

The relationship between self-injurious behavior and self-disclosure in adolescents with eating disorders

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Abstract

Purpose The aim of the current study is to examine the association between self disclosure and self-injurious behaviors among adolescent patients diagnosed with an eating disorder.

Methods Sixty three female patients who fulfilled the DSM-IV diagnostic criteria of eating disorders were included (i.e. anorexia, bulimia, binge eating disorder and eating disorders not otherwise specified). Participants' age ranged from 11.5 to 20 years ($M = 15.42$, $SD = 1.82$). Participants completed self-report questionnaires about eating disorders, self-disclosure, self-injurious behaviors (FASM) and depression (BDI-II)

Results 82.5% of the sample endorsed severe self-injurious behaviors. A moderate negative relationship was found between general disclosure to parents and self-injurious behaviors indicating that patients who generally self-disclose to their parents (on different topics, apart from suicidal ideation) engage less frequently in self-injurious

behaviors. In addition, the more patients self-disclose their suicidal ideation to others, the more they tend to self-injure.

Conclusion Self-disclosure to parents on any topic may buffer against self-injurious behaviors and therefore it is important to work with adolescents suffering from eating disorders on effective self disclosure. In addition, self-disclosure about suicidal ideation to others by adolescents suffering from eating disorders should always be taken seriously, since it may be related to self-injurious behaviors.

Keywords Eating disorders · Self injurious behavior · Self disclosure

Introduction

Studies have focused on the association between self-injurious behaviors (SIBs) and eating disorders (ED) mainly among adults [1–8]. These studies indicate that there is a strong association between the two and that SIB is common in adults with ED [9]. Fewer studies have investigated self-injurious behaviors and eating disorders among adolescents, although the prevalence of self-injurious behavior in those diagnosed with ED appears to be very high in this cohort (e.g., [10–12]). In a study by Peebles et al. [12], for example, 40.8 % of a sample of adolescents diagnosed with ED reported to be engaging in SIB.

Self-disclosure (SD) is the ability to communicate and share intimate personal feelings [13, 14] and is an essential component of good mental health and well-being [15]. Self-disclosure capability was found to have an inverse association with both ED [16, 17] and SIB [18]. There are studies examining self-disclosure and its inverse association with suicidality (i.e., self-injurious behavior with at least some intent to die) [19, 20], but no study has

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examined the relationship between SD and SIB in adolescents diagnosed with ED [9].

This study attempted to fill this gap by examining the association between SD and SIB among adolescent patients diagnosed with an ED. Specifically, our three hypotheses were as follows: (1) ED severity would be positively related to higher levels of SIB; (2) ED severity would be negatively related to SD and; (3) SD would reduce SIB among ED adolescent patients.

Method

Participants and procedure

Following approval from the Schneider Children's Medical Center of Israel Institutional Review Board and after obtaining informed consent from participants (in accordance with the guidelines of the Helsinki Declaration of Ethical Principles) 63 female patients were recruited. These adolescents were referred to an assessment regarding their eating disorders conducted in an Eating Disorder Clinic located in a pediatric hospital (Schneider Children's Medical Center of Israel), and fulfilled the DSM-IV diagnostic criteria of ED: anorexia nervosa (AN) ($N = 37$), bulimia nervosa (BN) ($N = 12$), binge eating disorder (BED) ($N = 2$) and eating disorder not otherwise specified (EDNOS) ($N = 12$). Female participants' age ranged from 11.5 to 20 years ($M = 15.42$, $SD = 1.82$). See Table 1 for demographic characteristics of the sample.

