ORIGINAL ARTICLE / ОРИГИНАЛНИ РАД

Self-harm in children and youth – impact of the COVID-19 pandemic

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Introduction/Objective COVID-19 pandemic caused many disruptions in the daily routines of children and adolescents, which may have influenced their mental health.

This study aimed to examine the impact of the COVID-19 pandemic on self-harming behaviors, including non-suicidal self-injury (NSSI) and suicide attempts in children and youth seeking psychiatric help. **Methods** Retrospective, cross-sectional study was conducted, analyzing data from medical documentation of 1129 outpatients, aged between 10 and 18, who had their first psychiatric examination at the Institute of Mental Health in Belgrade, Serbia between March 1, 2019 and August 31, 2021. The frequency of NSSI and suicide attempt during the pandemic was compared to a one-year period before the pandemic. **Results** Proportions of patients with NSSI were higher in both years during the pandemic (18.1%; 27.7%) compared to the year before (12.6%), especially in the second year of the pandemic, with a marked increase in March 2021. NSSI was more frequent in girls, older adolescents, those living in incomplete families and those with a history of abuse. No significant change in the frequency of suicide attempts related to the COVID-19 pandemic was found.

Conclusion Significant increase in the frequency of NSSI, markedly during the second year of the pandemic, especially in children and youth with additional factors of vulnerability, calls for further attention from both professionals and policymakers, as well as preventive measures for this vulnerable group during stressful times.

Keywords: non-suicidal self-injury; suicidal attempt; child; adolescent; pandemic



Suicide is the second leading cause of mortality among children and youth aged 10-24, and a global public health concern that requires more interest from the medical community. While youth mortality from major medical disorders has declined in recent years, the prevalence of child suicide has increased. Suicidal thoughts and behavior are more frequent than completed suicide [1, 2]. Self-injurious behavior is a broad category of behaviors in which an individual directly and deliberately causes harm to oneself. It can include non-suicidal self-injury (NSSI), as a direct, deliberate destruction of one's own body in the absence of intent to die; or suicide attempts, which refer to acts directed toward intentionally ending one's own life [3]. The rate of self-injurious behavior is low in early childhood but increases rapidly with the onset of teenage years [4]. Even though NSSI excludes explicit suicidal intention, it is associated with suicidal thoughts and behaviors.

Those who engage in NSSI are more than four times more likely to attempt suicide later in life [5]. Moreover, engaging in NSSI can predict the transition from suicidal thoughts to attempted suicide in youth [6].

Systemic changes have occurred due to the coronavirus disease (COVID-19) pandemic, including the temporary closure of academic institutions, limited accessibility to health and social services and the disruption of children's and their families' daily routines, having significant influence on their lives [7, 8]. The state of pervasive fear, the presence of stress, the lack of psychological support systems, and worsening socio-economic conditions in many families have led to the worsening of existing and the emergence of new mental health issues [9].

Many school-based social, healthcare, and mental health services were disrupted, potentially resulting in negative academic, emotional, behavioral, and social outcomes [10]. Job loss or working from home along with constant worry and uncertainty are important causes of stress for the parents, which can further cause negative effects on children, directly or indirectly [11]. On one hand, school closure, online classes, and the loss of extracurricular activities resulted in the lack of social support which could have influenced children and youths' mental health negatively. On the other hand, the pandemic caused a reduction of academic pressure and stress, peer conflicts and violence, which could have had some positive effects [12, 13].



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Within the population of psychiatrically hospitalized youth COVID-specific suicidal thoughts and behaviors occurred (engaging in purposeful COVID-19 exposure with suicidal intent) [14].

Understanding how the still current pandemic affects mental health of children and youth is critical for evaluating strategies to enhance outcomes for persons who are experiencing mental health deterioration. The aim of our study is the evaluation of the influence of the COVID-19 pandemic on the frequency of NSSI and suicide attempts among children and adolescents, as well as the possible contributing risk factors within this population.

METHODS

This research was conducted as a retrospective, cross-sectional study, including data from medical documentation of 1129 children and youth, aged 10–18 (mean age 14.17; 57.8% girls), who had their first psychiatric examination in the Institute of Mental Health in Belgrade, Serbia between March 1, 2019 and August 31, 2021. Presence of NSSI and suicidal attempt during the pandemic period (March 2020 – August 2021) was compared to a one-year period before the pandemic (March 2019 – February 2020). The presence of any type of abuse, family status and the presence of negative life events were also examined as possible risk factors.

Ethics approval

The study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the Institute of Mental Health in Belgrade, Serbia (Date 14.12.2021/No.1060/2110/1).

RESULTS

Proportion of patients with NSSI has increased in the second year of the pandemic period (27.7%) compared to the year before (12.6%) and the first year of the pandemic (18.1%) (Table 1). Comparing the first year of the pandemic period with the prior year, there was a slightly higher proportion of patients with NSSI, with the effect size bordering on significance ($\chi^2 = 4.538$, p = 0.03, Cramer's V = 0.074 (weak effect)). When comparing the second year of the pandemic period with the first year, there was a significant increase in frequency of patients with NSSI ($\chi^2 = 7.247$, p = 0.007, Cramer's V = 0.113 (weak effect), Figure 1).

