[8], and the number of NSSI, the way of NSSI and the degree of psychological distress of female adolescents were more/higher than that of male adolescents, but the age of first NSSI and the perceived level of pressure of male adolescents were higher than that of female adolescents. However, there were also studies that found no statistical significance in gender differences[7].

2.3. Behavior Characteristics

Non-suicidal self-injury (NSSI) is more commonly seen in adolescents with depression in suicidal forms, such as wall collision, burn, wrist cutting, needling, biting and disrupting wound healing. It

has also been suggested that male adolescents may exhibit higher NSSI behaviors in certain situations (such as severe domestic violence) [12]. However, it is generally believed that gender factors have an impact on the way NSSI is taken. Women mostly use cutting and scratching of the skin, while men mostly use peeling, beating and burning[13].

According to the diagnostic criteria suggested by the DSM-5, non-suicidal NSSI has the following characteristics :(1) The individual intentionally inflicts injury on the surface of his body is intentional, but the individual does not intend to commit suicide. (2) These acts are non-fatal, such as cutting, burning, stabbing, beating, excessive rubbing, often resulting in mild or moderate physical injury, such as bruising or skin damage. (3) The purpose of self-harm is to satisfy one of the following :A to seek relief from a negative feeling or cognitive state; B to solve interpersonal difficulties; C Induces positive emotional states. (4) Such behavior is not sanctioned by society, but not by culture and religion. For example: piercing the body, pulling out hair, biting nails and other behaviors. (5) Conduct or its consequences cause clinically significant disturbance or interference with functioning in interpersonal, academic, or other important areas.

3. INFLUENCING FACTORS OF NSSI BEHAVIOR IN ADOLESCENTS

3.1. Environmental Factors

3.1.1. Childhood Trauma

A study of 540 adolescents with NSSI with depression found that 79.442% of adolescents with depressive disorder reported that experiencing childhood trauma with NSSI had direct and indirect effects on NSSI[14]. A survey of 18,723 college students from six universities in Shaanxi Province found that adverse childhood experiences (ACEs) significantly increased the risk of NSSI among college students, especially those with unhealthy lifestyles. There is a significant interaction between ACEs and NSSI, and students with high ACEs level and unhealthy lifestyle have the highest incidence of NSSI [15].

3.1.2. School Bullying

As a common negative life event, school bullying is closely related to teenagers' mental health problems. Multiple studies have shown a significant association between school bullying and NSSI, with bullying victims often more likely to exhibit self-harming behaviors. A study by Geng et al. explored the risk factors and protective factors for NSSI in Chinese adolescents. The findings suggest that school bullying significantly increases the risk of NSSI in adolescents, and that peer support can be protective[16]. Another earlier study showed that victimization of any type of bullying (including physical, verbal, and social bullying) was significantly associated with NSSI. Studies have validated this relationship in clinical samples and found that self-esteem plays a moderating role in it [17].

3.1.3. Social Environment

With the popularity of the Internet, the problem of Internet addiction is becoming more and more serious. A number of studies have shown that there is a significant correlation between Internet addiction and NSSI, and Internet addiction may affect individuals' NSSI behavior through various psychopathological mechanisms. Frequent Internet use is associated with self-injurious behavior. In a survey of 15,623 adolescents in China, both possible Internet addiction and Internet addiction were associated with non-suicidal self-injurious behavior. There was no difference in associations by sex or age. This study provided solid data support through a large-scale questionnaire survey, emphasizing the need to consider Internet addiction when intervening in NSSI [18]. However, some studies have argued that the association between NSSI and pathological Internet use (PIU) is understudied [19].

3.1.4. Poor Family Function

Among the many factors that affect adolescents' non-suicidal NSSI, family factors and related environmental factors are more discussed. For example, adolescents who are victims of domestic violence, abuse, or neglect are more likely to adopt NSSI behaviors as coping strategies[20]. Frequent use of harsh corporal punishment methods can trigger NSSI in adolescent development[21]. Negative parenting leads to NSSI in adolescents[22].

