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Nonsuicidal self-injury in a clinical sample of adolescents in Serbia

Nesuicidalno samopovređivanje u kliničkom uzorku adolescenata u Srbiji

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Abstract

Background/Aim. Nonsuicidal self-injury (NSSI) among adolescents is recognized as a significant public health concern. Adolescents with mental health problems are at an especially high risk of NSSI. The aim of the study was to assess the sociodemographic and clinical characteristics of patients with NSSI and the features of NSSI, as well as the impact of emotional reactivity and internalizing/externalizing problems on them. **Methods.** The observational study included a clinical sample of 111 adolescents treated at the Department of Child and Adolescent Psychiatry, Psychiatric Clinic at the University Clinical Center of Vojvodina, from March 2018 to October 2019. The adolescents were divided into two groups: group A comprised of adolescents who had at least one episode of NSSI in the last year, and group B comprised of adolescents who had no NSSI episode in their experience. The following clinical scales were used to examine the differences between adolescents from group A and group B: self-report questionnaires about emotional and behavioral problems (Youth Self-Report – YSR, Child Behavior Checklist – CBCL), emotional reactivity (Emotion Reactivity Scale – ERS), and suicidality (Self-Injurious Thoughts and Behaviors Interview – SITBI). **Results.** Group A contained a total of 58 adolescents older than the subjects of group B and was predominated by female participants. They had the first episode of NSSI at 13.05 and the last at 14.80 years. The most common methods of NSSI were cutting, scratching, and biting. Adolescents from group A had higher scores on ERS, higher scores on internalizing and externalizing problems, as well as higher total scores on YSR, but there was no difference between groups regarding scores on the CBCL scale. **Conclusion.** Due to the results obtained for emotional and behavioral problems, adolescents with NSSI should have a detailed psychiatric assessment, including social support, pharmacotherapy, and psychotherapy, to better understand NSSI and help them develop better coping skills.

Key words:
adolescent; adolescent psychiatry; psychopathology; self-injurious behavior.

Apstrakt

Uvod/Cilj. Nesuicidalno samopovređivanje (NSSP) među adolescentima prepoznato je kao značajan problem javnog zdravlja. Adolescenti sa problemima mentalnog zdravlja posebno su izloženi riziku od NSSP. Cilj rada bio je da se procene sociodemografske i kliničke karakteristike bolesnika sa NSSP i odlike NSSP, kao i uticaj emocionalne reaktivnosti i internalizacije/eksternalizacije problema na njih. **Metode.** Opservacionom studijom obuhvaćeno je 111 adolescenata koji su bili lečeni na Odeljenju za dečju i adolescentnu psihijatriju, Klinike za psihijatriju, Univerzitetskog Kliničkog centra Vojvodine, od marta 2018. godine do oktobra 2019. godine. Adolescenti su bili podeljeni u dve grupe: grupu A (adolescenti koji su imali najmanje jednu epizodu NSSP u poslednjih godinu dana) i grupu B (adolescenti koji nikada nisu imali NSSP). Za ispitivanje razlika između adolescenata grupe A i grupe B korišćeni su upitnici: o emocionalnim i bihejvioralnim problemima [Upitnik za samoprocenu adolescenata (*Youth Self-Report* – YSR) i Lista provere dečjeg ponašanja (*Child Behavior Checklist* – CBCL)]; o emocionalnoj reaktivnosti [Skala emocionalne reaktivnosti (*Emotion Reactivity Scale* – ERS)]; o suicidalnosti [Intervju o samopovređujućim mislima i ponašanju (*Self-Injurious Thoughts and Behaviors Interview* – SITBI)]. **Rezultati.** Grupu A činilo je ukupno 58 adolescenata koji su bili stariji od ispitanika grupe B i u njoj je dominirao ženski pol. Prvu epizodu NSSP imali su u uzrastu od 13,05 godina, a poslednju sa 14,80 godina. Najčešće metode NSSP bile su sečenje, grebanje i grickanje. Adolescenti grupe A postizali su više skorove: na ERS skali, u internalizovanju i eksternalizovanju problema kao i na ukupnom rezultatu na

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YSR skali. Nije bilo razlike između adolescenata grupe A i grupe B u odnosu na skorove postignute na CBCL skali. **Zaključak.** Adolescenti sa NSSP bi trebalo da imaju detaljnu psihijatrijsku procenu, koja bi uključivala socijalnu i psihološku podršku, farmakoterapiju i psihoterapiju, u cilju razumevanja i razvijanja veština prevladavanja NSSP.

