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Highlights in Suicidal Ideation and Non-Suicidal Self-Injury in Costa Rica Children and Adolescents

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Abstract

Introduction: Suicidal ideation and deliberate self-harm prevalence has markedly increased among youngsters over the past two decades. The objective of the work was to determine the prevalence and factors associated with deliberate self-harm and suicidal ideation in students of Costa Rica. **Material and Methods:** Descriptive and cross-sectional study was conducted. Questionnaires were applied to 2284 students in Costa Rica to collect data on individual, family and social factors related to self-harm behavior and suicidal ideation. Data were analyzed by using SPSS program to estimate frequencies and multivariate models which were tested with different variables. All procedures performed were in accordance with ethical standards. **Results:** Around 18.2% of the young people presented suicidal ideation and 10.2% self-harm behavior. "Bullying" was the variable most strongly associated with suicidal thoughts and deliberate self-harm. **Conclusions:** Efforts should be made to promote positive school climates where the practice of bullying is not allowed.

Keywords

Suicidal Ideation, Non-Suicidal Self-Injury, Adolescents, Deliberate Self-Harm, Costa Rica

1. Introduction

Non-Suicidal Self-Injury (NSSI) prevalence has markedly increased over the past

two decades, especially among middle school, high school and university students (Muehlenkamp, Williams, Gutiérrez, & Claes, 2009). Although it can also begin in childhood (Yates, Carlson, & Egeland, 2008), its relation to suicide is very complex, and it requires attention and is no longer considered a rare behavior or that it occurs only in mental-ill individuals (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011; Rodham, & Hawton, 2009; Nixon, Cloutier, & Jansson, 2008). NSSI is defined as the intentional destruction of one's body tissue without suicidal intent, for purposes not socially sanctioned (Nock & Favazza, 2009). NSSI typically begins between the ages of 12 and 16 years old and nearly 10% - 15% of adolescents have self-injured at least one time (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011). There is evidence suggests that several individuals, family and social factors may increase the risk of NSSI in this age group. Among the individual factors are: puberty, depression, anxiety, low self-esteem, hopelessness, poor problem-solving, impulsivity, frustration, eating disorders, drug or alcohol abuse and sexual activity (Patton et al., 2007). Family factors include poor communication among the family members, the conflict between parents and the young person, neglect, excessive punishments or restrictions, and financial problems. Social factors include difficulties in peer relationships, bullying, availability of methods of self-harm, having friends who self-harm and media or internet influences. Favazza, DeRosear & Conterio (Favazza, DeRosear, & Conterio, 1989) found that 12% of college students and Whitlock et al. (Whitlock, Eckenrode, & Silverman, 2006) found that 17% of American college students had engaged in NSSI on at least one occasion. Approximately one of ten Australian young people have self-harmed at some point in their lives (Orygen, 2018). The most common methods of NSSI used by 70% - 90% of young people include skin cutting, scraping or carving. Other methods are banging, bruising/hitting, burning, biting, skin picking, taking an overdose, wound excoriation, suffocation and bone-breaking (Nijman et al., 1999). People who perform NSSI are often stigmatized as crazy, attention-seeking or manipulative. NSSI is frequently performed as a consequence or to alleviate intense and overwhelming negative emotions (anxiety, stress, sadness, frustration, shame emptiness, hopelessness, loneliness, and emotional abuse). Emotions such as relief, calm and satisfaction are reported to often follow engagement in NSSI. There is considerable heterogeneity among those who self-injure. NSSI rates are similar for females and males, although girls cut more often and boys hit or bang more frequently (Muehlenkamp, Williams, Gutiérrez, & Claes, 2009). Males may injure their hands more than females, while girls injure their wrists and thighs more than boys (Whitlock, Eckenrode, & Silverman, 2006).

On the other hand, suicide is one of the greatest tragedies of our modern society; it affects the family members, friends, neighbors and colleagues of the person who committed it. A suicidal person generally is in extreme emotional pain and is crying for help. People who experience suicidal thoughts are often so distressed that are unable to see other options available to them. They want to escape from the pain they are feeling or problems they have. They are suffering,

undecided, disconnected and confused. Personal and social factors come together to increase individual risk of suicide: history of self-harm or suicide attempts, mental health problems, age according to sex (men between 20 - 64 years; woman during middle age), drug or alcohol intake, low social contact, poverty, loss of employment or family member, history of abuse, impulsivity and bullying (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011; National Office for Suicide Prevention, Ireland, 2018).