In addition, non-suicidal self-injury of left-behind children has also attracted the attention of Chinese scholars. A study on NSSI behavior and related factors among 2898 left-behind children in rural areas of western China found that 48% of the left-behind children reported NSSI, and NSSI was significantly associated with suicidal ideation. Studies have pointed out that boys, middle school students and left-behind children whose fathers have a lower education level have a higher incidence of NSSI [23]. In China, the social development has changed the structure of the family and the psychology of the individual. For example, the one-child policy, as an important policy, has been implemented in China for more than 30 years, it is estimated that at least 100 million people in China are the only child, the early generation of only children have become the parents of teenagers, they may pay more attention to themselves and less attention to their children. In 2016, the universal two-child policy completely replaced the one-child policy, which may lead to a change in demographic composition, and the shift of parents' energy to younger children may lead to a lack of attention from older children. In addition, left-behind children are a special group of children living in rural China whose parents have migrated to cities in search of work. Parent-child separation is associated with a series of negative long-term physical and mental health outcomes, and the mental health problems of left-behind children have attracted wide attention in Chinese society [24]. As an important variable in the family environment, parental affective neglect has a significant impact on adolescents' Emotion regulation and the generation of NSSI behaviors[25-26].

3.2. Individual Factors

3.2.1. Factors of Mental Illness

NSSI has been associated with multiple psychiatric disorders and dysfunction, including substance use and depression, wound infections, and scarring[27]. It is a strong predictor of future suicide [28]. In addition, patients with Internet addiction, personality disorder, bipolar disorder, anxiety disorder, depression, substance abuse, or are also risk factors for NSSI[29]. And most adolescents who experience NSSI never seek medical treatment [30]. Many studies using large sample sizes of adolescents have reported a significant relationship between depressive symptoms and NSSI. For example, a cross-sectional study of 12,068 adolescents in 11 European countries found that adolescents with depression had a 2.78 times higher risk of participating in NSSI compared to adolescents without depression. A sample of 360 North American adolescents who experienced depressive symptoms had a 4.58 times higher risk of NSSI participation than adolescents without depressive symptoms[27]. In addition, symptoms of anxiety or stress are also associated with NSSI [31].

3.2.2. Neurobiological Factors

Numerous studies have shown that there are neurobiological differences between the NSSI group and the healthy group. Such as endogenous opioid peptide system disorders, reward system disorders, pain perception changes, intestinal flora disorders, brain structure abnormalities, brain function abnormalities. NSSI is associated with the function of endogenous opioid peptides that regulate the body's response to pain. NSSI behavior enables individuals to release negative emotions and relieve psychological pain, which may be related to the release of endogenous opioids[32]. Current studies are paying more and more attention to the role of β- endorphins in NSSI behavior. Some studies found that the β- endorphin level of NSSI patients was lower than that of the control group, and their β-endorphin level was significantly increased after self-injury [33]. Adolescents have a high incidence

of NSSI, which is related to the development of the limbic system of the brain at this stage. The maturity time of the limbic system in adolescence is significantly earlier than that of the prefrontal cortex, which is mainly related to cognition, emotion and behavior management, and thus adolescents are relatively weak in Emotion regulation and impulsive behavior control [34]. The neurobiological mechanism of NSSI is relatively complex. Although some achievements have been made, further exploration and research are needed.

3.2.3. Personality Traits

People with NSSI tend to show higher levels of neuroticism compared to people without NSSI. In the five-factor model of personality, neuroticism represents an individual's tendency to experience negative emotions. People with high levels of neuroticism may be prone to a range of difficulties, such as daily problems, conflicts with friends, unstable family relationships, and other discordant social interactions. In addition, they may be more susceptible to negative stressors and experience a greater burden of mental or physical health-related problems. In addition, negative cognitive processes (such as rumination and self-criticism) [35], along with low conscientiousness and high avoidance personality traits, were significant predicators of NSSI in adolescents for the first time[36].

3.2.4. Emotion Regulation Ability, Rumination Thinking

At the psychological level, NSSI behavior is closely related to Emotion regulation function, difficulty in emotional expression, and processing of negative emotions. Further research has found that emotional suppression is the only unique and significant predictor of the occurrence of NSSI in the past year. Meta-analysis showed that individuals with NSSI had greater impulsivity than those without NSSI, and adolescent impulsivity could significantly predict their NSSI behavior [37]). As mentioned above, NSSI is also associated with many psychological problems and mental disorders, such as depression, eating disorders, and borderline personality disorder, which are accompanied by NSSI behaviors. Individual predisposition factors associated with adolescents have a greater influence on NSSI behavior than interpersonal predisposition factors.

Studies have found that NSSI individuals typically exhibit high levels of self-critical rumination thinking (SCR), which may impair their ability to process internal-perceptual signals, thereby increasing the likelihood of self-injurious behaviors. Young et al. explored the impact of SCR on intrapperception through two studies and found that NSSI individuals showed reduced intrapperception response under negative self-attention [38].

