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Original

Non-suicidal self-injury behaviors' features and relationship with adolescents' daily life activities and mental status

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SUMMARY: Çimen İD, Coşkun A, Etiler N. Non-suicidal self-injury behaviors' features and relationship with adolescents' daily life activities and mental status. Turk J Pediatr 2017; 59: 113-121.

This study investigated, characteristics of the non-suicidal self-injury (NSSI) behaviors and behaviors' relationship with the sociodemographic characteristics, psychological problems and other features like daily life activities, between the ages of 12 and 17 years in the central district İzmit of Kocaeli; 555 students whose data included to study received a sociodemographic questionnaire (SQ) and Youth Self-Report (YSR). Students, who reported that they had NSSI, were additionally evaluated with the Inventory of Statements About Self-injury (ISAS). We found out a significant correlation between NSSI and the psychological problems, habits with addiction-forming potential, some daily life activities and making friends with negative characteristics. We concluded that prevention of the risk factors related to NSSI might be effective to avoid the development of this behavior. And diagnosing the behavior in the onset, might provide more effective and long-lasting results and enable the adolescent to get over this risky period with minimal harm.

Key words: activities of daily living, adolescents, mental disorders, self-harm, self-injury.

Non-suicidal self-injury (NSSI) is one of the most problematic behavior disorders faced in the adolescence period. It was considered as a new category of diagnosis in DSM-5 and placed under the chapter "Other Conditions That May Be a Focus of Clinical Attention" with the title "Personal History of Self-Harm"[1]. NSSI is defined in DSM-5 as the intentional self-injury behavior of a person, for at least 5 days over the last past year causing bleeding, cyanosis or pain with the expectation of mild-to-moderate physical harm. In order to make a definitive diagnosis, the behavior should not be socially acceptable and should not be limited to behaviors such as scab-lifting or nail-biting. In addition, the behavior and its consequences should cause a clinically prominent distress or impairment in interpersonal, academic or other important functionality fields[1].

Studies conducted with a sampling group from the general population showed that the incidence of NSSI was between 14%-19% among adolescents[2-5]. In the studies which covered 11 European countries, the incidence of NSSI was 19.73% among adolescents and in most of these countries, a significant correlation between female sex and NSSI was demonstrated[6]. Although, the onset of NSSI was between 12-16 years according to the studies in the literature, a study focused on subjects from the clinical practice in our country showed that the mean age for the onset of NSSI was 14.70±2.15 years. In this study onset of NSSI was 14.74±2.11 years among girls and 14.43±2.46 years among males[7,8]. Studies displayed that the most common NSSI behavior in adolescents was self-cutting[9,10]. There might be differences between some self-injuring methods regarding gender. For example, in a study, it was determined that boys were more prone to self-burning than girls and girls were more prone to self-cutting

The study was presented as a poster presentation at the 26th Turkish Child and Adolescent Psychiatry Congress (13-16 April 2016 / İzmir)

and self-scratching[11].

Some studies in the literature reported a correlation between NSSI and socioeconomic level, being abused, problems about friendship relations, psychological disorders like depression, anxiety, behavior disorders and suicide ideation along with several risky disorders like smoking, alcohol consumption, school skipping[4,12-20].

In this study, our objective was to determine the characteristics of the NSSI in the adolescents between the ages of 12 and 17 years, who were in the 7th, 8th, 9th and 10th grades in the central İzmit district of Kocaeli. We also investigated the sociodemographic characteristics leading to the onset of such behaviors, the psychological problems in the youngsters with non-suicidal self-injury behavior and lifestyle and friendship relations of these adolescents, which might be related to this behavior pattern.

Material and Methods

Subjects

The adolescents, who were in 7th-10th grades in the district İzmit of Kocaeli participated in our study. Regarding the sampling size from the population, the NSSI incidence was accepted as 15%[21]. The calculations displayed that the subject size should be at least 545. Considering absenteeism, we decided to enroll 626 students into the study. Our study was approved by the Kocaeli Clinical Research Ethics Committee (Approval Nr.: 1/3; Project Nr.: 2014/3). The investigator made a written application to the Kocaeli Directorate of National Education and to the Governorship of Kocaeli from where the legal permissions were obtained.

