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Suicide Attempts and Self-Injurious Behaviors in Adolescent and Adult Patients with Borderline Personality Disorder

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Abstract

Objective—Prevalence data on self-mutilation and suicide attempts for adolescent borderline personality disorder (BPD) is currently not available. The purpose of this paper was to determine the frequency and methods of two forms of physically self-destructive acts (i.e., self-mutilation and suicide attempts) reported by adolescent borderline inpatients in one of the largest samples to date and to compare these results with a similarly diagnosed and assessed group of adult borderline inpatients.

Methods—A total of 104 adolescent inpatients with BPD and 290 adult inpatients with BPD were interviewed about their lifetime history of physically self-destructive acts.

Results—The overall rates of self-mutilation (about 90%) and suicide attempts (about 75%) were similar during index admission for both adolescent and adult borderline patients. However, adolescents reported significantly higher rates of extreme levels of lifetime self-mutilation (e.g., >25 and >50 episodes) and cutting in particular, as compared to adult BPD. In contrast, borderline adults were significantly more likely to report a history of numerous (five or more) suicide attempts than adolescents with BPD.

Conclusions—Self-mutilation and suicide attempts among adolescent borderline patients are prevalent and serious. Taken together, these results suggest that extreme levels of self-mutilation distinguish adolescent BPD from adults with BPD.

Background

Despite lengthy controversy over the diagnosis of personality disorders in individuals less than 18 years of age, adolescent borderline personality disorder (BPD) is increasingly

recognized as a legitimate illness deserving of treatment and early intervention (Chanen, 2015). Adolescent BPD is now included in the DSM-5 (APA, 2013). The 11th Revision of the International Classification of Diseases encourages the diagnosis of personality disorder in adolescents and specifies a sub-type with negative affectivity traits (Tyrer, Reed, & Crawford, 2015).

Limited epidemiologic data exists for adolescent BPD. Data from the longitudinal Children in the Community Study sample found by age 16, 1.4% met diagnostic criteria for BPD increasing to 3.2% by age 22 years. (Johnson, Cohen, Kasen, Skodol, & Oldham, 2008). In addition, 3.2% of 11-year old children in the ALSPAC study met DSM-IV criteria for BPD (Zanarini, Horwood, Wolke, Waylen, Fitzmaurice, & Grant, 2011). A small French study of high school students, found a high prevalence of adolescent BPD; 10% in boys and 18% in girls (Chabrol, Montovany, Chouicha, Callahan, & Mullet, 2001) while a Chinese study reported a more modest prevalence of 2% (Leung & Leung, 2009). In mental health settings, adolescent BPD is common, with an estimated prevalence of 11% in psychiatric outpatients and upwards of 50% in hospital inpatient units (Kaess, Brunner & Chanen, 2014).

There is mounting evidence that highlights the importance of adolescent borderline personality pathology in the development of adolescent self-harm and suicidal behavior. Adolescent self-harm has been associated with BPD traits including affective lability, identify problems, insecure attachment, oppositional behavior, and cognitive disorganization (Adrian, Zeman, Erdley, Lisa, & Lim, 2011; Franklin, Aaron, Arthur, Shorkey, & Prinstein, 2012). More recently, Nakar and colleagues (2016) studied two-year trajectories of self-harm, suicide attempts, and substance misuse in a community sample of 513 adolescents and found all three self-destructive behaviors were highly overlapping and significantly associated with BPD symptomatology. In a sample of adolescent inpatients across Germany, 35% had a history of a suicide attempt, and dimensional BPD psychopathology conferred additional relative risk for a lifetime suicide attempt (OR = 2.36, 95% CI 1.69–3.30, $p < 0.001$) (Kaess, Brunner, Parzer, Edanackaparampil, Schmidt, Kirisgil, Fischer, Wewetzer, Lehmkuhl, & Resch, in press). In a study comparing suicidal adolescents with and without BPD, those with BPD exhibited more suicide attempts, aggression, and psychiatric co-morbidity (Yen, Gagnon, & Spirito, 2013).

For adult BPD, the presence of suicide attempts or self-injurious behavior is one of the diagnostic criteria (APA, 2013) and a defining feature of the disorder. Cross-sectional rates of self-mutilation in adults with BPD have ranged from 17% to 80% (median = 53%) and suicide attempts have ranged from 46% to 92% (median = 76%) (reviewed in Zanarini, Frankenburg, Reich, Fitzmaurice, Weinberg, & Gunderson, 2008).

