

Does Involvement in Peer Bullying Invite Self-Injury?

The Association Between Peer Bullying and Self-Injury in a Clinical Sample

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Abstract: Previous studies have linked peer bullying to nonsuicidal self-injury (NSSI). However, the evidence is largely limited to population-based groups. This study examined whether there is a relationship between NSSI and being a victim of peer bullying among adolescents in a clinical sample and how this may be influenced by types of bullying. The sample consisted of 96 outpatients with NSSI and 107 healthy adolescents. The Inventory of Statements About Self-Injury, Peer Bullying Scale, and Rosenberg Self-Esteem Scale were applied. Whereas the scores of each bullying type of adolescents with NSSI were significantly higher, their self-esteem scores were significantly lower. Each victimization score of bullying had a negative correlation with NSSI-onset age and self-esteem scores and a positive correlation with self-injury scores. This study demonstrated that being a victim of any type of bullying is strongly associated with self-injury. It would be advisable to screen adolescents with self-injury for exposure to bullying, and vice versa.

Key Words: Nonsuicidal self-injury (NSSI), peer bullying, psychopathology, self-esteem, adolescents

(*J Nerv Ment Dis* 2022;00: 00–00)

Nonsuicidal self-injury (NSSI) and peer bullying are common, multifaceted phenomena and urgent public health problems among adolescents. NSSI refers to intentional and socially unacceptable harm to oneself, regardless of suicidal intent, and the term covers a broad spectrum of behaviors such as self-cutting, -burning, -biting, -hitting, -poisoning, and skin damage by other methods (American Psychiatric Association, 2013; Nock, 2010; Stanford et al., 2017). The prevalence of NSSI is remarkably variable and ranges between 13% and 42% in nonclinical groups and 40% and 80% in clinical populations of adolescents (Claes et al., 2015; Stanford et al., 2017; Swannell et al., 2014).

Although our understanding of self-injury has improved recently, there is still a great deal unknown about its risk factors and causal mechanism. Numerous previous studies have revealed that NSSI could be caused by depression and anxiety, impulsivity, attention and conduct difficulties, low self-esteem, stressors, or upsetting events (Arseneault et al., 2006; Barker et al., 2008; Karanikola et al., 2018; Stanford and Jones, 2009).

Peer bullying is defined as intentional and repeated hurtful actions against a peer by abuse of power or strength and may happen in many ways, including verbal, physical, and sexual, bullying exclusion; spreading malicious rumors; or attacks against property (Olweus, 2013). Numerous studies have reported that peer bullying often leads to negative psychiatric consequences such as depression and anxiety, a greater risk of suicide, alcohol and substance use, self-injury, and poor overall school performance (Arseneault et al., 2006; Claes et al., 2015; Ford et al., 2017; Karanikola et al., 2018; Kelly et al., 2015). In this regard, mounting evidence supports the view that peer bullying is a strong predictor of NSSI (Claes et al., 2015; Esposito et al., 2019; Heerde and Hemphill, 2019; Karanikola et al., 2018; Serafini et al., 2021; van Geel et al., 2015). Several recent studies have shown that victims of peer bullying are at increased risk for self-injury compared with children who are not exposed to peer bullying (Brunstein Klomek et al., 2016; Esposito et al., 2019; Ford et al., 2017; Heerde and Hemphill, 2019; Moore et al., 2014; Wolke et al., 2013). Some studies have revealed a dose-response relationship between NSSI and peer bullying, with adolescents who report being chronically bullied most at amplified risk of NSSI (Claes et al., 2015; Ford et al., 2017; Karanikola et al., 2018; Moore et al., 2014; Wolke et al., 2013). Accordingly, children who are chronically victimized are most vulnerable to harmful consequences. Again, compared with physical victimization, relational bullying has been associated with worse mental health outcomes (Barker et al., 2008; Ford et al., 2017; van Geel et al., 2015; Yen et al., 2015). However, little is known about which types of peer bullying are more strongly related to NSSI behaviors than others. Furthermore, the evidence is largely from population-based groups, and whether there is such a special relationship has not been explored adequately in clinical populations. Thus, this study aimed to assess which types of peer bullying have the highest risk for NSSI behaviors among adolescents who reported self-injury in a clinical sample. We further examined the relationship between peer bullying and types of psychopathology and self-esteem because emerging evidence suggests that poor self-concept and psychiatric disorders influence the link between NSSI and peer bullying (Barker et al., 2008; Claes et al., 2015; Nock, 2010; van Geel et al., 2015).

