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Childhood trauma as a predictor of suicidal thoughts and suicidality in adulthood in a sample of the Croatian general population

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Summary

Background: *The aim of this study was to examine the contribution of childhood trauma to suicidal ideation in adulthood and to determine which forms of trauma are predictors of suicide attempts.*

Participants and methods: *The study included 283 participants, of whom 52 were men (18.4%) and 231 were women (81.6%). The majority of participants lived in urban areas (194; 68.6%), had completed secondary education (121; 42.8%), and were married (144; 50.9%). The median age was 36 years (Q1–Q3: 26–46). The Childhood Trauma Questionnaire and the Suicidal Ideation Attributes Scale were used in the study.*

Results: *A suicide attempt was reported by 12 participants (4.2%). The level of suicidal ideation was statistically significantly higher in participants who attempted suicide compared to those who did not ($p < 0.001$). A statistically significant association was also found between an increased risk of suicidal thoughts and suicide attempts ($p < 0.001$). Variables significantly associated with suicidal thoughts were younger age ($p = 0.044$), physical neglect ($p = 0.001$) and sexual abuse ($p = 0.002$). Sexual abuse was significantly associated with suicide attempts ($p = 0.006$).*

Conclusion: *The results of the study indicate that younger age, physical neglect, and sexual abuse were significantly associated with suicidal thoughts, while sexual abuse was significantly associated with suicide attempts. The findings further emphasize the importance of early recognition and intervention in individuals exposed to traumatic experiences in childhood.*

Keywords: *childhood trauma, suicidal thoughts, suicidality*

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INTRODUCTION

Suicidal ideation refers to thoughts about ending one's own life, and can range from fleeting thoughts and a general desire to die without a clear plan, to more intense and elaborate reflections accompanied by a specific intention to commit a suicidal act (Harmer et al., 2024). Its importance stems from the fact that suicidal ideation represents one of the strongest indicators of increased suicidal risk, which is why they have a special place in the assessment and prevention of suicidal behavior (Bryan et al., 2019). People who experience suicidal ideation are more likely to develop more severe forms of suicidality, especially when timely recognition and appropriate professional help are lacking (Søndergaard et al., 2023). Despite this, suicidal ideation still receives insufficient attention, although its association with subsequent suicidal behavior is well documented (Jobes & Joiner, 2019).

Suicidal behavior is a complex and multidimensional phenomenon influenced by a number of biological, clinical, psychological, social, and cultural risk and protective factors (O'Connor & Kirtley, 2018). One of the theoretical models that explains the development of suicidality is the Three-Step Theory of Suicide. According to this theory, suicidal ideation arises from the combination of psychological pain and hopelessness, while the progression from suicidal thoughts to suicidal behavior depends on reduced connectedness and the acquired capability for suicide (Klonsky et al., 2021). Such a theoretical framework is particularly important in research on early adverse experiences, because traumatic events from childhood can have long-term consequences precisely on

emotional regulation, a sense of security, interpersonal relationships, and the perception of self-worth. In the context of traumatic experiences, it is also important to consider the DSM-5 framework. According to the DSM-5, trauma includes exposure to actual or threatened death, serious injury, or sexual violence, whether through direct experience, witnessing the event, learning that such an event had occurred to a loved one, or repeated exposure to distressing details of traumatic events (American Psychiatric Association, 2013). However, in research on adverse childhood experiences, the term is often used more broadly to encompass emotional, physical, and sexual abuse, as well as emotional and physical neglect. While not all such experiences necessarily meet DSM-5 criterion A for trauma, a number of studies have shown that they are associated with long-term psychological vulnerability and increased risk for suicidal ideation and behavior in later life.

In addition to factors that act immediately before the onset of suicidality, such as acute stress, emotional states and current psychological difficulties (Foley et al., 2006; Misiak et al., 2023), more distant, developmentally earlier factors also play an important role, among which childhood trauma stands out in particular (Ihme et al., 2022). Early abuse and neglect are not uncommon. It is estimated that approximately a quarter of the European population was exposed to some form of physical, emotional or sexual abuse, as well as emotional or physical neglect during childhood (Finkelhor et al., 2013; McElvaney & Lalor, 2014). The consequences of such experiences are not limited to a higher risk of mental disorders in adulthood, but also include a higher risk of suicide attempts and other forms of suicidal behavior (de Codt et al., 2016; Angelakis et al., 2019).

Previous research suggests a clear link between childhood trauma and suicidal ideation in adulthood. A history of emotional, physical, and sexual abuse is associated with a higher likelihood of suicidal ideation, and recent work suggests that various forms of neglect may have a similar effect (Helvaci Celik & Hocaoglu, 2022; Pompili et al., 2014; Zatti et al., 2017; Berardelli et al., 2022). Sexual abuse in particular has been shown in several studies to be an important factor associated with suicidal ideation in adulthood (Akbari et al., 2017; Habibi et al., 2018; Poursharifi et al., 2012). In addition to the direct association with suicidal ideation, childhood trauma is also associated with later suicide attempts and suicidal behavior in adulthood (Angst et al., 2014; Liu et al., 2017; O'Connor & Kirtley, 2018). Meta-analytic findings show that people exposed to traumatic experiences in childhood have a two to three times higher risk of suicidal behavior than people without such experiences (Angelakis et al., 2019).

Part of this association can be explained by the long-term consequences of trauma on emotional and psychological functioning. Childhood trauma can be associated with difficulties in regulating emotions, impaired self-esteem, feelings of shame and hopelessness, reduced psychological resilience, and a higher risk of developing various psychological disorders, including posttraumatic stress disorder (Felitti et al., 1998). All of the above can increase an individual's vulnerability to developing suicidal thoughts, and in some individuals, to transitioning into suicidal behavior.

Accordingly, the aim of this study was to examine the contribution of childhood trauma to suicidal thoughts in adulthood and to determine which forms of trauma are predictors of suicide attempts.