No study to date has focused on the examination of self-injury and suicide attempt rates in a large sample of rigorously diagnosed adolescents with BPD nor compared these findings with similarly diagnosed and assessed adults with BPD. Given increased rates of suicidal and self-injurious symptomatology in adolescents compared to any other developmental phase, it is important to examine similarities and differences between adults and adolescents diagnosed with the disorder. In addition, this study will provide additional descriptive

information for types of self-injurious behaviors and methods of suicide attempts in adolescent and adult BPD.

Methods

The institutional review boards at the participating institutions approved all study procedures.

The methodology of this study has been presented before in detail (Zanarini et al., in press). Briefly, all adults with BPD were inpatients at McLean Hospital in Belmont, Massachusetts who were admitted between June 1992–December 1995. Each patient was initially screened to determine that he or she: 1) was between the ages of 18–35, 2) had normal or better intelligence, and 3) had no history or current symptomatology of an organic condition that could cause serious psychiatric symptoms (e.g., lupus, MS), schizophrenia, or bipolar I disorder.

Written informed consent was obtained from each patient. Three semi-structured diagnostic interviews were then administered to each patient blind to his or her clinical diagnosis. These instruments were: 1) the Structured Clinical Interview for DSM-III-R Axis I Disorders (SCID I; Spitzer, Williams, Gibbon, & First, 1992), 2) the Revised Diagnostic Interview for Borderlines (DIB-R; Zanarini, Gunderson, Frankenburg, & Chauncey, 1989), and 3) the Diagnostic Interview for DSM-III-R Personality Disorders (DIPD-R) (Zanarini, Frankenburg, Chauncey, & Gunderson, 1987). The inter-rater and test-retest reliability of all three of these measures have been found to be good-excellent (Zanarini & Frankenburg, 2001; Zanarini, Frankenburg, & Vujanovic, 2002).

Adolescents with presumptive BPD who were 13–17 years old were recruited from four units at McLean Hospital and one unit at the Icahn School of Medicine at Mount between August 2007 and September 2012. After obtaining written consent from a parent and assent from the adolescent subject, three semi-structured diagnostic interviews were administered to the adolescent with presumptive BPD during his or her index admission. These interviews were: 1) the Structured Clinical Interview for DSM-IV Childhood Diagnoses (KID-SCID; Matzner, Silva, Silvan, Chowdhury, & Nastari, 1997), 2) the DIB-R (Zanarini, Gunderson, Frankenburg, & Chauncey, 1989), and 3) the Childhood Interview for DSM-IV Borderline Personality Disorder (CI-BPD; Sharp, Ha, Michonski, Venta, & Carbone, 2012).

Both groups of subjects were also interviewed using the Lifetime Self-destructiveness Scale (LSDS; Zanarini, Frankenburg, Ridolfi, Jager-Hyman, Hennen, & Gunderson, 2006). This semi-structured interview assesses the number of episodes of self-mutilation and the number of suicide attempts a subject engaged in before his or her entry into the study and the methods used. Self-mutilation was defined as any intentional self-inflicted injury without intent to die (e.g., punching or burning oneself). A suicide attempt was defined as any intentional non-lethal act that involves intent to die (e.g., overdosing or attempted hanging). The inter-rater and test-retest reliability of this measure has been found to be excellent (Zanarini et al., 2006).

Analyses

Between-group differences of demographic variables were assessed using Student's t-test for continuous variables and Pearson chi-square for binary variables. Analyses of binary symptoms were conducted using logistic regression. In addition, these analyses were conducted controlling for sex and race.

Results

Subjects

One hundred and four subjects were adolescent inpatients who met both DIB-R and DSM-IV criteria for BPD. Two hundred and ninety subjects were adult inpatients who met both DIB-R and DSM-III-R criteria for BPD.

Demographic characteristics have also been described (Zanarini et al., in press). Briefly, adolescents with BPD were significantly more likely to be female and nonwhite than adults with BPD. Adolescents with BPD were also significantly younger (as expected) than adults with BPD (by about 11 years). In addition, they came from a significantly higher socioeconomic class than adults with BPD. In terms of GAF scores, adolescents with BPD had significantly lower scores (by about 4 points) than adults with BPD.