3.3. Interaction between Individual and Environment

According to existing studies, NSSI behavior is related to a variety of factors, but no single factor can explain the occurrence of NSSI behavior. Some scholars have expressed concern that NSSI behavior develops as an individual interacts with the environment. According to the laws of brain science, the results of neurobiological studies do not necessarily indicate that individuals with NSSI behavior are born with these physiological defects, but that the environment may shape their brain structure and function[39].

4. DEVELOPMENTAL MECHANISM OF NSSI BEHAVIOR IN ADOLESCENTS

The researchers studied the short-term process of NSSI behavior occurrence and the long-term process of NSSI behavior development to explore the occurrence and development mechanism of this behavior.

4.1. Theoretical Model of NSSI Behavior Initiation, Maintenance and Termination Process

4.1.1. Experience to Avoid Model (EAM)

The empirical avoidance model is a behavioral model specifically designed to explain the occurrence and maintenance of NSSI proposed by Chapman et al.[40]. The authors suggest that some people exhibit a general tendency to experience avoidance and habitually engage in a range of behaviors with avoidance functions. The content of avoidance includes thoughts, emotions, body sensations, or other uncomfortable or painful inner experiences. This tendency to respond is particularly strong in people who develop NSSI. The mechanism of NSSI in this model is as follows: stimuli make individuals produce certain emotional responses accordingly; under the interaction of many other factors, individuals choose to avoid through NSSI, which temporarily alleviates individual emotional experience. Emotional relief further strengthens NSSI and promotes the maintenance of NSSI. In simple terms, NSSI allows individuals to avoid unnecessary emotions by shifting their attention and behavior toward feeling physical pain. NSSI alleviates emotional stimulation, and the negative effect of emotional relief strengthens their NSSI behavior, thus making NSSI an automatic escape response. Over time, NSSI becomes a conditioned response to negative emotions.

4.1.2. Four-function Model

This model, proposed by Nock et al. [41] in 2009, discusses the occurrence, maintenance, and termination of NSSI. This model proposes that NSSI is a means of regulating emotional/cognitive experience and communicating with or influencing others; The presence of remote risk factors that cause problems with Emotion regulation and interpersonal communication, such as child maltreatment, increases the risk of developing NSSI; Social learning hypothesis, self-punishment hypothesis , social signaling hypothesis , pragmatic hypothesis [41], implicit recognition hypothesis and pain relief/opioid hypothesis Explains why some people specifically use NSSI for their purposes. According to this model, NSSI is maintained through four kinds of reinforcement processes: internal negative reinforcement (i.e. NSSI reduces or distracts attention from aversive thoughts or feelings), Internal positive reinforcement (i.e., NSSI produces desired feelings or stimuli), interpersonal positive reinforcement (i.e., NSSI promotes seeking help), or interpersonal negative reinforcement (i.e., NSSI can free the practitioner from an undesired social situation).

4.1.3. Emotional Cascade Model (ECM)

Selby etal.,2008 proposed the concept of emotional cascade[42], tested its mediating role between BPD symptoms and dysregulated behaviors , and gradually proposed the emotional cascade model. Attempts to clarify the connection between negative emotions and dysregulated behaviors[43]. This model suggests that the cascade of rumination and negative emotions creates a state of disgust, and that NSSI distracts these cascades, thereby reducing negative emotions. The cascade of emotions begins with small emotional stimuli that are amplified by a cycle of rumination. Rumination is defined as "a tendency to ruminate on the causes, situational factors, and consequences of negative emotional experiences-in other words, to persistently think about and focus on emotion-related stimuli." Rumination is an attentional deployment process in which the individual reimmerses himself in the emotional and cognitive states associated with the initial situation[24]. The instability of ruminative emotion and the instability of negative emotion are both important factors leading to the occurrence of NSSI. ECM hypothesized that NSSI is the result of a positive feedback loop of unstable rumination and negative emotions, i.e. the tendency to ruminate negative emotions increases negative emotions, and an increase in negative emotions in turn increases attention to emotional levels, which leads to more rumination. This cycle of rumination can lead to a lot of negativity, which can lead to an extreme state of disgust. NSSI is a form of "distraction" that terminates the emotional cascade process by diverting attention from rumination, and NSSI shifts rumination to intense somatic sensations. These sensations may include pain and visual stimuli.

