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Non-suicidal Self Injury: Relationship with Attachment, Childhood Trauma and Dissociation

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Beste Dila EREN SARIKAYA¹, Çağatay ERMİŞ², Hüseyin Burak BAYKARA³, Burcu SERİM DEMİRGÖREN⁴

ABSTRACT

Objective: This study aimed to investigate the relationship between non-suicidal self injury (NSSI), dissociative experiences, types of childhood traumas, and attachment styles in adolescents.

Method: Adolescents aged 14-18 with a diagnosis of NSSI and a psychiatric disorder (NSSI, n=40), a clinical comparison group which have any psychiatric disorder without NSSI (CCG, n=40) and a healthy control group (HC, n=40) were included. The diagnosis of NSSI were confirmed with the research criteria of the Diagnostic and Statistical Manual of Mental Disorders-5th Edition. All participants were evaluated using the Kiddie Schedule for Affective Disorders and Schizophrenia - Present and Lifetime Version. Childhood Trauma Questionnaire (CTQ), the short form of the Inventory of Parent and Peer Attachment (IPPA), and the Adolescent Dissociative Experiences Scale (ADES) were used.

Results: The dissociation scores were higher in the NSSI group compared to the CCG group (4.8±2.0 and 2.9±2.2, p<0.001) NSSI group also had higher trauma levels but the difference was not statistically significant (48.0±14.2 and 41.4±5.0, p=0.062). Similarly, the NSSI group yielded higher scores of CTQ (48.0±14.2 and 33.8±6.8, p<0.001) and ADES (4.8±2.0 and 1.8±1.6, p<0.001) compared to HC group. Also, compared to the HC group, the NSSI group had more impaired attachment to father (42.0±19.7 vs. 53.0±21.7, p=0.056) and more frequently reported physical and emotional abuse. Finally, there were negative correlations between attachment levels to mother and CTQ total scores (r=-0.70, p<0.001) and between father attachment subscale and ADES scores (r=-0.33, p=0.047).

Conclusion: Our study supports the notion that dissociation, trauma and insecure attachment are more common in individuals with NSSI. Psychotherapeutic approaches based on current findings will provide more benefits to patients.

Keywords: Non-Suicidal Self Injury, Childhood Trauma, Dissociation, Attachment

INTRODUCTION

Non-suicidal self-injury (NSSI) is defined as voluntary, intentional and repetitive attempts that results in tissue damage to one's own body, without a conscious desire for death (Aksoy and Ögel 2003). Self-cutting, skin picking, burning, scratching, scraping and similar behaviours fall within the scope of NSSI (Lloyd-Richardson et al. 2007). There is rather limited data about the mechanisms that cause the emergence or persistence of NSSI. It frequently occurs in adolescence and therefore, in addition to the individual itself, it is of particular concern to child and adolescent

psychotherapists, teachers and other professional groups that work with adolescents (Brown and Plener 2017). In international studies, the prevalence of NSSI among adolescents was found to be 17.2% (Swannell et al. 2014) and 18% (Muehlenkamp et al. 2012). Individuals with recurrent NSSI have higher risk for developing dysfunctional emotional regulation strategies, and it is known that suicide and suicide attempts are more common in these individuals (Brown and Plener 2017). In the DSM-5, NSSI is defined under a separate title in the section concerning other conditions that may be the focus of clinical attention (DSM-5 2013).

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1.2Psychiatrist, 3.4Assoc. Prof., Dokuz Eylül University Research and Application Hospital, Department of Child and Adolescent Psychiatry, İzmir, Turkey.

Dr. Beste Dila Eren Sarıkaya, e-posta: bestedilaeren@outlook.com

Childhood trauma is defined as all "damaging" or "inappropriate" actions or inactions that hinder the physical and mental development of the child (Taner and Gökler 2004). It is known that traumas (abuse and neglect) experienced during childhood and adolescence are one of the most important factors in the development of NSSI (O'Connor et al. 2009).

Dissociation is a defence mechanism that helps protect the psychological integrity of the individual against the negative effects of traumatic experiences such as physical, emotional, sexual abuse and physical or emotional neglect during childhood. In a review, NSSI and dissociation were found to be positively correlated in adolescents (Černis et al. 2019).