Students completed the questionnaires with a nickname and the investigator was available in the classrooms during this process. All students received SQ and SES. Students reporting self-injury fulfilled also ISAS. All students gave their consent for the participation. 580 students were accessed among 626 patients, who were planned to enroll into the study. Twenty-five students either always marked the same choices for all questions or left all questions unanswered. Therefore, the data from these 25 students were found unreliable and they were excluded from the study.

Sociodemographic Questionnaire (SQ)

The form was prepared by the investigator and the following characteristics of participants and their friends were queried: Number of brother/sisters, the birth order in the family, an important event experienced in the last one year, daily TV viewing time on weekdays and weekends, TV shows they watched, daily internet usage time on weekdays and weekends, websites they surfed, encounters of NSSI on TV and websites, free time activities, smoking, alcohol consumption and substance-use habits, grade repetition, disciplinary punishment, cutting object usage, and involvement in a fight.

Youth Self-Report / YSR/11-18 for Adolescents between the Ages of 11-18 Years

Youth self -report enables a standard evaluation of the problematic behaviors of the adolescents with the help of the information provided by the participants. The report constitutes of 17 articles measuring the qualification and 112 articles measuring problematic behaviors. Problematic behaviors are scaled according to their frequency as "0" (not true); "1" (somewhat or sometimes true) and "2" (very true or often true) and the articles are classified in several subgroups. The report enables the obtainment of two separate behavior symptom scores like "intrinsic orientation" and "extrinsic orientation". The intrinsic orientation group constitutes from the total of subtests of "Anxiety/Depression, Social Intrinsic Orientation/Depression and Somatic Complaints" and the extrinsic orientation group constitutes from the total of subtests of "Oppositional Defiance and Aggressive Behaviors". Furthermore, "Social Problems, Thought Disorders and Attention Disorders", which is not included in these groups, is available in this questionnaire. "Total Problem" score is obtained from the sum of these subtests[22]. The compatibility and reliability of this questionnaire regarding the Turkish language were done by Erol and Şimşek[23]. In our study, both chapters of the questionnaire were completed, but only the 2nd chapter was evaluated.

Inventory of Statements About Self-injury (ISAS)

ISAS is a scale, which has 2 sections and was developed by Klonsky and Glenn[24] in 2009. In the first section (Behaviors) the lifetime

incidence of 12 NSSI behaviors performed "intentionally (on purpose) and without suicidal intent" is assessed. The descriptive and contextual characteristics of these behaviors are investigated with an additional five questions.

The participants, who reported "one or more NSSI" in the first section of the inventory, were instructed to complete the second section (Functions) of the inventory. This section assesses the functions of 13 NSSI with total 39 questions in respect of two separate dimensions (autonomous and social functions). Autonomous functions consist of 5 subdimensions and social functions of 8 subdimensions. Each function is assessed by three items, rated as "0-not relevant," "1-somewhat relevant," or "2-very relevant". The validity and reliability of the inventory for the Turkish language were assessed by Bildik et al.[25] in 2013.

Considering all NSSI behaviors assessed in the first section of the inventory, the analyses pointed out a rather high internal consistency (α=0.81). The internal consistency and confirmative factor analysis performed for the second section of the inventory showed that the items explaining the functions of NSSI composed were coherent with the original inventories - a dimension with a very high internal consistency (for the total score: α=0.93) and could be grouped in two factors as autonomous functions (α=0.81) and social functions (α=0.86).

Statistical analysis

The data was analyzed with SPSS v.20 software program. Before the analysis of numeric data, normal distribution was tested with Kolmogorov-Smirnov. In cases of the normal distribution, mean values were compared with t-test and one-way variance analysis. In cases with no normal distribution, Mann-Whitney U-test was performed. For the comparison of the ratios Pearson Chi-square, Fischer and Chi-square tests were used. The accepted value of significance was $p<0.05$.

Results

General Characteristics of the Participants

A total 555 students (314 girls (56.6%) and 241 boys (43.4%) were included in the study. 125 of the participants were 12-13 years old (22.5%), 315 were 14-15 years old (56.8%) and 115 were 16-17 years old (20.7%). 122 of them were in 7th grade (22%), 125 in 8th (22.5%), 185 in 9th (33.3%) and 123 in 10th grade (22.2%).

