Chapter 16

NONSUICIDAL SELF-INJURY AND THE RELATIONSHIP TO SUICIDE

Stephanie Stockburger*
Division of Adolescent Medicine and Young Parent Programs, Kentucky Clinic, Department of Pediatrics, Kentucky Children’s Hospital, University of Kentucky College of Medicine, Lexington, Kentucky, US

ABSTRACT

Nonsuicidal self-injury (NSSI) is the deliberate, direct, and self-inflicted destruction of body tissue resulting in immediate tissue damage done for purposes not socially sanctioned. Common forms of NSSI include cutting, carving words, burning, scratching, or hitting oneself to the point of injury. In the United States, studies have found that the lifetime prevalence of NSSI ranges from 12% to 37.2% in the middle school populations and 12% to 20% in late adolescent and young adult populations. Risk factors for NSSI include depression, anxiety, perceived isolation, low family warmth, poor family communication, abuse, and hopelessness. Individuals who self-harm are at increased risk of suicide although NSSI is considered a coping mechanism to avert suicide. There are several theories as to why NSSI carries increased risk of suicide although more research is needed to truly determine the association. Psychiatric disorders including depression, anxiety, substance misuse, and personality disorders are relatively common among individuals who self-harm. Currently, treatment for NSSI consists of psychotherapy and possibly medication although no formal guidelines are in place. Areas for future research about NSSI include the relationship between NSSI and suicide as well as treatment for NSSI.

* Corresponding author: Stephanie Stockburger, MD, FAAP, Adolescent Medicine, University of Kentucky College of Medicine, 740 S Limestone, Lexington, KY 40536, United States. E-mail: stephaniestockburger@uky.edu.
INTRODUCTION

Nonsuicidal self-injury (NSSI) is the deliberate, direct, and self-inflicted destruction of body tissue resulting in immediate tissue damage (1). It must be for purposes not socially sanctioned which means that tattooing and piercing are not NSSI unless done excessively in which case they may be a form of NSSI. As per the definition, the self-injury must not be done with suicidal intent. Types of self-injury are included in table 1, which is by no means a comprehensive list.

The “Diagnostic and statistical manual, edition 5” lists nonsuicidal self-injury under “conditions for further study” (2) (see table 2). The proposed criteria include self-inflicted damage to the surface of the body on five or more days in the last year. There cannot be suicidal intent. Suicidal intent can be assessed either by the individual stating this or that the individual knows, or has learned, that the behavior is not likely to result in death (2).

PREVALENCE

NSSI typically starts in the early teen years and may continue into adulthood (2). However, self-harm behavior may begin in childhood or adulthood. Individuals may self-harm one or two times and then stop self-harming. Other individuals occasionally self-harm or self-harm repeatedly. In a cross-national study of community samples from Italy, the Netherlands and the United States, consisting of a survey of 1862 adolescents, approximately 24% of the adolescents reported at least one NSSI episode within the last year (3). Another cross-sectional study of 11 European countries with a sample size of 12,068 found that the lifetime prevalence of direct self-injurious behavior was 27.6% with 19.7% reporting occasional self-injurious behavior, and 7.8% reporting repetitive self-injurious behavior (4). In the United States, studies have found that the lifetime prevalence of NSSI ranges from 12% to 37.2% in the middle school populations and 12% to 20% in late adolescent and young adult populations (5). The average age of onset is typically between ages 11 and 15 years (5). Of the youth that report ever engaging in self-injurious behavior, approximately 6-7% of adolescents report engaging in repetitive NSSI (5).

NSSI varies in several ways between genders. Currently, studies vary on whether the prevalence of NSSI is equal between males and females or if females have a higher prevalence of NSSI. A study by Sornberger et al. (6) found that females reported higher rates of NSSI. Females were more likely to cut and scratch and had more injuries to arms and legs than their male counterparts. Males reported more burning and hitting behavior. Males had more injuries to the chest, face, and genitals (6). Therefore, it is possible that NSSI in females is more visible than in males (1).