SUBJECTS AND METHODS

The research was conducted during July and August 2024 using an online questionnaire created on the Google Forms platform. A total of 283 respondents participated in the study. Participation was voluntary, anonymous and based on informed consent. Before completing the questionnaire, the participants were informed about the purpose of the research and the conditions of participation, after which they confirmed their consent to complete the questionnaire. The link to the questionnaire was distributed using the snowball method via social networks, with respondents being encouraged to forward the questionnaire to other potential participants. In order to protect privacy, no personally identifiable information was collected, including names, email addresses, or personal identification numbers. To reduce the possibility of multiple submissions, participants were required to be logged into their browser before accessing the questionnaire. The study was conducted as an anonymous online survey in the general adult population and was not carried out within a hospital or healthcare institution. Only respondents living in the Republic of Croatia were included in the research, which was verified by the appropriate question in the questionnaire.

The sample consisted of 52 men (18.4%) and 231 women (81.6%). The majority of respondents lived in urban areas, 194 of them (68.6%), had completed secondary education, 121 of them (42.8%), and were married, 144 of them (50.9%). The median age of the respondents was 36 years, with an interquartile range of 26 to 46 years.

Inclusion and exclusion criteria

Participants who provided informed consent, were at least 18 years old, and lived in the Republic of Croatia were eligible to participate in the study. Individuals who did not meet these criteria were not included in the study.

MEASUREMENT INSTRUMENTS

The questionnaire consisted of three parts. The first part related to sociodemographic data, the second included the Childhood Trauma Questionnaire, and the third included the Suicidal Ideation Attributes Scale.

The sociodemographic section contained six questions related to gender, age, place of residence (rural, suburban or urban), level of education, marital status and information on whether the respondent had ever attempted suicide in their life.

The Childhood Trauma Questionnaire, which contains 33 items, was used to assess childhood trauma. Responses are recorded on a five-point Likert scale, from 1 ("Never") to 5 ("Very often"). The questionnaire includes six subscales: emotional abuse, physical abuse, physical neglect, emotional neglect, sexual abuse and overprotection and control. Each of the aforementioned subscales consists of five items, while an additional three items are intended to assess symptom reduction, or minimization. The total score of each subscale is obtained by summing the responses to the corresponding items, with a possible range of scores from 5 to 25. The reliability of the subscales, expressed as Cronbach's alpha coefficient, was for emotional abuse $\alpha = 0.88$, for physical abuse $\alpha = 0.85$, for physical neglect $\alpha = 0.82$, for emotional neglect $\alpha = 0.88$, for sexual abuse $\alpha = 0.91$, and for overprotection and control $\alpha = 0.83$ (Macuka et al., 2024).

Suicidal ideation was assessed using the Suicidal Ideation Attributes Scale (SIDAS). The scale consists of five items, each rated on a scale from 0 ("Never") to 10 ("Always"). The total score is obtained by summing the responses to all five items. If the first item is marked with a 0, indicating the absence of suicidal thoughts, the total score is automatically recorded as 0, regardless of the responses to the remaining items. The possible total score range is from 0 to 50, with a higher score indicating more pronounced suicidal ideation. A score of 21 or more can be considered an indicator of increased suicidal risk. In this study, the SIDAS demonstrated high internal reliability, with a Cronbach's alpha coefficient of 0.91 (van Spijker et al., 2014).

STATISTICAL METHODS

Descriptive statistical methods were used to describe the frequency distribution of the variables under study. Categorical variables were presented as absolute and relative frequencies. Since the distributions of numerical variables did not meet the assumption of normality, central tendencies were presented as medians, while dispersion was described as interquartile ranges.

The normality of the distribution was tested using the Kolmogorov–Smirnov test. The values of this test for all numerical variables were statistically significant ($p < 0.001$), indicating a deviation from normal distribution. Therefore, non-parametric methods were applied in further processing.

Differences in suicidal thoughts with respect to sociodemographic characteristics were tested using the Mann–Whitney U test for comparisons between two groups and the Kruskal–Wallis test for comparisons between multiple groups. Differences in age with respect to suicide attempts were also tested using the Mann–Whitney U test. The association between sociodemographic characteristics and suicide attempts was analyzed with the chi-square test, while Fisher's exact test was applied when the expected frequencies in the cells were low.

Multicollinearity diagnostics were performed before regression analysis. Variance inflation factor values ranged from 1.40 to 3.96, indicating no substantial multicollinearity among the predictors.

In order to assess the contribution of individual variables to suicidal ideation, a regression analysis was performed using the weighted least squares method. Suicidal ideation was used as the dependent variable. Variables that showed statistically significant associations in preliminary analyses were entered as independent variables in order to reduce model complexity and avoid overfitting.

Binary logistic regression was used to examine factors associated with suicide attempts, with suicide attempt considered as a dichotomous dependent variable. Variables that were statistically significant in univariate analyses were entered into the multivariable model in order to reduce model complexity, particularly given the limited number of suicide attempts.

The level of statistical significance was set at $p < 0.05$. Statistical data processing was performed in the JASP program, version 0.17.2.1 (Department of Psychological Methods, University of Amsterdam, Amsterdam, The Netherlands).

RESULTS

Descriptive results showed that the median SIDAS score was 0 (Q1–Q3: 0–0). Of the childhood trauma subscales, the highest median was found for emotional neglect, 13 (Q1–Q3: 12–14), while the lowest median was recorded for sexual abuse, 6 (Q1–Q3: 5–8) (Table 1).

Table 1. Descriptive results of the SIDAS scale and the Childhood Trauma Questionnaire subscale

	Median (Q1 – Q3)
Suicidal thoughts	0 (0 – 0)
Emotional abuse	9 (8 – 9)
Physical abuse	6 (5 – 9)
Physical neglect	10 (9 – 12)
Emotional neglect	13 (12 – 14)
Sexual abuse	6 (5 – 8)
Excessive control	10 (9 – 13)

Note: n – number of respondents, % – percentage, Q1 – first quartile, Q3 – third quartile.

