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Nonsuicidal Self-Injury (NSSI) in Serbia: Nationally representative sample study

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ABSTRACT

Although NSSI has been drawing the attention of researchers intensely for the last 30 years, to date there is no published study about rates of NSSI behaviors in countries of south-eastern Europe. The study aimed to explore NSSI in the Republic of Serbia. Data were collected using multistage random sampling. The final sample consisted of 2792 participants (57.4% female) while the NSSI subsample consisted of 405 participants (54.3% males). Results showed the NSSI rate in Serbia is 4.3% based on a percentage of people who answered affirmatively to lifetime NSSI engagement. However, when the percentage of people who reported at least one positive answer through the NSSI behaviors checklist, the rate rises to 14.5%. The most frequent NSSI behavior is wound picking. NSSI rate drops to 8.8% when wound picking is excluded. Those engaged in NSSI were more likely to report suicide attempts and seek professional help than those who did not report NSSI. Gender differences in NSSI frequency are found only in cases of headbanging and burning oneself. This study showed the scope of NSSI-related problems is similar in Serbia compared to other countries. It also raised questions about the lack of preventive programs and treatment strategies for dealing with NSSI in Serbia.

1. Introduction

The International Society for the Study of Self-Injury (ISSS, n.d.) defines nonsuicidal self-injury (NSSI) as the deliberate, self-inflicted damage of body tissue without suicidal intent and for purposes not socially or culturally sanctioned. There are many types of NSSI behaviors including cutting, biting, burning, banging, hitting, scratching, etc. Cutting appears to be the most common method of NSSI in both clinical and non-clinical samples (Andrews et al., 2014; Swannell et al., 2014; Whitlock et al., 2006). Previously, NSSI was viewed as one of the borderline personality disorder (BDP) symptoms, but it has been shown that NSSI can be found among participants without BDP or other mental disorders, which is one of the reasons why NSSI was proposed as a "condition for further study" in the fifth edition of Diagnostic and Statistical Manual (DSM-5) (APA, 2013).

Studies showed that NSSI prevalence is higher among younger people (Klonsky, 2011; Plener et al., 2016; Swannell et al., 2014). Middle adolescence appears an especially risky life period for NSSI (e.g., Xavier et al., 2016), but late adolescence may also be an important period to pay attention to (e.g., Gandhi et al., 2018). Representative non-clinical sample studies about NSSI prevalence among adults are still rare, but some studies should be mentioned. In the United States, the lifetime prevalence of NSSI among adults is 5.9% (Klonsky, 2011). Research conducted on a representative sample of the German population showed that NSSI prevalence in Germany is 3.1% (Plener et al., 2016). Swanell and colleagues (2014) reviewed and analyzed published NSSI data collected among six geographical regions (Asia, Australia/New Zealand, Canada, Europe, United Kingdom, and the USA) and reported that on average NSSI prevalence among adults is 5.5%. However, the latter study indicated the extent to which methodological factors contribute to the

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heterogeneity in prevalence estimates. They found higher NSSI rates in cases of university samples, anonymous participation, the presence of incentives for participation, and usage of a checklist instead of binary (yes or no) questions. Furthermore, Muehlenkamp et al. (2012) also warned that prevalence scores may depend on instruments used to assess NSSI. Compared to single-item questions, NSSI rates may be doubled when a checklist is used.

Bresin and Schoenleber (2015) conducted a meta-analysis and found that women are more likely to report a history of NSSI than men, but also showed that gender differences effect is larger in clinical samples. However, a meta-analysis by Yang and Feldman (2018) showed there were no gender differences among Chinese clinical samples. Swanell and colleagues (2014) found that after adjusting methodological factors NSSI rate among females remained higher but the difference between males and females was no longer significant. To thoroughly explore gender differences, many authors search for these differences among specific NSSI behaviors. These studies report that females are more engaged in cutting and scratching, and males in burning and hitting-type behaviors (Claes et al., 2007; Sornberger et al., 2012).