METHODS

Participants

This study was conducted at the Child and Adolescent Psychiatry Outpatient Clinic of Sivas Cumhuriyet University Hospital. All participants were included in the study during December 2019 to January 2022. Initially, 107 adolescents who had engaged in self-injury admitted to the Child and Adolescent Psychiatry Outpatient Clinic were enrolled in the study. From the initial sample, 11 were excluded because 7 adolescents had a firm diagnosis of intellectual disability and 4 adolescents refused to participate in the study. In total, 96 adolescents between 12 and 16 years of age who had engaged in at least one incidence of NSSI in the past 6 months regardless of previous NSSI (mean age, 14.2 ± 1.2 years; 29 male and 67 female adolescents; 69.8% female adolescents) participated

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ISSN: 0022-3018/22/0000-0000

DOI: 10.1097/NMD.0000000000001574

in the study. None of the adolescents had any chronic medical conditions, acute mania, psychosis, autism spectrum disorders, or intellectual disability. The control group included 107 adolescents who were randomly selected (mean age, 14.3 ± 1.1 years; 36 male and 71 female adolescents; 66.4% female adolescents) matched for age and sex to the NSSI group and without any present or past psychopathology or any chronic medical conditions. After a full verbal explanation of the study, all individuals who were approached agreed to participate in the study, and their parents/legal guardians gave written informed consent. This study was approved by the local ethics committee and conducted following Good Clinical Practice procedures and the current revision of the Declaration of Helsinki.

Each participant and his/her parents were assessed by a semi-structured interview (Turkish version of the Schedule for Affective Disorders and Schizophrenia for School-Aged Children–Present and Lifetime Version [K-SADS-PL-DSM-5-T]) to ascertain the presence of any current and past symptoms of mood, anxiety, psychotic, and disruptive behavior disorders (Kaufman et al., 2016; Ünal et al., 2019). K-SADS-PL-DSM-5-T is extensively used in child and adolescent psychiatry and was created to establish the early detection of psychiatric disorders corresponding to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* categories in children aged 6 to 18.

Data Collection Tools

Inventory of Statements about Self-Injury

The Inventory of Statements about Self-Injury (ISAS) is a self-report measure that evaluates the frequency and functions of NSSI and consists of two sections (Klonsky and Glenn, 2009). The first section assesses the lifetime prevalence of 12 types of NSSI behaviors. The

second section investigates the rationale of NSSI behaviors with a total of 39 questions. Participants rate each item on a 3-point scale regarding its relevance to them (0, not relevant; 1, somewhat relevant; 2, very relevant). The inventory was adapted to Turkish by Bildik et al. (2013).

Peer Bullying Scale–Adolescent Form

The Peer Bullying Scale–Adolescent Form (PBS-AF) is used to determine the prevalence of exposure to and involvement in peer bullying. The PBS-AF includes two dimensions, bullying and victimization, and a total of 53 items. Both dimensions consist of six bullying categories: physical (15 items), verbal (7 items), isolation/exclusion (6 items), spreading rumors (5 items), attacks against property (10 items), and sexual bullying (10 items) (Ayas and Pişkin, 2015). Participants are asked to respond on a 5-point scale based on how often the particular type of bullying happened to the respondent (5, “almost every day”; 4, “at least once a week”; 3, “once a month”; 2, “once a term”; 1, or “never”) for both dimensions. In this study, only the victimization dimension was used. The lowest and highest scores of each dimension are 53 and 265, respectively. The higher the score, the higher the level of exposure to peer bullying. In this study, the participants were asked to report their exposure to peer bullying only within the last 6 months.