This reality is also present in Costa Rica, where suicides and suicide attempts are already considered a public health problem that has epidemic levels. An investigation of the Adolescent Clinic of the National Children's Hospital carried out in 2014 indicated that 15% of the participants said they had suicidal ideas in the last 30 days and 8% that they had planned suicide attempts. Between 2010 and 2013, a total of 21 young people between 15 and 24 years old committed suicide and in 2014 there were 7 suicide attempts in young children between 10 and 14 years old (Varela, 2016). Although self-harm behavior has different objectives than suicide, this practice could easily end in suicide by accident. In Costa Rica, there is little and not updated information about the causes of suicidal ideas and NSSI in adolescents. For these reasons, this work pretends to explore the main individual, family and social factors that may be increasing the risk of NSSI or suicidal thoughts in children and adolescents of Costa Rica.

2. Materials and Methods

2.1. Type of Study and Selection of the Population

The study was descriptive and cross-sectional. The population was composed of 2284 elementary, middle and high school students from 64 educative centers (40 schools and 24 high schools) of Costa Rica. The sample size was calculated using the proportional estimation formula, with a confidence level of 95% and an error range of 3%. In each educative center, a total of approximately 36 children and adolescents were randomly selected.

2.2. Data Collection and Analysis Techniques

Elementary students (n = 1063, 46.5%) were interviewed by the researchers. Middle and high school students (n = 1221, 53.5%) were given a validated and self-administered questionnaire under the supervision of the investigators. In these questionnaires, data of individual, family and social nature were collected and categorized in three models described in the scientific literature as influencing the two dependent variables studied: self-harm behaviors and suicidal ideation (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011; Patton et al., 2007; National Office for Suicide Prevention, Ireland, 2018; Brown & Witt, 2019). Dichotomous questions (Yes/No) to know the environment of each young participant were made in these three environments.

Among the individual variables collected were: gender, eating disorders, physical activity, dissatisfaction with body image, drug use (cigarette, alcohol, marijuana, cement or cocaine) and belonging to an urban group (emos, rockers, ska-

ters, metalheads, among others). Eating disorders were evaluated using an index constructed to measure risk of eating disorder behaviors (Núñez, Holst, & Campos, 2019), those students at risk and without risk were considered.

Among the family variables, information was collected on: family structure, perception of security at home, socioeconomic index and parental support. The socioeconomic index was determined according to the methodology described by Madrigal (1997), for which an index was built, knowing the possession of some material goods at home. To establish the family typology, two types of family were defined: nuclear as that group consisting of the couple and one or more children and non-nuclear as any other type of family consisting of other members. To estimate whether the students had parental support or not, an index was constructed based on five variables of the questionnaire related to the topic.

Among the social variables, young people were asked: their belonging and feeling of happiness in the educational center, if they have experienced violent behavior of their classmates or teachers of physical, psychological nature or in social networks.

2.3. Statistical Analysis

Data was analyzed using descriptive statistics and the SPSS program for Windows (version 24.0) to estimate frequencies. To perform the bivariate analyzes, the probabilities that children and adolescents were involved in each of the two dependent variables: suicidal ideation and self-harm behaviors were calculated. The prevalence of each of these two risk behaviors was calculated according to sex, age, socioeconomic status, family, social and personal variables. A critical value of $p < 0.05$ was adopted. Finally, two separate multivariate summary models were tested to estimate the odds ratio of the two behaviors studied, adjusting for sociodemographic variables. In each of the summary models, the variables that were significant in the three corresponding family, social and personal models that were previously run individually were included, in order to fully estimate the odds ratio of the two behaviors that are analyzed in this study.

2.4. General and Ethical Procedures

The study protocol, the informed consent and assent form used were approved by the Scientific Ethic Committee of INCIENSA (Ordinary session # 27 of October 19, 2010; IC-2010-05). Parents and legal guardians gave the informed consent of the minor students. All procedures performed were in accordance with the Helsinki Declaration and its ethical standards.

3. Results

A total of 2284 students participated in this study. Near 47.3% were men and 52.7% women, with an average age of 13.35 ± 1.21 and an age range between 8 and 19 years. A 58.5% of young people belong to the middle socioeconomic class. Around 18.2% of the youngsters had suicidal ideation and 10.2% self-harm behaviors (Table 1).