One of the most robust correlates of NSSI is emotional dysregulation (e.g., Wolff et al., 2019). Emotion dysregulation appears to result in behavioral dysregulation (for further details see Selby et al., 2008). Many theoretical models of NSSI such as the Experimental avoidance model (Chapman et al., 2006) and the Emotion cascade model (Selby et al., 2008) include emotional dysregulation as one of the key elements for engagement in self-injury. By definition, NSSI excludes suicidal motives. However, it is shown that NSSI and suicidality indicators (such as suicidal ideation, suicidal plan, or suicide attempts) are related (e.g., Kiekens et al., 2018; Klonsky et al., 2013). Nock and colleagues found that 70% of adolescents engaging in recent NSSI reported at least one suicide attempt during their lifetime (Nock et al., 2006). Previous research showed that both suicidality and engagement in NSSI are related to many different forms of adverse childhood experiences (ACE) (e.g., Kaess et al., 2013; Sahle et al., 2021). Furthermore, emotion dysregulation may be a mechanism underlying both ACE (Jennissen et al., 2016) and NSSI (Wolff et al., 2019). Due to the high number or intensity of ACEs, emotion dysregulation may be increased which could lead to many forms of behavioral dysregulation, NSSI included.

Importantly, NSSI is often followed by stigma (e.g., Burke et al., 2019), which serves as one of the most important barriers to help-seeking (e.g., Clement et al., 2015). Some people who self-injure do not seek help at all. Those who do, seek help from friends first, but there are many confidantes including parents, siblings, partners, teachers, and importantly, mental health workers and general practitioners. However, the number of those who seek help from psychologists and psychiatrists is small and friends remain the main source of help (Arbuthnott and Lewis, 2015; Fortune et al., 2008; Hasking et al., 2015). Hasking et al. (2015) showed how important may be to whom NSSI is disclosed and that contrary to parents, disclosure to peers might lead to reducing perceived social support. Seeking help from formal institutions and reaching out to mental health professionals is an important step in the treatment of NSSI and the prevention of its negative effects.

In 2019 in Serbia self-harm was the sixth most frequent cause of death among adolescents aged from 10 to 14 years and the second most frequent cause of death among adolescents aged from 15 to 24 years (WHO, 2020). Self-harm can be seen as a broad term for both suicidal and nonsuicidal self-injury behaviors, and as it has been previously mentioned, these two types of behaviors are related. Serbia suffered civil wars after the disintegration of Yugoslavia and during the last 30 years, people in Serbia were exposed to civil unrest and wars in the region, more than three years of UN economic sanctions, and 11 weeks of NATO bombing. These adverse events caused not only infrastructure problems, social instability, and economic crises, but problems within the health-care system as well (Lecic-Tosevski and Draganic-Gajic, 2004). Results of the Serbian ACE study (UNICEF, 2019) showed that for every 100 adults in Serbia, about 70 reported at least one form of ACE repeatedly during childhood, and about 20 have experienced four or more ACEs. Furthermore, 2% of all participants have reported at least one attempted suicide and only 22.6% of all participants sought professional help from a psychiatrist, psychologist, or psychotherapist during their lifetime (UNICEF, 2019). The mental healthcare system in Serbia has many disadvantages and stigma related to mental health problems is still prevalent among the public (Lecic-Tosevski et al., 2010). Bilić and Georgaca (2007) analyzed the contents of Serbia's daily press and found that newspapers stigmatized people with mental health problems and presented them "as dangerous and passive sufferers of medical conditions".

Despite its importance, the NSSI did not get sufficient attention from researchers in Serbia. Only a few studies about NSSI in Serbian samples have been published. Kolundžija and coauthors (2022) reported that 52.3% of 111 adolescents treated in the Clinical Centre in Vojvodina (north Serbia) had an NSSI episode at least once in the last year. Kostić and coauthors explored NSSI functions in a sample of 50 adolescents who were reported to the Department for Child and Adolescent Psychiatry in Niš (south-east Serbia) and found that the most often function of NSSI is an affect regulation function (Kostić et al., 2019a). Kostić and colleagues also explored characteristics of families with adolescents who have engaged in NSSI and found that families with those who had engaged in NSSI differed from the ones with no NSSI in terms of functionality (Kostić et al., 2019b). Although these findings provide important insight into NSSI in Serbia, samples used in these studies are not nationally representative as the first step in dealing with the NSSI in Serbia is to explore NSSI rates.

Due to the specific recent history of Serbia marked by war events and community violence and also the lack of epidemiological studies related to mental health problems in this under-researched region in Europe, the focus of this study were rates and correlates of NSSI behaviors in Serbia. Due to the high rate of ACEs in Serbia (UNICEF, 2019), it may be assumed the NSSI rate would be higher in Serbia than in other European countries. However first nationally representative study of mental disorders during the second year of the COVID-19 pandemic which was recently published (Maric et al., 2022) showed that the prevalence of mental disorders in Serbia during 2021 is similar to or lower than the prevalence in some other European countries during 2019–20.