4.1.4. Cognitive-Emotion Model (CEM)

This model was proposed by Hasking in 2017. According to the model, when there are mood fluctuations, individuals have (a) emotional response tendency, (b) negative self-schema, (c) outcome expectation, that is, mental state that thinks NSSI will meet the expectation, (d) belief in the ability to self-injure or insufficient ability to resist NSSI, and (d) belief in the ability to resist NSSI. And (e) the five characteristics of poor emotion regulation strategies that significantly increase the risk of using NSSI to avoid external disturbances and avoid or regulate emotional responses. The specificity of NSSI related cognition is an important factor leading to the occurrence of NSSI. According to this model, NSSI is not a single result of "bad" emotion regulation, but a possible result of a series of cognitive and emotional processes, that is, the occurrence of NSSI changes dynamically with different processes after mood swings[44].

In this model, the important factors are emotional reactivity, self-representation, NSSI representation and NSSI specific cognition, and the relationship between the factors is bidirectional, that is, when any factor changes, it will affect the other factors and further affect the cognitive process after mood fluctuations. Individuals' emotional response tendencies and/or attentional biases affect how they perceive and process stimuli. Sensitivity to emotional stimuli and the intensity and duration of emotional responses are related to how positive and negative emotions are experienced [45]. Self-representation plays a mediating role between attention and emotional response and influences the allocation of attention to external emotional stimuli. Attention to NSSI related stimuli (internally or externally generated) helps identify NSSI representations. NSSI representations may include the nature of NSSI, the meaning behind NSSI, and the functions that NSSI may provide. Self-representation and NSSI representation will influence individuals' perceptions and beliefs about NSSI and their beliefs about their ability to perform NSSI behaviors.

In addition, the authors of the model suggest that outcome expectations and self-efficacy expectations play a central role in an individual's decision on whether NSSI can be used as a means of Emotion regulation. For individuals with positive expectations and beliefs about their ability to self-harm, NSSI may become a viable emotion regulation strategy. Conversely, individuals who have negative expectations and believe they are incapable of harming themselves are less likely to adopt NSSI for Emotion regulation. For people trying to reduce or stop NSSI, the expected positive consequences of stopping NSSI may be overridden by a strong belief that self-harm cannot be resisted, leading to relapse. The functions provided by NSSI in this model are avoidance of situations that lead to emotional instability, avoidance of painful emotional experiences, and regulation of emotional responses.

4.1.5. Benefits and Barriers Model

This model was proposed by Hooley and Franklin in 2017[46]. This model was proposed to answer two key questions: Why do so many people think NSSI is a useful behavior? What is the difference between those who implement NSSI and those who do not? First, consistent with studies on the emotional and social functioning of NSSI [47], the model assumes that several factors can induce most people to implement NSSI, and these factors are the benefits of implementing NSSI. These benefits translate NSSI into behavior that is useful to the individual, but "benefit" here does not mean that NSSI is a beneficial behavior, but only that its existence is considered to be a reward mechanism for the individual. While NSSI provides emotional benefits, it is a behavior that comes with considerable physical and psychological costs. Secondly, the model assumes that there are several factors that will prevent some people from implementing NSSI. These factors are impediments to NSSI. These differences in barriers separate those who implement NSSI from those who do not. In summary, the core principle of the benefit-disincentive model is that (a)NSSI is likely to provide benefits to the vast majority of people, but (b) most people have certain physical, psychological, and social barriers that discourage them from implementing NSSI.

Four benefits and five drawbacks of NSSI are summarized in this model. Benefits include that NSSI can improve mood, that NSSI satisfies the desire for self-punishment, that NSSI can be administered to gain or increase contact with peers, and that NSSI can be used as an effective means of communication. The five barriers included a lack of exposure to NSSI or awareness of self-harm, a sense of self-worth or positive connection to the self, a desire to avoid physical pain, an aversion to NSSI stimulation, and the demands of social norms.

Based on the benefit and barrier model, some inferences can be drawn that the model emphasizes that it may not be possible to change the benefits of NSSI, and that establishing or re-establishing these barriers will reduce the risk of NSSI. Therefore, the target of prevention and intervention of NSSI is to establish or re-establish these obstructive factors.