Ključne reči:
adolescenti; psihijatrija, adolescentna; psihopatologija; samopovređivanje.

Introduction

Nonsuicidal self-injury (NSSI) is defined as deliberate, direct, self-inflicted destruction of body tissue without suicidal intent and outside socially sanctioned purposes [1]. The most common types of NSSI are cutting, burning, carving, scratching, picking wounds, head banging or punching, and hitting objects with hands or legs. Even though cutting was found to be the most common type of NSSI, most individuals use multiple methods of self-injurious behavior [2].

NSSI is a major public health concern as it has been linked to several poor outcomes and is found to place individuals at increased risk for suicide-related behavior [3]. The outset was noted in early adolescence, between the ages of 12 and 14 [4], peaking around mid-adolescence and declining toward late adolescence [1], but it can continue into adulthood [5]. It is estimated that 4% of adults present with NSSI [6]. A prevalence of 13% to 45% was found in the general adolescent population, with a greater clinical sample percentage, from 19% to 60% [7]. NSSI is mostly found in females. Gender differences were also found concerning the method of NSSI. Burning and self-hitting were more common in males while cutting and scratching were typically found in females [5, 8].

Even though the NSSI definition excludes suicidal intent, research indicates that individuals who present with NSSI are at greater risk of suicidal behavior [1]. That is why many research studies focus on examining the link between suicidal behavior and NSSI. Suicidal behavior and NSSI are increasingly being considered to exist along a continuum of self-harming behavior [9]. Compared to suicide attempts, NSSI occurs more frequently, implies minor physical harm [10], and absence of suicide intent [11]. Despite mutual differences, NSSI and suicide attempts often co-occur in both the general and clinical adolescent populations [6].

Many previous studies regarded NSSI as one of the characteristics of borderline personality disorder (PD). However, most recent study findings indicate a strong link between NSSI and different psychiatric disorders: depression, substance abuse disorder, posttraumatic stress disorder, generalized anxiety disorder, eating disorders (EDs), and other PDs [7, 12]. Adolescents who present with NSSI were found to have a greater incidence of both internalizing and externalizing problems [3]. In clinical practice, 87.6% of adolescents presenting with NSSI are also diagnosed with some psychiatric disorder [3].

NSSI is a maladaptive coping strategy with the purpose of emotional regulation. Its main function is to reduce or avoid difficult emotions, anxiety, sadness, or guilt [13–15]. Therefore, it makes sense that the most established affective factors related to NSSI are emotion dysregulation and emotional reactivity (ER) [15–17]. ER represents more trait-like vulnerability to heightened emotional experiences, whereas emotion dysregulation represents the inability to manage those experiences [18]. Those with high ER tend to experience emotions more intensely, for a longer time, and in response to a wider array of stimuli [16]. While a large amount of research has focused on emotion dysregulation and NSSI, much less work exists on the role of ER in NSSI engagement. The study conducted by Nock et al. [16], who used a combined sample of adolescents and young adults, found that ER was significantly related to the presence of NSSI. Additionally, ER statistically mediated the relation between psychopathology and self-injurious thoughts and behaviors [16].

The aim of the study was to assess the sociodemographic and clinical characteristics of patients with NSSI and the features of NSSI, as well as the impact of ER and internalizing/externalizing problems on them.

Methods

Participants

The study included 111 adolescents between 11 and 18 years of age, attending inpatient and outpatient services at the Department of Child and Adolescent Psychiatry, Psychiatric Clinic in University Clinical Center of Vojvodina, Serbia, sampled from March 2018 to October 2019. Participation in the study was voluntary and without financial compensation.