A marked rise in frequency of patients with NSSI occurred in March 2021, with frequencies in the following months on the same level for the remainder of the observed time period (that is, until August 2021). No significant differences were found between the prior period and the first year of the pandemic ($\chi^2 = 1.359$, p = 0.244), or the first and second year ($\chi^2 = 214$, p = 0.643).

The average age of patients with NSSI (mean = 14.82, SD = 1.718) was slightly greater (F = 23.305, p = 0.000)

Table 1. Number of patients with non-suicidal self-injury and suicidal behavior distributed by time period

Time period	Non-suicidal self-injury n (%)	Suicidal behavior n (%)	Others n (%)	Total n
Pre-pandemic ¹	71 (12.6%)	41 (7.3%)	451 (80.1%)	563
First year ²	49 (18.1%)	26 (7%)	195 (74.9%)	270
Second year ³	82 (27.7%)	32 (11.9%)	182 (60.4%)	296

¹March 2019 – February 2020;

³March 2021 - August 2021

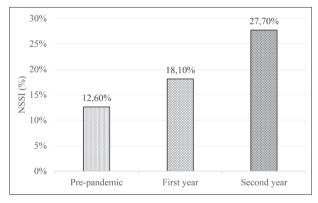


Figure 1. Non-suicidal self-injury trend

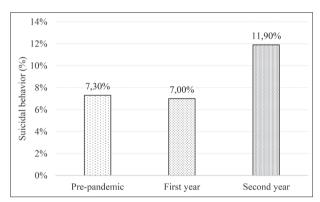


Figure 2. Suicidal behavior trend

compared to the rest (mean = 14.02, SD = 2.211), with most patients in the NSSI group being girls (89.1%).

A similar pattern was observed with the frequency of suicidal behavior, with no differences between the prepandemic period (7.3%) and the first year of the pandemic (7%), and a significant increase in the second year (11.9%) ($\chi^2 = 6.893$, p = 0.032, Cramer's V = 0.078 (weak effect), Figure 2).

In regard to other sociodemographic variables, considered as possible risk factors, patients with NSSI more frequently came from incomplete families (55%) compared to the rest of the sample (39.3%, $\chi^2 = 16.741$, p = 0.000, Cramer's V = 0.122 (weak effect)). The presence of any type of abuse was also more frequently associated with NSSI (27.2% of NSSI patients compared to 19% of the rest, $\chi^2 = 6.923$, p = 0.009, Cramer's V = 0.078 (weak effect)). No significant differences were found in regard to the frequency of negative life events – 38.6% in the NSSI group, and 35.4% in the non-NSSI group ($\chi^2 = 0.752$, p = 0.386).

²March 2020 – February 2021;

Patients who attempted suicide were, on average, older (mean = 15.09, SD = 1.464) than patients in the non-suicidal group (mean = 14.08, SD = 2.188, (F = 20.390, p = 0.000). As was the case with NSSI, most patients that attempted suicide were girls (82.8%). No significant differences were found in regard to either family status, the presence of abuse, or negative life events.

DISCUSSION

Results of our study suggest that the proportions of children and adolescents with NSSI within our sample were higher for both periods during the pandemic (March 2020 – February 2021 and March 2021 – August 2021) compared to the one-year period before the pandemic (March 2019 – February 2020). The proportion of patients with NSSI during the first year of the pandemic was significantly higher than the year before (with a weak effect size), and in the second pandemic period (March 2021 – August 2021). This increase in frequency was even more significant compared to the first year of the COVID-19 pandemic, with a marked increase of frequency in March 2021. These results are consistent with other research regarding the effects of the pandemic on the frequency of NSSI in the adolescent population [15, 16, 17].

It is important to note that our sample was made up of children and adolescents seeking help from psychiatric services for the first time, it does not give us insight into the general population of children and adolescents where the number of those who self-harm without seeking help might be greater. Moreover, children and youth with a previous history of contact with the psychiatric service were also excluded from the sample, which could be a subject of a future study.

NSSI is mainly used by children and youth as a strategy for short-term emotional regulation. Previous research shows that stressors, depressive symptoms, hopelessness, the lack of adequate social support, negative interactions within close relationships as well as parental psychopathology are significant risk factors for NSSI [18, 19]. It is probable that many of the newly instituted restrictive measures and general changes in daily routines have led to increased stress in children, but also in their parents and other close relationships, making them feel hopeless and isolated, and therefore more prone to engage in NSSI.

The mean age of children and youth with NSSI was slightly greater compared to those not engaging in NSSI (mean = 14.82, SD = $1.718 \, vs$. Mean = 14.02, SD = 2.211, p = 0.000), and most of the patients engaging in NSSI were female (89.1%). Finding that girls more often engage in NSSI compared to boys, both during and before the pandemic, is supported by previous studies [15, 16, 20, 21], as well as the fact that higher age is linked to NSSI among adolescents [21].