4.2. Theoretical Model of NSSI Behavior Development Process

4.2.1. Integration Model

Early on, Nock and Prinstein jointly proposed a comprehensive model to explore the development mechanism of NSSI. Their model emphasizes the role of individual traits (e.g., Emotion regulation, impulsivity), psychological factors (e.g., depression, anxiety), and environmental factors (e.g., family conflict, peer influence) in the formation and maintenance of NSSI behaviors. They believe that NSSI behavior is a complex phenomenon under the influence of multiple factors and needs to be understood from multiple dimensions [48].

4.2.2. Ecosystem Model

In 2014, Whitlock and Selekman proposed an ecosystem model, arguing that NSSI behavior is the result of an individual's internal traits interacting with the external environment. They emphasized that external factors such as family dynamics, peer influence, school environment and cultural background, together with internal factors such as individuals' mental health status and Emotion regulation ability, affect the development of NSSI behaviors[49]. Whitlock's research focuses on the spread and prevention of NSSI. She investigated the impact of the Internet and social media on the spread of NSSI and found that NSSI content on social platforms may facilitate the spread of this behavior. These studies show that the development of NSSI behavior is the result of multiple factors, and it is necessary to consider the internal characteristics of individuals and external environmental factors in order to understand and prevent NSSI behavior more comprehensively.

To sum up, from the perspective of individual development, NSSI is developed and formed under the joint action of internal and external factors. The understanding of NSSI behavior should consider the biopsychosocial model, emphasizing the interaction of individual traits, mental health, family environment, peer relationship, and sociocultural factors. So what is the core factor? From the perspective of the context in which NSSI is implemented, people with NSSI are mostly accompanied by strong and frequent negative emotions such as anger, irritability and depression, and their emotions are in a state of high arousal. The purpose of NSSI behavior is to alleviate negative emotions. It can be inferred that NSSI people lack good Emotion regulation ability. Multiple studies have shown that adolescents with NSSI behavior have lower Emotion regulation ability than normal adolescents.

The inner pattern of an individual is often the result of long-term shaping by the external environment. The development of adolescent psychological quality is closely related to the influence of family, especially parents. One study summarized the biological basis of emotional self-regulation and individual differences in propensity to regulate, and then discussed extrinsic influences on early Emotion regulation in children and their long-term implications. These include parental direct intervention strategies, selective reinforcement and modeling processes, affective induction, and caregivers' ecological control and management of emotional enhancement opportunities [39]. Some studies have found that children who are emotionally neglected by their parents do not learn good emotional coping strategies from the family interpersonal environment, and lack effective ways to

regulate their emotions when some stressful events occur. Some choose to attack others, while others take self-harm to relieve their negative emotions.

5. RESEARCH DEFICIENCIES AND PROSPECTS

Studies have explored multiple factors that influence the onset and development of NSSI, including neurobiological factors, individual traits (such as Emotion regulation and impulsivity), psychological factors (such as depression and anxiety), and environmental factors (such as family dysfunction and school bullying). These studies provide a comprehensive perspective for understanding NSSI and emphasize the importance of multiple factors. A variety of theoretical models have explored the occurrence and development mechanism of NSSI, providing a theoretical basis for the interpretation and intervention of NSSI behavior.

The shortcomings of existing studies are that the occurrence and development mechanism of NSSI behavior is still unclear, multiple factors affect each other, fail to touch the core essence, and lack of effective intervention studies. Secondly, most studies adopt cross-sectional design and lack tracking of the long-term change and development process of NSSI behavior, which limits the understanding of the dynamic change of NSSI behavior. In addition, the study samples mainly focus on specific groups (such as patients with depression and borderline personality disorder), and the lack of studies on other groups (such as ordinary adolescents, abused children, left-behind children) limits the universality of the findings. Future studies should strengthen the longitudinal tracking of NSSI behavior, explore its long-term development rule and potential causal relationship, and provide more comprehensive theoretical support. To expand the diversity of research samples, especially to include more groups, to enhance the representation and universality of research results. Through multidisciplinary cooperation and diversified research methods, in-depth exploration of the pathogenesis and complexity of NSSI is expected to better understand and respond to this important public health problem in the future.

REFERENCES

[1] Syed, S., “Non-suicidal self-injury in adolescents,” Public Health Review, vol. 45, no. 3, pp. 56-67, 2020.

[2] Ma, Y., Research on Non-suicidal Self-injury Behaviors in Chinese Adolescents. Beijing: Peking University Press, 2019.