The Mann–Whitney U test and the Kruskal–Wallis test were used to examine differences in suicidal ideation with respect to sociodemographic characteristics. No statistically significant differences in suicidal ideation were found with respect to gender, marital status, or level of education, indicating that suicidal ideation was equally distributed among the observed sociodemographic categories (Table 2).

The results showed a statistically significant weak negative association between suicidal ideation and age ($\rho = -0.120$; $p = 0.044$) and a statistically significant weak positive association between suicidal ideation and physical abuse ($\rho = 0.288$; $p < 0.001$), physical neglect ($\rho = 0.223$; $p < 0.001$), sexual abuse ($\rho = 0.282$; $p < 0.001$), and excessive control ($\rho = 0.287$; $p < 0.001$). This means that younger age and higher levels of physical abuse, physical neglect, sexual abuse, and excessive control were associated with higher levels of suicidal ideation in adulthood (Table 3).

In order to determine predictors of suicidal ideation, a regression analysis was conducted using the weighted least squares method. Suicidal ideation was entered as the dependent variable, while age, physical abuse, physical neglect, sexual abuse, and excessive control were included as independent variables, since these variables were shown to be associated with suicidal ideation. The results showed that this set of predictors statistically significantly explained 3.1% of the variance in suicidal ideation (Adjusted $R^2 = 0.031$; $p = 0.010$). Age ($p = 0.044$), physical neglect ($p = 0.001$), and sexual abuse ($p = 0.002$) were identified as statistically significant predictors. Inspection of the standardized regression coefficients showed that lower age and higher levels of physical neglect and sexual abuse significantly contribute to higher levels of suicidal ideation in the study group (Table 4).

Table 2. Differences in suicidal ideation by sociodemographic characteristics

		Suicidal thoughts		
		Median (Q1 – Q3)	**Test value (df)**	**p**
Gender	Male	0 (0 – 0)	U = 0.580 (1)	0.438
	Female	0 (0 – 0)		
Marital status	Cohabiting	0 (0 – 0)	H = 9.011 (4)	0.061
	Single	0 (0 – 0)		
	Divorced	0 (0 – 1.75)		
	Married	0 (0 – 0)		
	Widowed	0 (0 – 0)		
Education level	Primary school	0 (0 – 0)	H = 5.986 (4)	0.200
	Secondary school	0 (0 – 0)		
	Undergraduate	0 (0 – 0)		
	Graduate	0 (0 – 0)		
	Postgraduate	0 (0 – 0)		

Values are presented as median (Q1 – Q3). p – statistical significance; Q1 – first quartile; Q3 – third quartile. Mann–Whitney U test was used for comparisons between two groups, and Kruskal–Wallis test for comparisons between more than two groups.

Table 3. Spearman correlations between suicidal thoughts, age, and Childhood Trauma Questionnaire subscales

		2.	3.	4.	5.	6.	7.	8.
1.Suicidal thoughts	ρ	-0.120	0.066	0.288	0.223	0.061	0.282	0.287
	p	**0.044**	0.269	**<0.001**	**<0.001**	0.310	**<0.001**	**<0.001**
2.Age	ρ		0.037	-0.005	0.099	0.029	-0.035	0.023
	p		0.532	0.939	0.096	0.632	0.558	0.695
3.Emotional abuse	ρ			0.074	0.156	-0.089	0.126	0.150
	p			0.216	**0.009**	0.133	**0.034**	**0.012**
4.Physical abuse	ρ				0.516	0.105	0.626	0.604
	p				**<0.001**	0.077	**<0.001**	**<0.001**
5.Physical neglect	ρ					0.183	0.381	0.376
	p					**0.002**	**<0.001**	**<0.001**
6.Emotional neglect	ρ						0.126	0.018
	p						**0.034**	0.768
7.Sexual abuse	ρ							0.611
	p							**<0.001**
8.Excessive control	ρ							-
	p							-

ρ – Spearman's correlation coefficient rho; p – statistical significance.

Table 4. Results of regression analysis – suicidal thoughts dependent variable

	Standardized Coefficients	t	p	Adjusted R^2
	ß			
(Constant)		-3.624	<0.001	**0.031**
Age	-0.144	-2.020	**0.044**	
Physical abuse	0.086	1.255	0.210	
Physical neglect	0.376	3.298	**0.001**	
Sexual abuse	0.335	3.187	**0.002**	
Excessive control	0.127	1.950	0.052	

Note: p – statistical significance; β – regression coefficient; t – the size of the difference relative to the variation in sample data; Adjusted R^2 – adjusted coefficient of determination

Table 5. Distribution of suicidal attempts and differences in suicidal thoughts according to suicidal attempts

		Suicidal thoughts		
		n (%)	Median (Q1 – Q3)	p*
Have you ever attempted suicide in your life?	Yes	12 (4.2)	14.50 (0 – 25.25)	**<0.001**
	No	271 (95.8)	0 (0 – 0)	

n – Number of respondents, % – Percentage, M – Mean, SD – Standard Deviation; p – statistical significance; * Mann Whitney test

A suicide attempt was reported by 12 respondents (4.2%). The level of suicidal ideation was statistically significantly higher in respondents who attempted suicide compared to those who did not ($p < 0.001$) (Table 5).

The distribution of increased risk of suicidal behavior, defined by a score of 21 and above on the SIDAS, differed statistically significantly with respect to suicide attempt (χ^2 test; $p < 0.001$). Among respondents who were not at high risk, the majority did not attempt suicide, 255

Table 6. Distribution of high risk for suicidal behaviors with suicide attempts

			Suicide attempt		Total	p*
			No	Yes		
High risk of suicidal thoughts	No	n	255	4	259	**<0.001**
		%	94.1	33.3	91.5	
	Yes	n	16	8	24	
		%	5.9	66.7	8.5	
Total		n	271	12	283	
		%	100	100	100	

n – Number of respondents, % – Percentage, p – statistical significance; * $\chi 2$ test

(94.1%), while among respondents with high risk, a significantly higher proportion reported a suicide attempt, 8 of them (66.7%) (Table 6).