Measures

The Functional Assessment of Self-Mutilation (FASM) [21]

This is a self-report measure of the methods, frequency, and functions of self-mutilative behaviors. Participants indicate whether and how often they had engaged in 12 different methods of SIB during the previous 12 months. The items include seven items that are considered to reflect minor SIB (e.g., hitting self, picking at a wound) and five items that are considered to reflect moderate/severe SIB (e.g., cutting, burning, self tattooing). The FASM has been used in studies of both normative and psychiatric samples [21, 22], which have yielded support for its psychometric properties. To take a more conservative approach, we used only the severe forms of SIB. The internal reliability (Cronbach's α) of the severe forms was 0.62. Due to a non-normal distribution of the FASM items which was caused by a clear center at lower self-injury frequencies (mean Skewness = 3.19, mean Kurtosis = 14.91), the items were regarded as dichotomous (specific self-injury: yes/no). We have used in the analysis the sum of the severe items (FASM severe; Skewness = 0.98, Kurtosis = 0.86).

Table 1 Demographic characteristics of the sample

	AN ($N = 37$)	BN ($N = 12$)	EDNOS ($N = 12$)	Binge ($N = 2$)
Age	15.24 (2.01)	16 (1.51)	15.86 (2.19)	15.5 (–)
Birth country				
Israel	32	10	10	1
Russia	2	1	1	–
Other	2	1	–	1
Employment				
Father (Emp/ UEm)	29/3	11/1	11/–	1/–
Mother (Emp/ UEm)	28/4	12/–	6/2	–/1
Weight	45.43 (8.04)	52.59 (16.98)	57.35 (18.54)	87 (–)
BMI	17.73 (1.91)	22.1 (2.05)	17.39 (2.22)	31.95 (–)
Age of onset	13.07 (3.34)	12.24(3.97)	11.61(4.92)	14.5

Standard deviations are given in parenthesis EMP employed, UEm unemployed

The Jourard Self-Disclosure Questionnaire (SDQ) [14]

For the present study, we used the short version of this scale. The scale consists of 40 items that assess self-disclosure to three different 'targets' in the subject's life: parents, peers, and non-family trusted adults, with regard to five topics: family issues, friend-related issues, body shape, depression, and suicidal ideation. Subjects are asked to rate on a 4-point scale the extent to which they have shared these topics with the specified targets. The questionnaire thus yields 15 sub-scales (3 targets \times 5 topics). The internal reliability of the short version was 95 [14]. A factor analysis indicated that while the topics of body, depression, friends, and family should be examined with regard to their disclosure targets, disclosure about suicide should be construed as a different element. Therefore, we have combined all topics (apart from suicide) for each disclosure target, thus creating three new variables: general disclosure to family ($\alpha_{\text{cronbach}} = 0.9$), general disclosure to friends ($\alpha_{\text{cronbach}} = 0.9$), and general disclosure to adults ($\alpha_{\text{cronbach}} = 0.92$) (see data analysis section for details on the factor analysis).

The Beck Depression Inventory, Second Edition (BDI-II) [23]

The BDI-II includes 21 items, each of which consists of four self-evaluative statements scored 0–3, with increasing scores indicating greater depression severity. Responses

are summed to yield a total score that ranges from 0 to 63. The internal reliability (Cronbach’s α) of the BDI-II questionnaire in our sample was 0.90.

Eating Disorder Inventory-2 (EDI-2) [24–26]

The EDI-2 is a 91-item self-report questionnaire evaluating the psychological and behavioral dimensions of eating disorders. The EDI-2 has 11 sub-scales: drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interceptive awareness, asceticism (lack of), maturity fears, social insecurity and impulse regulation. Responses are rated on a 6-point scale, from “always” to “never”. The questionnaire was used in its Hebrew version and has been found to have good reliability of 0.67–0.93 (comparable to the original scale) and good validity [27]. The questionnaire has been shown to differentiate Israeli patients with eating disorders from non-eating disorders controls [27]. The internal reliability (Cronbach’s α) of the EDI-2 in our sample was 0.90.

