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Self-Injury and Suicide Attempt in Relation with Trauma and Dissociation among Adolescents with Dissociative and Non-Dissociative Disorders

Filiz Kılıç[1], Murat Coşkun[2], Hasan Bozkurt[3] ✉, İlyas Kaya[2], and Salih Zoroğlu[2]

[1]Department of Child and Adolescent Psychiatry, Faculty of Medicine, Gaziantep University, Gaziantep, Turkey
[2]Department of Child and Adolescent Psychiatry, Istanbul Medical Faculty, Istanbul University, Istanbul, Turkey
[3]Department of Child and Adolescent Psychiatry, Faculty of Medicine, Gaziosmanpasa University, Tokat, Turkey

Objective To explore the role of trauma and dissociation over self-injurious behaviors (SIB) and suicide attempts (SA) in adolescents.

Methods A total of 207 adolescents participated in the study. After conducting diagnostic interview, participants were divided into five groups as subjects with dissociative disorders (DD), attention deficit hyperactivity disorder (ADHD), major depressive disorder (MDD) and anxiety disorders (AD), and a control group (CG) without any psychiatric disorder. ADHD, MDD and AD groups were considered as non-dissociative disorders (non-DD group) in the present study.

Results There is no significant difference between groups in terms of number and age of the subjects ($p>0.05$). Among all participants SIB was reported in 32.2% of females (n=37) and 25% of males (n=23) while SA was reported in 29.6% of females (n=34) and 4.4% of males (n=4). Adolescents with DD were found to experience higher rates of SIB and SA than the other groups. Dissociation was the most important variable contributing to SIB and female gender was the most efficient variable for SA. Total trauma scores were also found to be significantly higher in DD group followed by non-DD and CG respectively.

Conclusion SIB and SA are complex behavioral problems which may be associated with many psychiatric factors. However higher level dissociation seems as an important mediating factor, even regardless of psychiatric diagnosis, in the development of SIB and SA. More research is needed to further explore the factors effective over SIB and SA in adolescents. **Psychiatry Investig 2017;14(2):172-178**

Key Words Dissociation, Self-injury, Suicide, Adolescents, Trauma.

INTRODUCTION

Self-injurious behavior (SIB) refers to a broad class of behaviors in which an individual directly and deliberately causes harm to her/himself. Such behavior can include non-suicidal self-injury, which refers to direct, deliberate destruction of one's own body tissue in the absence of intent to die; or suicide attempts (SA), which refer to direct efforts to intentionally end one's own life. SIB and SA are serious mental and public health problems among adolescents all over the world.

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✉ **Correspondence:** Hasan Bozkurt, MD
Department of Child and Adolescent Psychiatry, Faculty of Medicine, Gaziosmanpasa University Medical Faculty Hospital, Kaleardı District, Muhittin Fisunoğlu Street, Ali Şevki Erek Campus, Tokat 60100, Turkey
Tel: +90-356-2129500, **Fax:** +90-356-2133179, **E-mail:** drhasan33@gmail.com

A variety of psychological, biological and socio-cultural factors have been identified associated with SIB and SA in this age group.[1,2] History of sexual abuse, depression, anxiety, alexithymia, hostility, smoking and dissociation in addition to thought suppression and emotional reactivity have been demonstrated to be among several correlates of SIB in adolescents.[3] Moreover common risk factors for SA include having a previous SA, being female, mood disorders, poor parent-child communication, family pathology and a history of family suicidal behavior.[4]

Dissociation, generally described as an altered state of consciousness that results in diminished awareness of environmental events has been reported to be a frequent concomitant of self-injurious or suicidal behaviors.[5] Patients with dissociative disorders (DD) more frequently engage in SIB and SA, use more methods of self-injury, and begin to injure themselves at an earlier age then patients who do not dissociate.[6] Many researchers have also found that dissociation levels are higher

in samples of psychiatric patients who report SIB than in those who do not report such behaviors.[7-10] Gratz et al.[11] assessed risk factors for SIB in 159 college students and noted that dissociation was the strongest predictor of SIB for both men and women in their sample. Furthermore Sar et al.[12] found that participants with a DD had history of suicide attempt more frequently than did participants without a DD in a nonclinical sample of Turkish women. Similarly, in a Turkish sample with drug or alcohol abuse, Karadag et al.[13] also demonstrated higher frequency of suicide attempt in patients with DD than in those without DD.