No statistically significant association was found between gender and suicide attempts ($\chi^2 = 0.367$; df = 1; p = 0.702), nor between marital status and suicide attempts (Fisher's exact test, p = 0.238). In contrast, a statistically significant association was found between education level and suicide attempts (Fisher's exact test, p = 0.019), indicating that the distribution of suicide attempts differed among educational categories (Table 7).

Binary logistic regression analysis was performed to examine the predictors of suicide attempts. All participants (N = 283) were included in the analysis, with no missing data. The overall model was statistically significant ($\chi^2 = 42.881$; df = 9; p < 0.001), indicating that the set of predictors reliably distinguished between participants who had and had not attempted suicide. The model

Table 7. Association between sociodemographic characteristics and suicide attempts

		Suicide attempts		χ^2 (df)	p
		No attempt n (%)	Attempt n (%)		
Gender	Male	49 (18.1)	3 (25.0)	0.367 (1)	0.702
	Female	222 (81.9)	9 (75.0)		
Marital status	Cohabiting	24 (8.9)	0 (0.0)	—	0.238
	Single	85 (31.4)	6 (50.0)		
	Divorced	16 (5.9)	2 (16.7)		
	Married	140 (51.7)	4 (33.3)		
	Widowed	6 (2.2)	0 (0.0)		
Education level	Primary school	5 (1.8)	0 (0.0)	—	0.019
	Secondary school	114 (42.1)	7 (58.3)		
	Undergraduate	55 (20.3)	3 (25.0)		
	Graduate	89 (32.8)	0 (0.0)		
	Postgraduate	8 (3.0)	2 (16.7)		
		Median (Q1 – Q3)	U		
Suicide attempt	No	36 (27 – 46)	1409.50		0.435
	Yes	35 (23 – 48)			

n – number of respondents; % – percentage; χ^2 – Chi-square test; df – degrees of freedom; U – Mann–Whitney U test; p – statistical significance; Q1 – first quartile; Q3 – third quartile.

Table 8. Regression analysis – suicide attempt as a dependent variable

		ß	S.E.	Wald	df	p	OR
Univariate analysis	Emotional abuse	0.272	0.101	7.281	1	**0.007**	1.313
	Physical abuse	0.243	0.057	18.032	1	**<0.001**	1.275
	Physical neglect	0.359	0.101	12.646	1	**<0.001**	1.431
	Emotional neglect	0.175	0.123	2.013	1	0.156	1.191
	Sexual abuse	0.319	0.071	20.183	1	**<0.001**	1.376
	Excessive control	0.239	0.088	7.309	1	**0.007**	1.270
Multivariate analysis	Emotional abuse	-0.099	0.166	0.353	1	0.552	0.906
	Physical abuse	0.056	0.145	0.147	1	0.701	1.057
	Physical neglect	0.370	0.193	3.682	1	0.055	1,448
	Sexual abuse	0.458	0.166	7.649	1	0.006	1,581
	Excessive control	-0.278	0.174	2.562	1	0.109	0.757
	Primary school			6.573	4	0.160	
	Secondary school	-18.512	35580247	<0.001	1	0.996	<0.001
	Undergraduate	0.426	0.894	0.227	1	0.634	1.531
	Graduate	-17.253	17412.191	<0.001	1	0.999	0.000
	Postgraduate	3.165	1.260	6.310	1	0.012	23.677
	Constant	-8.060	2.496	10.426	1	0.001	<0.001

ß – regression coefficient; SE – Standard error, Wald – tests whether a predictor significantly influences the dependent variable, df – Degrees of Freedom, p – statistical significance, OR – Odds Ratio

explained between 14.1% of the variance according to Cox & Snell R^2 and 47.5% according to Nagelkerke R^2. In terms of classification accuracy, the model correctly classified 96.1% of cases. However, it showed a substantial imbalance in prediction performance, correctly identifying 99.3% of participants without suicide attempts, but only 25.0% of those who had attempted suicide. Regarding individual variables, sexual abuse was the only factor significantly associated with suicide attempts in the multivariable model (OR = 1.581; p = 0.006), indicating that higher levels of sexual abuse were associated with a greater likelihood of reporting a suicide attempt. Physical neglect approached statistical significance (p = 0.055), suggesting a potential trend. Education level as a whole was not a statistically significant predictor (p = 0.160). However, one specific category (postgraduate education) showed a significant effect (p = 0.012), although this result should be interpreted with caution due to extremely large standard errors and unstable estimates. Importantly, the model did not fully converge, as the maximum number of iterations was reached. This issue is likely related to the small number of participants who reported suicide attempts (n = 12), which may have affected the stability and reliability of the estimates. Therefore, the results of the regression analysis should be interpreted with caution (Table 8).

DISCUSSION

The aim of this study was to examine the contribution of childhood trauma to suicidal ideation in adulthood and to determine which forms of trauma are predictors of suicide attempts. The findings partially addressed the study objectives and indicate that physical neglect and sexual abuse are associated with higher levels of suicidal ideation, while sexual abuse was the only factor significantly associated with suicide attempts in the multivariable model.

Regarding suicidal ideation, the results showed that physical neglect was significantly associated with higher levels of suicidal ideation in adulthood. Although relatively few studies have directly examined this association and confirmed this finding (Delirrooyfard et al., 2022), it is known that neglect can have long-term consequences on emotional development. Such experiences are associated with an increased risk of self-harm, alcohol and drug abuse, and suicidal ideation (Jovanović et al., 2025; Vanderminden et al., 2019), but also with difficulties in regulating emotions and a negative self-image (Avdibegović & Brkić, 2020). In this sense, low self-esteem and hopelessness are particularly important, as these factors are often associated with suicidal thoughts (Low et al., 2017). One possible explanation for the results obtained

is that physical neglect in childhood can impair the development of stress and emotion regulation systems in the long term (Teicher et al., 2003). Children who grow up in conditions of neglect often do not have the opportunity to develop adequate coping strategies nor do they receive the emotional support needed to understand and regulate their own emotional states, which can lead to increased emotional reactivity, difficulty coping with stress, and greater sensitivity to negative life events (Teicher et al., 2003; Avdibegović & Brkić, 2020). Such individuals more often experience feelings of helplessness, hopelessness, and internal instability, and these patterns have previously been associated with a higher risk of suicidal ideation (Dube et al., 2001; Low et al., 2017). In addition, the chronic lack of support and security in the early period can lead to a permanently damaged sense of self-worth and trust in others, which further increases psychological vulnerability (Avdibegović & Brkić, 2020; Teicher et al., 2003).

