Characteristics of Adolescent Who Engage in Non-suicidal Self-Injury

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Abstract

Increasing prevalent rates of non-suicidal self-injury (NSSI) among adolescents is of increasing concern in both clinical and school environments. Basic knowledge of the characteristics, influences, treatment approaches for NSSI are essential for those working with this population. This paper explores the characteristics of adolescents who self-injure, peer, family, and media (including internet) influences; as well as internal factors that reinforce this behavior. Individual, family, and school based interventions are discussed.


Introduction and Definition

Non-suicidal self-injury (NSSI), self-injurious behavior (SIB), self-mutilation, and cutting; all refer to “intentional, self-effected, low lethality bodily harm of a socially unacceptable nature, performed to reduce psychological stress [1]. While this behavior is not new, there has been ongoing, recent alarm due to the perceived increase in NSSI behavior among teens and young adults. Prevalence studies vary by definition of what constitutes NSSI, leading to dramatic variations in reports of this behavior across clinical and community populations. Dyl [2] reports rates of “5-47% in community adolescent samples, 12-35% among college students, and 4% in general adult populations”. There are significantly higher prevalence rates among adolescent psychiatric populations [3]. Across populations, the lifetime prevalence rates in the community hover around 15-20% [4]. In practical terms, this suggests that in a high school of 1000 students, as many as 150-200 could self-injure during their high school years. It should be noted however, that some adolescents will only engage in this type of behavior once or twice before stopping permanently [4].

Increasing prevalence rates [5,6] and clinical concerns related to diagnosis and management have led to proposed criteria for a new diagnostic category of Non-Suicidal Self Injury in the 5th Edition of the Diagnostic and Statistical Manual of Mental Disorders [DSM-5] [7,8]. While light cutting is most prevalent, other forms of NSSI include biting, burning, hitting oneself, carving, pin-scratching; and more recently, “embedding”. Embedding [9] involves inserting objects such as pins under the skin (usually in the arm or neck area) and has been discussed in the medical rather than psychological literature due to complications in emergency treatments that require radiological or magnetic resonance imaging assessment [10]. Deliberate substance use and self-poisoning are considered to be self-injurious, but tend not to be relevant to this population as the motivations and goals for these behaviors are different from the definition of NSSI.

Gender Differences

The typical adolescent that engages in NSSI is Caucasian, usually from middle to upper middle class background and of at least average intelligence [11]. Most clinicians endorse the concept that NSSI occurs more frequently in females than males [12] but Heath et al. [4] in their review of a number of prevalence studies suggest that this may not be accurate due to the broad criteria used to define self-injury. A study by Lloyd-Richardson, Perrine, Dierker, and Kelley [13,14] reports small gender differences together with an extremely high prevalence rate (46.5%) in a population of college students and Hilt, Nock,
Lloyd-Richardson, and Mitchell found no gender differences among a middle school population and a prevalence rate of 7.5%. There is agreement in the literature regarding gender differences for method of NSSI, however. According to Health et al. [4] “specifically, males are more likely to self-hurt, and females are more likely to cut”.

**Internet Influence**

Yip [15] conceptualizes a useful multi-dimensional approach to adolescent cutting that accounts for “socio-cultural contexts, peer and parental influences of adolescents’ self-cutting in the antecedents, process and aftermath of adolescents’ self-cutting”. Of increasing interest in the socio-cultural context is the influence of the Internet with adolescents who engage in NSSI. In 2006, over 400 message boards dedicated to self-injury were identified on the internet [16]. A Google search by this author in the fall of 2012 using the term “self-injury” led to 1,685,000 “hits”, including message boards, self-designed websites and professionally or clinically based and developed web sites. A similar Google search using the terms “self-injury and Facebook” resulted in 72,500,000 “hits”. Interestingly, there appears to be a lack of empirical research on social media and NSSI, despite its obvious presence. A recent study by Duggan, Heath, Lewis and Baxter [17] suggest there are thousands of social networking sites devoted to NSSI that serve as online support groups as well as a forum for self-injurers to post experiences, methods, and photos. They echo the concern of other researchers regarding the potential for these sites to desensitize, normalize, and encourage NSSI behaviors.