All participants were provided with a brief overview of the study aims and procedures along with written informed consent to participate in the research. Parental consent was required for participants under 18 years of age. Ethical approval was received from the institutional Ethical Board of the University Clinical Center of Vojvodina.

Instruments and procedure

All adolescents completed the following self-report questionnaires: The Youth Self-Report (YSR) [19] and Emotion Reactivity Scale (ERS) [16]. One of the parents or caregivers completed the Child Behavior Checklist (CBCL) [19]. Following the completion of YSR and ERS, adolescents were asked dichotomous questions (Yes/No) about self-harming (e.g., "Have you ever admittedly self-harmed without suicidal intent?"). For those participants who answered "Yes", a clinician-administered Self-Injurious Thoughts and Behavior Interview (SITBI) was performed [20]. The adolescents were

divided into two groups: the first group comprised of adolescents who had at least one episode of NSSI in the last year (i.e., group with NSSI), and the second group comprised of adolescents who had no NSSI episode in their experience (group without NSSI).

The YSR by Achenbach and Rescorla [19], consisting of 103 items, is one of the most widely used standardized self-report questionnaires for 11–18-year-olds that gives a dimensional description of behavioral/emotional problems that fall into four broad categories: Competence, Internalizing problems, Externalizing problems, and Total problem. Total competence includes activity, academic competence, and social competence. In addition to the total problem score, the problem items form nine narrowband syndrome scales ('withdrawn', 'somatic complaints', 'anxious/depressed', 'attention problems', 'thought problems', 'social problems', 'aggressive behavior', 'delinquent behavior', and 'self-destructive behavior/identity', which is a syndrome for boys only) and two broadband dimensions, 'internalizing' and 'externalizing'. Items that are not included in any of the eight syndromes are collected under the heading 'other problems', but they do not form a 'true' scale. The adolescent is asked to describe or rate their thoughts, emotions, and behaviors at present or in the previous six months on a three-point scale by circling 0 if the item or statement is not true, 1 if it is somewhat or sometimes true, and 2 if it is very true or often true. High scores on the problem items indicate more problems, and high scores on competence items indicate higher competence.

The CBCL is the parent report version of the Achenbach System of Empirically Based Assessment (ASEBA) [19]. Caregivers rated their children's behavior problems at ages 4–18. Item scores ranged from 0 (not true of the child) to 2 (very true or often true of the child). The internalizing scale sums 32 items loading onto three clinical syndrome scales: Withdrawn (9 items), Somatic complaints (9 items), and Anxious/Depressed (14 items). The externalizing scale sums 27 items from two clinical syndrome scales: Delinquent behavior (8 items) and Aggressive behavior (19 items).

The ERS is a self-report measure of emotional sensitivity, intensity, and persistence [16]. This study used a one-dimensional concept (i.e., total score) on this scale. The ERS has demonstrated good convergent, divergent, and criterion-related validity [16].

Self-injurious thoughts and behaviors were assessed using the SITBI [20], a structured clinical interview that assesses the presence, frequency, severity, age-of-onset, and other characteristics of a broad range of SITBI, including NSSI, suicide ideation, and suicide attempts. In the current study, only items that inquired about the presence of NSSI were included. The SITBI has strong interrater reliability, test-retest reliability over a 6-month period, and construct validity [20].

In addition to the above-listed measures, clinicians administered a specially designed semi-structured 9-item questionnaire that included factors found to be broadly associated with NSSI, such as demographic variables (age, sex), data related to suicide attempts (number of attempts, method, time), followed with a medical file review data about previous hospitalizations, psychopharmacotherapy treatments, heredity and diagnoses given by a clinician (child psychiatrist) according to the current International Classification of Diseases, Tenth Revision (ICD-10) criteria.

Permission to use the above-described measures was provided by the instrument authors.

Statistical analysis

Nonparametric χ^2 tests were used for statistical comparisons of the obtained data as well as independent samples *t*-test and multivariate analysis of variance (MANOVA). In situations where χ^2 was not statistically justified (frequency in cells lower than 5), we used contingency coefficient (C) as the measure of correlation.