Sexual abuse has also been shown to be a significant predictor of suicidal thoughts. This finding is in line with previous research that highlights its strong association with suicidality (Berardelli et al., 2022; Helvaci Celik & Hocaoglu, 2022). One of the possible mechanisms involves the development of post-traumatic stress disorder (Alves et al., 2024). In persons who have been exposed to sexual abuse, the prevalence of PTSD reaches about 40% (Naura et al., 2006), and symptoms such as intrusive thoughts, dissociation, hypervigilance, and hopelessness can further increase the risk of suicidal thoughts (American Psychiatric Association, 2013; Mainali et al., 2023).

However, this association is likely explained by multiple mechanisms. Childhood sexual abuse can profoundly disrupt basic feelings of security and trust in others, which later affects interpersonal relationships, self-image, and the way a person interprets their own life difficulties (Brown et al., 1999; Ihme et al., 2022). Such experiences are often associated with feelings of shame, guilt, and worthlessness, which can become a stable part of self-perception and contribute to persistent emotional vulnerability (Brown et al., 1999; Maniglio, 2011). When combined with difficulties in regulating emotions and a tendency to repetitive negative thinking, psychological pain can become extremely intense, and suicidal thoughts can appear as a way out of an unbearable inner state or as a perception that there are no other solutions (Bahk et al., 2017; Wang et al., 2022). Broken relationships and weaker social support further increase feelings of isolation, and it is precisely the feeling of separation from others that is one of the important elements associated with suicidal ideation (Joiner, 2005; Van Orden et al., 2010; Klonsky, Pachkowski, et al., 2021).

Younger respondents reported higher levels of suicidal thoughts. One possible explanation is that at a younger age, emotional and cognitive regulation systems are still developing, which makes it more difficult for individuals to recognize, understand and adequately regulate intense emotional reactions. At the same time, they are more often exposed to developmental challenges, instability of interpersonal relationships and uncertainty about the future, which further increases psychological burden (King et al., 2001; McHugh et al., 2019). In such a context, negative childhood experiences may have a more pronounced effect, because protective mechanisms are not yet fully developed and stabilized (Liu et al., 2017; Misiak et al., 2023).

One of the aims of the study was to examine factors associated with suicide attempts, and sexual abuse was the only factor significantly associated with this outcome in the multivariable model. This finding is consistent with previous research that highlights it as a key risk factor for suicidal behavior (Davidson et al., 1996; Garnefski & Arends, 1998; Maniglio, 2011; Tae & Chae, 2021). Possible mechanisms include disruption of adaptive coping strategies, development of feelings of worthlessness and isolation, and long-term changes in the way of coping with emotional pain (Brown et al., 1999; Maniglio, 2011). Such experiences can leave a lasting mark on emotional functioning and interpersonal relationships, thereby increasing vulnerability to the transition from suicidal thoughts to suicidal behavior (Ihme et al., 2022; Klonsky, Pachkowski, et al., 2021).

This study also found a correlation between education level and suicide attempts, but this result should be interpreted with caution, primarily due to the small number of respondents in certain education categories, but also due to the small number of respondents with suicide attempts. Education level may reflect a broader social context, including socioeconomic status, health literacy, access to information, and the ability to seek help in a timely manner (Lorant et al., 2005; Batty et al., 2018). People with a lower level of education are more likely to have limited access to resources, recognize symptoms of mental health problems later, and seek professional help less often, which may further increase their vulnerability (Lorant et al., 2005; Batty et al., 2018). Future research should further examine the role of education in suicidal behavior in more detail, especially through larger and more heterogeneous samples that would allow for more reliable comparisons between individual educational groups.

The prevalence of suicide attempts in this sample was 4.2%, which is comparable to previous research (Kessler et al., 1999), and it was also found that suicidal thoughts were more pronounced in respondents who

attempted suicide, which is consistent with previous research (McHugh et al., 2019). These results can also be interpreted within the Three-Step Theory of Suicide (Klonsky, Pachkowski, et al., 2021). In the first phase, suicidal thoughts arise as a result of psychological pain and hopelessness. In this study, traumatic experiences in childhood, especially physical neglect and sexual abuse, may be the source of such long-term psychological pain. In the second phase, the sense of connection with others plays an important role. When this feeling is weakened, suicidal thoughts can become more intense. This is particularly important for individuals with a history of sexual abuse, as such experiences are often associated with distrust, withdrawal, and damaged relationships (Joiner, 2005; Van Orden et al., 2010; Ihme et al., 2022). The third stage refers to the transition from suicidal thoughts to suicidal behavior, and it depends not only on the presence of thoughts but also on the ability to commit suicide. The finding that sexual abuse is the only significant predictor of suicide attempts can also be viewed in this light, since repeated exposure to pain, fear, and impaired physical and emotional safety can reduce inhibitions towards self-harm and increase tolerance for suffering (Klonsky, Pachkowski, et al., 2021; Maniglio, 2011).

PRACTICAL IMPLICATIONS

These findings have practical implications and highlight the importance of early recognition of persons who were exposed to traumatic experiences in childhood, especially sexual abuse. This is important in psychiatric and psychological practice, but also in primary health care, the school system and all services that come into contact with children, adolescents and young adults. Routine screening for traumatic experiences and suicidal thoughts could help in earlier detection of risk groups and timely inclusion in support and treatment (Mann et al., 2005; Zalsman et al., 2016).