The literature document different findings about the bivariate relationship between dissociation and SIB or SA. Some studies support this association despite controlling for childhood trauma while others do not.[10,14-17] So more research is needed to better understand the effect of childhood trauma on this relationship.

However many studies on psychological trauma, dissociation and their relation with self-injury or suicidal behaviors concern adult populations. There is a limited number of study concerning young population in the literature.[18,19] To our knowledge, the present study is the second study in adolescents investigating the role of dissociation and trauma over self-injury and suicide development in our country. In the first study, Zoroglu et al.[20] examined SIB and SA among Turkish high school students in relation with abuse, neglect and dissociation. They demonstrated similar findings regarding frequency and impacts of traumatic experiences in regard to those in Western countries. Accordingly, we also expect negative effects of trauma on SIB and SA with the present study since childhood is more vulnerable period to trauma and the impacts cannot be changed by other cultural effects.

We hypothesize that regardless of psychiatric diagnosis, higher levels of dissociation and trauma history correlate with increased frequency of SIB and SA in adolescents. Additionally adolescents with DD are expected to engage in SIB and SA more frequently than adolescents with non-dissociative disorders (non-DD) and healthy controls.

METHODS

Participants

Participants for this study were divided into five groups as subjects with DD (DD group), attention deficit hyperactivity disorder (ADHD group), major depressive disorder (MDD group) and anxiety disorders (AD group), and healthy control group (CG). ADHD, MDD and AD groups were considered as non-dissociative disorders (non-DD group) in the present study. Subjects in DD and non-DD groups were all recruited among adolescents who were referred to a university child psychiatry outpatient unit during a period of one year. CG included adolescents from three local high schools during the same period.

Subjects who were given a provisional diagnosis of DD at the first interview were screened with the Adolescent Dissociative Experiences Scale (ADES). Then the subjects who scored 3 or more on ADES were interviewed by the first and last authors (F.K and S.Z) using the Structured Interview for DSM-IV Dissociative Disorders (SCID-D) to confirm the diagnosis of DD. Finally 15 adolescents were diagnosed with dissociative identity disorder (DID), 9 were diagnosed with dissociative disorder- not otherwise specified (DD-NOS) and two adolescents were found to have dissociative amnesia based on the SCID-D findings.

Non-DD group consisted of adolescent subgroups who were referred to the child psychiatry outpatient unit during the same period. Subjects were interviewed for psychiatric evaluation by using the relevant modules of Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version−Turkish Version (K-SADS-PL-T). After that, adolescents with ADHD, MDD and AD were included in non-DD group. So three groups were composed as ADHD, MDD and AD groups. ADHD, MDD and AD were the primary diagnoses in these groups. Because it may not possible to find all subjects without any comorbid diagnoses, subjects in these groups were allowed to have comorbid conditions to some extent. However for the sake of healthy assessment and comparison, subjects in these groups were required to be free of traumatic psychopathology (such as acute stress disorder, adjustment disorders, PTSD, DD), several psychiatric disorders (such as conduct disorder, psychotic disorders, bipolar disorder, substance use disorders, eating disorders) and a diagnosis from other two groups (such as while ADHD+MDD or ADHD+AD or MDD+AD were not allowed but comorbidity with learning, oppositional defiant, tic, obsessive compulsive, elimination disorders were allowed).