Table 1. Characteristics of students with suicidal ideation and self-harm behavior according to family, social and personal (individual) risk variables, 2021.

Variables	Suicidal ideation					Self-harm behavior				
	No (n = 1868; 81.8%)		Yes (n = 416; 18.2%)		Value of *p* (*)	No (n = 2051; 89.8%)		Yes (n = 233; 10.2%)		Value of *p* (*)
	n	%	n	%		n	%	n	%	
A) Personal or individual:										
Gender:										
Male	914	48.9	167	40.1	0.036	969	47.2	112	48.1	0.857
Female	954	51.1	249	59.9	0.013	1082	52.8	121	51.9	0.851
Has eating disorders	754	40.4	203	48.8	0.032	790	38.5	167	71.7	<0.001
Two or more screen hours per day (TV, video games, among others)	544	29.1	133	32.0	0.512	630	30.7	47	20.2	0.130
Few physical activity (0 - 3 days/week)	734	39.3	120	28.8	0.028	760	37.0	94	40.3	0.533
Body image dissatisfaction	800	42.8	217	52.2	0.014	861	42.0	140	60.0	<0.001
Smokes cigarettes	99	5.3	74	17.8	0.008	108	5.3	65	27.9	<0.001
Drink alcoholic beverages	221	11.8	133	32.0	<0.001	277	13.5	77	33.0	<0.001
Smokes marijuana	77	4.1	55	13.2	0.056	81	3.9	51	21.9	0.001
Inhale cement or glue	18	1.0	27	6.5	0.373	21	1.0	24	10.3	0.189
Inhale cocaine	13	0.7	26	6.2	0.428	21	1.0	18	7.7	0.292
Belongs to a subculture:										
Metalheads	252	13.5	54	13.0	0.922	258	12.6	48	20.6	0.141
Hiphoppers	102	5.5	26	6.2	0.890	109	5.3	19	8.2	0.616
Rockers	306	16.4	66	15.9	0.921	314	15.3	58	24.9	0.072
Emos	152	8.1	124	29.8	<0.001	198	9.7	78	33.5	<0.001
Gothics	111	5.9	38	9.1	0.496	118	5.8	31	13.3	0.155
Phosphorescent	265	14.2	89	21.4	0.109	298	14.5	56	24.0	0.075
Skaters	455	24.4	13	3.1	0.076	457	22.2	10	4.3	0.175
Prepaid	71	3.8	23	5.5	0.724	75	3.7	19	8.2	0.403
B) Family										
Family structure:										
Nuclear	1104	59.1	184	44.2	<0.001	1164	56.7	124	53.2	0.455
Not-nuclear	764	40.8	232	55.8	<0.001	887	43.3	109	46.8	0.487
Feeling insecure at home	78	4.2	34	8.2	0.390	85	4.1	27	11.6	0.150
Has no parental support	44	2.4	36	8.7	0.208	55	2.7	25	10.7	0.135

Continued

C) Social										
Does not feel happy in the EC	188	10.1	62	14.9	0.300	219	10.7	31	13.3	0.665
Does not feel part of the EC	157	8.4	74	17.8	0.036	193	9.4	38	16.3	0.205
Victim of physical violence in EC	477	25.5	183	44.0	<0.001	548	26.7	112	48.1	<0.001
Victim of mocking by teachers	205	11.0	62	14.9	0.406	241	11.8	26	11.2	0.928
Victim of mocking by students	436	23.3	166	39.9	<0.001	498	24.3	104	44.6	<0.001
Feeling rejection in the EC	200	10.7	99	23.8	0.003	233	11.4	66	28.3	<0.001
Have suffered cyberbullying	225	12.0	103	24.8	0.003	272	13.3	56	24.0	0.042

*Significant if $p < 0.05$ (X^2 test), n: number of persons; EC: educative center.