STUDY LIMITATIONS

The findings should be interpreted in light of several limitations. First, the proportion of explained variance for suicidal ideation was relatively low, suggesting that suicidal ideation is influenced by numerous additional psychological, psychiatric, interpersonal, and social factors that were not included in the present model.

Second, the logistic regression model for suicide attempts did not fully converge, probably due to the small number of participants who reported suicide attempts (n = 12). Therefore, the regression estimates should be interpreted with caution, and future studies with larger samples and a greater number of suicide attempts are needed to confirm these findings. Third, the distribution of SIDAS scores was highly skewed, with the median, 75th percentile, and 90th percentile equal to zero. Although non-parametric methods and weighted least squares regression were used to address this distribution, the restricted variability of SIDAS scores may have reduced statistical power and contributed to the relatively low explained variance of the model. Fourth, suicidal thoughts were assessed for the past month, whereas suicide attempts were measured across the lifetime. This temporal discrepancy limits the interpretation of the relationship between these variables. Fifth, data were collected using an online snowball sampling approach. The predominance of female participants and the potential underrepresentation of older individuals may limit the representativeness of the sample and the generalizability of the findings to the broader Croatian population. Finally, important psychiatric and clinical variables, such as depressive symptoms, PTSD, anxiety disorders, substance use, psychiatric history, current psychiatric treatment, and previous psychiatric hospitalization, were not assessed and may have contributed to the observed associations. The cross-sectional design of the study also prevents causal conclusions.

CONCLUSION

The findings of this study suggest that childhood trauma may play an important role in understanding suicidality in adulthood. In particular, physical neglect and sexual abuse were associated with higher levels of suicidal ideation, while sexual abuse was the only factor significantly associated with suicide attempts. These findings support previous evidence on the long-term impact of adverse childhood experiences on mental health and suicidal behavior. At the same time, they underline the importance of early recognition of traumatic experiences, especially sexual abuse, in order to identify individuals at increased risk and provide timely support and intervention. Further research should include a broader range of psychological and social factors and use methodologically robust designs to better clarify the complex relationship between childhood trauma and suicidality.

Ethical Considerations: Participation in the study was voluntary and anonymous. Before accessing the questionnaire, participants were informed about the aims of the study and provided informed consent electronically. No personally identifiable information was collected, and all responses were processed anonymously and confidentially. The study was conducted as an anonymous online survey among adults from the general population and was not carried out within a hospital or healthcare institution.

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References

Akbari, A., Panaghi, L., Habibi, M., & Sadeghi, M. A. (2017). Perceived family functioning and suicidal ideation among university students: Hopelessness as a moderator. *Iranian Journal of Psychiatry and Clinical Psychology*, *22*, 284–291. https://doi.org/10.18869/nirp.ijpcp.22.4.284

Alves, A. C., Leitão, M., Sani, A. I., & Moreira, D. (2024). Impact of sexual abuse on post-traumatic stress disorder in children and adolescents: A systematic review. *Social Sciences, 13*, Article 189. https://doi.org/10.3390/socsci13040189

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing. https://doi.org/10.1176/appi.books.9780890425596

Angelakis, I., Gillespie, E. L., & Panagioti, M. (2019). Childhood maltreatment and adult suicidality: A comprehensive systematic review with meta-analysis. *Psychological Medicine, 49*(7), 1057–1078. https://doi.org/10.1017/S0033291718003823

Angst, J., Hengartner, M. P., Rogers, J., Schnyder, U., Steinhausen, H. C., Ajdacic-Gross, V., & Rössler, W. (2014). Suicidality in the prospective Zurich study: Prevalence, risk factors and gender. *European Archives of Psychiatry and Clinical Neuroscience, 264*(7), 557–565. https://doi.org/10.1007/s00406-014-0500-1

Avdibegović, E., & Brkić, M. (2020). Child neglect: Causes and consequences. *Psychiatria Danubina, 32*(Suppl. 3), 337–342.

Bahk, Y. C., Jang, S. K., Choi, K. H., & Lee, S. H. (2017). The relationship between childhood trauma and suicidal ideation: Role of maltreatment and potential mediators. *Psychiatry Investigation, 14*(1), 37–43. https://doi.org/10.4306/pi.2017.14.1.37

Batty, G. D., Kivimäki, M., Bell, S., Gale, C. R., Shipley, M., Whitley, E., & Gunnell, D. (2018). Psychosocial characteristics as potential predictors of suicide in adults: An overview of the evidence with new results from prospective cohort studies. *Translational Psychiatry, 8*, Article 22. https://doi.org/10.1038/s41398-017-0072-8

Berardelli, I., Sarubbi, S., Rogante, E., Erbuto, D., Giuliani, C., Lamis, D. A., Innamorati, M., & Pompili, M. (2022). Association between childhood maltreatment and suicidal ideation: A path analysis study. *Journal of Clinical Medicine, 11*, Article 2179. https://doi.org/10.3390/jcm11082179

Brown, J., Cohen, P., Johnson, J. G., & Smailes, E. M. (1999). Childhood abuse and neglect: Specificity of effects on adolescent and young adult depression and suicidality. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*, 1490–1496. https://doi.org/10.1097/00004583-199912000-00009

Bryan, C. J., Rozek, D. C., Butner, J., & Rudd, M. D. (2019). Patterns of change in suicide ideation signal the recurrence of suicide attempts among high-risk psychiatric outpatients. *Behaviour Research and Therapy, 120*, Article 103392. https://doi.org/10.1016/j.brat.2019.04.001

Davidson, J. R., Hughes, D. C., George, L. K., & Blazer, D. G. (1996). The association of sexual assault and attempted suicide within the community. *Archives of General Psychiatry, 53*, 550–555. https://doi.org/10.1001/archpsyc.1996.01830060096013

de Codt, A., Monhonval, P., Bongaerts, X., Belkacemi, I., & Tecco, J. M. (2016). Bipolar disorder and early affective trauma. *Psychiatria Danubina, 28*(Suppl. 1), 4–8.