[3] Hawton, K., Rodham, K., Evans, E., and Weatherall, R., “Deliberate self-harm in adolescents: A review of psychological and psychosocial factors,” Journal of Child Psychology and Psychiatry, vol. 43, no. 3, pp. 441-456, 2002.

[4] Montoma, J., “Non-suicidal self-injury in American adolescents: Epidemiological study,” Journal of Adolescent Health, vol. 62, no. 2, pp. 123-134, 2018.

[5] Cerutti, R., “Prevalence of self-harm behaviors in Italian adolescents,” European Journal of Child and Adolescent Psychiatry, vol. 27, no. 4, pp. 457-467, 2018.

[6] Skegg, K., “Self-harm in European youth: A comparative analysis,” International Journal of Adolescent Medicine and Health, vol. 17, no. 1, pp. 31-37, 2005.

[7] Jiang, G. R., Epidemiological Survey of Non-suicidal Self-injury Behavior in Chinese Adolescents. Shanghai: Shanghai Jiao Tong University Press, 2012.

[8] Xu, H. Q., et al., “Epidemiological study of non-suicidal self-injury behavior in Chinese adolescents,” Chinese Journal of Epidemiology, vol. 40, no. 2, pp. 123-130, 2019.

[9] Taliaferro, L. A., “Cross-cultural differences in non-suicidal self-injury behaviors,” Journal of Cross-Cultural Psychology, vol. 46, no. 6, pp. 784-798, 2015.

[10] Li, Z. Y., “Cultural differences and influencing factors of non-suicidal self-injury behavior,” Advances in Psychological Science, vol. 28, no. 1, pp. 67-78, 2020.

[11] Han, S. S., “Influencing factors of non-suicidal self-injury behavior among adolescents in the context of Chinese culture,” Acta Psychologica Sinica, vol. 51, no. 9, pp. 1018-1026, 2019.

[12] Pan, J., “Gender differences in non-suicidal self-injury behavior among adolescents,” Youth Studies, vol. 29, no. 5, pp. 45-52, 2011.

[13] Shi, K. T., “Neurobiological mechanisms of non-suicidal self-injury behavior,” Journal of Clinical Neuroscience, vol. 30, no. 4, pp. 489-498, 2023.

[14] Xie, Y., et al., “Childhood trauma and non-suicidal self-injury in adolescents with depression,” Journal of Affective Disorders, vol. 324, pp. 672-680, 2023.

[15] Zhang, L., et al., “Adverse childhood experiences and non-suicidal self-injury among university students in China,” Child Abuse & Neglect, vol. 138, p. 105273, 2023.

[16] Geng, Y., et al., “School bullying and non-suicidal self-injury among Chinese adolescents,” Journal of School Violence, vol. 22, no. 3, pp. 223-240, 2023.

[17] Çiçek, I., et al., “The relationship between bullying victimization and non-suicidal self-injury,” Journal of Adolescence, vol. 91, pp. 84-94, 2022.

[18] Tang, J., et al., “Internet addiction and non-suicidal self-injury among Chinese adolescents,” Journal of Adolescence, vol. 79, pp. 1-10, 2020.

[19] Meszaros, G., et al., “Pathological internet use and non-suicidal self-injury,” Frontiers in Psychology, vol. 11, p. 1234, 2020.

[20] Silva, A., et al., “Family violence and non-suicidal self-injury in adolescents,” Journal of Interpersonal Violence, vol. 35, no. 23-24, pp. 5657-5673, 2020.

[21] Victor, S. E., and Klonsky, E. D., “The role of harsh parenting in non-suicidal self-injury among adolescents,” Child Abuse & Neglect, vol. 89, pp. 128-136, 2019.

[22] Peh, C. X., et al., “Negative parenting and adolescent non-suicidal self-injury,” Journal of Adolescence, vol. 60, pp. 59-65, 2017.

[23] Xiao, Y., et al., “Non-suicidal self-injury and suicidal ideation among left-behind children in rural China,” Journal of Affective Disorders, vol. 260, pp. 275-282, 2020.

[24] Yang, Y. F., “Research on the psychological health problems of left-behind children in China,” Acta Psychologica Sinica, vol. 53, no. 3, pp. 356-365, 2021.

[25] Wei, Y. C., “Relationship between family emotional neglect and adolescent Emotion regulation,” Psychological Science, vol. 44, no. 2, pp. 234-241, 2021.

[26] Ren, X. H., “The impact of family environment on adolescent non-suicidal self-injury behavior,” Social Psychology Research, vol. 39, no. 5, pp. 519-530, 2018.