Attachment is the first bond that forms between the baby and the caregiver, which starts from the first days of life, develops the basic sense of trust, and lasts for life. It has been shown that adolescents with insecure attachment style are more vulnerable to stress and difficult situations, refuse to receive support from their parents or peers during the crisis, and engage in risky behaviours such as NSSI or suicide attempts (France 2000).

NSSI's relationship with insecure attachment, childhood trauma and dissociation has been demonstrated in previous studies (Allen et al. 1996, France 2000, Zoroglu et al. 2001). However, there is no study in Turkey examining childhood trauma, dissociative experiences and attachment together in adolescents with a diagnosis of NSSI according to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition. In addition, in overall literature NSSI group was mostly compared with only a healthy control group; and individuals with NSSI who are included in studies after clinical admission usually have additional psychopathological diagnoses. Therefore, it is not clear whether the differences found between the two groups are due to NSSI or due to a psychopathological diagnosis. In our study, we aimed to clearly reveal the reason of these differences. The primary aim of this study is to compare the types of attachment to both parents, dissociation and trauma between the NSSI group, the clinical comparison group (CCG) and healthy controls (HC). Our first hypothesis is that in individuals with NSSI behaviour; trauma, dissociative experience and insecure attachment is observed more frequently. Our second hypothesis is that in individuals with NSSI behaviour, with a longer history of trauma, dissociative experience occurs more frequently and insecure attachment may be observed more frequently in the presence of a history of trauma.

METHOD

This study was carried out in the Child and Adolescent Psychiatry Outpatient Clinic of Dokuz Eylül University Hospital between August 2018 and November 2018. There are two patient groups and a healthy control group in the study. Inclusion criteria were identified as being 14-18 years of age, having a clinically normal level of intelligence, and having obtained parental and self-consent. 40 cases diagnosed with NSSI and psychopathology, 40 cases diagnosed with similar psychiatric diseases but no NSSI and 40 healthy control cases with similar sociodemographic characteristics were included in the NSSI, CCG and HC groups, respectively. Exclusion criteria were to be outside of the specified age range, to have clinical mental retardation, to meet the diagnoses for pervasive developmental disorder, schizophrenia, bipolar disorder, psychotic disorder, and to have a developmental or physical (neurological, metabolic, endocrine, etc.) disorder that prevents participation in the scales and interviews applied in the study. To reach healthy volunteers, advertisements promoting the study were posted on the bulletin boards throughout the hospital and 40 healthy adolescents who gave written paternal and self-consent were included by considering inclusion and exclusion criteria.

The research criteria of the 5th Edition of the Diagnostic and Statistical Manual of Mental Disorders were used to evaluate the diagnosis of NSSI in all three groups. Comorbid psychiatric disorders were evaluated with the K-SADS-PL (Schedule for Affective Disorders and Schizophrenia for School-Age Children) based on DSM-4 criteria in all participants. The outcomes of primary objective were assessed with the validated Turkish versions of Childhood Trauma Questionnaire (CTQ), the short form of the Inventory of Parent and Peer Attachment (IPPA), and the Adolescent Dissociative Experiences Scale (ADES). The approval of the Ethics Committee of Dokuz Eylül University Hospital Non-Interventional Research was obtained before study with the decision number 2018/19-39 dated 26.07.2018. Informed information and consent forms were obtained from all the participants.

Schedule for Affective Disorders and Schizophrenia for School-Age Children - Now and Lifetime Version (K-SADS-PL)

K-SADS-PL is a semi-structured interview applied to both children and their parents; It includes five diagnostic supplements as affective disorders, psychotic disorders, anxiety disorders, behavioural disorders, substance abuse and other disorders, and sub-diagnostic supplements of these diagnoses and a general assessment scale for children. Validity and reliability study in the Turkish language was performed by Gökler et al. in 2004 (Gökler et al. 2004).

Childhood Trauma Questionnaire (CTQ)

CTQ is a five-point Likert type self-report scale developed by Bernstein in 1994 with 70 items to screen neglect and abuse

experiences in childhood and adolescence. It was reduced to 54 items in 1995 and the questions were divided into five subscales (Bernstein et al. 2006). There are also five subscales in Turkish version of CTQ that measure physical abuse, emotional abuse, sexual abuse, physical neglect and emotional neglect. In addition, there are three items which include questions on denial of trauma. High scores indicate the frequency of childhood trauma experience (Sar et al. 2012).