Delirrooyfard, A., Cheraghi, M., Sayyah, M., & Farahbakhsh, Z. (2022). Association between a history of child neglect, abuse and the suicidal patient: A cross-sectional study. *Journal of Emergency Practice and Trauma, 8*(1), 32–36. https://doi.org/10.34172/jept.2021.34

Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D. P., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: Findings from the Adverse Childhood Experiences Study. *JAMA, 286*(24), 3089–3096. https://doi.org/10.1001/jama.286.24.3089

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences Study. *American Journal of Preventive Medicine, 14*(4), 245–258. https://doi.org/10.1016/S0749-3797(98)00017-8

Finkelhor, D., Turner, H. A., Shattuck, A., & Hamby, S. L. (2013). Violence, crime, and abuse exposure in a national sample of children and youth: An update. *JAMA Pediatrics, 167*(7), 614–621. https://doi.org/10.1001/jamapediatrics.2013.42

Foley, D. L., Goldston, D. B., Costello, E. J., & Angold, A. (2006). Proximal psychiatric risk factors for suicidality in

youth: The Great Smoky Mountains Study. *Archives of General Psychiatry, 63*(9), 1017–1024. https://doi.org/10.1001/archpsyc.63.9.1017

Garnefski, N., & Arends, E. (1998). Sexual abuse and adolescent maladjustment: Differences between male and female victims. *Journal of Adolescence, 21*, 99–107. https://doi.org/10.1006/jado.1997.0132

Habibi, M., Bagherian Sararoudi, R., & Ghahremani, S. (2018). Mental health challenges in students: A futuristic view on depression and suicidal behaviors. *RBS, 16*(4), 573–599. https://doi.org/10.52547/rbs.16.4.573

Harmer, B., Lee, S., Rizvi, A., & Saadabadi, A. (2024). Suicidal ideation. *In StatPearls*. StatPearls Publishing.

Helvaci Celik, F. G., & Hocaoglu, C. (2022). Implications of childhood trauma on suicidal behavior and deliberate self-harm in patients with major depressive disorder. *Psychiatria Danubina, 34*(1), 57–63. https://doi.org/10.24869/psyd.2022.57

Ihme, H., Olié, E., Courtet, P., El-Hage, W., Zendjidjian, X., Mazzola-Pomietto, P., Consoloni, J.-L., Deruelle, C., & Belzeaux, R. (2022). Childhood trauma increases vulnerability to attempt suicide in adulthood through avoidant attachment. *Comprehensive Psychiatry, 117*, Article 152333. https://doi.org/10.1016/j.comppsych.2022.152333

Jobes, D. A., & Joiner, T. E. (2019). Reflections on suicidal ideation. *Crisis, 40*(4), 227–230. https://doi.org/10.1027/0227-5910/a000615

Joiner, T. E. (2005). *Why people die by suicide*. Harvard University Press.

Jovanović, T., Mamić, M., Lovrić, B., Jelinčić, I., Vidić, H., Mikšić, Š., Tomac Jovanović, J., Mamić, I., Zirdum, I., Karabatić, S., Saveljić, M., Samardžić, J., & Lovrić, R. (2025). Presence of suicidal thoughts and their association with loneliness among nurses in social, family, and romantic contexts. *Croatian Nursing Journal, 9*(1), 5–18. https://doi.org/10.24141/2/9/1/1

Kessler, R. C., Borges, G., & Walters, E. E. (1999). Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Archives of General Psychiatry, 56*(7), 617–626. https://doi.org/10.1001/archpsyc.56.7.617

King, R. A., Schwab-Stone, M., Flisher, A. J., Greenwald, S., Kramer, R. A., Goodman, S. H., Lahey, B. B., Shaffer, D., & Gould, M. S. (2001). Psychosocial and risk behavior correlates of youth suicide attempts and suicidal ideation. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 837–846. https://doi.org/10.1097/00004583-200107000-00019

Klonsky, E. D., Pachkowski, M. C., Shahnaz, A., & May, A. M. (2021). The three-step theory of suicide: Description, evidence, and some useful points of clarification. *Preventive Medicine, 152*(Pt 1), Article 106549. https://doi.org/10.1016/j.ypmed.2021.106549

Liu, R. T., Trout, Z. M., Hernandez, E. M., Cheek, S. M., & Gerlus, N. (2017). A behavioral and cognitive neuroscience perspective on impulsivity, suicide, and non-suicidal self-injury: Meta-analysis and recommendations for future research. *Neuroscience & Biobehavioral Reviews, 83*, 440–450. https://doi.org/10.1016/j.neubiorev.2017.09.019

Lorant, V., Kunst, A. E., Huisman, M., Bopp, M., & Mackenbach, J. (2005). Socio-economic inequalities in suicide: A European comparative study. *British Journal of Psychiatry, 187*, 49–54. https://doi.org/10.1192/bjp.187.1.49

Low, Y. T. A., Kwok, S. Y., Tam, H. L. C., Yeung, W. K. J., & Lo, H. M. H. (2017). The relationship between childhood physical abuse and suicidal ideation among Chinese university students: Possible moderators. *Children and Youth Services Review, 81*, 94–100. https://doi.org/10.1016/j.childyouth.2017.07.026

Macuka, I., Nekić, M., Ombla, J., Šimunić, A., & Vidaković, M. (2024). *Collection of psychological scales and questionnaires* (Vol. 12). University of Zadar. https://doi.org/10.15291/9789533314938

Mainali, P., Motiwala, F., Trivedi, C., Vadukapuram, R., Mansuri, Z., & Jain, S. (2023). Sexual abuse and its impact on suicidal ideation and attempts and psychiatric illness in children and adolescents with posttraumatic stress disorder. *Primary Care Companion for CNS Disorders, 25*(1), Article 22m03239. https://doi.org/10.4088/PCC.22m03239

Mann, J. J., Apter, A., Bertolote, J., Beautrais, A., Currier, D., Haas, A., Hegerl, U., Lonnqvist, J., Malone, K., Marusic, A., Mehlum, L., Patton, G. C., Phillips, M., Rutz, W., Rihmer, Z., Schmidtke, A., Shaffer, D., Silverman, M., Takahashi, Y., ... Hendin, H. (2005). Suicide prevention strategies: A systematic review. *JAMA, 294*(16), 2064–2074. https://doi.org/10.1001/jama.294.16.2064

Maniglio, R. (2011). The role of child sexual abuse in the etiology of suicide and non-suicidal self-injury. *Acta Psychiatrica Scandinavica, 124*, 30–41. https://doi.org/10.1111/j.1600-0447.2010.01612.x

McElvaney, R., & Lalor, K. (2014). Child abuse in Europe. In J. Conte (Ed.), *Child abuse and neglect worldwide* (Vol. 2). Praeger.