There has been no conclusion in the literature that there is an association with race or socioeconomic status; the study results have been mixed. However, the variable that does appear to be significantly associated with NSSI is sexual orientation. Specifically, youth who are bisexual or questioning seem to be at higher risk than both their heterosexual and homosexual peers. Females who are questioning or bisexual appear to be at the highest risk (7).
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RISK FACTORS

NSSI is a way of regulating intense emotion. Therefore, risk factors for NSSI are similar to risk factors for other negative coping mechanisms. A study by Glassman et al. (8) found that emotional and sexual abuse had the strong associations with NSSI. This study supported a theoretical model that in which self-criticism mediates the relationship between emotional abuse and NSSI behaviors. Another study by Baetens et al. (9) investigated whether adolescents’ psychological distress and/or perceived parenting predicted the occurrence of NSSI. The study concluded that psychological distress at age 12 years predicted NSSI over time and that parental awareness of NSSI changed the perception of parenting behaviors, specifically a perception of decreased parental rule setting over time (9). A literature review by Webb (10) revealed that psychological factors such as depression and hopelessness were strongly associated with deliberate self-harm. The study found that common psychosocial factors of deliberate self-harm in adolescents included poor communication and relating, social worries such as relationships, sexuality and career/examination pressures (10). It also found that depression, family dysfunction, and social pressure are likely to exist together in adolescents with deliberate self-harm behavior (10).

Table 1. Common types of self-injury (1)

| Carving words into the skin (often negative words such as “fat” and “worthless”)
| Burning (such as with cigarette lighter or hot hair pin) the skin
| Rubbing (such as with an eraser) the skin to the point of injury
| Scratching or pinching with fingernails to the point of injury
| Biting and leaving marks
| Banging or punching an object or self to the point of self-injury
| Intentionally preventing wound healing
| Embedding objects into the skin
| Pulling out hair or eyelashes with the intention of hurting oneself |

Table 2. Nonsuicidal self-injury proposed criteria, DSM 5 (2)

| A. The behavior occurs on 5 or more days in the last year and is done without suicidal intent
| B. The individual must engage in the self-injurious behavior with at least one of the following expectations:
  1. To obtain relief from a negative feeling or mental state
  2. To resolve an interpersonal difficulty
  3. To induce a positive feeling state
| C. The intentional injury must be associated with at least one of the following:
  1. Interpersonal difficulties or negative feelings or thoughts (like depression, anxiety, tension, anger, distress, or self-criticism) which occurs immediately prior to the self-injury
  2. Prior to engaging in self-harm, a period of preoccupation with the behavior which is difficult to control
  3. Thinking about self-injury that occurs frequently, even when not acted upon
| D. The behavior is not socially sanctioned (like part of a religious ritual or cultural ritual) and is not limited to biting nails or picking scabs
| E. The behavior or consequences of the behavior result in significant distress or interferes with important areas of functioning (such as interpersonal or academic)
| F. The behavior does not occur during psychosis, is not part of a pattern of repetitive stereotypies, and is not better explained by another mental or medical condition |
Motivations

A key to understanding NSSI is understanding what motivates individuals to harm themselves. As mentioned previously, NSSI is a deliberate attempt to harm oneself. However, it must not be done with suicidal intent as that behavior would be classified as “suicide attempt.” It is confusing to think about why someone would deliberately hurt themselves. It is important to think about self-harm as a coping mechanism in order to understand it. There are a number of reasons individuals self-harm.

An individual may self-harm for multiple reasons. As in the DSM 5 proposed criteria for NSSI, a common expectation is to obtain relief from a negative feeling or state, or in other words, to regulate intense negative emotion (2, 7). A common time youth will self-harm is when they are going through a particularly stressful time. For example, a fight or break-up with a significant other, a low grade on an exam, or family arguments may all be triggers for NSSI. Other youth self-harm to “feel something” when they otherwise feel numb. There is also an association with self-criticism or punishment (7). The individual may feel that that their self-harm is a way to “gain control.”