Data analysis

Data analysis was conducted in three steps. In the first step, we examined differences between ED diagnoses in all analyzed variables. In the second step, we examined the correlation matrix between ED severity (the mean score of all EDI-2 sub-scales), depression (mean BDI score), SIB (FASM), and self-disclosure (SDQ suicide, and SDQ general to parents, peers, and other adults). In addition, based on the results of the previous two steps, in the third step, we examined the effects of SD on SIB over and above the effects of depression and ED severity. Specifically, we conducted three hierarchical multiple step regressions, one for each of the disclosure targets, in which the independent variables (EDI, BDI, and SDQ general and suicide) predicted SIB (FASM score). These independent variables were entered in the following sequence: step 1—EDI severity, step 2—BDI total score, Step 3—SDQ about suicide (by disclosure target), and step 4—SDQ general (by disclosure target). All regression steps were forced entered. For all analyses, we have used SPSS V. 20.

As for the self-disclosure questionnaire (SDQ) which can be examined by disclosure topics ($N = 5$) or by disclosure targets ($N = 3$), we conducted an exploratory factor analysis to choose the most suitable factor structure for further examination. Factor analysis was conducted with all 15 sub-scales in a varimax rotation of the factor loading matrix. After Eigen values cut-off (cut-off set to 1), four factors were obtained. The analysis results indicated the need to analyze disclosure topic and disclosure targets, separately (Table 2).

Table 2 Self-disclosure questionnaire (SDQ) factor structure

	Component			
	1	2	3	4
Friend				
Family	0.92	0.01	0.08	−0.03
Depression	0.92	0.08	0.11	0.19
Body	0.91	0.14	0.12	0.05
Friends	0.78	0.38	0.06	0.01
Family				
Friends	0.12	0.88	0.27	−0.08
Family	0.06	0.86	0.23	0.11
Body	0.24	0.82	0.28	0.05
Depression	0.12	0.81	0.26	0.40
Adult				
Family	0.06	0.24	0.87	0.12
Depression	0.11	0.20	0.85	0.36
Body	0.18	0.30	0.82	0.25
Friends	0.09	0.39	0.81	−0.08
Suicide				
Adult	0.09	0.03	0.55	0.75
Family	0.00	0.54	0.20	0.72
Friend	0.62	−0.07	0.05	0.63

Bold indicates similar targets and topics disclosure

Factor 1 Disclosure to friends, Factor 2 Disclosure to parents, Factor 3 Disclosure to adults, Factor 4 Disclosure about suicide

Results

A Kruskal–Wallis test revealed a significant effect of diagnosis on EDI mean score ($\chi^2(3) = 8.98, p < 0.05$). A post hoc test using Mann–Whitney tests with Bonferroni correction, however, showed no significant differences between the diagnostic groups. In addition, a Kruskal–Wallis test revealed a significant effect of diagnosis on depression ($\chi^2(3) = 8.37, p < 0.05$). A post hoc test using Mann–Whitney tests with Bonferroni correction showed a significant difference between patients with bulimia and patients with EDNOS ($U = 25, Z = -2.71, p < 0.008$); bulimic patients ($M = 21.5, SD = 12.69$) were suffering from higher levels of depression in comparison to EDNOS patients ($M = 12.41, SD = 12.44$).

82.5 % of the sample (52 adolescents out of 63) endorsed severe SIB. In accordance with the first hypothesis, stating that ED severity would be related to higher levels of SIB, a correlation test was conducted. Table 3 reveals a positive moderate correlation between the EDI and SIB ($r(63) = 0.37, p < 0.01$). Patients showing more severe ED (elevated EDI-2 mean score) tended to have higher SIB.

In contrast, regarding our second hypothesis that ED would be negatively related with SD, the correlation analysis revealed no significant correlations between EDI and

SD. Finally, in contradiction with the third hypothesis, that more self-disclosure would be related to less severe SIB, a significant effect was found only for some self-disclosure variables. For example, we found a significant positive correlation between self-disclosure about suicide ideation and SIB ($r(63) = 0.51, p < 0.001$). That is, the more an adolescent discloses suicidal ideation to others in her environment, the more she tends to engage in self-injurious behaviors.