Results

Sociodemographic characteristics

The sample comprised 64.8% of females and 35.2% of males. The average age was 14.83 (± 1.9) years. A total of 58 (52.3%) adolescents reported having at least one episode of NSSI in the last year, while 53 (47.7%) adolescents reported not having a single episode of NSSI in their experience.

Statistically significant differences were found regarding age in the NSSI group with older adolescents ($p = 0.05$). Moreover, there were differences regarding gender, with more females in the NSSI group ($p = 0.01$) (Table 1).

The average age for the first episode of NSSI in the current study sample was found to be 13.05 [standard deviation (SD) = 2.3] years and 14.80 (SD = 1.9) years for the last episode. The three most commonly noted methods of NSSI were cutting (81%), scratching (65.5%), and biting (62%). Overall, 19% of the adolescents in our sample reported using only one method, whereas 68% used more than three different methods of NSSI. Results indicate that 51.7% of adolescents had more than five episodes of NSSI in their lifetime, 27.6% in the last year, and 8.6% in the last month.

Table 1

Comparison between the nonsuicidal self-injury (NSSI) group and the non-NSSI group in sociodemographic features

Sociodemographic features	NSSI (n = 58)	Non-NSSI (n = 53)	Statistics	*p*
Age (years), mean (SD)	15.2 (1.732)	14.5 (2.099)	-1.972*	0.05
Gender, female (%)	75.9	52.8	6.446#	0.01

SD – standard deviation.
***= *t*-test; # = χ^2 test.**

Most (65%) adolescents in the NSSI group reported never receiving any treatment for NSSI. Similarly, 53% admitted that, at the time of assessment, they did not avail of mental health services for NSSI but rather sought help for other mental health-related reasons. In the NSSI group, 81% reported their parents/caregivers were aware of their self-harming behavior. Results show that 65% of adolescents, who present with NSSI, did not search for NSSI information on the internet, and 77% reported they did not access NSSI-related websites.

Psychiatric diagnosis, heredity, suicidal attempts, and NSSI

Regarding psychiatric diagnosis in line with ICD-10 criteria, results indicate lower intensity positive correlation between diagnosis and presence/absence of NSSI. The results show that in the group with NSSI, there were more adolescents with the following diagnoses: F1, F3, F4, and F6, and fewer participants with diagnoses F2, F5, F8, and F9 (Table 2). It was found that 46.3% of adolescents have a positive hereditary predisposition for psychiatric disorders. However, the results indicate no statistically significant differences between adolescents with NSSI and those without NSSI (Table 2).

The current study sample comprised adolescents in inpatient (66.7%) and outpatient (33.3%) treatment. The results show no statistically significant difference regarding the presence of NSSI. Variable history of previous hospitalizations was not found to be statistically significant (Table 2).

In our clinical sample, 17.1% of adolescents were found to have had a suicidal attempt in the past, and 6.3% reported having multiple suicidal attempts. A significant correlation (p = 0.000) was noted between adolescents with and those without NSSI concerning the suicidal attempt variable (Table 3). The group with NSSI had more adolescents who attempted suicide compared to the group without NSSI. In addition to that, results indicate that adolescents with NSSI reported multiple suicidal attempts (p = 0.019) compared to adolescents without NSSI.

Difference between groups on ERS, YRS, and CBCL

Table 4 shows a statistically significant difference between groups regarding ER. Those adolescents with NSSI had higher scores on ERS (p = 0.000).