Characteristics of the Adolescents with NSSI

The incidence of NSSI was 11.4% (63) among the participating adolescents. There was no significant difference according to the sex, age group, school grade, number of brothers/sisters, the birth order in the family and having an additional work in respect of NSSI. The reported youngest age for the onset of NSSI was 7 years and the oldest was 16 years. The calculated mean age for the onset of NSSI was 12.4±1.87 years. The mean age for the NSSI onset was 12.85±1.71 years among girls and 11.68±1.96 years among boys. We determined that the boys started with NSSI at a statistically earlier age than girls.

Considering the number of NSSI types, we determined that adolescents carried out NSSI mostly with one method. It was found out that the most common repetitive behaviors were hitting a hard object and biting. Pricking was the least common repetitive behavior. While the overall most common behavior was hitting a hard object, it was cutting among girls and hitting a hard object among boys. There was no significant correlation between NSSI type and sexual characteristics. The results of the first section of ISAS (behaviors) were summarized in Table I.

Correlation between sub-scores of ISAS and Sex

The correlation between gender and subscores of ISAS, which indicate motivation of NSSI, was shown in Table II. There were no meaningful differences in all subscores considering gender except anti-dissociation. In this subscore, it was found that boys had more tendency towards NSSI behavior to prevent dissociation than girls ($p<0.05$).

The Correlation between NSSI and the Behaviors with Addiction Potential

There was a significant correlation between NSSI and duration of internet usage on weekdays (Linear $\chi^2 = 18.411$, $p<0.05$), weekends (Linear $\chi^2 = 5.032$, $p<0.05$), smoking (Linear $\chi^2 = 44.440$, $p<0.05$), alcohol consumption (Linear $\chi^2 = 37.000$, $p<0.05$) and substance use (Linear $\chi^2 = 17.380$, $p<0.05$).

Table I. Features of Non-Suicidal Self-Injury (63 cases).

Features	N	%
Being alone during NSSI		
No	7	11.1
Sometimes	19	30.2
Yes	37	58.7
Time interval between impulsion and NSSI		
Shorter than 1 hour	50	80.6
1-3 hour	6	9.7
3-6 hour	1	1.6
6-12 hour	0	0
12-24 hour	0	0
Longer than 1 day	5	8.1
Sense of pain during NSSI		
No	19	30.2
Sometimes	25	39.6
Yes	19	30.2
Wish to stop NSSI		
No	22	34.9
Yes	41	65.1

NSSI: non-suicidal self-injury

The Correlation of NSSI with the Free-time Occupations of the Adolescents

There was no significant correlation between NSSI and frequency of internet cafe visits, the total duration of TV-watching on weekdays, favorite TV-program and favorite activity at home. Although there was no significant correlation between NSSI and favorite website, there was a significant difference between the adolescents, who came across NSSI on the internet and who did not (χ^2 = 10.373, $p<0.05$). Similarly, there was a significant difference between the adolescents, who came across NSSI on TV and who did not (χ^2 = 10.373, $p<0.05$).

There was a correlation between NSSI and favorite music genre, NSSI was observed in 28 of the adolescents listening to pop music (8.3%), in 17 of the adolescents listening to metal and rock music (23.3%), in 1 of the adolescents listening to classical music (3.3%) and in 17 of the adolescents listening to other music genres (rap, arabesque) (17.2%). NSSI was not observed among adolescents, who prefer folkloric music. The difference between the groups was significant and this difference depended on adolescents listening metal and rock and other music genres like rap and arabesque (χ^2 = 20.321, $p<0.05$). NSSI was significantly high among the adolescents between 12-17 years old, who visited entertainment places like bar and night clubs at nights ($\chi2$ = 13.885, $p<0.05$).

We also found that there was a significant correlation between NSSI and adverse behaviors like threatening, being threatened, carrying cutting object, involvement in fights outside the home ($p<0.05$). Considering the school-life of the adolescents, there was a significant difference between the adolescents with a disciplinary punishment and the adolescents without (χ^2=13.765, $p<0.05$). Moreover, there was also a significant correlation between visiting a psychiatrist and being already under a psychiatric treatment (χ^2=19.010, $p<0.05$).