In the final part of the analysis, all three multiple step regressions revealed a strong positive association between EDI and SIB ($\beta_{\text{family}} = 0.38, p < 0.01$; $\beta_{\text{friend}} = 0.40, p < 0.01$; $\beta_{\text{adult}} = 0.40, p < 0.01$); indicating the expected positive relation between eating disorder severity and self-injury (Table 4). Furthermore, all three multiple step regressions also revealed a strong positive association between self-disclosure about suicide ideation and SIB, over and above the effects of BDI and EDI ($\beta_{\text{family}} = 0.57, p < 0.001$; $\beta_{\text{friend}} = 0.46, p < 0.01$; $\beta_{\text{adult}} = 0.55, p < 0.001$). This effect indicates that the more patients self-disclose their suicidal ideation, the more they tend to self-injure or the reverse—the more they self-injure the more they disclose suicidal ideation to others. In addition, the analysis revealed a moderate negative relationship between general disclosure to parents and SIB ($\beta = -0.32, p < 0.05$) over and above the effects of BDI, EDI and SDQ about suicide. This effect indicates that patients who generally self-disclose to their parents (on different topics, apart from suicidal ideation), engage less frequently in self-injurious behaviors.

Discussion

The results of this study are consistent with previous studies, indicating that patients with eating disorders have a high prevalence of self-injurious behavior [5–8, 12]. The very high level of SIB that we found may be due to our specific sample which was a hospital-based psychiatric service population (including severe ED); other comparable adolescents studies were conducted among community-based samples [e.g., 10] or in academic clinics [12].

Similar to several previous studies [1, 3], no significant differences in self-injury behavior frequencies among the AN, BN and EDNOS subgroups were found. Some studies, however, have found SIB to be more common in bulimic than in anorexic patients [12, 28, 29].

Our first main finding about SD revealed that among adolescents suffering from ED, self-disclosure to parents about a wide range of topics (besides suicidal ideation) was related to less significant levels of SIB. Self-disclosure to parents' (on family issues, friend-related issues, body shape and depression) seems to buffer SIB, and can be explained

Table 3 Correlation matrix for self-disclosure (SDQ), eating disorders (EDI-2), depression (BDI-II), and self-injurious behaviors (FASM)

	1	2	3	4	5	6
1. SDQ suicide	–					
2. SDQ family	0.48**	–				
3. SDQ adult	0.55**	0.60**	–			
4. SDQ friend	0.40**	0.32**	0.29*	–		
5. EDI general	0.03	–0.21	0.02	–0.14	–	
6. BDI	–0.02	–0.37**	–0.18	–0.15	0.68**	–
7. FASM severe	0.51**	0.01	0.15	0.18	0.37**	0.23

$N = 63, * p < 0.05, ** p < 0.01$

by the importance of an intimate, open and accepting relationship between adolescents and their parents. If the adolescent can disclose to the parent it may mean that the parent is viewed as a positive and significant figure who may serve as an internal protective figure. These results are consistent with previous findings which indicated that the ED patients who report difficulty in communicating their distress to others tend to practice more SIB [30, 31]. Our results are also in line with a large multinational study among adolescents which found that family related loneliness was associated with engagement in Non-Suicidal Self-Injury (NSSI) [32]. It may be that adolescents who have a good relationship with their parents and are able to verbally disclose their difficulties to them, show lower levels of distress and tend to use SIB less frequently as a way to discharge tension and express feelings [33]. These results are consistent with previous findings about the inverse association between SD and suicidal behavior [19, 20].

The second main finding about SD was that self-disclosure about suicidal ideation to anyone (i.e., parents, friends, other adults) was associated with higher levels of SIB. Similarly, those ED adolescents who self-injure may be at higher risk for suicidal thoughts. These findings reflect and reinforce previous studies which found a strong association between NSSI and suicidal thoughts [34–36].