Self-mutilation

While elevated rates (<90% of subjects) of any form of self-mutilation were endorsed by both the adolescent and adult BPD groups, these rates did not significantly differ between the two groups (see Table 1). Repeat episodes of self injury were also frequently endorsed, with adolescent BPD subjects demonstrating a significantly larger percentage of individuals endorsing both 25+ and 50+ episodes of self injury than our subjects with adult BPD (25+: OR 2.12, 95% CI 1.30–3.47, $Z=2.99$, $p < 0.003$; 50+: OR 2.08, 95% CI 1.29–3.34, $Z=3.01$, $p < 0.003$). In terms of methods of self-injury, cutting was the most frequently endorsed method, with adolescent BPD subjects reporting significantly higher rates than adults with BPD (OR 6.35, 95% CI 3.11–12.98, $Z=5.07$, $p < 0.001$). Adolescents with BPD were significantly younger at the time of their first episode of self harm ($M=12.9$ years, $SD=2.2$) than adults with BPD ($M=15.8$ years, $SD=7.3$), $t(357)=3.92$, $p<0.001$.

Suicide attempts

A high percentage of both the adolescent BPD and adult BPD samples endorsed previous suicide attempts, 76% versus 79% respectively (see Table 2). The only significant difference in the number of attempts between the two groups was “5 or more” which 32% of the adult BPD group reported compared to only 15.4% of the adolescent BPD group (OR 0.37, 95% CI 0.20–0.68, $Z=-3.21$, $p < 0.001$). There were no significant differences between the two groups at our stringent Bonferroni-corrected level in terms of the method of attempting suicide. Overdosing was the most common method for both groups with over 50% of each group attempting suicide in this manner and multiple methods of suicide attempts cited for >30% for both groups. Adolescents with BPD were significantly younger at the time of their

first suicide attempt ($M=14.0$ years, $SD=2.5$) than adults with BPD ($M=19.0$ years, $SD=6.8$), $t(307)=6.49$, $p<001$.

Discussion

Several findings have emerged from this study. The first is that both adolescent and adult borderline patients report extensive levels of self-mutilation efforts and suicidal acts prior to their index admission. More specifically for both groups, $>90\%$ reported a baseline history of self-mutilation and $>75\%$ cited a prior suicide attempt. In addition, the majority of borderline patients in both samples engaged in multiple episodes of self-mutilation ($>88\%$) and had made multiple suicide attempts ($>50\%$). However, our adolescent sample demonstrated significantly higher prevalence rates for $>25+$ and $>50+$ lifetime self-mutilation episodes, despite their younger age, while a significantly higher percentage of our adult BPD sample reported 5+ lifetime suicide attempts.

Our results pertaining to the lifetime multiple attempt rates of 52%, and 76% suicide attempt rate of hospitalized adolescents with BPD are derived from one of the largest samples studied to date. In addition, lifetime self-mutilation in our sample of adolescent BPD was almost ubiquitous, found in over 95% of our subjects. It is difficult to compare these rates to the literature which is extremely limited as most studies on adolescent suicide and self-injury do not assess for BPD and for the studies that do, BPD traits but not the full diagnosis of BPD is the diagnostic outcome. Data from Kaess and colleagues (2016) who studied lifetime suicide attempts and self-injurious episodes in hospitalized adolescents with mixed diagnoses, including BPD, revealed rates roughly 50% less than our findings; and 50% for self-injury and 35% for suicide attempts.

Other factors that may be influencing our findings of increased rates may be that the use of a semi-structured interview which specifically inquires about an extensive list of methods (and number of episodes) of self-mutilation and suicide attempts led to a higher percentage of adolescent borderline patients reporting a history of self-mutilation (and multiple episodes of self-mutilation) than studies that used less detailed and comprehensive methods of assessing the prevalence of self-mutilation.

Another main finding is that borderline patients in both the adolescent and adult groups report a lifetime history of using a range of methods of mutilating themselves and attempting suicide. The most common methods of self-mutilation reported by both adolescent and adult borderline patients were cutting themselves, punching walls, and head banging, with adolescents BPD subjects showing statistically significant elevations in the use of cutting as compared to adults. In terms of suicide attempts, the most common methods reported in both groups were overdosing and cutting themselves. There were no significant differences between the groups in terms of methods of suicide attempts.

The differences in findings between adolescent and adult BPD may be due to true differences between the groups. For example, our data on the age of first act of self-mutilation and age of first suicide attempt demonstrate significantly lower ages for the adolescent BPD cohort as compared to the adult BPD group. However, the adult BPD

subjects was recruited and assessed 20 year prior to the adolescent sample and therefore we can not rule out that cohort effects may be influencing our results.

Limitations include that all subjects were initially inpatients. It may well be that borderline patients who have never been hospitalized have less extensive histories of self-mutilation and suicide attempts. Additionally, subjects provided all of the information pertaining to self-destructive acts. Whether they were accurate historians, were exaggerating their histories, or minimizing them is unknown. Lastly, the majority of the sample was in treatment and thus, the results may not generalize to untreated subjects.