Individuals may self-harm as a distraction, or to escape from what is going on around them (7). They may gain attention from adults or peers due to their self-harm which is motivating for them. They may also self-harm to attain group membership (7). Adolescents, especially around ages 14-15 years, are developmentally trying to break away from their parents. At this age, group membership and peer acceptance is extremely important. For the adolescent brain, in this case, the way of solving the problem of “desiring acceptance” is to self-harm, although adult brains typically think of self-harm as the “problem itself.” It is always important to keep the adolescent’s perspective in mind, however, when encountering self-harm (or any other harmful or potentially harmful behavior).

Endorphin Release and Addiction

Most individuals feel a high or rush when they self-harm. The theory is that when the self-harm causes tissue damage, endorphins are released which make the individual feel good. Due to the endorphin release, which is similar to the “rush” that people feel for example, when abusing drugs, NSSI may be addictive. An individual may crave the “rush” they feel when they self-harm and, as with other addictive behaviors, the individual may have difficulty controlling the impulse to self-harm. This may be thought of as, similarly to substance abuse, a way to self-medicate (11).

NSSI and Suicide

Despite the fact that non-suicidal self-injury must be done without suicidal intent, per definition, there is an association with NSSI behavior and suicide. In a study by Nock et al., which consisted of clinical interviews of 89 adolescents admitted to an adolescent psychiatric inpatient unit who engaged in NSSI in the past 12 months, it was found that 70% of adolescents who engaged in NSSI report a lifetime suicide attempt and 55% report multiple
While nonsuicidal self-injury (NSSI) attempts are often viewed as a precursor to suicide, research has shown that there are several characteristics associated with suicide attempts that are not related to NSSI. Characteristics that were associated with suicide attempts included a longer history of NSSI, using a greater number of methods of self-injury, and the absence of physical pain during NSSI (12).

Thus, there is a paradoxical relationship between NSSI and suicide. Most specialists and scholars agree that NSSI is used, in most cases, to alleviate distress and to overt suicide (13). It is a temporary means of sustaining life (13). NSSI serves both as a temporary means of regulating negative emotion while simultaneously being associated with increased suicide risk (13). There are currently three main theories to explain the relationship between NSSI and suicide.

The first theory is called "the gateway theory." There is a school of thought that suggests that NSSI and suicidal behavior are on a continuum of self-harm behaviors with NSSI at one extreme and completed suicide at the other extreme (14). The thought is that even though the behaviors have different intentions, they share common experiential qualities (15). For example, both behaviors involve causing direct bodily harm (15). One part of this theory is that NSSI is a "gateway" behavior which may escalate and eventually result in completed suicide. However, there is limited longitudinal research about this theory (16). Specifically, one would predict that an escalation in self-harm that eventually led to completed suicide would be found (16). There are current longitudinal studies on this subject but they are limited to adolescents receiving inpatient or outpatient care. A history of NSSI has been found to be predictive of suicidal behavior but it has not been found that suicidal behavior is predictive of NSSI (16).

The second theory is the "third variable theory." The premise of this theory is that there is a "third variable" that accounts for the association between NSSI and suicidal behavior (16). It has been shown that among individuals who complete suicide, 90% have a diagnosable psychiatric disorder (17). Similar rates (87%) of psychiatric disorder have also been found among inpatient samples of youth who engage in NSSI (12). Another possible "third variable" is perceived level of psychological distress. Individuals who engage in either or both NSSI an suicidal behavior report greater depression, suicidal ideation, lower self-esteem, and lower parental support than individuals who do not engage in either behavior (14). A third possible "third variable" may be a genetic predisposition. A meta-analysis by Lin and Tsai found that individuals who died by suicide were more likely to carry a gene that reduced serotonin uptake when compared to a living control group (18). There is also a proposed theory that serotonin syndrome dysfunction is also a risk factor for NSSI (5). However, the "third variable theory" is inconsistent with findings that individuals who engage in NSSI are at higher risk for suicidal behavior even when controlling for age, gender, and socioeconomic factors as well as other risk factors for depression (16).