1.1. Aim

Even though NSSI attracts attention from researchers for the last 30 years, to date, no study on the NSSI rates was conducted in south-eastern European countries on a nationally representative sample. In that regard, this study done in the Republic of Serbia may somewhat fill this gap. This study aimed to explore the NSSI rates in Serbia. We explored prevalence of both NSSI in general and several different NSSI behaviors (methods), gender differences related to NSSI behaviors, and the relation of NSSI with lifetime suicidal attempts and seeking professional help, with respect to two life periods (before and after the age of 18) and a lifetime period.

2. Method

2.1. Sample and procedure

For this study, we used the Serbian ACE study database (UNICEF, 2019). The study used a representative sample of the adult population of Serbia. The sampling plan included multistage probabilistic household sampling. Serbia was divided into regions (Vojvodina, Belgrade, East and South Serbia, West Serbia and Šumadija), after which municipalities in Serbia were used as clusters to be sampled. The first stage included a random sampling of municipalities). The second stage included a random sampling of local communities in each municipality, proportional to the size of the region and settlement type (urban-rural). The third stage involved a selection of participants using a random-walk technique in each sampled municipality. Thirty trained research assistants (RAs)

collected data through Computer-assisted personal interviewing (CAPI). In each local community, the RAs started from the start point; turned right on each street, entered every third house/building on that street, and then entered every second apartment. In the apartment, the person with the most recent birthday was selected as a respondent, which is a standard quasi-random method for the selection of respondents (Lavrakas, 2008). The final sample consisted of 2792 respondents (57.4% female) and the respondents from urban and rural areas were almost equally represented in the sample (51.5% urban). The mean age of participants was 38.51 (SD = 14.28).

For exploring NSSI rates we used descriptive statistics. Significant differences between groups were analyzed using t-tests. For testing differences between groups in dichotomous variables, the Chi-Square test was used.

2.2. Measurements

Nonsuicidal Self-Injury was measured with an NSSI questionnaire designed for the Serbian ACE study consisting of 11 items in total. It was based on several validated questionnaires constructed for measuring NSSI (e.g., Deliberate Self-Harm Inventory - DSHI, Gratz, 2001). As mentioned earlier, this study was part of a larger Serbian ACE study. For adolescents in Serbia, when they are 18 years old, risky activities become more accessible (e.g., they can buy alcohol and cigarettes). Furthermore, ACE is defined as an experience that happened before the age of 18. Thus, the same NSSI questions were asked with respect to two time periods: before and after the age of 18.

NSSI questionnaire starts with the general binary question *Have you ever deliberately inflicted physical injury to yourself without the desire to kill yourself*. The lifetime NSSI prevalence is calculated using this question. Furthermore, nine of the most common forms of NSSI behaviors are listed: punching oneself, biting oneself, burning oneself, cutting oneself, scratching oneself, headbanging, preventing wounds from healing (wound picking), pouring toxic liquid on oneself's skin, and breaking bones. Participants answer if they have ever engaged in these NSSI behaviors and *how many times* (before and after age 18). If the respondent checked that there was an NSSI episode no matter when or in which way, score 1 was assigned. If not, the score would be zero. NSSI rate based on a checklist was calculated this way. NSSI scores for each NSSI behavior were calculated similarly – if the respondent reported a frequency larger than zero, score 1 was assigned for that type of NSSI. If not, the score would be zero. Finally, the frequency (number of NSSI episodes) of different NSSI behaviors overall was calculated as a sum of frequencies reported before and after age 18 for each NSSI behavior. The questionnaire ends with a question: *Have you ever deliberately inflicted some of these injuries to yourself, which led to medical interventions or hospital treatment*. Participants answer if they have ever engaged in such severe NSSI behaviors and *how many times* if they have (before and after age 18). NSSI rates are analyzed using a complete final sample database, but in further analyses, all participants who did not report any NSSI episode were excluded.

Two more binary questions were used in this study. The first question was related to lifetime suicide attempts (*Have you ever tried to kill yourself*) and the second question was related to seeking help from mental health professionals (*Have you ever been treated by a psychologist, psychiatrist, or psychotherapist, for any reason whatsoever*).