Rosenberg Self-Esteem Scale

We used the first 10 items of the scale to evaluate general self-worth in this study. Each item is rated on a 4-point Likert-type scale as “highly true,” “true,” “false,” and “highly false.” Self-esteem scores vary in the range of 0 to 30. A high score signifies high self-esteem (Çuhadaroglu, 1986; Rosenberg, 1965).

TABLE 1. Sociodemographic Characteristics and Clinical Features of the Sample

	NSSI Group (N = 96)	Control Group (N = 107)	<i>p</i> ^a
Age, y	14.29 ± 1.23	14.39 ± 1.10	0.591
NSSI-onset age, y	13.12 ± 1.40	–	
Sex			
Male	29 (30.2)	36 (33.6)	0.600
Female	67 (69.8)	71 (66.4)	
Family type			
Nuclear	49 (51)	77 (72)	0.002
Single parent	32 (33.3)	14 (13.1)	
Extended	15 (15.6)	16 (15)	
Place of residence			
Urban	66 (68.8)	73 (68.2)	0.936
Rural	30 (31.3)	34 (31.8)	
Family income level ^b			
The minimum wage/less than minimum wage	44 (45.8)	46 (43.0)	0.684
Above the minimum wage	52 (54.2)	61 (57.0)	
Level of education of the mother			
Primary education and lower	44 (45.8)	27 (25.2)	0.002
Upper primary education	52 (54.2)	80 (74.8)	
Level of education of the father			
Primary education and lower	40 (41.7)	26 (24.3)	0.008
Upper primary education	56 (58.3)	81 (75.7)	

Data are given as mean ± SD or *n* (%).

^a The chi-square test and Fisher's exact test (as appropriate) for categorical variables and the independent *t*-test for continuous variables were used to test group differences. Bold font indicates statistical significance: *p* < 0.05.

^b The level of income was determined by the minimum wage value on the date of the study.

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TABLE 2. PBS Mean Victimization Scores and Self-Esteem Scores of the Two Groups

	NSSI Group (N = 96)	Control Group (N = 107)	p ^a
PBS–Physical Bullying–Victimization scores	18.37 ± 3.45	16.07 ± 1.42	<0.001
PBS–Verbal Bullying–Victimization scores	11.92 ± 4.64	8.13 ± 1.22	<0.001
PBS–Isolation/Exclusion–Victimization scores	10.76 ± 3.87	7.07 ± 1.21	<0.001
PBS–Spreading Rumors–Victimization scores	8.49 ± 3.63	5.79 ± 1.24	<0.001
PBS–Attacks Against Property–Victimization scores	15.01 ± 5.09	11.35 ± 1.55	<0.001
PBS–Sexual Bullying–Victimization scores	12.89 ± 1.65	11.06 ± 1.19	<0.001
RSES SCORES	18.92 ± 3.14	25.14 ± 2.27	<0.001

Data are given as mean ± SD.

RSES indicates Rosenberg Self-Esteem Scale.

^a The independent *t*-test was used to test group differences. Bold font indicates statistical significance: *p* < 0.05.

Statistical Analysis

The analyses were performed using IBM SPSS 22.0 (SPSS Inc., Chicago, IL). All data were expressed as mean ± SD, number (*n*), median (min–max), or percentage (%) as appropriate. Comparisons of the groups were performed using the chi-square test and Fisher's exact test for categorical variables and independent *t*-test for continuous variables. Correlations were evaluated using Pearson correlation analysis. *p* < 0.05 was considered statistically significant.