1) Suicidal ideation:

Among young people with suicidal ideation, the proportion of women with this type of ideas is higher than the proportion of men (59.9% vs 40.1%; $p < 0.001$), 29.8% belong to the subculture group of "emos", 32.0% drink alcohol at an early age and 52.2% feel dissatisfied with their body image. When comparing the characteristics of the students who have had suicidal ideation vs those who have not, it was observed that the former have suffered significantly more physical attacks (44.0% vs 25.5%; $p < 0.001$), mocked by peers (39.9% vs 23.3%; $p < 0.001$), rejection in the educational center (23.8% vs 10.7%; $p = 0.003$) and harassment in social networks (24.8% vs 12.0%; $p = 0.003$). Near 59.1% of the students without suicidal ideation came from nuclear-type families (Table 1).

Family, social and personal variables statistically associated with suicidal ideation behavior are presented in Table 2 (in descending order according to the odds ratio), being the main aggressor factors associated with suicidal thoughts the following: not having parental support (OR = 3.89, 95% CI 2.20 - 6.87), being part of the "emo" group (OR = 1.93, 95% CI 1.37 - 2.73), being physically assaulted (OR = 1.90, 95% CI 1.46 - 2.48), being woman (OR = 1.88, 95% CI 1.47-2.41), consuming drugs (OR = 1.79, 95% CI 1.57 - 2.04), feeling rejected (OR = 1.71, 95% CI 1.25 - 2.34) and mocked by peers (OR = 1.60, 95% CI 1.23 - 2.10). Being part of the Skater subculture turned out to be a preventive factor (OR = 0.17, 95% CI 0.12 - 0.23), as well as having a nuclear family structure (OR = 0.66, 95% CI 0.52 - 0.84).

The goodness-of-fit of this multivariate model which summarizes social, family and personal variables statistically associated with suicidal ideation establishes that the model (set of independent variables) is significant (chi-square significance of the model in the omnibus test < 0.05); explains between 0.169 (Cox and Snell's R^2) and 0.269 (Negelkerke's R^2) the part of the variance of the dependent variable (suicidal ideation) and correctly classifies 83.3% of the cases (the model is able to correctly predict the 83.3% of cases with suicidal ideation). Likewise, the p value associated with the Hosmer-Lemeshow test is >0.05, which means that this model is well explained with the variables included. Therefore, it

Table 2. Summary multivariate model of social, family and personal variables statistically associated with suicidal ideation.

Variables	β	OR	CI 95%	Standard Error	*p*	Etiological fraction	Preventive fraction
						Cases exposed (%)	
Gender (1 = Female 0 = Male)	0.633	1.883	1.469 - 2.413	0.127	0.000	48.2	-
Feels part of the educative center (No = 1, Yes = 0)	0.536	1.710	1.248 - 2.343	0.161	0.001	41.5	-
Physically assaulted by peers (Yes = 1, No = 0)	0.643	1.903	1.460 - 2.480	0.135	0.000	47.5	-
Mocked by peers (Yes = 1, No = 0)	0.471	1.602	1.225 - 2.096	0.137	0.001	37.6	-
Nuclear family structure (1 = Nuclear, 0 = not-nuclear)	−0.417	0.659	0.518 - 0.839	0.123	0.001	34.1	-
Has parental support (No = 1, Yes = 0)	1.358	3.887	2.198 - 6.874	0.291	0.000	74.3	-
Use of drugs (continuous variable)	0.583	1.791	1.574 - 2.038	0.066	0.000	44.2	-
Is part of the subculture group called Emos (Yes = 1, No = 0)	0.658	1.932	1.368 - 2.727	0.176	0.000	48.2	-
Is part of the subculture group called Skaters (Yes = 1, No = 0)	−1.788	0.167	0.120 - 0.234	0.171	0.000	-	83.3

α = −2.255: represents the value of the intercept of the equation of the straight line when the independent variables take zero value.; CI: confidence interval; OR: Odds ratio.

is an acceptable model and comprehensively summarizes the explanation of the behavior examined.

2) Non-suicidal self-injury (NSSI):

Among the young people who have injured themselves, there are no significant differences by gender (51.9% vs 48.1%; $p = 0.562$). Students who produce this type of injuries have suffered more from: eating disorders (71.7% vs 38.5%; $p < 0.001$), dissatisfaction with their body images (60.0% vs 42.0%; $p < 0.001$), physical assaults (48.1% vs 26.7.1%; $p \leq 0.001$), mocked by peers (44.6% vs 24.3%; $p \leq 0.001$) and rejection in their educational centers (28.3% vs 11.4%; $p \leq 0.001$) than their peers who do not practice self-injuries. A 27.9% of the youngsters that practice NSSI smoke cigarettes, 33.0% drink alcohol at an early age and 33.5% belong to the subculture group of "emos" (Table 1).