91 adolescents from three local high schools without any psychiatric referral or diagnosis were included in the study as CG. They were selected randomly among adolescents who responded positively to participate in the study. Subjects with any known medical or neurological condition and substance abuse or effect were excluded from CG group.

Measures

Following instruments were assigned to 207 participants by the first (F.K) and last authors (S.Z).

ADES

The ADES is designed to measure dissociation in adolescents. The reliability and validity of the Turkish version of

ADES was demonstrated by Zoroglu et al.[21] The good psychometric characteristics of the ADES among Turkish participants support its cross-cultural validity.

K-SADS-PL-T

Psychiatric co-morbidity was assessed using the K-SADS-PL-T. The KSADS-PL-T is a semi-structured interview schedule designed to assess 32 psychiatric disorders in children and adolescents on the basis of DSM-IV criteria. Gokler et al.[22] demonstrated the reliability and validity of the Turkish version of the K-SADS-PL.

SCID-D

The SCID-D is a semi-structured interview developed by Steinberg.[23] It is used to make DSM-IV diagnoses for all DD. Although the SCID-D is validated for adults only, preliminary observations revealed promising results in adolescents.[24] Information about the validity and reliability of the Turkish version for adult psychiatric patients has been reported elsewhere.[25] Another study with two blind raters also allowed an inquiry of the validity and inter-rater reliability of the Turkish version of the SCID-D for adolescents.[26]

The Childhood Trauma Questionnaire

The CTQ is a 53-item self-report questionnaire that assesses 5 types of abuse (physical, emotional, and sexual abuse; emotional and physical neglect) with high internal consistency and good test-retest reliability. The reliability and validity of Turkish version of this instrument has been demonstrated by Sar et al.[27]

The Questionnaire for SIB and SA

A self-report questionnaire was developed by the authors to investigate frequency, duration and types of SIB and SA over the life course. For the purpose of present study, SIB was defined as deliberate harm to one's body without a conscious intent to die and included such behaviors as cutting, slashing, burning, pulling hair or banging and hitting body areas. SA was defined as any behavior that is intended to end the life of the child or adolescent and included such behaviors as overdose ingestion, hanging, cutting of the arms or neck, jumping from a height, stabbing himself or herself, drowning or self-shooting. The questionnaire consisted of 14 items (7 items for SIB and 7 items for SA). 12 out of them were yes/no questions.

The Children's Depression Inventory

The CDI is a 27-item self-report questionnaire that is scored on six domains: total score, negative mood, interpersonal problems, ineffectiveness, anhedonia, and negative self-esteem. Reliability and validity of the Turkish version of the CDI have been documented.[28]

The Screen for Child Anxiety Related Emotional Disorders

The SCARED is one of the few self-report measures that assess different types of anxiety based on criteria in the DSM-IV. It is a 41-item inventory using a 3-point scale designed to screen for DSM-IV anxiety disorders with child self-report and parent-report versions. The reliability and validity of Turkish version of the SCARED has been demonstrated.[29]

Procedure

After diagnostic interviews were conducted, all participants in each group were administered a battery of five scales or questionnaires consisting of CDI, SCARED, ADES, CTQ-53 and the questionnaire for SIB and SA. Written informed consent from both parents and adolescents were taken. A faculty ethical committee approved the study. Student t test and One-way Anova for comparing continuous variables and logistic regression for the factors affecting SIB and SA were used in the present study. Pearson Correlation Coefficient was used for correlation between dissociation and trauma scores. $p<0.05$ was considered as statistically significant.

RESULTS

55.5% of all subjects were female (n=115) and 44.5% were male (n=92). There is no significant difference between groups in terms of number and age of the subjects ($p>0.05$). CG (age range: 14−16; mean age 15.15; 58.2% male) and ADHD group (age range: 12−18; mean age 14.96; 63.3% male) differed in gender from the MDD group (age range: 13−18; mean age 15, 26; 30% male), AD group (age range: 13−17; mean age 15.03; 23.3% male), and DD group (age range: 11−18; mean age 15.34; 15.4% male) with the former being primarily male and the latter female.