2.3. Ethical Standards

For the Serbian ACE study, the Steering Committee (SC) was established and chaired by the Institute of Psychology with members from the Institute of Mental Health, World Health Organization (WHO), Serbian Ministry of Health, and UNICEF. The SC plays the role of the Reference Group of the research and organizes the review process in a systematic, consultative manner. The ethical safeguards in line with the UNICEF Procedure for Ethical Standards in Research, Evaluation, Data Collection, and Analysis and in accordance with the UNICEF Strategic Guidance Note on Institutionalizing Ethical Practice for UNICEF Research were implemented.

3. Results

3.1. Representative sample results

We used the ACE study database to calculate the rate of lifetime NSSI. The rate of NSSI in Serbia was 4.3% based on the single item assessing engagement in NSSI during a lifetime. Rate of reported NSSI before age 18 was 3.6% and the rate of reported NSSI after age 18 was 1.8%. However, when the rate was a score based on the percentage of people who reported even one positive answer through the checklist of NSSI behaviors, the lifetime NSSI rate was higher – 14.5%. Interestingly, when the most prevalent NSSI behavior, wound picking, is excluded from the NSSI behaviors checklist, the NSSI rate was smaller - 8.8%.

Males were more likely to report NSSI through the NSSI behaviors checklist (18.8%, $\chi^2(1) = 26.542$, $p < .01$, $\phi = 0.10$) than females (11.8%). Those who reported engaging in NSSI were more likely to report suicide attempts (8.4%, $\chi^2(1) = 102.122$, $p < .01$) than those who did not report any NSSI episode through the NSSI behaviors checklist (0.8%). Those who reported engaging in NSSI were more likely to report seeking professional help from a psychiatrist, psychologist, or psychotherapist (36%, $\chi^2(1) = 48.692$, $p < .01$) than those who did not report any NSSI episode through the NSSI behaviors checklist (20.2%).

3.2. NSSI-subgroup results

In further analyses, all participants who reported no NSSI episode (no matter how or when) in a lifetime were excluded from the database. The database used for these analyses consisted of 405 participants between 18 and 65 years old ($M_{age} = 32.71$, $SD_{age} = 12.64$, 54.3% males). More than half of participants in the NSSI group reported preventing wounds from healing (54.1%, n = 219). Other methods were used less frequently: punching oneself – 19.0% (n = 77), burning oneself – 18.8% (n = 76), banging oneself's head – 18.5% (n = 75), scratching oneself – 15.8% (n = 64), cutting oneself – 14.3% (n = 58), biting oneself – 7.7% (n = 31) and other methods – 4.7% (n = 19). Pouring toxic liquid (0.5%, n = 2) and breaking bones (0.2%, n = 1) were the least frequent NSSI methods used. Of all participants in the NSSI-subgroup, 4.2% (n = 17) reported severe injuries which had to be treated by medical staff. The number of these severe NSSI injuries ranged from 0 to 2 before the age of 18 and from 0 to 5 after the age of 18. The frequency of NSSI behaviors before and after the age of 18 is presented in Table 1. The number of NSSI methods ranges from 1 to 6. More than half of the participants (66.2%) reported only one NSSI behavior, 20.2% reported two methods, 9.9% reported three, 1.7% reported four, 1.5% reported five, and only two participants (0.5%) reported six NSSI methods used.

Significant gender differences in NSSI frequencies were found in banging head ($t(225.217) = 2.008$, $p = .046$) and burning oneself ($t(222.112) = 2.367$, $p = .019$) showing that male participants reported using these types of NSSI more often than females (see Table 2).

4. Discussion

To the best of our knowledge, this is the first study of the NSSI rate in general and the rate of different NSSI behaviors in the Serbian nationally representative sample. Furthermore, no studies about the NSSI rate in other countries of south-eastern Europe are available.

NSSI rate in Serbia is 4.3% which is a little higher than in Germany (3.1%, Plener et al., 2016) and a little lower than the rate calculated based on NSSI data from six geographical regions Swanell and colleagues reported (5.5%, Swannell et al., 2014). The rate of NSSI in Serbia being similar compared to other countries is in line with recently published results of the first epidemiological study of mental health disorders in

Table 1
Descriptive statistics.