Adolescent Dissociative Experiences Scale (ADES)

Adolescent Dissociative Experiences Scale (A-DES) has been shown to be useful, valid and reliable in detecting dissociative disorders in the adolescent age group. It is an easy-to-apply measurement tool based on self-reporting. It was developed by Armstrong and Putnam in the United States and its validity and reliability were also demonstrated by Armstrong and Putnam (Armstrong et al. 1997). Validity and reliability of the Turkish version were ensured in 2002 (Zoroglu et al. 2002). The scale consists of 30 items with evaluation scores between 0 and 10 to be selected for each item. The ADES total score is the average of scores from 30 items and a high score is associated with dissociative experience.

Inventory of Parent and Peer Attachment (IPPA)

The inventory is a short form of the 12-item form of Inventory of Parent and Peer Attachment (IPPA) prepared by Raja et al. which was originally developed by Armsden and Greenberg (Armsden and Greenberg 1987, Raja et al. 1992). The scale was adapted into Turkish by Günaydın et al. (Günaydın et al. 2005). Each item in the scale is scored between 1-7 (1=never, 7=always). As a result of the adaptation study, the sub-domains of trust, communication and alienation were determined. The total attachment score is obtained by adding up trust, communication, and inversely scored alienation subscales and high scores indicate secure attachment. Attachment score can be calculated separately for mother and father (Günaydın et al. 2005).

Data Analysis

Categorical or nominal variables were presented as percentages and numbers. Whether the distribution of continuous variables was normal or not was evaluated with kurtosis and skewness values. If the continuous variables obtained by the measurement fit the normal distribution, mean±standard deviation were given. ANOVA (Analysis of Variances) test was applied between the three groups. Where the ANOVA test gave statistically significant results, Bonferroni's posthoc tests were applied to determine the group which the difference was stemming from. Chi-square test was applied in the analysis of categorical or nominal data. Fisher's exact test was used when there were values less than 5 observed in

the chi-square test. In order to reduce the Type-II error rate, the p-value was adjusted by applying Bonferroni correction in the comparison of the three groups. The relationship between numerical variables was evaluated with the Pearson correlation test. Dissociation, trauma, and attachment scores were compared using the ANCOVA test. Age was included as a control variable in the analyses.

Statistical analysis of the data obtained in this study was performed with SPSS version 22.0. In all analyses, p<0.05 was accepted as the statistical significance limit.

RESULTS

120 participants with a mean age of 15.7±1.2 were included in our study. The NSSI and CCG groups were similar in terms of age, whereas the HC group was significantly younger than both groups (Table 1). Gender distribution was similar between groups with no statistically significant difference being found. Participants in our study were also similar in terms of their education and income status. Cigarette and alcohol use were highest in the NSSI group, and a statistically significant difference was observed for both parameters when the NSSI group and HC were compared (Table 1). Suicidal ideation was observed in 87.5% of the NSSI group and was more common than in the CCG and HC groups. More suicide attempts were present in both the NSSI and CCG groups than in the HC group (Table 1).

In Table 2, axis I psychiatric diagnoses of the adolescents in the NSSI and CCG groups are evaluated. Major depressive disorder (70%), attention deficit hyperactivity disorder (13.8%), and generalized anxiety disorder (12.5%) were the most common diagnoses for the relevant cases. There was no psychiatric diagnosis with statistically significant difference between the NSSI group and CCG. No significant difference was observed between the two groups for use of antidepressant, antipsychotic, stimulant and anxiolytic drugs, and there was no use of mood-stabilizing drugs in either group (Table 3).

The NSSI group had higher dissociation levels than both CCG and HC groups. Trauma levels of the NSSI group were higher than the CCG group, despite not being statistically significant (Table 4). The rate of attachment to the father was higher in the CCG group than in the NSSI group, but there was no statistically significant difference. In addition, the NSSI group reported more frequent physical and emotional abuse than CCG; however, other types of trauma had similar frequencies. Finally, the NSSI group showed statistically higher trauma, dissociation and insecure attachment characteristics than HC group (Table 4).