RESULTS

Descriptive and Clinical Characteristics of the Sample

The demographic and clinical characteristics of the participants are shown in Table 1. The NSSI and control groups did not differ significantly in terms of age, sex, family income level, or place of residence (all *p* values > 0.05). On the other hand, compared with the adolescents in the control group, the adolescents in the NSSI group had a significantly higher rate of having a single-parent family (*p* = 0.002), and their parents' education levels were markedly lower (*p* = 0.002 and *p* = 0.008 for the mother and the father, respectively) (Table 1).

Assessment of Peer Bullying

Table 2 shows the mean PBS scores of the two groups. In the victimization dimension, the adolescents in the NSSI group had significantly higher mean scores in each of the six bullying categories of

PBS (*i.e.*, physical, verbal, isolation/exclusion, spreading rumors, attacks against property, and sexual bullying) compared with the controls (all *p* values < 0.001). The two groups also differed significantly in terms of their self-esteem levels (*p* < 0.001), and the mean Rosenberg Self-Esteem Scale scores of the participants were 18.92 and 25.14 in the NSSI and control groups, respectively (Table 2).

Relationship Between Psychopathology and Being a Victim of Bullying, Self-Injury, and Self-Esteem in the NSSI Group

Concerning the types and profiles of the psychopathologies of those in the NSSI group, all participants had current psychopathologies. Based on a previous report (Stanford and Jones, 2009), we categorized the psychological profiles among the adolescents in the NSSI group into two groups according to their dominant psychopathology: 1) the “internalizing disorders” group (those with symptoms of depression, anxiety, and trauma and stress-related disorders, and lower self-regard), and 2) the “externalizing disorders” group (those with symptoms of attention deficit hyperactivity disorder, disruptive behavior disorders, impulsivity). Accordingly, whereas 80.2% (*n* = 77) of the cases in the NSSI group had internalizing disorders, 19.8% (*n* = 19) had externalizing disorders.

Table 3 represents group differences in the mean scores of peer bullying, self-injury, and self-esteem according to the aforementioned psychopathological profiles. In the analysis of the relationship between

TABLE 3. Group Differences in the Mean Victimization Scores of Peer Bullying, Self-Injury, and Self-Esteem According to Psychopathology Profiles

	Internalizing Disorders (n = 77)	Externalizing Disorders (n = 19)	p ^a
PBS–Physical Bullying–Victimization scores	17.44 ± 2.76	22.16 ± 3.45	<0.001
PBS–Verbal Bullying–Victimization scores	11.17 ± 4.52	14.95 ± 3.92	<0.001
PBS–Isolation/Exclusion–Victimization scores	11.75 ± 3.76	9.16 ± 3.43	0.001
PBS–Spreading Rumors–Victimization scores	8.86 ± 3.47	6.79 ± 1.27	0.025
PBS–Attacks Against Property–Victimization scores	13.87 ± 4.47	19.63 ± 4.86	<0.001
PBS–Sexual Bullying–Victimization scores	12.52 ± 1.70	13.68 ± 1.15	0.007
Inventory of Statements about Self-Injury scores	36.68 ± 7.48	31.34 ± 11.16	0.016
Rosenberg Self-Esteem Scale scores	17.89 ± 2.92	21.06 ± 2.44	<0.001

Data are given as mean ± SD.

^a Independent *t*-test. Bold font indicates statistical significance: *p* < 0.05.

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TABLE 4. Mean Victimization Scores of Peer Bullying Types, Self-Injury, and Self-Esteem by Sex of Those in the NSSI Group

	Males (n = 29)	Females (n = 67)	p ^a
PBS–Physical Bullying–Victimization scores	20.45 ± 4.13	17.45 ± 2.83	<0.001
PBS–Verbal Bullying–Victimization scores	12.09 ± 5.12	11.52 ± 4.49	0.099
PBS–Isolation/Exclusion–Victimization scores	10.10 ± 4.12	11.42 ± 3.71	0.038
PBS–Spreading Rumors–Victimization scores	6.93 ± 2.26	9.16 ± 3.91	0.009
PBS–Attacks Against Property–Victimization scores	16.10 ± 5.50	13.97 ± 4.62	0.001
PBS–Sexual Bullying–Victimization scores	12.72 ± 1.75	12.96 ± 1.31	0.441
Inventory of Statements about Self-Injury scores	30.60 ± 8.89	34.13 ± 10.87	0.153
Rosenberg Self-Esteem Scale scores	20.14 ± 2.40	18.40 ± 3.29	0.008

Data are given as mean ± SD.