NSSI behaviors	Before the age of 18				After the age of 18			
	Rate	Frequency			Rate	Frequency		
	%	range	M	SD	%	range	M	SD
punched yourself	12.1	0–48	.58	3.21	10.6	0–28	.48	2.53
bitten yourself	5.2	0–40	.20	2.07	3.2	0–100	.34	5.02
burned yourself	15.6	0–55	.55	3.86	4.2	0–30	.15	1.55
cut yourself	13.6	0–120	.65	6.09	4.0	0–6	.08	.49
scratched yourself	13.1	0–50	.45	3.03	6.2	0–100	.72	7.22
banged your head on a solid object	13.3	0–100	.85	7.18	9.9	0–50	.57	4.13
prevented your wounds from healing	47.9	0–152	8.22	22.45	19.0	0–100	2.41	11.86
poured toxic liquid on your skin	0.2[a]	0–2	0	.05	0.2[a]	0–1	0	.05
broken your bones	0	0	0	0	0.2[a]	0–1	0	.05

Note. N = 405, NSSI rate is calculated based on the number of participants who reported NSSI frequency bigger than zero.
[a] One participant only.

Table 2
Gender differences in frequency of NSSI behaviors.

NSSI behaviors		M	SD
punched yourself	Male	1.25	4.48
	Female	.85	4.66
bitten yourself	Male	.77	7.28
	Female	.25	1.24
burned yourself**	Male	1.15	6.16
	Female	.17	.48
cut yourself	Male	.91	8.18
	Female	.52	1.71
scratched yourself	Male	.62	4.19
	Female	1.82	11.27
banged your head on a solid object**	Male	2.35	14.82
	Female	.33	1.62
prevented your wounds from healing	Male	12.98	33.80
	Female	7.82	21.19

Note. **$p < .05$, For pouring toxic liquid and breaking bones t statistic could not be computed because a small number of participants who engage in these NSSI behaviors and because standard deviations are zero.

Serbia which showed a similar rate of mental health problems in Serbia compared to some other European countries during the second year of the COVID-19 pandemic (Maric et al., 2022). However, the discrepancy in NSSI rates is observed due to the type of NSSI assessment. When a checklist of NSSI behaviors is used, the rate is higher - 14.5%. This result supports the viewpoint of authors arguing that considering methodological factors is crucial when assessing NSSI prevalence (Muehlenkamp et al., 2012; Swannell et al., 2014). Namely, participants and researchers may not define NSSI or understand NSSI questions in the same way. As previously mentioned, it is important to examine how participants interpret NSSI questions. When asking one single binary NSSI question it may be useful to add examples of some of the most common forms of NSSI behaviors and motives in parentheses, which could contribute to the question being clearer and thus the answers more valid. The NSSI rate before age 18 is higher than the NSSI rate after age 18, which suggests that participants engaged in NSSI more often when they were younger compared to later periods in life. This result is in line with previous studies showing that NSSI prevalence is higher among younger people (Klonsky, 2011; Plener et al., 2016; Swannell et al., 2014).

Results also showed that most participants in the NSSI group used just one method to self-injure. This result was unexpected because other authors often report multiple methods (NSSI behaviors) as the most frequent pattern (e.g., Klonsky, 2011). Researchers use different numbers of methods presented through different checklists which may impact results about the number of methods used. The most common NSSI behavior (both before and after the age of 18) is preventing wounds from healing (also called wound picking or interfering with wounds). It is important to note that although some authors consider this behavior as NSSI behavior (e.g., Klonsky and Olino, 2008), the current DSM-5 NSSI definition specifies bleeding or bruising as a result of tissue damage, which in the case of wound picking does not have to appear (APA, 2013). Behaviors that may also cause tissue damage but are considered common and normative such as lip-biting or nail-biting are also excluded from DSM-5 NSSI definition criteria. Wound picking is tricky to categorize because information about motivation for it and the extent of body damage is needed. A person can do very little damage to the tissue while picking a wound, but this damage can also be very severe. Some authors (for further details see Hooley et al., 2020) are warning that the inclusion of "milder" behaviors such as wound picking in NSSI assessment tools may increase rates of NSSI engagement. Our result showing that the NSSI rate dropped from 14.5% to 8.8% when wound picking was excluded from the NSSI behaviors checklist confirms these assumptions. Therefore, the inclusion of wound picking as one of the NSSI behaviors in the checklist may be one of the reasons for such a difference in NSSI rates based on a single question and NSSI behavior checklist. It should be explored whether participants consider wound picking to be NSSI at all.