In the correlation analysis of NSSI group, there was a negative correlation between the total score of attachment to the

Table 1. Sociodemographic and Clinical Characteristics of the Case and Control Groups

						Post hoc Bonferroni p value		
Variables	NSSI (n=40)	CCG (n=40)	HC (n=40)	F/χ^2	P	NSSI and CCG	NSSI and HC	CCG and HC
Age, year, med. ± SD	16.0±1.1	16.0±0.9	15.2±1.3	7.0	0.001	1.0	0.005	0.005
Gender, female, n (%)	35 (87.5)	29 (72.5)	32 (80.0)	2.8	0.245	-	-	-
Level of Education, n (%)				8.8	0.066	-	-	-
Primary school	0 (0.0)	1 (2.5)	1 (2.5)					
Secondary school	7 (17.5)	0 (0.0)	7 (17.5)					
High school	33 (82.5)	39 (97.5)	32 (80.0)					
Income, n (%)				10.2	0.117	-	-	-
Low	3 (7.5)	6 (15.0)	2 (5.0)					
Middle	31 (77.5)	31 (77.5)	27 (67.5)					
High	5 (12.5)	3 (7.5)	11 (27.5)					
Very high	1 (2.5)	0 (0.0)	0 (0.0)					
Tobacco use, n (%)	17 (42.5)	14 (35.0)	6 (15.0)	7.6	0.023	1.0	0.021	0.117
Alcohol use, n (%)	20 (50.0)	10 (25.0)	5 (12.5)	14.1	0.001	0.063	< 0.001	0.456
Suicidal ideation, n (%)	35 (87.5)	21 (52.5)	5 (12.5)	45.1	< 0.001	0.003	< 0.001	< 0.001
Suicide attempt, n (%)	22 (55.0)	10 (25.0)	0 (0.0)	28.2	< 0.001	0.066	< 0.001	0.001

 $CCG: Clinical\ comparison\ group,\ NSSI:\ Non-suicidal\ self-injury\ group,\ HC:\ Healthy\ control\ group,\ SD:\ Standard\ deviation.$

Psychiatric Diagnoses, n (%)	NSSI (n=40)	CCG (n=40)	Statistics	p	
Major Depressive Disorder	30 (75.0)	26 (65.0)	$\chi^2 = 1.0$	0.329	
Attention Deficit Hyperactivity Disorder	7 (17.5)	4 (10.0)	$\chi^2 = 0.9$	0.330	
Generalized Anxiety Disorder	3 (7.5)	7 (17.5)	$\chi^2 = 1.8$	0.176	
Post-Traumatic Stress Disorder	4 (10.0)	2 (5.0)	FET	0.675	
Obsessive compulsive disorder	2 (5.0)	2 (5.0)	FET	1.0	
Substance Use Disorder	1 (2.5)	1 (2.5)	FET	1.0	
Eating disorders	1 (2.5)	1 (2.5)	FET	1.0	
Panic Disorder	1 (2.5)	0 (0.0)	FET	1.0	
Social Phobia	1 (2.5)	0 (0.0)	FET	1.0	

Psychiatric Treatments, n (%)	SI (n=40)	CCG (n=40)	Statistics	P
Antidepressants	20 (50.0)	19 (47.5)	FET	0.82
Antipsychotics	16 (40.0)	10 (25.0)	$\chi^2 = 2.1$	0.15
Stimulant drugs	5 (12.5)	8 (10.0)	FET	0.71
Anxiolytic/Sedative drugs	1 (2.5)	2 (5.0)	FET	1.0
Mood Stabilizers	0 (0.0)	0 (0.0)	-	

Table 4. Comparison of Dissociation, Attachment and Trauma Characteristics of Case and Control Groups

			HC (n=40)			Post hoc Bonferroni p values		
(Mean±SD)	NSSI (n=40)	CCG (n=40)		$\mathbf{F}^{\mathbf{a}}$	p	NSSI and CCG	NSSI and HC	CCG and HC
CTQ-total	48.0±14.2	41.4±15.0	33.8±6.8	11.4	< 0.001	0.062	< 0.001	0.039
Emotional abuse	12.4±5.2	9.8±5.4	6.9±2.2	12.3	< 0.001	0.035	< 0.001	0.040
Physical abuse	7.2±3.3	6.0 ±2.0	5.2±0.5	6.8	0.002	0.047	0.001	0.649
Emotional neglect	12.4±4.9	11.7±5.3	10.0±4.0	2.9	0.060	-	-	-
Physical neglect	7.6±3.0	6.9±2.4	6.6±2.0	1.9	0.157	-	-	-
Sexual abuse	8.5±5.2	7.3±4.9	5.1±0.4	6.8	0.005	0.653	0.004	0.107
ADES-total	4.8±2.0	2.9±2.2	1.8±1.6	20.2	< 0.001	< 0.001	< 0.001	0.094
IPPA-mother	51.6±18.1	58.2±19.2	71.4±10.4	12.1	< 0.001	0.226	< 0.001	0.006
IPPA-father*	42.0±19.7	53.0±21.7	67.0±17.8	13.4	< 0.001	0.056	< 0.001	0.015
IPPA-friend	58.7±18.2	65.6±15.8	72.4±13.0	6.9	0.001	0.159	0.001	0.187