Taken together, the results of this study suggest that adolescent borderline patients have a history of physically self-destructive acts that is more extensive than previously known. While there is substantial overlap between adolescent and adult presentations of the disorder in the rates of self-harm and suicide attempts, BPD adolescents do exhibit statistically significant higher rates of extreme self-mutilation. Regarding adolescents with self-injury, recent longitudinal studies suggest that many individuals do give up this behavior depending upon initial frequency and severity (Moran, Coffey, Romaniuk, Olsson, Borschmann, Carlin, & Patton, 2012). Whether this pattern applies to self-injurious acts in adolescent with BPD, remains to be determined.

The trajectory of adolescent BPD individuals with these high levels of self-mutilation is unknown as is the rate of recurrent suicide attempts as the adolescent BPD subject ages and traverses adulthood. It remains unclear whether adolescent BPD represents a more virulent expression of the disorder, as is the case with early onset schizophrenia-spectrum psychosis in children and adolescents and compared to adult onset (Stentebjerg-Olesen Pagsberg, Fink-Jensen, Correll, & Jeppesen, 2016), or whether adolescent and adult BPD are similar manifestations of the disorder. Longitudinal studies are necessary to answer these questions.

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Table 1
Phenomenology of Self-Mutilation of Adolescent and Adult Patients with Borderline Personality Disorder

	Adolescent BPD (N=104)		Adult BPD (N=290)		Odds Ratio	95% Confidence Interval	Z Score	P-value
	%	N	%	N				
Any self-mutilation	95.2	99	90.3	262	2.33	0.86–6.36	1.66	0.10
Number of episodes								
2 or more	91.4	95	88.6	257	1.41	0.63–3.13	0.84	0.40
5 or more	82.7	86	78.6	228	1.52	0.83–2.78	1.35	0.18
10 or more	79.8	83	68.6	199	2.09	1.19–3.67	2.55	0.01
25 or more	65.4	68	51.4	149	2.12	1.30–3.47	2.99	0.003
50 or more	53.9	56	39.3	114	2.08	1.29–3.34	3.01	0.003
Methods of self-mutilation								
Cutting	89.4	93	60.3	175	6.35	3.11–12.98	5.07	<0.001
Burning	38.5	40	27.2	79	1.84	1.12–3.03	2.39	0.02
Punching self	29.8	31	42.1	122	0.58	0.36–0.96	-2.13	0.03
Punching walls	43.3	45	58.3	169	0.57	0.35–0.92	-2.30	0.02
Putting hand through windows	9.6	10	24.8	72	0.37	0.18–0.76	-2.71	0.007
Head banging	32.7	34	47.2	137	0.52	0.32–0.85	-2.60	0.009
Other forms of self-mutilation	18.3	19	13.1	38	1.53	0.81–2.86	1.32	0.19
Multiple methods	73.1	76	71.7	208	1.12	0.67–1.90	0.44	0.66

* Bonferroni correction for multiple comparisons $p < 0.004$

Table 2
Phenomenology of Suicide Attempts of Adolescent and Adult Patients with Borderline Personality Disorder

	Adolescent BPD (N=104)		Adult BPD (N=290)		Odds Ratio	95% Confidence Interval	Z Score	P-value
	%	N	%	N				
Any suicide attempt	76.0	79	79.3	230	0.73	0.42–1.28	–1.09	0.27
Number of attempts								
2 or more	51.9	54	60.0	174	0.68	0.42–1.08	–1.62	0.11
5 or more	15.4	16	32.1	93	0.37	0.20–0.68	–3.21	0.001
Methods of attempting suicide								
Overdosing	51.9	54	52.1	151	0.95	0.59–1.51	–0.24	0.81
Cutting	26.9	28	20.7	60	1.42	0.83–2.45	1.28	0.20
Hanging	14.4	15	7.6	22	2.25	1.06–4.76	2.11	0.03
Walking into traffic	3.9	4	7.6	22	0.43	0.14–1.33	–1.46	0.14
Suffocation	12.5	13	4.8	14	3.17	1.38–7.32	2.71	0.007
Other forms of self-mutilation	26.9	28	19.7	57	1.52	0.88–2.64	1.50	0.13
Multiple methods	36.5	38	30.7	89	1.22	0.75–2.00	0.80	0.42

* Bonferroni correction for multiple comparisons: $p = 0.005$