The third theory is called "Joiner’s theory of acquired capability for suicide" (19). According to this theory, in order for someone to end their own life, they have to overcome the fear and pain that is associated with suicidal behaviors (16). Joiner refers to this as acquired capability for suicide (16). Joiner hypothesizes that NSSI is a way for individuals to habituate to the fear and pain associated with self-harming behaviors (16, 19). This theory is similar to the Gateway Theory in that there is a continuum of behaviors beginning with self-harm and possibly ending with suicide. Joiner’s theory differs from the Gateway Theory in that NSSI is only one of many behaviors that may habituate and desensitize someone to the pain and fear associated with suicide (16). Other desensitizing behaviors may include alcohol and drug abuse and exposure to violence such as in combat experiences or interpersonal
violence. In support of this theory is research that more frequent NSSI is predictive of more lethal suicidal attempts (20). Also in support of this theory is that the use of multiple methods of NSSI and the number of years spent with NSSI behavior are predictive of the number of suicidal attempts (12). Criticisms of the theory include that NSSI and suicidal behavior often involve different means (16). In addition, habituating to one self-harm behavior may not habituate someone to another form of self-harm behavior (16). Researchers have not yet examined the link between NSSI and acquired capability for suicide with a longitudinal, cross-sectional study (16). More research is clearly needed to substantiate these three theories about the association between NSSI and suicide as well as the conditions which may increase the risk of those with NSSI behavior going on to develop suicidal behavior (16).

**ASSOCIATION WITH PSYCHIATRIC DISORDERS**

Research has found that individuals with NSSI are at increased likelihood of having other psychiatric disorders. A systematic review by Hawton et al. (21) of 50 studies from 24 countries, of patients who present to a hospital with self-harm, evaluated the prevalence of co-occurring psychiatric disorders. They found that psychiatric disorders were present in 83.9% of adults and 81.2% of adolescents and young adults (who present to the hospital with self-harm) (21). Personality disorders were found in 27.5% of adult patients (21). They also found that psychiatric disorders were more common in patients in Western (89.6%) than non-Western countries (70.6%) (21).

<table>
<thead>
<tr>
<th>Table 3. Motivations for self-harm (7)</th>
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<tbody>
<tr>
<td>• to regulate intense emotions</td>
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<tr>
<td>• to experience emotion when otherwise feeling numb</td>
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<tr>
<td>• to punish oneself</td>
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<tr>
<td>• to exert self-control</td>
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<tr>
<td>• to distract</td>
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<tr>
<td>• to get a high or rush</td>
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<tr>
<td>• to gain attention from peers or adults</td>
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<td>• to attain group membership</td>
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<th>Table 4. Presence of psychiatric disorders in patients admitted to hospital with self-harm (21)</th>
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<tr>
<td>Depression</td>
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<td>Anxiety disorders</td>
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<td>Bipolar disorders</td>
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<td>Psychotic disorders</td>
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A study by Nock et al. (12) evaluated data from clinical interviews with 89 adolescents who were admitted to an inpatient psychiatric unit and had engaged in NSSI within the last 12 months (12). This study found that 87.6% of these adolescents met the criteria for a DSM-IV Axis I diagnosis (12). This included externalizing (62.9%), internalizing (51.7%), and substance use (59.6%) disorders (12). The percentile of adolescents in the study who met criteria for an Axis II personality disorder was 67.3% (12). Although this study was much smaller than the study by Hawton et al. (21), it does suggest a higher prevalence of both DSM-IV Axis I and Axis II disorders. The exact reason for this is unknown although a major variable is that Hawton et al. (21) included adolescents, young adults, and adults whereas Nock et al. (12) included only adolescents. A possible theory to explain this difference is that adolescents who engage in NSSI have a higher prevalence of co-occurring psychiatric disorders than young adults and adults. Regardless of the reason for the different results, both studies highlight the importance of screening for co-occurring psychiatric disorders in individuals who engage in NSSI.