The Correlation of NSSI with YSR Subgroups

We determined that there was a significant difference between the YSR subgroups and NSSI regarding all subgroups except the positive characteristics subgroup score. The correlation of YSR subgroups with NSSI was shown in Table III.

The Correlation of NSSI with the Characteristics of the Adolescents' Friends

There was a significant correlation with NSSI and having a friend run away from home (Linear χ^2=19.120, p<0.05), having a smoking friend (Linear χ^2=25.514, p<0.05), having a friend with alcohol consumption habit (Linear χ^2 = 19.381, p<0.05), having a friend with drug abuse habit (Linear χ^2=29.515, p<0.05) and having a friend with NSSI (Linear χ^2=71.369, p<0.05). We also detected a significant correlation between NSSI and having an emotional relation at an early age (χ^2=11.24, p<0.05), having several boyfriends/girlfriends (Linear χ^2=13.284, p<0.05) and having more than one boyfriend/girlfriend at the same time (χ^2=5.705, p<0.05).

Discussion

Sixty-three adolescents (11.4%) among the participants committed NSSI in our study. The mean age for the onset of NSSI was 12.4±1.87 years. In this period, which is also considered as the early adolescence period, NSSI might start along with the conditions such as the start of the struggle for freedom, tendency to oppose parents, concerns about the future, experiencing multiple physical and psychological changes and difficulties to cope with them.

Regarding the characteristics of the moment NSSI occurred, there were different results in the literature regarding pain perception[26-27-28]. In our study, we found out that 30.2% of the subjects did not feel the pain during the NSSI commitment, 30.2% felt the pain and 39.6% felt the pain occasionally. We concluded that these results confirmed the arguments in the literature like inhibition of the pain perception by the endorphin release during the NSSI and having a relatively high pain threshold.

We determined that adolescents were alone during committing NSSI. This finding pointed out that this behavior was not manipulative and it was rather committed to relief anger

Table II. Subscale-Scores of Inventory of Statements About Self-injury (ISAS) According to Sex.

	Girls			Boys			Total		
Subscales	N	Mean±SD	Median	N	Mean±SD	Median	Mean±SD	Median	p
Affect regulation	39	4.03±1.77	4.00	22	3.8±1,45	4.00	3.93±1.65	4.00	0.39
Anti-suicide	40	1.53±1.57	1.00	22	2.41±1.82	3.00	1.84±1.70	2.00	0.06
Marking distress	39	3.03±1.87	3.00	22	2.50±1.44	2.50	2.84±1.73	3.00	0.35
Self-punishment	40	2.10±1.77	2.00	22	2.00±1.15	2.00	2.06±1.57	2.00	0.89
Anti-dissociation	40	1.85±1.67	2.00	22	2.77±1.54	3.00	2.18±1.67	2.00	0.02
Intrapersonal functions	38	12.68±6.13	12.00	22	13.45±4.67	13.00	12.97±5.61	13.00	0.56
Interpersonal boundaries	40	1.85±1.72	2.00	22	2.68±1.89	3.00	2.15±1.81	2.00	0.08
Interpersonal influence	39	1.08±1.24	1.00	22	1.55±1.65	1.00	1.25±1.41	1.00	0.27
Revenge	39	2.03±1.33	2.00	22	2.32±1.89	2.00	2.13±1.54	2.00	0.76
Sensation seeking	40	1.35±1.58	1.00	22	2.14±1.88	1.50	1.63±1.72	1.00	0.08
Peer bounding	40	0.68±1.35	0.00	22	1.64±1.94	0.50	1.02±1.63	0.00	0.06
Toughness	40	2.18±2.22	1.00	22	2.45±1.90	2.00	2.27±2.10	2.00	0.43
Autonomy	39	1.56±1.77	1.00	22	2.23±2.02	2.00	1.80±1.88	1.00	0.18
Self-care	40	1.58±1.22	1.00	21	2.05±1.91	1.00	1.74±1.49	1.00	0.55
Interpersonal functions	38	12.55±8.81	9.00	21	17.19±12.53	13.00	14.20±10.42	13.00	0.26
Total functions	37	25.16±14.31	22.00	21	30.67±16.57	26.00	27.16±15.26	24.50	0.23

*Mann-Whitney U test statistics, ISAS: Inventory of Statements About Self-injury, N: Number, SD: Standard Deviation

and anxiety and to strengthen the perception of the life. The time between the impulse for NSSI and the realization of the NSSI was shorter than one hour. This finding supported that NSSI usually emerged as an impulsive behavior without any prior planning.