The results of MANOVA indicate a significant difference between groups regarding internalizing, externalizing, and total scores on YSR (p = 0.000). Statistically, a

Table 2

Comparison between the nonsuicidal self-injury (NSSI) group and the non-NSSI group in psychiatric diagnosis and comorbidities

Parameter	NSSI (n = 58)	Non-NSSI (n = 53)	Statistics	*p*
Hospitalization (yes) (%)	32.7	34.0	0.018#	0.893
Psychiatric heredity (yes) (%)	46.3	28.8	3.433#	0.062
Clinical psychiatric diagnosis, ICD-10 (%)			0.334*	0.052
F1 (substance use disorder)	3.4	0		
F2 (psychotic disorders)	3.4	9.4		
F3 (affective disorders)	6.9	1.9		
F4 (anxious disorders)	50	39.6		
F5 (eating disorders)	0	7.5		
F6 (personality disorders)	15.5	7.5		
F8 (pervasive disorders)	0	1.9		
F9 (conduct disorder, ADHD)	20.7	32.1		
Comorbidity (%)			0.104*	0.544
no	74.2	75.5		
one diagnosis	17.2	20.8		
two diagnoses	8.6	3.8		

ICD-10 – International Classification of Diseases, Tenth Revision; ADHD – attention deficit hyperactivity disorder.

 # = χ^2 test; *= contingency coefficient (C).

Table 3

Comparison between the nonsuicidal self-injury (NSSI) group and the non-NSSI group in suicidal attempts and methods

Parameter	NSSI (n = 58)	Non-NSSI (n = 53)	C	*p*
Suicidal attempt (yes) (%)	29.3	3.8	0.321	0.000
Suicidal attempts over a lifetime (%)			0.346	0.002
last month	5.2	3.8		
last year	13.8	0		
more than a year	10.3	0		
Suicide method (%)			0.324	0.005
intoxication	20.7	3.8		
cutting	6.9	0		
other	1.7	0		

C – contingency coefficient.

Table 4

Differences between the nonsuicidal self-injury (NSSI) group and the non-NSSI group on Emotion Reactivity Scale (ERS), Youth Self-Report (YSR), and Child Behavior Checklist (CBCL)

Parameter	NSSI (n = 58)	Non-NSSI (n = 53)	*t*- test (*F-test)	*p*
ERS (mean)	54.4	33.7	5.979	0.000
YSR (T score mean)				
internalizing	70.17	57.56	29.784*	0.000
externalizing	63.64	52.63	28.933*	0.000
total	69.03	55.70	44.398*	0.000
CBCL (T score mean)				
internalizing	67.22	65.58	0.807*	0.371
externalizing	62.31	58.79	2.855*	0.094
total	66.07	63.58	2.307*	0.132

significant difference was found in relation to the mean T score on three dimensions of the YSR scale: internalizing, externalizing, and total problems. Those with NSSI have higher scores on all three dimensions (Table 4).

The results of MANOVA show no significant difference between groups regarding internalizing, externalizing, and total scores on the CBCL scale ($p = 0.423$). Likewise, no significant difference was found regarding the mean T score on all three dimensions: internalizing, externalizing, and total problems on the CBCL scale (Table 4).

Discussion

The aim of the research was to investigate the phenomenological characteristics of NSSI as well as similarities and differences between two groups of adolescents within a clinical population where the main distinguishing factor was the presence/absence of NSSI.

More than half (52.3%) of the participants in our clinical sample had NSSI at least once in the last year. These findings have been confirmed in previous research studies indicating that the frequency of NSSI in the clinical population goes up to 60% [7, 21–23]. The current study results align with the results obtained by Kaess et al. [24], who found that the frequency of NSSI in a clinical sample with one NSSI is 60%, and for repetitive NSSI is 50%. Similar results were found in an Austrian study where 50.8% of inpatient adolescents between 11 and 17 years of age had at least one NSSI [23].

Our research also confirmed earlier findings of greater frequency of NSSI in females that is particularly significant in a clinical sample of adolescents [8, 14, 22, 23]. One of the explanations for this could be that male adolescents rarely seek help regarding their psychological difficulties due to fear of stigmatization. Furthermore, it is well known that depression and anxiety are strongly correlated with NSSI and that those disorders are more prevalent among females who ask for help than among males. That was evident in our clinical sample, which comprised 64.8% of females. Likewise, some types of NSSI, such as punching the wall or objects or hitting their body against the wall, are regarded as physical aggression directed outward and are not registered as NSSI. All this can have an impact on poor cognition, diagnosing NSSI, and lack of intervention for NSSI in males [25].