Many message boards and internet sites are created and moderated by self-admitted “cutters” and provide a forum for support, information and sharing of experiences. These peer moderated (as opposed to professionally developed) sites often run surveys or polls regarding NSSI behaviors that despite being unscientific, offer some important insights into the motivations and behaviors of individuals who harm themselves. An example of such a site is www.self-injury.net that claims a subscription base of over 20,000 members. Results of a recent poll on “what age did you begin self-injuring?” indicated 63% reported starting between the ages of 12-15, and 16 % for both the 11 and younger and 16-18 year old age groups. This is consistent with research that suggests age of onset is typically between the ages of 12 and 14 [18]. In addition to message boards, there are an increasing number of videos related to NSSI posted on sites such as YouTube (over 5000 in a recent search using the term “self-injury”), often labeled as “triggering” to warn viewers of the potential to encourage self-injurious behavior. Lewis, Heath, St. Denis, and Noble 2011, in an analysis of the top 100 YouTube videos related to self-injury, found that they had been viewed well over 2 million times. These videos, as well as photographs posted on websites, often contain graphic images of self-injury and related behaviors.

Rodham, Gavin, Lewis, St. Denis, and Bandalli [19] analyzed the apparent motivations of online representations of NSSI by observing over 400 individuals text and photographic posts to self-injury websites identified through a Google search. They identified five themes of recording and confessing to self-injurious behavior; to track progress or lack of progress in controlling behavior, to publicize turning points in behavior, to dispel myths and provide education, and to offer or solicit support. This suggests a wide range of motivations to create an online presence and the authors express concern that postings in general tend to normalize self-injurious behavior and marginalize those who don’t self-injure, in terms of the ability to understand this behavior.

Professional and clinical concerns with these sites revolve around the potential for them to do “more harm than good” for the adolescent who is self-injuring. Whitlock, Lader, and Conterio [20] suggest that such internet sites may attract self-injurers due to the anonymity and ease of access afforded adolescents who may have secondary social difficulties. They use the term “narrative reinforcement” to describe “the sharing of similar life stories and interpretations, which can normalize and subconsciously justify the use of self-injury” [16,20] and suggest the monitoring of internet use be a regular discussion in psychotherapy with self-injurers. Whitlock et al. [16,20] also note, however, that self-injury websites provide support for users to reduce self-injurious behaviors.

**Media and Peer Influences**

Other important socio-cultural factors in NSSI are the media portrayal and celebrity admissions of self-injurious behavior. Many of the websites devoted to self-injury have links to pictures and biographies of celebrities who have admitted self-injury, as well as links to movies, songs, and books that mention or promote self-injurious behavior. Seeing high stimulus value celebrities who self-injure, as well as other cultural phenomenon such as piercing and tattooing may increase the probability of this behavior by desensitizing and glamorizing it. Purington and Whitlock [21], in a review of media influences on NSSI, suggest that “although discerning a causal link is nearly impossible, the trends are clear and suggest that media do play a role in introducing and normalizing NSSI in mainstream culture”. Similarly, Miskel and Mcgee [22], in a review of the portrayal of self-mutilation in young adult literature, found that references to NSSI are prevalent and are often cited in relation to traumatic experiences, suicidal ideation or acts, and (of greatest concern) “that the teen has little ability to fight the urge to cut without adult help”.

Trewavas, Hasking, and McAllister [23] reviewed the characterization of NSSI in motion pictures and found that it was “generally sensationalized, featured prominently, and depicted as covert, severe, and habitual”. They report that while the depiction of NSSI was generally accurate in terms of method
and rationale (affect regulation, psychiatric illness, childhood abuse, and substance use), characters seldom were in treatment, raising concerns that the depiction of NSSI in films contributes to stigma and reduced the likelihood of viewers of such films to seek treatment.

While internet and social networking sites are a clear form of peer influence, more traditional peer influences have been studied and are a major consideration in assessing risk to engage in NSSI. Hay and Meldrum [24] report that both traditional and cyber bullying are positively correlated with self-harm and suicidal ideation. Alfonso [25] reports that knowing a peer who has self-injured increases the likelihood of engaging in this behavior, especially when substance use or abnormal eating behaviors are present. Claes, Houben, Vandereycken, Bijttebier, and Muehlenkamp [26] also report that having more friends who self-injure is correlated with having low self-esteem. Hilt, Cha, and Nolen-Hoeksema [27] note, however, that “peer communication moderated the relationship between peer victimization and NSSI”, suggesting that positive peer relationships can also contribute to protective factors. Yip [15] describes peer influence and response as “one of the crucial factors” in NSSI, citing relationship problems, rejection, communication problems as central. Yip also supports the findings from Hilt and Cha, however, that supportive peer interactions are a protective factor against NSSI.