Trauma and dissociation scores across groups

Emotional abuse (EA), physical abuse (PA), sexual abuse (SxA), emotional neglect (EN) and physical neglect (PN) were all assessed by CTQ-53. Total trauma (TT) scores were significantly higher in DD group (10.8±3.2) followed by MDD group (9.1±2.1), AD group (8.2±2), ADHD group (7.8±1.5) and CG (7.4±2.2). EA, PA and EN scores were higher in DD group (EA=2.61, PA=2.18, EN=3.30) when considering subscores of CTQ. SxA and PN scores did not differ across groups.

Dissociation scores were assessed by ADES. DD group had significantly higher dissociation scores (DD=150.3±46.4) from other groups. AD (98.5±47.2) and MDD (87.5±49.8) groups followed DD group. CG had statistically significant lower scores

than other groups except ADHD group. Trauma and dissociation scores across groups are shown in Table 1.

Bivariate correlation was also conducted in order to assess the interactions between dissociation and trauma scores. While no statistically significant relationship was found between SxA, EN, PN and ADES scores ($p>0.05$), TT, EA and PA scores were significantly correlated with higher ADES scores ($p<0.05$).

Frequency of SIB and SA across groups

SIB was reported in 32.2% of females (n=37) and 25% of males (n=23) while SA was reported in 29.6% of females (n=34) and 4.4% of males (n=4). There were no gender differences in relation with SIB ($\chi^2=1.2$, $p>0.05$) but SA was significantly more common in females ($\chi^2=21.6$, $p<0.05$).

Frequency of SIB was found to be more common among subjects in DD group (n=21, 80.8%) followed by MDD (n=11, 36.7%), ADHD (n=9, 30.0%), AD (n=8, 26.7%) groups and CG (n=11, 12.1%), respectively ($\chi^2=47.4$, $p<0.05$). SA was also detected to be more frequent among subjects in DD group (n=17, 65.4%) followed by MDD (n=12, 40.0%), AD (n=2, 6.7%), ADHD (n=2, 6.7%) and CG (n=5, 5.5%), respectively ($\chi^2=63.2$, $p<0.05$). Frequency of SIB and SA across groups is shown in Table 1.

Factors impacting the development of self-injurious and suicidal behaviors

A logistic regression analysis was administered to determine factors which are effective on the development of SIB and SA. Gender, depression, anxiety, dissociation, and childhood trauma scores were used as independent variables and the effects of these factors on the development of SIB and SA were investigated. While dissociation was found to have the highest impact on the development of SIB followed by depression; gender and depression were found to have the highest impact on the development of SA. Table 2 includes the factors impacting the development of SIB and SA.

DISCUSSION

This study investigated the role of trauma and dissociation over SIB and SA in adolescents with different psychiatric diagnoses comparing with their healthy peers. Adolescents with DD displayed significantly more SIB and SA than adolescents with non-DD and CG. Total trauma scores were found to be significantly higher in DD group followed by non-DD and CG, respectively. Regardless of psychiatric diagnosis, dissociation was detected to be the most important variable contributing to SIB and female gender to be the most efficient variable for SA. The present study is important for its specifically evaluating SIB and SA among different diagnostic groups comparing with matched controls and reporting on the predictors of SIB and SA.

High rates of SIB have been reported in patients with DD in the literature. Saxe et al.6 found that patients with DD more frequently engaged in self-destructive behaviors, used more methods of self-injury and began to injure themselves at an earlier age than patients without DD. Our findings in adolescent population also support the literature in this context. Except for DD, adolescents with MDD were found to experience higher rates of SIB than the other groups. Research has consistently documented elevated risk for self-injury among youth with depression and recent studies have shown positive correlation between depression and SIB. Similar to our findings, Lev-Wiesel et al.[30] showed that depression was related to SIB regardless of childhood SxA in their study exploring the role of dissociation in SIB among sexually abused female adolescents.