Clinical implications

There are several practical implications to this study's findings. The fact that SD reduces the frequency of self-injurious behaviors makes clear the importance of encouraging adolescents diagnosed with ED to disclose their feelings, thoughts and behavior to parents. However,

Table 4 Regression analysis examining the effects of self-disclosure on self-injurious behaviors over and above the effects of depression and ED severity

Variable	SD to parents			SD to adults			SD to friends		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Step 1									
EDI	0.01	0.00	0.37**	0.01	0.00	0.38**	0.01	0.00	0.38**
Step 2									
EDI	0.01	0.00	0.41*	0.01	0.00	0.41*	0.01	0.00	0.42*
BDI	0.00	0.02	−0.05	0.00	0.02	−0.04	−0.01	0.02	−0.05
Step 3									
EDI	0.01	0.00	0.40*	0.01	0.00	0.43**	0.01	0.00	0.37*
BDI	0.00	0.02	−0.02	0.00	0.02	−0.02	0.00	0.02	0.02
SDQ general	0.01	0.02	0.08	0.04	0.02	0.24*	0.03	0.02	0.21
Step 4									
EDI	0.01	0.00	0.38*	0.01	0.00	0.40**	0.01	0.00	0.40**
BDI	−0.01	0.02	−0.09	−0.01	0.01	−0.07	−0.01	0.01	−0.09
SDQ general	−0.05	0.03	−0.31*	−0.01	0.02	−0.05	−0.03	0.03	−0.18
SDQ suicide	0.10	0.03	0.57***	0.09	0.03	0.46**	0.12	0.03	0.55***

Disclosure to Parents, $R^2 = 0.014$ for step 1 ($p < 0.01$); $R^2 = 0.00$ for step 2 ($p = 0.76$); $R^2 = 0.01$ for step 3 ($p = 0.52$); $R^2 = 0.18$ for step 4 ($p < 0.001$). Disclosure to Friends, $R^2 = 0.14$ for step 1 ($p < 0.01$); $R^2 = 0.00$ for step 2 ($p = 0.78$); $R^2 = 0.06$ for step 3 ($p < 0.05$); $R^2 = 0.12$ for step 4 ($p < 0.01$). Disclosure to Friends, $R^2 = 0.15$ for step 1 ($p < 0.01$); $R^2 = 0.00$ for step 2 ($p = 0.74$); $R^2 = 0.04$ for step 3 ($p = 0.1$); $R^2 = 0.16$ for step 4 ($p < 0.001$)

EDI Eating Disorder Inventory-2, BDI Beck Depression Inventory 2, SDQ suicide Self-Disclosure Questionnaire-suicide items, SDQ general Self-Disclosure Questionnaire-general items to anyone

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

evaluating the parents' role in their child's condition, their possible responses and their ability to contain their own reactions, indicates that cautious preparation by a skilled therapeutic provider would be needed. Moreover, it seems likely that focusing on improving the interpersonal skills of individuals with eating disorders in order for the SD to be effective would be crucial to its success [10, 37–40].

The clinical implications of our finding regarding the disclosure of suicidal ideation to others by ED adolescents may be related to SIB and should mandate not only an in-depth investigation of the nature of the SIB but also a comprehensive suicidal risk assessment. SIB among adolescents suffering from ED should always be taken seriously not merely because of the significant impact of this behavior on the adolescent but also because it may indicate that the adolescent suffers from suicidal ideation.

Study limitations

This study has several limitations. The first is the relatively small sample size of patients with ED with no differentiation between purging AN and non-purging AN. The second limitation is the cross-sectional design which prevents us from inferring causality (SD influences SIB or vice versa). The third limitation relates to the measurement of self-disclosure with the Jourard self-report questionnaire. There

might be an inherent contradiction in the measurement of self-disclosure as it relies solely upon the subjects' reports; this format necessarily reduces the validity of the measure. In addition, there are no norms to indicate the cut-off score on the self disclosure questionnaire which would indicate a pathological level of self-disclosure. Finally, we did not investigate SD characteristics and we lack information about their consequences (i.e., others' reactions). Future studies should examine these factors using a larger sample and in longitudinal studies such that causality can be inferred.

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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