Parental Influences

Parental and home factors are also recognized as central to adolescent NSSI. Although Vale, Nixon and Kucharski [28] suggest that “no specific family factors have been clearly identified in research as risk factors associated with adolescent self-injury, there is a strong body of research indicating that communication, parenting style, and interactional patterns are all relevant when assessing risk factors. Parental criticism [29], lack of parental support [30], and invalidating family environments [31] are all implicated in increasing the risk of NSSI. Yip [15] cites marital discord as a potential risk factor since it contributes to increased stress in the home, as well as “feelings of emptiness, and sense of depersonalization”.

As many adolescents characterize their NSSI behaviors as “trying to be noticed” or “to let others know how I feel”, it may be that families’ lack of communication contribute to self-injury in some cases. Plante 2007 characterizes this as a dramatic means of communicating, controlling, and asking for help from others. Hilt et al., [27,32] found that young adolescents reporting self-injury “experienced a significant increase of the quality of their relationships with their fathers” suggesting that this is an example of a specific social reinforcement that may contribute to the maintenance of the behavior. Interestingly, Oldershaw, Simis and Schmidt [33] investigated parent’s perspectives on adolescent self-harm and found “parents commonly suspected and spotted self-harm prior to disclosure or service contact; however, communication difficulties and underestimating significance led to delays in addressing the behavior”, suggesting a wide chasm between parent’s and children’s perceptions of self-injurious behavior.

Affect Regulation

Central to understanding NSSI with adolescents are issues related to affect regulation. Klonsky and Muehlenkamp [12] describe affect regulation as the most common function of self-injury. This is often described by the adolescent as “to stop bad feelings” (or alternately, “to feel something”), to “deal with the hurt, anger or pain in life”, or in some cases, “to feel calm or relief”. Affect regulation has been discussed in terms of both internal and social reinforcement [34]. In essence, internal negative reinforcement from NSSI involves the expression of “bad feelings” leading to subjective relief, while internal positive reinforcement tends to be described as expression of affect through NSSI “to punish yourself” or “to feel relaxed”. In contrast, affect regulation from NSSI leading to social positive reinforcement is described as “to get attention”, “to feel more part of a group”, or “to let others know how desperate you are”. Social negative reinforcement is typically described as “to avoid being with people or doing something unpleasant”. Many adolescents report temporary relief from “blocking out” unpleasant emotions or a release of feeling followed by a rapid reduction in tension or anxiety, as well as feelings of “being in control” [2]. Adolescents who report engaging in NSSI behaviors for reasons related to internal positive or negative reinforcement tend to be more “at risk” for comorbid psychiatric impairments [35] as well as risk of suicide [36].

Lundh, Bjärehed, and Wängby-Lundh [37] found a strong association between poor sleep and repeated NSSI in adolescent girls, suggesting this leads to increased emotional distress and impaired cognitive functioning, which in turns leads to less cognitively demanding coping such as NSSI behaviors. Glenn and Klonsky [38] have studied the role of seeing blood in NSSI in relation to affect regulation and have found it to be a common phenomenon among adolescents who cut themselves. Those who indicated that seeing blood was important were characterized as prone to more frequent episodes of self-harm with clearer motivation and described need for affect regulation. Results of this study suggest the desire to see blood “may represent a marker for increased psychopathology, a more persistent course of NSSI, and consideration of more aggressive treatment strategies”.

Suicide and Self-Harm

While it is often assumed (or misunderstood) that adolescents who engage in NSSI are also at increased risk for suicide, this is not always the case. NSSI behaviors are differentiated from suicidal behaviors in both intent and method, i.e. not to achieve a fatal outcome but to modify a psychological state [39]. There are, however, some characteristics of adolescents that self-harm that
suggest a greater likelihood of progressing to suicide attempts or who may be more comorbidly prone to suicidal behavior. For example, Nock et al. [18] suggests that adolescents who use more varied methods to injure themselves and who report they experience less physical pain during self-injury are more likely to have a history of suicide attempts. Similarly, Andover and Gigg [40] report that, in a psychiatric inpatient sample, “presence and number of NSSI episodes were significantly related to presence and number of suicide attempts”. Tsukiu et al. [30], Lloyd-Richardson, Perrine, Dierker, and Kelley [13], and Wong, Stewart, Sunita, Ho, and Lam [41] all report that adolescents engaging in NSSI that also demonstrate heightened depressive symptoms, substance use, and other internalizing disorders were more likely to attempt suicide.