It is also common for patients with DD to report a history of SA in the literature. Foote et al.[31] showed that presence of DD was strongly associated with SA in their study comparing suicidality in patients with DD versus patients without DD.

Table 1. Trauma/dissociation scores and self-injurious behaviors/suicide attempts across groups

	Dissociative disorder (N=26)	Depression (N=30)	Anxiety disorder (N=30)	ADHD (N=30)	Control (N=91)	F	Df	χ^2	p
Dissociation	150.3±42.3	87.5±31.0	98.5±38.2	77.7±29.1	56.8±22.4	21.4	4		<0.001*
Total trauma	10.8±4.1	9.1±3.6	8.2±2.7	7.8±2.5	7.4±2.3	12.4	4		<0.001*
Emotional abuse	2.61±1.1	2.03±0.7	2.21±0.9	1.77±0.6	1.51±0.5	14.5	4		<0.001*
Physical abuse	2.18±0.8	1.47±0.5	1.51±0.5	1.34±0.4	1.27±0.4	10.8	4		<0.001*
Sexual abuse	1.35±0.4	1.17±0.3	1.31±0.4	1.04±0.2	1.15±0.3				>0.05
Emotional neglect	3.30±1.4	3.08±1.2	2.17±0.9	2.55±1.1	2.25±1.0	12.0	4		<0.001*
Physical neglect	1.38±0.4	1.33±0.4	1.11±0.3	1.13±0.3	1.18±0.2				>0.05
SIB (%)	80.8	36.7	26.7	30.0	12.1			47.4	<0.05*
SA (%)	65.4	40.0	6.7	6.7	5.5			63.2	<0.05*

*significant. SIB: self-injurious behaviors, SA: suicide attempts, ADHD: attention deficit hyperactivity disorder

Table 2. Factors impacting the development of self-injurious behavior and suicide attempt

	Wald	df	Sig.	Exp (B)	95% CI for Exp (B)	
					Lower	Upper
Self-injurious behavior						
Gender	0.104	1	0.747	0.874	0.385	1.982
Depression*	4.808	1	0.028	1.066	1.007	1.128
Anxiety	1.089	1	0.297	0.984	0.954	1.014
Dissociation†	23.293	1	0.000	1.024	1.014	1.033
Total trauma	0.352	1	0.553	1.056	0.882	1.264
Emotional abuse	0.248	1	0.618	0.968	0.786	1.112
Physical abuse	0.001	1	0.970	0.724	0.514	1.024
Sexual abuse	1.397	1	0.237	1.048	0.846	1.256
Emotional neglect	0.018	1	0.894	0.812	0.624	1.014
Physical neglect	0.136	1	0.712	0.922	0.746	1.098
Suicide attempt						
Gender*	11.430	1	0.001	8.714	2.484	30.572
Depression*	10.145	1	0.001	1.118	1.044	1.197
Anxiety	0.083	1	0.774	1.005	0.971	1.040
Dissociation	1.747	1	0.186	1.007	0.997	1.017
Total trauma	2.443	1	0.118	1.180	0.959	1.453
Emotional abuse	1.188	1	0.276	1.024	0.912	1.354
Physical abuse	0.280	1	0.597	0.992	0.784	1.112
Sexual abuse	0.005	1	0.943	0.824	0.712	1.036
Emotional neglect	1.056	1	0.304	1.012	0.856	1.306
Physical neglect	2.837	1	0.092	1.224	1.002	1.544

*significant, †most significant. Exp: exponentiated logistic coefficients

Likewise in our present study, adolescents with DD were more likely to engage in SA than adolescents with other psychiatric disorders. MDD and AD groups followed the DD group. This result is not surprising for MDD since suicidal ideation is one of the diagnostic criteria of MDD.[32] Association between SA and MDD along with AD was demonstrated in the literature. Balázs et al.[33] showed that both subthreshold and threshold-anxiety and depression were related to suicidality in a large study with adolescents living in Europe.