**Table 5. Warning signs of NSSI (1)**

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<th>Warning Signs</th>
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<tr>
<td>unexplained marks or clustered scars</td>
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<td>fresh cuts, bruises, or burns</td>
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<tr>
<td>bandages</td>
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<tr>
<td>inappropriate dress for the season (excess covering of skin)</td>
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<tr>
<td>being unwilling to participate in swimming or other activities that require skin exposure</td>
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<tr>
<td>use of wrist bands (to cover wounds or scars)</td>
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<tr>
<td>unexplained razor blades or other cutting or burning implements</td>
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<tr>
<td>social withdrawal</td>
</tr>
<tr>
<td>difficulty handling anger</td>
</tr>
<tr>
<td>expressions of self-loathing or worthlessness</td>
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Encountering an individual’s self-harm wounds can be shocking, intimidating, and anxiety-producing to others who are not familiar with NSSI. Warning signs that someone is self-harming include unexplained cuts or clustered marks, bandages worn frequently, inappropriate dress for the season (like long pants in the summer), use of wrist bands, social withdrawal, expressions of self-loathing or worthlessness (see table 5) (1). However, it should be noted that these are warning signs and do not prove that an individual self-harming. It is especially important to remember that although individuals who self-injure may be withdrawn or isolated, they may also be very functional and engaged members of society (1).

When there is a concern that someone may be self-harming, it is important to privately ask them honest and direct questions. Yelling, acting shocked, or acting horrified are typically not helpful reactions to an individual who is self-harming. One suggestion is “I have noticed that you have wounds or scars on your arms. I know this can be a sign of self-harm. Are you harming yourself?” (1). Someone who you suspect is self-harming may or may not be willing to talk about it. It is important to let them know that you are concerned about them and that the door is open if they would like to talk more with you. It is important not to try to force
someone to talk about their self-harm. Often people who self-harm are ashamed and embarrassed about it. Being critical of them may make it even harder for them to be open about their self-harm. It is also a good idea to assess if the person you suspect is self-harming has resources and people they can talk open and honestly with.

As there is an association, as previously discussed, with NSSI and increased risk of suicide, it is important to ask individuals who self-harm about their intent. Most often, their intention is not to “end life” but to preserve life and regulate emotion. However, young adolescents may not understand what type of self-harm is lethal, or may not understand that self-harming certain places in the body (like cutting on the neck) has higher lethality. There may also be individuals whose intent in self-harming was to commit suicide. It is impossible to know an individual’s intent unless they are directly asked. If someone reports that they are suicidal, it is extremely important that they receive immediate mental health or medical care which is often found in emergency departments and some mental health centers. The goal is to keep the individual safe until they receive appropriate management and their mood stabilizes.

Encountering recent self-harm injuries such as cuts, wounds, burns, or bruises requires an assessment of the tissue damage. Wounds should be checked for signs of infection. Some self-harm injuries require suturing or medical adhesive application for appropriate healing. Proper care of self-harm wounds such as washing, applying antibiotic cream, and keeping clean are important to prevent secondary infection.

**Treatment**

Treatment for NSSI is complex and carries a lack of evidence-based research. In general, the main treatment is psychotherapy, which may be in the form of cognitive behavioral therapy (CBT), dialectical behavioral therapy (DBT), family therapy or intervention, developmental group psychotherapy, and multisystemic therapy (22). In some cases, inpatient psychiatric management is indicated. Medication use for the treatment of NSSI is also under-researched (22). Treatment often depends on the existence of other co-occurring psychiatric or personality disorders. Selective serotonin reuptake inhibitors (SSRIs) are commonly used for the treatment of anxiety and depression in adolescents and adults. However, there is a lack of evidence for treatment specifically for NSSI (22).

**Future Directions**

Non-suicidal self-injury is relatively common in the adolescent and young adult population. Future research would benefit individuals with NSSI behavior as well as medical and mental health providers who care for these individuals. Directions for future research include further evaluating the association between NSSI and suicide. Currently, there are several theories but they have not been longitudinally evaluated. Another major area for future research is the treatment of NSSI. Trials that compared one form of psychotherapy vs. another and that measured outcomes longitudinally would be beneficial. In addition, there is currently a gap in the literature about medication management in individuals who self-harm. Gaining further
information about this subject would benefit individuals who self-harm as well as medical and mental health providers.

REFERENCES