CTQ: Childhood Trauma Questionnaire, IPPA: Inventory of Parent and Peer Attachment, ADES: Adolescent Dissociative Experiences Scale, CCG: Clinical comparison group,

NSSI: Non-suicidal self-injury group, HC: Healthy control group, SD: Standard deviation.

*Data for 7 people were missing for this variable.

^aResults were checked for the age variable in the ANCOVA analysis.

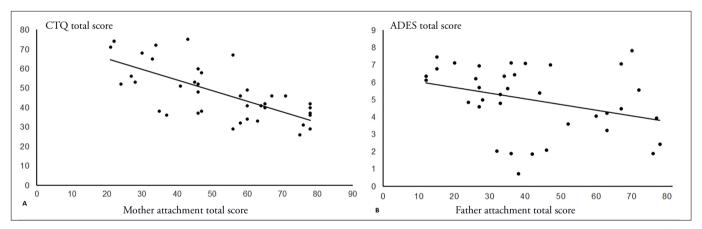


Figure 1. Negative high correlation between mother attachment total score and total CTQ score (A) (r=-0.70, p<0.001) and negative low correlation between father attachment total score and total ADES scores (B) (r=-0.33, p=0.047).

ADES: Adolescent Dissociative Experiences Scale, CTQ: Childhood Trauma Questionnaire

mother (subscale of IPPA) and the CTQ (r=-0.70, p<0.001). Similarly, levels of attachment to the father were negatively correlated with dissociation (r=-0.33, p=0.047) (Figure 1). No correlation was found between ADES and CTQ and other subscales of IPPA; and no correlation was present between CTQ and other subscales of IPPA. (Figure 1).

DISCUSSION

In our study, the highest rate of dissociative experience was observed in the NSSI group, and a significant difference was present with both CCG and HC groups. In literature, dissociation levels were found to be higher in participants who physically harmed themselves (Zoroglu et al. 2001, Zoroglu

et al. 2003). The higher rate of dissociation NSSI group may indicate a bidirectional relationship. A person may induce self-harm to avoid a dissociative experience, or a person may experience a dissociative process following NSSI.

Trauma history was observed the most in the NSSI group. Although more traumatic experiences were detected in NSSI group, there was no significant difference compared to CCG. The NSSI group reported higher levels of physical and emotional abuse than CCG, but other trauma types were similar between the two groups. This finding made us think that our society is more accustomed to neglect than abuse. On the other hand, it may make one think that abuse causes NSSI more easily than neglect. Consistent with our results, in a study conducted by Zoroğlu et al. all types of traumas were

found to be higher in adolescents with NSSI and the highest reported types of trauma were physical and emotional abuse (Zoroglu et al. 2003). Other studies also emphasized the effect of emotional abuse in NSSI (Glassman et al. 2007). In current literature, several studies reported that sexual abuse is a strong precursor for NSSI (Jacobson and Gould, 2007, Ford and Gomez 2015). However, in our study, although sexual abuse was more common in the NSSI group, there was no significant difference. We also observed that adolescents with a trauma history turned to NSSI more frequently in order to cope with the emotional stress caused by the traumatic process.

