Adolescent non-suicidal self-injurious behavior: The latest epidemic to assess and treat
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A B S T R A C T

Non-suicidal self-injury (NSSI) among adolescents is a serious and prevalent problem. This article reviews the epidemiological data as well as the existing treatments for adolescents who engage in NSSI. The authors also present the unique features of dialectical behavior therapy, the gold-standard evidence-based treatment for adults who engage in NSSI, and discuss its promise as an effective treatment for adolescents who engage in NSSI. Finally, the authors present a clinical vignette of an adolescent engaging in NSSI and how DBT works to target this maladaptive behavior.

1. NSSI among adolescents: the scope of the problem

Clinicians in the field are certainly well aware of NSSI as a relatively common problem among adolescents. To date, there is little epidemiological research that specifically addresses adolescent NSSI, as distinct from suicidal behaviors. Thus, the information available is somewhat scarce and limited in its generalizability. Nonetheless, the studies that have addressed NSSI provide valuable information that directly informs clinical intervention and prevention and sets the stage for future research.

In the US, NSSI and suicidal behaviors are often classified by clinicians and researchers based upon the reported intent of a self-injurious act by the adolescent. There are several limitations to this classification system, especially when involving retrospective methods. First, although some intentional self-injury is clearly without any suicidal intent, intentional self-injury often occurs with enormous ambivalence or with swiftly changing intent, such that retrospective analyses of intent may be exceptionally difficult. In other words, adolescents may have difficulty recalling the exact intent of a self-injurious act and/or may change their perception of an act as time passes. Second, a behavior that starts as suicidal can evolve into a non-suicidal act and vice versa. Third, intentional but NSSI can itself be lethal (Miller, Rathus, & Linehan, 2007). Regardless, at the very least, the stated intent of the adolescent at the time of a self-injurious act should always be gathered during the assessment process in order to best inform current and future risk assessments as well as subsequent interventions. It is important to remember that NSSI is in and of itself a potent predictor of eventual suicide (Miller et al., 2007).

There are some youth who engage only in NSSI and never in suicidal behavior, while others engage only in suicidal behavior and never in NSSI (Jacobson, Muehlenkamp, Miller, & Turner, 2008). Estimates of lifetime prevalence of NSSI based upon high school samples range from 13.0% to 23.2% (Muehlenkamp & Gutierrez, 2004, 2007; Ross & Heath, 2002; Zoroglu et al., 2003). Most of the aforementioned investigators developed their own questionnaires to discriminate NSSI from suicidal behavior but they have not published psychometric data on their instruments. The exception was Gutierrez et al. (2001) who developed the Self-Harm Behavior Questionnaire and they did publish psychometric data on their instrument.

The 12-month prevalence of NSSI ranges from 2.5% to 12.5% (Garrison et al., 1993; Muehlenkamp & Gutierrez, 2007), indicating that as many as 2.1 million high school students may engage in NSSI each year. The age of onset of NSSI typically falls between 12 and 14 years (Kumar, Pepe, & Steer, 2005; Muehlenkamp & Gutierrez, 2004, 2007; Nixon, Cloutier, & Aggarwai, 2002; Nock & Prinstein, 2004; Ross & Heath, 2002) and cutting oneself with a sharp object and self-hitting are among the most common methods of NSSI across several studies (Muehlenkamp & Gutierrez, 2004, 2007; Ross & Heath, 2002; Zoroglu et al., 2003).
In contrast to clinical lore, it is unclear whether NSSI is in fact more common among females than males, as only two (Muehlenkamp & Gutierrez, 2007; Ross & Heath, 2002) of five community based studies (Garrison et al., 1993; Muehlenkamp & Gutierrez, 2004; Zoroglu et al., 2003) concluded that females were significantly more likely to engage in NSSI than males. The other three studies found no gender difference in frequency of incidents.

It is likely that the majority of adolescents who engage in NSSI have a psychiatric disorder. However, only one community based study (Garrison et al., 1993) included a formal assessment of both NSSI and psychiatric disorders and this study did not report on the rates of disorders among those who reported NSSI. This study concluded, however, that having a diagnosis of major depressive disorder (MDD), specific phobia, and/or OCD was associated with an elevated risk of engaging in NSSI. Studies that included clinical samples of youth have identified elevated rates of MDD, externalizing disorders, substance use, and borderline personality disorder among those who engaged in NSSI compared to those who do not self-injure (Jacobson et al., 2008; Kumar et al., 2005; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006).

In addition to psychiatric disorders, adolescents who engage in NSSI display elevated levels of hostility (Ross & Heath, 2003; Zoroglu et al., 2003), alexithymia (Kisiel & Lyons, 2001; Zlotnick, Shea, Pearlstein, Costello, & Begin, 1996), emotional reactivity (Nock, Wędig, & Holmberg, in press), and dissociation (Kisiel & Lyons, 2001; Zlotnick et al., 1999) compared to their non-self-injuring peers. Additionally, research indicated that experiencing stressful life events (Garrison et al., 1993), including interpersonal loss (Rosen, Walsh, & Rode, 1990), increased one’s odds of engaging in NSSI. Interestingly, research suggests that the greater number of methods used to engage in NSSI the greater the likelihood of making a suicide attempt (Nock et al., 2006; Zlotnick, Donaldson, Spirtito, & Pearlstein, 1997). Finally, a fairly substantial amount of research demonstrated a positive association between being the victim of sexual abuse and engaging in NSSI (Kisiel & Lyons, 2001; Lipschitz et al., 1999; Zlotnick et al., 1996; Zoroglu et al., 2003). Thus, these studies highlight the importance of targeting both the NSSI directly as well as the associated psychosocial variables, such as abuse or loss.