McHugh, C. M., Corderoy, A., Ryan, C. J., Hickie, I. B., & Large, M. M. (2019). Association between suicidal ideation and suicide: Meta-analyses of odds ratios, sensitivity, specificity and positive predictive value. *BJPsych Open, 5*(2), Article e18. https://doi.org/10.1192/bjo.2018.88

Misiak, B., Samochowiec, J., Gawęda, Ł., & Frydecka, D. (2023). Association of sociodemographic, proximal, and distal clinical factors with current suicidal ideation: Findings from a nonclinical sample of young adults. *European Psychiatry, 66*(1), Article e29. https://doi.org/10.1192/j.eurpsy.2023.14

Naura, A., Dalcin, B., Moraes, T., & Cavalcanti, M. (2006). Abuso sexual em crianças e adolescentes: A review of 100 years of literature. *Archives of Clinical Psychiatry (São Paulo), 33*, 204–213. https://doi.org/10.1590/S0101-60832006000400006

O'Connor, R. C., & Kirtley, O. J. (2018). The integrated motivational-volitional model of suicidal behaviour. *Philosophical Transactions of the Royal Society B: Biological Sciences, 373*(1754), Article 20170268. https://doi.org/10.1098/rstb.2017.0268

Pompili, M., Innamorati, M., Lamis, D. A., Erbuto, D., Venturini, P., Ricci, F., Serafini, G., Amore, M., & Girardi, P. (2014). The associations among childhood maltreatment, "male depression" and suicide risk in psychiatric patients. *Psychiatry Research, 220*(1–2), 571–578. https://doi.org/10.1016/j.psychres.2014.07.056

Poursharifi, H., Habibi, M., Zarani, F., Ashouri, A., Hefazi, M., Hajebi, A., & Bolhari, J. (2012). The role of depression, stress, happiness and social support in identifying suicidal thoughts in students. *Iranian Journal of Psychiatry and Clinical Psychology, 18*(2), 99–107.

Søndergaard, R., Buus, N., Berring, L. L., Andersen, C. B., Grundahl, M., Stjernegaard, K., & Hybholt, L. (2023). Living with suicidal thoughts: A scoping review. *Scandinavian Journal of Caring Sciences, 37*(1), 60–78. https://doi.org/10.1111/scs.13137

Tae, H., & Chae, J. H. (2021). Factors related to suicide attempts: The roles of childhood abuse and spirituality. *Frontiers in Psychiatry, 12*, Article 565358. https://doi.org/10.3389/fpsyt.2021.565358

Teicher, M. H., Andersen, S. L., Polcari, A., Anderson, C. M., Navalta, C. P., & Kim, D. M. (2003). The neurobiological consequences of early stress and childhood maltreatment. *Neuroscience & Biobehavioral Reviews, 27*(1–2), 33–44. https://doi.org/10.1016/S0149-7634(03)00007-1

Vanderminden, J., Hamby, S., David-Ferdon, C., Kacha-Ochana, A., Merrick, M., Simon, T. R., Finkelhor, D., & Turner, H. (2019). Rates of neglect in a national sample: Child and family characteristics and psychological impact. *Child Abuse & Neglect, 88*, 256–265. https://doi.org/10.1016/j.chiabu.2018.11.014

Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner, T. E. (2010). The interpersonal theory of suicide. *Psychological Review, 117*(2), 575–600. https://doi.org/10.1037/a0018697

van Spijker, B. A. J., Batterham, P. J., Calear, A. L., Farrer, L., Christensen, H., Reynolds, J., & Kerkhof, A. J. F. M. (2014). The Suicidal Ideation Attributes Scale (SIDAS): Community-based validation study of a new scale for the measurement of suicidal ideation. *Suicide and Life-Threatening Behavior, 44*(4), 408–419. https://doi.org/10.1111/sltb.12084

Wang, Y., Warmenhoven, H., Feng, Y., Wilson, A., Guo, D., & Chen, R. (2022). The relationship between childhood trauma and suicidal ideation, the mediating role of identification of all humanity, indifference and loneliness. *Journal of Affective Disorders, 299*, 658–665. https://doi.org/10.1016/j.jad.2021.12.052

Zalsman, G., Hawton, K., Wasserman, D., van Heeringen, K., Arensman, E., Sarchiapone, M., Carli, V., Höschl, C., Barzilay, R., Balazs, J., Purebl, G., Kahn, J. P., Sáiz, P. A., Lipsicas, C. B., Bobes, J., Cozman, D., Hegerl, U., & Zohar, J. (2016). Suicide prevention strategies revisited: 10-year systematic review. *Lancet Psychiatry, 3*(7), 646–659. https://doi.org/10.1016/S2215-0366(16)30030-X

Zatti, C., Rosa, V., Barros, A., Valdivia, L., Calegaro, V. C., Freitas, L. H., Ceresér, K. M. M., da Rocha, N. S., Bastos, A. G., & Schuch, F. B. (2017). Childhood trauma and suicide attempt: A meta-analysis of longitudinal studies from the last decade. *Psychiatry Research, 256*, 353–358. https://doi.org/10.1016/j.psychres.2017.06.082

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