Considering the friend relationships, we also detected a significant correlation between NSSI and having a friend with running away from home, smoking-alcohol consumption-substance

Table III. Youth Self-Report Subgroup Points According to Presence of Non-Suicidal Self-Injury.

Subgroup points	NSSI	Mean	SD	Median	p
Anxiety/depression	No	6.73	4.20	6.00	<0.001
	Yes	11.95	4.85	13.00	
Social intrinsic orientation/depression	No	4.41	2.68	4.00	<0.001
	Yes	6.84	3.00	7.00	
Somatic complaints	No	4.65	3.60	4.00	<0.001
	Yes	7.85	4.73	7.00	
Intrinsic orientation	No	15.67	8.60	15.00	<0.001
	Yes	26.86	10.05	26.00	
Oppositional defiance	No	3.42	3.83	2.00	<0.001
	Yes	7.20	6.05	5.00	
Aggressive behaviors	No	7.68	5.29	7.00	<0.001
	Yes	13.87	6.24	14.00	
Extrinsic orientation	No	11.08	8.42	9.00	<0.001
	Yes	20.65	11.65	19.00	
Social problems	No	4.41	3.42	4.00	<0.001
	Yes	7.08	4.20	6.00	
Thought disorders	No	4.13	3.35	3.00	<0.001
	Yes	8.81	5.12	9.00	
Attention disorders	No	6.19	3.30	6.00	<0.001
	Yes	9.60	3.47	10.00	
Other problems	No	4.52	2.93	4.00	<0.001
	Yes	6.51	3.18	6.00	
Anxiety disorder	No	2.73	2.18	2.00	<0.001
	Yes	4.75	2.45	4.00	
Mood disorder	No	5.63	3.77	5.00	<0.001
	Yes	11.42	4.94	11.00	
Somatization disorder	No	2.80	2.62	2.00	<0.001
	Yes	4.69	3.62	4.00	
Attention deficit hyperactivity disorder	No	4.54	2.70	4.00	<0.001
	Yes	7.10	3.21	8.00	
Oppositional defiant disorder	No	3.23	2.00	3.00	<0.001
	Yes	5.43	2.03	5.00	
Obsessive compulsive disorder	No	4.19	2.82	4.00	<0.001
	Yes	6.30	3.46	6.00	
Conduct disorder	No	3.02	4.05	2.00	<0.001
	Yes	7.22	6.02	5.00	
Post-traumatic stress disorder	No	7.61	4.35	7.00	<0.001
	Yes	13.22	4.85	13.00	
Positive features	No	20.79	5.09	22.00	0.130
	Yes	19.94	4.95	21.00	

*Mann-Whitney U test statistics, NSSI: non-suicidal self-injury

use habits and NSSI. Making friends with adolescents, who had behavioral disorders like using addictive substances or running away from home, especially in the mid-adolescence period, during which peer relationship become particularly important, opens a road for NSSI as a result of the desires like orientation to the peer group, mimicking the peer behavior and getting across the group.

In our study, we did not find any correlation between NSSI and types of visited websites, duration of TV watching, favorite programs in TV. Considering the free time activities of the adolescents, there was a significant correlation between spending time on the internet and self-injury opinions. In literature it was reported that only 11 individuals had the intention of self-injury and all of them spend all of their time on social networking sites on the internet[29].

In our study, we found out that with the increase of time of internet usage on weekdays and weekends, also the rate of NSSI increased. Furthermore, the rate of coming across with NSSI on the internet or on TV was significantly higher in adolescents with NSSI. We concluded that watching such behaviors on screens might affect the adolescents and encourage them to mimic this behavior.

There was a statistical correlation between NSSI and smoking, alcohol consumption and substance use habits. Regarding the literature, although some studies reported that smoking, alcohol and substance use increased NSSI, some other studies did not demonstrate any correlation with alcohol and substance use[10,12,26,30-35]. During the alcohol and substance use, the increase of the impulsivity and the inhibition of super-ego might facilitate the commitment of NSSI. Similarly, a risky behavior like NSSI might trigger the alcohol and substance use.