Furthermore, regardless of DD group, ADHD group in the present study was found to be associated with SIB and SA following MDD group. Related studies also support this finding. In this context, Hurtig et al.[34] suggested that ADHD was a risk factor for both suicidal ideation and deliberate self-harm in a cohort study. Correlatively another prospective follow-up study showed that girls with childhood ADHD maintained marked impairment for SA and SIB in their early adulthood. Impulsivity seems to play an important role for this relationship.

Total trauma scores were found to be higher in DD group followed by other groups in the present study. Since DD are etiologically associated with a complex combination of developmental and cultural factors including childhood trauma, this finding is not surprising. However SxA and PN subscores did not differ across groups. Relationship between childhood traumas and internalizing/externalizing psychiatric disorders has been shown in the literature.[35] So it is expected that several types of abuse are more likely to be reported not only in DD group but also in other groups of the present study.

When we examined the factors impacting the development of SIB, we found that dissociation had the highest impact. Many studies suggest a strong association between high levels of dissociation and increased frequency of self-harming behavior.[6,8] Patients with DD usually report numbness or deadpan feelings shortly before SIB.[9,36] Moreover innate hypnotic capacity was also found to be a strong predictor of self-mutilating behavior in patients with DD in one study.[37] However Wachter et al.[38] found that childhood maltreatment rather than dissociation predicted self-injury in their preliminary study examining relationships between childhood maltreatment, dissociation and self-injury in psychiatric outpatients. Second important factor effecting the development of SIB was the depression scores. Similarly, high depression scores have been also demonstrated among adolescents with SIB in the

literature.[39,40] Other factors do not have statistically significant impact.

Female gender and depression scores were found to have highest impact on the development of SA. Female adolescents had higher rates of SA than male adolescents in our study. Coskun et al.[41] also demonstrated that female youth had a higher suicide rate than male youth in their study from Turkey. Moreover, high depression scores in our present study were associated with high SA rates. This finding was expectable because high depression scores were detected to be associated with SA in the literature.[42] Other factors showed statistically negative results. Although suicide attempters had higher level of dissociation, dissociation was not found to be a statistically significant predictor for SA in our study. This finding may have an important clinical implication as it has been reported that adolescents with higher level of dissociation, who currently have more SIB, may have future risk for suicidal behaviors as pathological dissociation may progress to DD.[43] Hence recognizing and treating adolescents with higher level of dissociation may prevent to progress to more serious dissociative disorder and so further suicidal behaviors.

Besides having higher trauma and dissociation scores, adolescents with SIB and SA also had higher scores on depression and anxiety scales. These results suggest that SIB and SA are complex behavioral problems which may be associated with many psychiatric factors. However higher level dissociation seems as an important mediating factor, regardless of psychiatric diagnosis, particularly in the development of SIB as we discussed above.

Our study has several limitations that should be addressed. First of all the value of retrospective histories of trauma is questionable, given the possibility of under-reporting, over-reporting or false memory. The probands also may not report some traumatic experiences, especially sexual abuse, because of some factors discussed above. Relatively small sample size of each group may limit statistical comparison between groups and generalizability of the findings. Another limitation could be the fact that presence of comorbid psychiatric disorders both in dissociative and non-dissociative groups cannot be totally excluded and the impact of comorbid conditions on the development of SIB or SA remains questionable.

Despite these limitations, the present study emphasized the substantial factors having an impact upon SIB and SA in adolescents with major psychiatric disorders comparing with healthy matched peers. Although considering psychiatric comorbidity in adolescents with SIB and SA is crucial for prevention and treatment, several important factors should be born in mind regardless of psychiatric diagnosis while examining this population. Awareness should be increased for dissociation, depression levels and female gender based on the findings of our study. However more research is needed for further exploration examining the factors impacting SIB and SA in youth.

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