Based on the family, social and personal variables statistically associated with deliberate self-harm behavior, Table 3 presents the multivariate model that comprehensively summarizes the explanation of this behavior. According to these results, the predictive factors associated with NSSI are: being part of the "emo" group (OR = 2.66, 95% CI 1.40 - 5.06), use of drugs (OR = 1.95, 95% CI 1.68 - 2.25), not having parental support (OR = 1.93, 95% CI 1.11 - 3.33), being

Table 3. Summary multivariate model of social, family and personal variables statistically associated with deliberate self-harm.

Variables	β	OR	CI 95%	Standard Error	*p*	Etiological fraction	Preventive fraction
						Cases exposed (%)	
Age in complete years (continuous variable)	−0.102	0.903	0.835 - 0.976	0.040	0.010	-	9.7
Feels part of the educative center (No = 1, Yes = 0)	0.500	1.650	1.132 - 2.404	0.192	0.009	39.4	-
Physically assaulted by peers (Yes = 1, No = 0)	0.552	1.738	1.250 - 2.415	0.168	0.001	42.5	-
Has parental support (No = 1, Yes = 0)	0.655	1.926	1.114 - 3.328	0.279	0.019	47.8	-
With risk of eating disorders (Yes = 1, No = 0)	0.461	1.585	1.141 - 2.201	0.168	0.006	36.9	-
Use of drugs (continuous variable)	0.666	1.946	1.683 - 2.250	0.074	0.000	48.6	-
Is part of the subculture group called Emos (Yes = 1, No = 0)	0.978	2.658	1.398 - 5.056	0.328	0.003	62.4	-
Is part of the subculture group called Skaters (Yes = 1, No = 0)	−1.629	0.196	0.135 - 0.284	0.190	0.000	-	80.4

α = −1.293: represents the value of the intercept of the equation of the straight line when the independent variables take zero value.

physically assaulted (OR = 1.74, 95% CI 1.25 - 2.42), feeling rejected (OR = 1.65, 95% CI 1.13 - 2.40) and having an eating disorder (OR = 1.59, 95% CI 1.14 - 2.20). Again, being part of the Skater subculture turned out to be a preventive factor (OR = 0.20, 95% CI 0.14 - 0.28).

The goodness-of-fit of this multivariate model which summarizes social, family and personal variables statistically associated with deliberate self-harm: the model (set of independent variables) is significant (chi-square significance of the model in the omnibus test < 0.05); explains between 0.149 (Cox and Snell's R^2) and 0.256 (Negelkerke's R^2) the part of the variance of the dependent variable (deliberate self-harm) and is capable of correctly predicting 90.1% of cases with deliberate self-harm.

4. Discussion

According to World Health Organization data, suicide is the fourth leading cause of death for people between 15 and 19 years old (World Health Organization, 2021). International systematic reviews have estimated the prevalence of suicidal thoughts among adolescents at 30% (Nock et al., 2008). The Adolescent Clinic of the National Children's Hospital reported 15% of suicidal ideation among young people (Varela, 2016) and the VIII Report on the State of the Rights of Children and Adolescents presented in 2015, indicates suicide as one of

the main causes of adolescent mortality between 16 and 17 years old (UNICEF & UCR, 2015). In this research, the prevalence of suicidal ideation among Costa Rican youngsters is even higher (18.2%) than that reported in 2014, which is alarming from a public health point of view. A study carried out in Canada in adolescents aged 11 to 20 years reported a prevalence of 10.8% of students with suicidal ideation, very similar numbers to those found in the United States (Sampasa-Kanyinga, Dupuis, & Ray, 2015). As in our study, several investigations around the world confirm that being a girl is positively associated with suicidal thoughts (Sampasa-Kanyinga, Dupuis, & Ray, 2015; Biswas et al., 2020). These differences between genders, as well as the specificities in the ways of thinking and feeling of men and women, have not yet been explained in the field of mental health (Barroso, 2019).