In respect to the favorite music genres, NSSI rate was significantly higher among the adolescents who listened to metal and rock or to other music genres like rap and arabesque. There were also some studies confirming our results regarding the correlation between NSSI and music genre[36,37]. However, another study reported that there was no correlation between NSSI and music genre[29]. In our study, we did not encounter NSSI among the adolescents, whose favorite was folkloric music and we encountered only one student with NSSI among the adolescents, who listened to classical music. We concluded that this correlation differences between NSSI and music genres might depend on the aggressive music and lyrics in the metal and rock, on the traditionality of the folkloric music and on the instrumental character of the classical music. Adolescents, whose favorite music was folkloric music, might be accommodative persons and suppressing their feelings or might be not reporting NSSI although they committed them due to these personality characteristics. Interest in music genres like metal and rock, arabesque and rap in this adolescence period might depend on certain motivations such as imitation to someone, seeking charisma, attention-seeking, desire to gain a seat in the peer group or depend on the parent opposing behavior and messages in the lyrics praising opposition. Visiting entertainment places at nights was highly correlating with NSSI. There were limited studies but similar results were reported in a study[26]. We concluded that the visiting entertainment places at nights might point out the indifference of the family and relationship problems.

We determined a correlation between being threatened and threatening others and NSSI in our study. Also, behaviors like carrying a cutting object and involvement to fight outside the home were correlating with NSSI. In our study, the correlation between NSSI and aggressive behaviors pointed out that the adolescent was reflecting his/her aggression to himself/herself and to the environment. The adolescent might be relieving his/her anger and tension with the pain caused by the self-injury.

Regarding the results of YSR, which evaluated the mood, all subgroup scores except the positive characteristics score were high. The reports in the literature were also in accordance with our results. In these studies, the rates of depressive disorders, destructive behavior disorders, somatoform disorders, anxiety disorders, post-traumatic stress disorder were relatively high in subjects with NSSI[26,28,38-43]. In the disorders like depression and posttraumatic stress disorder, the adolescents might be committing NSSI to free themselves from the guilt feelings or from other negative feelings.

On the other hand, in extrinsic disorders, they might be committing NSSI due to the impulsivity and disobedience. As we could not find any correlation between NSSI and the score of the positive characteristics, we concluded that adolescents with NSSI did not have negative feelings about themselves and they were not aware of their behavioral or psychological problems because of the developmental period they were going through.

Regarding the second section of ISAS, there was no significant difference between the subscores and the self-injuring girls and boys except the subscore "prevention of dissociation". The subscore "prevention of dissociation", which defines self-recognition and relief of indifference, was significantly higher among boys than girls.

The aim of the present study is to aid in prevention of NSSI among adolescents, by determining features of NSSI and identifying risk factors related with NSSI such as daily life activities, friendly relationships and mental status. We found a significant association between NSSI and psychological problems, potentially addictive habits like smoking, alcohol consumption, substance use, spending time on the internet, viewing NSSI behavior on internet or TV, music style listened, visiting entertainment places at night, school problems, behavioral problems and making friends that exhibit risk taking behavior. It appears that psychological problem's treatment, family control on TV and internet usage, being aware of adolescents' social circles and addictive behaviors, and having some rules on time to be at home at night are important.

There were many studies about NSSI conducted at different geographical areas of the world, but only a few national studies focused on this problem in Turkey. This is a community based study and includes individuals from a wide age range so we think that this study has important contributions to the literature in terms of cultural aspects of NSSI.

To our knowledge, this is the first community based study which includes early adolescents and uses ISAS which is the first scale that has been validated and found reliable for assessment of NSSI in Turkey. It provided objective evaluation of behavior and also may serve as a reference for future studies.

In this study we included the age of early adolescence period, so we were able to determine how early age the behavior began. It is important for early diagnosis of this behavior to aid in avoidance of future NSSI, and early initiation of the treatment accordingly might provide more effective and long-lasting results and enable the adolescent to get over this risky period with minimal harm.

As a result, NSSI is an increasing problem all over the world and may cause death. More studies should be done to determine other risk factors and cultural features' effects so that we could prevent this behavior in children and adolescents.

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