Children and adolescents engaging with NSSI more often came from incomplete families compared to those who do not self-injure (55% vs. 39.3%, p = 0.000). This was also the case with children and adolescents with a confirmed history of any type of abuse (27.2% vs. 19%, p = 0.009). However,

comparing these two groups by the presence of negative life events did not yield a significant difference. Previous research on psychosocial factors related to NSSI in adolescents during the COVID-19 pandemic supports the connection between NSSI and living in an incomplete family and the experience of abuse (bullying) but differ in relation to negative life events [21]. This difference in negative life events could be because our data collection was not specific enough to determine the number and type of negative life events.

Regarding suicide attempts, no significant differences were found between the three examined periods, between the two pandemic years, nor the pandemic and pre-pandemic period. This result differs from other studies, where it was shown that the proportion of youth with recent suicide attempts was greater in the first year of the COVID-19 pandemic compared to a year before [22, 23]. Some studies also suggest there was an increase in suicide attempts in both pandemic years, but only after April and May 2020 (when there were strict lockdowns in most countries) [24]. This relative increase is dependent upon methodology and sampling. Especially in the clinical samples it could be a reflection of the decrease in help seeking related to other, less acute mental health problems, due to changes in the availability of care. There are also multiple studies that show no significant difference in the frequency of suicide attempts in the adolescent population compared to the pre-pandemic period overall [25, 26, 27] in concordance with our results.

Patients that have attempted suicide were, on average, older (Mean = 15.09, SD = 1.464) than the patients in the non-suicidal group (Mean = 14.08, SD = 2.188, p = 0.000). Most patients with suicide attempts were girls (82.8%). These results are supported by previous studies for both the pandemic, and the pre-pandemic period. Older adolescents are more likely to attempt suicide compared to younger children according to available research [26].

Girls seem to be more prone to suicide attempts compared to boys, probably more so when faced with stressors leading to internalizing problems, both in pandemic and pre-pandemic studies [24, 26, 28]. Comparing the patients that have attempted suicide with those who have not, no significant differences were found regarding either family status, the presence of abuse, or negative life events. This was an unexpected finding, considering that multiple prepandemic studies show that living in an incomplete family, the experience of abuse and other significant negative experiences are related to adolescents more often engaging in suicide attempts [29, 30].

CONCLUSION

Analyzing retrospective data from the COVID-19 pandemic period and the year prior to the pandemic, our study offers preliminary evidence that the pandemic may be a contributing factor in the increase in NSSI, especially in the year since the beginning of the pandemic. This increase was especially pronounced in girls and older adolescents, those living in incomplete families and those that have experienced abuse. This effect was not observed for suicide

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attempts, as the frequencies did not significantly change during the pandemic, nor was the relationship proven for other examined psychosocial factors. Girls and older adolescents were more likely to attempt suicide, which is not a change in comparison to the pre-pandemic period. These findings call upon healthcare providers and related professionals, as well as policymakers, to pay closer attention to adolescents' mental health during a pandemic, especially young girls, having in mind that the presence of NSSI can predict the future transition from suicidal thoughts to attempted suicide in youth.

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Conflict of interest: None declared.

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Самоповређивање код деце и омладине – утицај пандемије ковида 19

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СДЖЕТДК

Увод/Циљ Пандемија ковида 19 изазвала је бројне промене дневних рутина деце и адолесцената, што је могло утицати на њихово ментално здравље.

Циљ овог истраживања је да испита утицај пандемије ковида 19 на самоповређивање, укључујући несуицидно самоповређивање и покушаје суицида код деце и омладине којима је била потребна психијатријска помоћ.

Методе Спроведена је ретроспективна студија пресека, анализирани су подаци из медицинске документације 1129 амбулантно лечених болесника, узраста од 10 до 18 година, који су први пут прегледани на Институту за ментално здравље у Београду, између 1. 3. 2019. и 31. 8. 2021. Учесталост несуицидног самоповређивања и покушаја суицида је поређена са једногодишњим периодом пре пандемије.

Резултати Пропорција болесника са несуицидним самоповређивањем је била виша у обе године у току пандемије (18,1%; 27,7%) у поређењу са годином пре пандемије (12,6%), нарочито током друге године пандемије, са видним порастом у марту 2021. године. Несуицидно самоповређивање је учесталије код девојчица, старијих адолесцената, оних који живе у непотпуној породици или имају искуство злостављања. Није утврђена значајна разлика учесталости покушаја суицида у вези са пандемијом.

Закључак Значајан пораст учесталости несуицидног самоповређивања, нарочито у току друге године пандемије, посебно код деце и младих са додатним факторима осетљивости, указује на потребу за праћењем од стране стручњака и доносилаца одлука, као и превентивним мерама за ове осетљиве групе у периодима повишеног стреса.

Кључне речи: несуицидно самоповређивање; покушај самоубиства; деца; адолесценти; пандемија

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