Control and Behavioral Issues

Finally, control, behavioral issues, and behavioral characteristics need to be considered in understanding of NSSI. Claes, Houwen, Vandereycken, Bitttebier, and Muehlenkamp [26] found that “students with NSSI rated themselves lower on academic intelligence, physical attractiveness, social skills and emotional stability than their non-NSSI peers”, going on to suggest that these low self-esteem adolescents attract peers with similar problems who may also self-injure. Considering this relative to the use of the internet by adolescents who engage in NSSI, low self-esteem and lack of social skills may be a contributing factor to the “draw” of this medium for unhappy and stressed adolescents. Many posters to self-injury websites describe a desire to punish themselves, feeling ambivalent about them, and feeling of frustrated about their life and their future.

Adolescents who engage in NSSI often report feeling temporarily “in control” of themselves and situations, with emphasis on themselves. Klonsky and Muehlenkamp [12] state... for some individuals, self-injury is used to affirm the boundaries of the self. Marking the skin, which separates individual from the environment and other people, may help one feel more independent, autonomous, or distinct from others. Some describe self-injury as something “I have control over and no one else can control”. These feelings may be short-lived as many individuals report a sense of loss of control, feelings of shame, alienation, and helplessness following an episode of self-injury.

Over time, NSSI has the potential to become psychologically and behaviorally addictive. There are concerns that greater exposure to NSSI over time leads to a decline in fears of injury and an increase in the reward function related to affect regulation [2,42]. New and Stanley [43] hypothesize an opioid deficit in Borderline Personality Disorders patients which contributes to lack of pain while engaging in cutting behaviors and that contributes to reinforcement of the behavior. Dyl describes many “cutters” who report a need to cut deeper and to use more diverse methods over time, suggesting an addictive quality to the behavior. Lovell [44] describes self-injury as a “career” for some adolescents, again suggesting an addictive and reinforcing quality to the behavior.

Osuch and Payne [45] describe the relationship between behaviorally reinforcing aspects of NSSI and brain mechanisms, specifically through the “schemata” of “behavioral reinforcement or exogenous reward, addiction or endogenous reward, disordered sensory experience and state regulation”. In essence, they suggest multiple pathways to reinforcement of self-injurious behavior through traditional reinforcement paradigms, activation of dopamine pathways or reward systems in the brain, increased sensitivity to stimuli from sensory overload that leads to NSSI, and behaviors designed for affect regulation that modify brain physiology. In somewhat similar work, Crowell, Beauchaine, McCauley, Smith, Vasilev, and Stevens [46] measured peripheral serotonin levels of adolescents who self-injure and in parental conflict. Serotonin levels were found to correlate with negative affect and conflict, with modest correlations to NSSI. Bresin and Gordon [47] suggest that individuals who engage in NSSI have lower baseline levels of endogenous opioids, which are released during self-injury. This supports the role of affect regulation in NSSI as endogenous opioids are implicated in the regulation of pain and emotion. Nixon, Cheng, and Cloutier [48] have explored biological connections to NSSI from a treatment perspective, using acupuncture to treat adolescents with repetitive self-injurious behavior. Results suggest some promise for this method as an adjunctive treatment.

Evidence Based Treatments

Despite clinical interest in assessment and treatment of NSSI, as well as increasing prevalence rates, evidence based treatment approaches are not well defined. Work in this area is confounded to some degree by the grouping of NSSI with Borderline Personality Disorder treatment, interventions for suicide, and Post Traumatic Stress Disorder, substance abuse, and depression [49,50]. Muehlenkamp [51] provides a comprehensive review of empirically supported treatments for NSSI, concluding that cognitive-behavioral treatments such as Problem Solving Therapy (PST) and Dialectical Behavior Therapy (DBT) are likely effective approaches. Nock, Teper, and Holllander [52] also promote the use of a DBT approach and present a case study of successful treatment of an adolescent over 24 sessions with this approach. Nixon et al. [48], as well as Kress and Hoffman [53] and Kamen [54] suggest that Motivational Interviewing approaches are effective in treating NSSI. However, Brausch and Girresch [55], in a thorough review of empirical treatment studies for adolescent self-injury, cite the lack of randomized controlled trials with adolescents in the literature and conclude that “there seem to be little to no direct evidence for effective treatments of NSSI in adolescents”. Family Interventions