^a Independent t-test. Bold font indicates statistical significance: *p* < 0.05.

psychopathology and being a victim of peer bullying, there was a significant difference between the two groups. Accordingly, the participants with internalizing disorders had significantly higher isolation/exclusion and spreading rumors scores than those with externalizing disorders (*p* = 0.001 and *p* = 0.025, respectively). On the other hand, the adolescents with externalizing disorders had significantly higher mean victimization scores in the categories of physical bullying, verbal bullying, attacks against property, and sexual bullying compared with the adolescents with internalizing disorders (*p* < 0.001, *p* < 0.001, *p* < 0.001, and *p* = 0.007, respectively). In addition, the adolescents with internalizing disorders had significantly higher ISAS scores than the adolescents with externalizing disorders (*p* = 0.016). Again, comparing the psychopathology profiles in terms of self-esteem, statistically significant differences were seen. The self-esteem levels of those with internalizing disorders were significantly lower than those with externalizing disorders (*p* < 0.001) (Table 3).

Relationship Between Sex and Peer Bullying Types, Self-Injury, and Self-Esteem in the NSSI Group

The mean victimization scores of the participants in the NSSI group in terms of peer bullying types, self-injury, and self-esteem by sex are presented in Table 4. Regarding the relationship between sex and the victimization dimension of peer bullying, the mean victimization-related scores of physical bullying and attacks against property in the male participants were significantly higher compared with those of the female participants (*p* < 0.001, *p* = 0.001, respectively). On the contrary, the mean victimization-related scores of isolation/exclusion and spreading rumors were significantly higher than those of the male participants (*p* = 0.038, *p* = 0.009, respectively). The mean victimization-related scores of verbal

and sexual bullying, however, were similar between the male and female participants (both *p* values > 0.05). Furthermore, although there was no significant difference between sexes in terms of their self-injury mean scores (*p* = 0.153), the mean self-esteem score of the female participants was significantly lower than that of the male participants (*p* = 0.008) (Table 4).

Correlation Analysis Between Peer Bullying and the Onset Age of NSSI and Scores of Self-Injury and Self-Esteem

According to the results of the correlation analysis, there was a significant negative correlation between the onset age of NSSI and victimization scores regarding all forms of peer bullying (all *p* values < 0.05). Self-injury scores, on the other hand, were significantly positively correlated with all kinds of peer bullying victimization scores (all *p* values < 0.05). In terms of self-esteem, the correlation analysis revealed a significant negative correlation between self-esteem scores and victimization scores regarding all forms of peer bullying (all *p* values < 0.05). Detailed information on the correlation coefficients can be found in Table 5.

DISCUSSION

In this study, we examined the relationship between being a victim of bullying and self-injury behaviors and investigated psychopathology and self-esteem in those with NSSI behaviors. The results of this study revealed that being a victim of peer bullying is strongly related to self-injury, regardless of the type of bullying, and those with self-injury behaviors had psychopathologies and lower self-esteem. We observed that greater peer bullying victimization scores were associated with increased

TABLE 5. Correlations Between Mean Victimization Scores of Peer Bullying and NSSI-Onset Age, Scores of Self-Injury and Self-Esteem

Parameters	NSSI-Onset Age		ISAS		RSES	
	r ^a	p ^a	r ^a	p ^a	r ^a	p ^a
Physical Bullying–Victimization scores	–0.572	<0.001	0.398	<0.001	–0.169	0.016
Verbal Bullying–Victimization scores	–0.570	<0.001	0.598	<0.001	–0.386	<0.001
Isolation/Exclusion–Victimization scores	–0.459	<0.001	0.568	<0.001	–0.435	<0.001
Spreading Rumors–Victimization scores	–0.255	0.012	0.525	<0.001	–0.515	<0.001
Attacks Against Property–Victimization scores	–0.501	<0.001	0.397	0.001	–0.166	0.018
Sexual Bullying–Victimization scores	–0.235	0.021	0.404	<0.001	–0.492	<0.001

RSES indicates Rosenberg Self-Esteem Scale.