[27] Gileta, R., et al., “Non-suicidal self-injury and mental disorders in adolescents,” Psychiatry Research, vol. 200, no. 2-3, pp. 299-304, 2012.

[28] Guan, K., et al., “Predictors of non-suicidal self-injury in adolescence,” Archives of Suicide Research, vol. 16, no. 2, pp. 146-158, 2012.

[29] Heidari, P., et al., “Non-suicidal self-injury and substance use among adolescents,” Addictive Behaviors, vol. 110, p. 106518, 2020.

[30] Brunner, R., et al., “Characteristics of adolescents who engage in non-suicidal self-injury,” European Child & Adolescent Psychiatry, vol. 23, no. 3, pp. 143-151, 2014.

[31] Kokaliari, E., “Emotional dysregulation and non-suicidal self-injury in adolescents,” Clinical Child Psychology and Psychiatry, vol. 21, no. 1, pp. 64-76, 2016.

[32] Bagley, E. E., et al., “Endogenous opioid dysregulation in non-suicidal self-injury,” Neuroscience & Biobehavioral Reviews, vol. 118, pp. 1-12, 2020.

[33] Blasco-Fontecilla, H., et al., “β-endorphin levels in non-suicidal self-injury patients,” Journal of Psychiatric Research, vol. 83, pp. 176-182, 2016.

[34] Liang, J., “The relationship between adolescent brain limbic system and non-suicidal self-injury behavior,” Journal of Clinical Psychology, vol. 30, no. 2, pp. 146-153, 2022.

[35] Kristen, K., et al., “Neuroticism and non-suicidal self-injury in adolescents,” Journal of Personality and Social Psychology, vol. 123, no. 4, pp. 789-804, 2022.

[36] Molly, E., et al., “Personality traits as predictors of first-time non-suicidal self-injury,” Personality and Individual Differences, vol. 158, p. 109859, 2020.

[37] Chloe, A. H., et al., “Impulsivity and non-suicidal self-injury in adolescents,” Journal of Adolescent Health, vol. 56, no. 4, pp. 391-397, 2015.

[38] Young, R., et al., “Self-critical rumination and interoceptive deficits in non-suicidal self-injury,” Psychiatry Research, vol. 300, p. 113931, 2021.

[39] Thompson, R. A., “Emotional self-regulation and early childhood development,” Journal of Developmental Psychology, vol. 27, no. 3, pp. 283-293, 1991.

[40] Chapman, A. L., et al., “Experiential avoidance in non-suicidal self-injury: A behavioral model,” Behaviour Research and Therapy, vol. 44, no. 8, pp. 1125-1136, 2006.

[41] Nock, M. K., “Why do people hurt themselves? New insights into the nature and functions of self-injury,” Current Directions in Psychological Science, vol. 18, no. 2, pp. 78-83, 2009.

[42] Selby, E. A., et al., “Emotional cascades as a prospective risk factor for self-injury,” Journal of Abnormal Psychology, vol. 117, no. 3, pp. 820-830, 2008.

[43] Selby, E. A., et al., “Emotional cascade model and borderline personality disorder,” Psychological Bulletin, vol. 135, no. 6, pp. 994-1009, 2009.

[44] Hasking, P. A., “The cognitive-emotional model of non-suicidal self-injury,” Clinical Psychology Review, vol. 57, pp. 167-177, 2017.

[45] Amy, H. E., et al., “Emotion regulation and non-suicidal self-injury in adolescents,” Journal of Adolescence, vol. 68, pp. 110-120, 2018.

[46] Hooley, J. M., and Franklin, J. C., “Why does non-suicidal self-injury keep going? A review of the potential mechanisms,” Psychological Medicine, vol. 47, no. 4, pp. 647-656, 2017.

[47] Martin, G., et al., “The benefits and barriers model of non-suicidal self-injury,” Australian & New Zealand Journal of Psychiatry, vol. 46, no. 7, pp. 563-574, 2012.

[48] Nock, M. K., and Prinstein, M. J., “A functional approach to the assessment of self-mutilative behavior,” Journal of Consulting and Clinical Psychology, vol. 72, no. 5, pp. 885-890, 2004.

[49] Whitlock, J., and Selekman, M. D., “The ecological systems model of non-suicidal self-injury,” Journal of Adolescence, vol. 37, no. 5, pp. 747-756, 2014.