Since most studies showed a similar rate among males and females (e.g., Whitlock et al., 2006), our finding showing males are more likely to engage in NSSI than females was unexpected. However, it should be mentioned that the effect size is very small and it is observed in a very large sample. Thus, the question of reproducibility of this finding remains open. Interestingly, results of analysis done on the NSSI-subgroup showed significant gender differences in NSSI frequency of two NSSI behaviors only – banging head and burning oneself, which is in line with results of previous studies (Claes et al., 2007; Sornberger et al., 2012). Some authors (e.g., Sornberger et al., 2012) noted that these differences might appear according to seeing blood as a result of an injury, but more research is needed to explore these assumptions.

Participants who reported lifetime NSSI were more likely to report suicide attempts than those who did not report any NSSI episode. This is in line with previous studies which showed NSSI is a robust correlate of suicidality (Glenn and Klonsky, 2009; Kiekens et al., 2018; Klonsky, 2011; Klonsky et al., 2013). Although NSSI by its very definition excludes suicidal motive, some authors (e.g., Whitlock et al., 2013) describe NSSI as a gateway to suicide. As expected, those who reported NSSI are more likely to seek mental health treatment than those who did not report any NSSI episode during their lifetime. However, less than half of those who reported NSSI sought professional help, which is concerning. Mental health stigma is still present in the Serbian public and seeking help from a psychologist, psychiatrist, or psychotherapist still seems to be perceived negatively. This result raises not only questions about the stigmatization of people with NSSI and other mental health issues but questions related to the accessibility of institutional help as well. There is insufficient cooperation between primary, secondary, and tertiary healthcare in Serbia (Lecic-Tosevski et al., 2010) and a lack of preventive programs for many mental health problems, NSSI included. Schools in Serbia lack programs related to mental health education. Some countries developed surveillance systems to monitor rates of self-harm (Witt and Robinson,

2019). None of those counties is located in south-eastern Europe. Winkler et al. (2017) summarized and analyzed data about the development and current state of mental health care practice in the period from the early 1990s to 2016, in the countries of central and eastern Europe. The results of their study shed light on many problems such as the lack of mental health research and the absence of political will to invest in mental health promotion and systematic implementation of mental health policies.

As previously noted by other researchers as well (e.g., Winkler et al., 2017), in the south-eastern Europe region, both epidemiological and non-clinical studies related to mental health problems are rare. To the best of our knowledge, this is the first study about the NSSI rate in the country of the south-eastern Europe region. Results of this study confirmed some of the NSSI patterns related to gender, suicidality, and seeking professional help which were also found in other countries inside and outside the European continent. However, this study has some limitations that should be noted. Since Serbian ACE study data rely on retrospective self-report, data are susceptible to recall bias. Because of the cross-sectional study design, causal interpretations are disabled. The study may also be limited by the response and selection bias. It is noted (UNICEF, 2019) that the Serbian ACE study sample has a bias toward more educated and employed people. Those spending more time at home (unemployed, retired persons) were having a greater chance to participate in this study. It should be mentioned that most questions are binary choices. It would be important to explore whether the same insights would be obtained with scaled responses. Finally, the current DSM-5 criterion-based definition of NSSI was not included in the research, so the rate of clinically relevant nonsuicidal self-injury disorder (NSSID) in Serbia remains unknown. Therefore, the next step in exploring NSSI prevalence in Serbia should include DSM-5 criteria and should be conducted in not only a sample of adults but also in a representative sample of adolescents who are at the greatest risk of NSSI engagement. This estimation would be than more precise and comparable to other countries' rates.

In summary, the results of our study showed that the scope of NSSI-related problems is similar in Serbia compared to other countries. The negative effects of NSSI behaviors can be limited by the implementation of prevention programs as well as the improvement of mental health promotion strategies. For the implementation of systematic solutions for mental health issues both cooperation among experts and cooperation with policy-makers are necessary.

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Data availability statement

Data supporting the findings of this study are available from Unicef in Serbia on request (belgrade@unicef.org).

Authors contribution

Ana Radanović: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Visualization, Writing. Milutin Kostić: Methodology, Writing - review and editing. Milica Pejović-Milovančević: Project coordination, Writing - review and editing. Oliver Tošković: Conceptualization, Project administration, Methodology, Data analysis. Marina Videnović: Methodology, Resources, Writing - review and editing. Marija Mitković-Vončina: Methodology, Writing - review and editing. Jelena Radosavljev-Kirćanski: Methodology, Writing - review and editing. Vanja Mandić-Maravić: Methodology, Writing - review and editing. Ljiljana B. Lazarević: Methodology, Resources, Supervision, Writing - review and editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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