^a Pearson correlation analysis. Bold font indicates statistical significance: *p* < 0.05.

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self-injury frequency and severity. In line with this study, previous studies have also stressed that peer bullying is a significant predictor of NSSI (Barker et al., 2008; Claes et al., 2015; Esposito et al., 2019; Heerde and Hemphill, 2019; Karanikola et al., 2018; van Geel et al., 2015). Moreover, researchers have suggested a dose-response relationship, or in other words, children who are bullied by their peers are at an elevated risk of NSSI compared with those who are not, and this risk is positively proportional to the extent of being a victim of bullying. Indeed, the experience of high-frequency and long-term peer bullying has been associated with concurrent and long-lasting more serious mental health problems, including increased self-injury behaviors (Claes et al., 2015; Moore et al., 2014; van Geel et al., 2015; Wolke et al., 2013). Regarding the etiological role of being a victim of bullying in self-injury behaviors, it has been proposed that being a victim of peer bullying results in psychological distress and impaired psychosocial functioning, which in turn evokes negative emotions (e.g., fear, worry, and anger, perception of weakness, feelings of embarrassment and worthlessness) and causes social isolation, depression, and low self-esteem. In this instance, the potential mechanism for explaining self-injury is the triggering of self-injury behaviors to cope with these unwanted emotional states (Arseneault et al., 2010; Nock, 2010; Pouwelse et al., 2011). The intrapersonal function of self-injury in the case of being a victim of peer bullying may be a relief from accumulated emotional distress and tension originating from peer bullying, escape from these intolerable and agonizing conditions, or self-punishment. As interpersonal functions, motives behind self-injury may be a cry for help, an attempt to be taken more seriously, a means of avoiding abandonment, revenge against others, influencing or manipulating people, or attracting peer attention to express oneself (Case et al., 2020; Klonsky and Glenn, 2009).

In this study, we found that being a victim of all types of peer bullying was significantly associated with NSSI behaviors. Nevertheless, some studies have indicated that exposure to certain types of bullying is more likely to lead to mental health problems and has more harmful consequences. In this context, it has been reported that indirect and covert types of bullying such as verbal and relational bullying, including social exclusion and spreading rumors, are more closely related to deleterious outcomes, as well as a greater risk of self-injury and suicidal behavior (Barker et al., 2008; Ford et al., 2017; Yen et al., 2015). Given that bullying may lead to a variety of mental health problems, our results suggested that being a victim of bullying, regardless of the type of bullying, generates a predisposition or a tendency to self-injury behaviors.

The results of this study also indicated that the frequency of experiencing bullying is negatively associated with the onset age of self-injury and positively related to the severity and frequency of self-injury. This finding means that the onset age of engaging in self-injury decreases and the severity and frequency of self-injury behaviors increase as the frequency of exposure to peer bullying increases. The most possible explanation for this result may be that younger children lack adequate and effective coping strategies for managing peer bullying successfully (van Geel et al., 2015). Thus, it is possible that younger children who suffer from peer bullying engage in NSSI behaviors more frequently than older children do.