On the other hand, international reports talk about a prevalence of 18% of NSSI among adolescents (Muehlenkamp, Claes, Havertape, & Plener, 2012). According to our study, in Costa Rica that prevalence is 10.2%. British statistics reveal that approximately 7% - 9% of young people injure themselves, this statistic being one of the highest percentages found in Europe (Bird & Faulkner, 2000). Some of the reasons described for self-harming include: to manage emotional upset, to reduce tension, to provide a feeling of physical pain to distract from emotional pain, a form to escape, an attempt to punish themselves, to regain control of feelings or problems, among others.

Understanding why people self-injure is a priority for demystifying the behavior and ensuring a better diagnosis and treatment, it is very important to understand the social context of NSSI. Individuals who self-injure exhibit a variety of social deficits such as poor social problem-solving skills, isolation and stressful social experiences (Guerry, & Prinstein, 2010). NSSI represents a critical public health issue that is very common among adolescents and young people (Rodham & Hawton, 2009) and can often persist into adulthood (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011). The epidemiology of NSSI indicates that adolescents and young adults self-injure more frequently than other age groups. There is only one longitudinal study examining the natural course of NSSI (Glenn & Klonsky, 2011). There is evidence from a few longitudinal studies that effective treatment can reduce the occurrence of NSSI and that NSSI can sometimes stop without treatment. NSSI and suicide differ in intention, medical severity and frequency. There are clear differences between NSSI and suicidal behavior, but it is a fact that NSSI and suicide often co-occur (Nock et al., 2006). Suicide risk is an important target of NSSI assessment. Self-harm can result in accidental death or suicide. Researchers are now considering the role of NSSI as a risk factor for suicide (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011). Self-harm is often repeated after it happens for the first time. To understand the origin of NSSI it is important to assess environmental, cognitive, affective and biological variables (insomnia, illness, premenstrual syndrome, use of drugs, eating disorders) around each individual. Young people with NSSI usually ex-

press self-derogation, self-criticism and low self-esteem (Glassman et al., 2007). Some researchers suggest that the combination of emotion dysregulation and self-derogation might present the highest risk for the development of NSSI (Klonsky & Muehlenkamp, 2007). Several biological factors have been suggested to play important roles in NSSI such as: endorphins, serotonin and dopamine. Endorphins are released in response to physical injury, acting as natural painkillers and giving pleasant feelings to the individuals. Endorphins released to explain the improvement in the moods of the youngsters after self-harm. Reduced serotonin levels can play a role also in NSSI and have been associated with depression, irritability, self-harm and suicide. Reduced dopamine has also been observed associated with self-injurious behaviors (Sher & Stanley, 2009). One of the protective variables found in our study related to NSSI was belonging to the Skaters subculture group. This group is characterized by the intense physical activity they perform riding and playing with their skates. Exercise is associated with the release of endorphins and pleasant feelings in youngsters. This could be used as a strategy by teachers and family members to prevent NSSI, as suggested by Klonsky & Glenn (2008) as it improves mood and depression symptoms in the individuals (Dunn et al., 2005). Psychotherapies that emphasize emotion regulation and problem-solving techniques appear to be also effective in treating self-injury (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011; Williams, Barnhofer, Crane, & Beck, 2005). Family therapy is often useful in the treatment of NSSI (Hollander, 2008). In this study the nuclear family structure appeared to be a protective factor and not having parental support was an important aggressive factor against NSSI and suicide thoughts. A non-intact family structure and weak family functioning were also significant predictors of suicidal ideation among Lithuanian adolescents in a cross-sectional survey performed in 2014 (Zaborskis, Sirvyte, & Zemaitiene, 2016). These aspects seem to negatively affect the mental health of young people (Greydanus & Shek, 2009).

In our study, two of the variables most strongly associated with suicidal thoughts and NSSI were being part of the "emo" subculture group and suffering "bullying". Several studies confirm that certain adolescent subgroups are at even greater risk of self-harm such as gay, bisexual, lesbian, Goth or Emo (Definis-Gojanovic, Gugic, & Sutlovic, 2009; Zdanow & Wright, 2013). Adolescents who identify with the "emo" youth culture are reported in the literature to engage in a range of self-harming and negative behaviors (anxiety, depression, low self-esteem) and are considered as self-destructive people. The "emo" subculture gathers youngsters between 12 and 20 years old, a critical and highly vulnerable period to engage in dangerous behaviors such as suicide and self-harm (Anestis & Selby, 2015; Trnka, Kuska, Balcar, & Tavel, 2017). Information concerning NSSI is shared by "emo" adolescents and young people through internet and it is present in movies and music (Lewis, Heath, St Denis, & Noble, 2011), suggesting that NSSI and self-harming are spread as a social contagion (Young et al., 2014). It is important to emphasize the role that the family plays in prevention and in-

tervention in case of depression or anxiety in adolescents, particularly the so-called "emos", which was also found to be a protective factor in our research. Parental support is key in the accompaniment that young people perceive during their passage through adolescence, a difficult stage of life marked by physical, biological, psychological and social changes.