2. Interventions

Despite growing concern about NSSI and the need to find effective treatments, there are very few studies that focus on reducing this behavior directly (Miller & Gilsinski, 2000; Walsh, 2006). Current research evaluating the efficacy of treatments of suicidal behavior have typically subsumed or ignored non-suicidal self-injury. While the results from research on treatments for suicidal behavior are somewhat promising (e.g., Brown et al., 2005; Linehan, Comtois, Murray, et al., 2006; Tryer et al., 2003; Verheul et al., 2003), they are mostly limited to suicidal behavior in adult populations and their effectiveness within adolescent groups is unknown. Still, these positive findings suggest that there may be a range of potentially effective treatments available to practitioners.

Most recently, Wallerstein and Nock (2007) published an interesting case study of a 26-year-old woman, who demonstrated a significant decrease in the number of incidents of NSSI following repeated physical exercise, which was the sole therapeutic intervention of this study. The authors suggested that exercise contributed to the release of endogenous opioids and beta-endorphins which may be central to the process of emotion regulation and thereby decreased her frequency of NSSI. The results of this single case study were promising as the NSSI completely remitted and remained so at the 8-week follow-up phase. Further research is necessary to investigate the effectiveness of exercise as a legitimate treatment for NSSI.

There are only a few randomized controlled trials of therapy for NSSI among adolescent samples and the results are mixed. To further complicate the picture, many of these studies below do not differentiate NSSI from suicide attempts so interpretation of the findings warrants caution. For example, Harrington et al. (1998) examined the efficacy of adding a four-session family problem-solving therapy to routine care for adolescents who deliberately poisoned themselves. Of note, the intent of such behaviors was not formally assessed to distinguish suicidal from NSSI behavior. Results indicated that there were no significant differences between treatment groups on general outcomes or on acts of repeated self-poisoning. However, within the treatment group, a subgroup of adolescents who were diagnosed with major depressive disorder reported a significant reduction in suicidal ideation. Huey et al. (2004) reported significant findings in their study, which also emphasized working with families systems. One hundred and fifty-six adolescents who presented to an emergency department following an act of self-harm (unclear whether suicidal or NSSI) were randomly assigned to receive either multiple systemic family therapy (MST) or inpatient treatment as usual. The authors reported that MST resulted in significantly fewer acts of self-harm and greater reduction of symptoms than treatment as usual over a 1-year follow-up. However, the findings are confounded by the fact that 44% of the MST sample also received inpatient care during the treatment period.

In addition to examining family interventions, some have evaluated the effectiveness of group-based interventions. In a sample of 105 adolescents discharged from an inpatient unit following a suicide attempt, Cotgrove, Zirinsky, Black, & Weston (1995) did not find significant differences between their experimental treatment (group management plus re-admission to inpatient on demand) and treatment as usual (group management). More promising results were reported by Wood, Trainer, Rothwell, Moore, & Harrington (2001), who evaluated the effectiveness of treatment as usual versus treatment as usual plus group therapy for adolescents engaging in “deliberate self-harm.” The group therapy intervention was described as being an integrated blend of multiple treatment modalities including problem-solving and cognitive–behavioral therapies, dialectical behavior therapy, and psychodynamic interventions that were developmentally appropriate. Results indicated that adolescents in the group intervention were less likely to repeat their self-injury. However, the two groups did not differ on outcome measures of depression, suicidal ideation, or global functioning; this suggests that the experimental group may have had a specific impact on self-injury.

Initial DBT studies with adolescents that target both suicide attempts and NSSI are promising; however, randomized controlled studies with this age group have yet to be conducted (Goldstein, Axelson, Mirmaher, & Brent, 2007; Katz, Gunasekara, Cox, & Miller, 2004; Rathus & Miller, 2002). Based on the large number of well controlled randomized trials with adults in multiple settings by numerous research groups, Dialectical Behavior Therapy (DBT; Linehan, 1993a, 1993b; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Linehan, Comtois, Brown, Heard, & Wagner, 2006; Koons et al., 2001) is considered the gold standard when it comes to treatment efficacy and effectiveness of reducing NSSI and suicidal behavior among adult outpatients diagnosed with borderline personality disorder (BPD). Miller et al. (2007) recently published a book describing their adaptation of this well-established treatment for use with adolescents engaging in suicidal behavior and NSSI. Preliminary data finds DBT with teens to be clinically meaningful and preferred by providers and consumers alike (Goldstein et al., 2007; Katz et al., 2004; Rathus & Miller, 2002; Trupin, Stewart,
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