Little has been written on family therapy approaches to treatment of NSSI [1]. Vale, Nixon and Kucharski describe the
importance of psycho educational and crisis management aspects of working with families and suggest both individual family and parenting group interventions as viable treatments. Bureau, Martin, Freynet, Poirier, LaFaontaine and Cloutier [56] suggest a link between NSSI and “feelings of failed protection and fear related to parents’ abdication of their role” which may best be addressed therapeutically by attending to the quality and substance of interpersonal family relations and communication. Similarly, there appears to be consensus within the literature [56,57], that the “invalidating environment in childhood” discussed by Linehan [58] in relation to Borderline Personality Disorder is a contributing factor to later NSSI. Kaess et al. [57] discuss a number of highly inter-correlated “adverse childhood experiences...specifically maternal antipathy and neglect” that contributes to these invalidating family environments. These findings suggest that a DBT approach may prove helpful in family based work. Hoffman, Fruzetti, and Swenson [59] describe a method of adapting DBT for work with families to aid in interpersonal skill acquisition and training, for example. Miklowitz and Goldstein [60] report using DBT and Family-focused therapy (FFT) together with bipolar adolescents to improve communication, increase family involvement and protectiveness, and improve self-regulation for all family members, which may be highly adaptable to treat NSSI.

School Based Interventions

Clinicians and staff who work in school settings are faced with specific and unique challenges in working with children who self-harm. Toste and Heath [61] identify individual (staff and student) as well as systemic issues and challenges to addressing NSSI successfully in school settings. Of great concern is the perception among school personnel that NSSI is a relatively rare occurrence [61,62] and that most students engage in these behaviors for attention [63]. Dobie and Donatelle [64] suggest that most school counselors see themselves as the appropriate staff to work with self-injuring youth, but that both the lack of school policies and staff training are barriers to successful intervention. They emphasize education with staff, students and with families as part of an overall approach. Heath, Baxter, Toste, and McLouth [4] suggest that students are typically unwilling to take advantage of support services in school that involve interventions for NSSI. They suggest that since these students present “deficits in emotional regulation”, schools should provide interventions that target NSSI together with other problems such as drug or alcohol use to improve adaptive skills in adolescents in general. Similarly, McAllister, Hasking, Estefan, McMenagh and Lowe [65] suggest a “strength based” group intervention program in schools to address NSSI behaviors.

Muehlenkamp, Walsh and McDale [66] have developed a more formal approach to dealing with NSSI in schools, the Signs of Self Injury (SOSI) program. The SOSI program is designed to offer “psycho educational and easily identifiable skills for students, and staff, to use to reduce stigma around help seeking for NSSI”. Based on the idea that “it is mostly adolescent peers that know of NSSI behaviors”, this program emphasizes staff and student training to reduce barriers to seeking help. Early research suggests some promise with this approach [51,61,66].

Overall, there is wide consensus that effective intervention and treatment for adolescents who engage in NSSI requires an empathic approach that emphasizes emotional distress over the physical act of cutting, that acknowledges the potential for behavior contagion [61], and that incorporates a balance of individual and system or school wide intervention. While family contact and involvement is more controversial [61], families clearly must be involved in order to ensure follow up medical and psychological treatment that goes beyond what is available in a school setting. However, parents will require the same careful approach and psycho educational about NSSI that school personnel often need.

Conclusion

With the inclusion of proposed diagnostic criteria in the DSM-5 [7], there will be opportunities to refine the definition of NSSI; leading to more consistency among studies of prevalence rate, characteristics, and treatment response. Schools will continue to require input from mental health professionals to train staff to understand and identify NSSI behaviors, to develop and implement school wide prevention programs, to develop individual and group intervention strategies, and to develop family approaches to deal with increasing rates of NSSI in adolescents. Of increasing importance is the need to understand the influence of internet sites, media and social networking, including implications for intervention, and factors that reinforce or encourage NSSI behavior.

References

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