On the other hand, bullying, in all its expressions (physical, psychological or verbal aggression and cyberbullying), is an extremely complex social phenomenon and affects the emotional and physical stability of children and adolescents. It is a serious and widespread problem that threatens the human rights of those who suffer it (Vargas & Durán, 2017). Unfortunately, bullying is present in the educational environments of our country and can affect people so much as to generate in their anxiety, helplessness, low self-esteem, sadness and discouragement that can lead them to take action against their life and integrity (Vargas & Durán, 2017). Studies have shown that adolescents who experienced bullying have an increased prevalence of self-harm, suicidal ideation and attempts (Ford, King, Priest, & Kavanagh, 2017). Victims of cyberbullying are at a greater risk than nonvictims of both self-harm and suicidal behaviors. To a lesser extent, perpetrators of cyberbullying are at risk of suicidal behaviors and suicidal ideation when compared with no perpetrators (John et al., 2018).

The participation of the entire educational community, families and professionals from different disciplines is necessary to propose strategies to eradicate the practice of bullying from the educational system (Sampasa-Kanyinga, Dupuis, & Ray, 2015). In 2019, an experience was carried out in our country with high-risk adolescents at the Liceo de San José educational center concerning this issue. One of the most important recommendations of this study was the presence in each school and high school center of a professional in psychology to support young people and thus not overload this work on counselors who often do not have the proper training to address this problem (G. Solano-Moncada, personal communication, September 2021). Psychology can stop or prevent an adolescent's desire to commit suicide, especially if George Kelly's Personal Construct Theory (PCT) is used (Kelly, 2017). This therapy focuses on what is happening in the present and the solutions rather than the problems. The patient works together with the therapist and is the one who solves the problem and proposes solutions to improve his life. PCT is short compared to traditional long-term therapy, which makes it ideal for cases of suicidal thoughts, depression, anxiety and low self-esteem in youngsters (Walker & Winter, 2007). Likewise, it is recommended to instruct students so they can be able to assume their emotions in a healthy way and solve them properly. The support of parents and their classmates is also essential for students to overcome these conflicts and feel accompanied in the process. In addition, the incorporation of a psychology professional in the interdisciplinary teams of schools and high schools is essential for the prevention of risk behaviors of self-harm and suicide. In the present study, we have identified focal areas of alert that may be useful in assessing students and families and identifying markers for the detection and follow-up of

suicide attempts in children and young people. This is a serious problem that poses great challenges to the current educational system and the government in terms of legislation to order to prevent school abuse and thus minimize the damage that this practice causes to young people. Special attention should be paid to female-specific initiatives, as it has been clearly demonstrated that they are the most affected by suicidal thoughts. In the prevention of self-harm and suicide in children and adolescents, policy-makers and health providers should consider evidence from population-based studies with mixed-age samples, and studies on conditions associated with self-harm and/or suicidality, such as this study. Also, efforts should be made to promote positive school climates, where young people feel connected to their educational centers and where bullying is not allowed**.** Further research should include long-term follow-up, and investigate possible adverse effects. In addition, policy-makers and schools should prioritize the inclusion of cyberbullying involvement in programs to prevent traditional bullying. The type of cyberbullying involvement, frequency, and gender should be assessed in future studies.

5. Strengths of the Study

This is, to our knowledge, one of the first studies to explore the main individual, familiar and social factors that may be increasing the risk of NSSI or suicidal thoughts in children and adolescents of Costa Rica. Further, the sample of this study is large and representative of the whole country and validated instruments were used.

6. Limitations of the Study

The design of this study is cross-sectional, so it only allows making inferences about associations but not about causality. Data was based on self-recordings, which may be influenced by social convenience and memory bias.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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