The HC group had a higher rate of secure attachment to parents and friends in our study. Meanwhile, insecure attachment was the most common in the NSSI group. Our results also support the relationship between attachment and psychopathology. It is known that adolescents with a secure attachment style resort to healthy solutions such as getting help from their parents or friends or contacting them in stressful situations, while adolescents with insecure attachment have higher rates of substance abuse, NSSI, suicide attempts, criminal attempts, and unresolved trauma history (Allen et al. 1996). Another study also reported that adolescents with insecure attachment style engage in risky behaviours such as NSSI or suicide attempt in presence of stress (France 2000). In addition, dysfunctional family environment, attachment problems and emotional neglect were also reported to have associations with the development of NSSI (Gratz 2003, Tantam and Whittaker 1992). In a recent study conducted with in-patient adolescents in a psychiatry clinic, a relationship was found between attachment trauma and NSSI, and it was stated that attachment-based approaches may be beneficial in the treatment of NSSI (Gander et al. 2021). In a review of 18 studies, it was stated that attachment problems are also a risk factor in adult population for NSSI (Wrath and Adams 2018). In our study, despite being not statistically significant, a tendency was found in the NSSI group to be more insecurely attached to the father compared to the CCG. Considering the prevalence of the female gender in our sample, the importance of the supportive role in the father-daughter relationship becomes evident. The increased emotional abuse and neglect scores in the NSSI group suggest that oppressive or critical parenting may lead to negative outcomes. Although we did not measure parenting skills, it can be suggested that parenting based on trust and compassion, which supports healthy coping mechanisms, may reduce the risk of future NSSI.

A negative correlation was found between maternal attachment level and CTQ total score (r=-0.68, p<0.001) as well as between father attachment level and ADES score (r=-0.36, p=0.031). These data indicate that trauma and dissociation increase alienation and have a negative effect

on trust and communication in the maternal and paternal relationships established by the adolescent. As a result, the attitudes and behaviours of adolescents in their relationships with their families are negatively affected. It can be predicted that such circumstance may pave the way for psychiatric diseases, including NSSI. In a high school sample in Istanbul, Zoroğlu et al. reported that the level of dissociation increased as the number of the types of trauma exposed increased (Zoroglu et al. 2003).

In our study, suicidal ideation was found to be higher in the NSSI group than in both CCG and HC groups. On the other hand, suicide attempts were found to be higher in the NSSI group than in the HC group while no statistically significant difference was found between the NSSI group and CCG; yet there is a trend towards a statistically significant relationship. In a recent review, it was stated that NSSI increases the risk of suicide by 3 times (Vega et al. 2018). In a study conducted on adolescents in Istanbul, 60% of adolescents with NSSI stated that they had suicidal ideation at least once in their life, while 31% reported that they had attempted suicide (Lüleci 2007). These studies show that the frequency and severity of NSSI are associated with suicidal ideation and attempt.

The strongest aspect of our study is that the relationship between NSSI behaviour and scale scores was compared not only with the healthy population, but also with the CCG group with similar psychiatric diagnoses. Trauma, emotional and physical abuse, dissociation and insecure attachment were observed more frequently in the NSSI group than in the HC, but this result may be due to the presence of a difference stemming from accompanying psychiatric diagnoses. On the other hand, the significant difference in terms of dissociation and emotional and physical abuse between NSSI and CCG groups, which had similar diagnoses and were separated only by the presence of self-harming behaviour, indicates that the presence of these factors may be more specific precursors for NSSI.

One of the main limitations of the study is that it contains data from a single clinic. Since the sample of our study consisted of adolescents who applied to the clinic, adolescents who did not apply to the clinic were not represented. The nature of NSSI in those adolescents may be different. The statistically significant age difference between the HC group and the other two groups, and the evaluation of the diagnosis of NSSI according to the DSM-5 and of the accompanying diagnoses according to the KSADS-PL based on the DSM-4 criteria are other important limitations of our study. Another limitation of our study is that the parenting skills of families were not measured. The groups were evaluated not in a longitudinal but in a cross-sectional manner, and the duration of medication use was not addressed due to the cross-sectional nature of the study. Future studies need to be designed to include data on long-term follow-up.

CONCLUSION

Individuals may experience severe anxiety, severe anger, depersonalization, depression, feelings of loneliness, mood swings, distress, feelings of emptiness and insecurity because of traumatic processes or insecure attachment relationships. To cope with these feelings, an individual can turn emotional hurt into physical pain through self-injury.

Since insecure attachment is more common in adolescents with NSSI, it is important to include therapeutic approaches to increase family functioning in the treatment plan. It may also be useful in clinical follow-up to keep in mind that adolescents with NSSI may have a history of trauma in their lives and to conduct supportive interviews in order to increase emotional coping. It has been observed that adolescents with self-injury behaviour are at risk in terms of suicide attempts. Therefore, preventive measures should be taken against suicide attempts in clinical follow-up.

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