Results indicate a significant difference between groups regarding age, where the group without NSSI had an average of 14.5 years and the group with NSSI 15.2 years. This result can be explained by longitudinal research findings, which indicated that NSSI reaches "the peak" during middle adolescence, i.e., 15–16 years of age [1].

Like other research findings [9, 26], cutting, scratching, and biting have been found as the most frequent method of NSSI in our sample. Moreover, 68% of participants have been found to use multiple NSSI methods [2, 13, 27], and multiple NSSI method use indicates higher suicidal risk, which is also in line with previous research findings [28].

Results of our study confirm an increased risk of attempting suicide and repeated suicide attempts for adolescents who present with NSSI, which is in line with numerous studies [3, 29]. Over the course of research that was conducted in the past two decades, it has become clear that NSSI and suicide attempts go side by side; if one form of behavior exists, there is a greater possibility that the second form will be present as well.

The link between NSSI and clinical diagnosis according to ICD-10 is also evidenced in our research. We found that the NSSI group had a higher number of individuals with the following diagnoses: substance addiction, mood disorder, anxiety disorder, and PD; fewer participants presented with psychotic disorders, ER, and attention deficit hyperactivity (ADHD). Most of these results are in line with what was expected based on the review of previous research findings [7, 12, 23], exclusive of the results concerning EDs. Various research findings indicate a strong link between NSSI and ED (mainly *bulimia nervosa*), which can be explained by the common risk factors, including emotional dysregulation and high ER [30]. A possible explanation could be that there were fewer participants with an ER in our sample.

Various research findings have, like ours, confirmed the link between externalizing and internalizing problems and NSSI [7, 31]. For instance, Nock et al. [3] found that 62.9% of adolescents with NSSI presented with an externalizing disorder, and 51.7% presented with an internalizing disorder. Particularly interesting are the findings of our research, which indicate significant differences between groups regarding the YSR scale (more internalizing and externalizing problems in the NSSI group). However, this difference between groups was not found on CBCL. One of the explanations for this re-

sult could be that NSSI is an expression of subjective distress that cannot be registered easily by others. Likewise, results highlight the importance of adolescent self-report in the detection of NSSI among clinical population adolescents.

Even though more than 10 years ago, Nock et al. [16] created the ERS and found that the construct of ER can partly explain the link between NSSI and psychopathology, this research field is lacking studies aiming to investigate ER in a clinical sample of adolescents. Our research clearly indicates the association between ER and NSSI, as we have found that the group with NSSI achieved significant scores on the ERS. Similar results were found in a study that included a smaller and slightly older sample of adolescents (average age 20 years) [32]. Thus far, there is not enough evidence indicating whether her psychopathology is the cause or a consequence of high ER. However, the evidence does suggest that high ER among individuals who present with psychopathology can lead to NSSI [16].

Despite the strengths of the results, the findings of this study should be viewed in the context of its limitations. The limitations of this study are the following: (1) relatively small sample size; (2) combined with other research that includes self-report questionnaires, results could be influenced by the fact that participants might have answered in a socially desirable manner and, in addition to this, there is a possibility of memory distortion; (3) this is a cross-sectional study, and only longitudinal study would enable monitoring of these variables over time.

Conclusion

A high level of NSSI is present in the clinical sample of adolescents. Girls were found to be more likely to present with NSSI, and the most common methods are cutting and scratching with the high level of multiple NSSI method use. Between groups of adolescents who present with NSSI and those without NSSI, significant differences were noted in the variables gender, clinical diagnosis, and previous suicidal attempts. Adolescents with NSSI have more prominent internalizing and externalizing problems and a higher degree of ER. Even though these two clinical groups were different regarding many factors, our study was unable to explain the existence of two distinct groups within a vulnerable clinical group of adolescents with mental health problems, nor was it able to define their potential characteristics. That was recognized as a gap that would warrant further research. The practical importance of our study is that NSSI was found to be a signal for many other associated problems in a clinical sample of adolescents and outlines the need for a more complex approach to treatment among clinicians.

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