Furthermore, we observed that the adolescents in the NSSI group have markedly lower self-esteem levels compared to the controls. This result may suggest that lower self-esteem contributes to engaging in self-injury behaviors. More importantly, one of the main results of the current study is a significant negative correlation between self-esteem and being a victim of all types of peer bullying, implying that lower self-esteem may be a risk factor for being a victim of peer bullying. Our finding is consistent with prior studies which have indicated that individuals with low self-esteem, which is a predictor of both self-injury behaviors and being a victim of peer bullying, are attractive victims for bullies (Cook et al., 2010; Egan and Perry, 1998; Nock, 2010; van Geel et al., 2015). Nevertheless, we cannot exclude the possibility that lower self-esteem is caused by being a victim of peer bullying.

In this study, internalization and externalization disorders were also investigated for being a victim of each type of peer bullying in the NSSI group. Among the 96 adolescents in the NSSI group, we identified two distinct psychological profiles according to dominant psychopathologies: “internalizing disorders” and “externalizing disorders.” In fact, previous studies have assigned the “psychologically normal group” as an additional psychological profile among self-harming adolescents in nonclinical populations (Stanford and Jones, 2009). In our sample, however, there were no adolescents in the mentally “healthy” category, most likely owing to the source of cases (population-based sample vs. clinical sample). Among the adolescents in the NSSI group, self-injury scores were significantly higher, and self-esteem scores were significantly lower in those with internalizing disorders than in those with externalizing disorders. Concerning the relationship between psychopathology and being a victim of peer bullying, we found that externalizing disorders were strongly associated with being a victim of physical bullying, verbal bullying, attacks against property, and sexual bullying compared with internalizing disorders. On the other hand, we observed that internalizing disorders were significantly related to being a victim of more covert types of bullying, that is, isolation/exclusion and spreading rumors, than externalizing disorders. In other words, the adolescents with externalizing disorders were more vulnerable to being victims of physical bullying, verbal bullying, attacks against property, or sexual bullying than the adolescents with internalizing disorders and controls, whereas the adolescents with internalizing disorders were more likely to be subjected to isolation/exclusion and spreading of rumors than the adolescents with externalizing disorders and controls. These results partially contradict previous reports showing that those with internalizing disorders are more likely to be victims than those with externalizing disorders (Arseneault et al., 2010; Cook et al., 2010; Hodges and Perry, 1999; Kelly et al., 2015; Yen et al., 2015), whereas our study revealed that externalizing disorders had a stronger relationship with being a victim of multiple types of peer bullying. The reason for this discrepancy may be that we investigated different forms of bullying separately and/or that we selected our participants from a clinical sample. However, researchers have highlighted that the causality between bullying and psychopathology is bidirectional (Arseneault et al., 2006; Brunstein Klomek et al., 2016; Ford et al., 2017; Karanikola et al., 2018; Moore et al., 2014; Wolke et al., 2013), and we cannot thus exclude the likelihood that psychopathology results from being a victim of peer bullying.

Finally, as a result of investigating the relationship between sex and peer bullying types, self-injury, and self-esteem in the NSSI group, we found that there were significant differences between the male and female participants. Our results showed that the mean scores of self-injury were similar between sexes in the NSSI group, but the mean self-esteem score of the female participants was significantly lower than those of the male participants. In addition, we found that the male and female participants differed in terms of being victims of certain types of peer bullying. The male participants in our sample had higher scores for being victims of physical bullying and attacks against property, whereas the female participants had higher scores for being victims of isolation/exclusion and spreading of rumors. However, the scores of being victims of verbal and sexual bullying did not differ between sexes. These data supported the notion that males are subjected to more direct and open forms of peer bullying, whereas females are exposed to more indirect and covert forms of peer bullying, and our results are largely consistent with the literature (Ford et al., 2017; Moore et al., 2014; Wolke et al., 2013).

The strengths of this study are the examination of different types of peer bullying separately, the selection of our participants from a clinical population, a relatively large sample size, and the use of a semi-structured interview technique to identify psychiatric disorders in adolescents. Furthermore, we used self-report scales, and this method may be more suitable for measuring self-injury and peer bullying because

this relatively covert information can be more difficult to report spontaneously or speak overtly, hence its identification. However, self-report scales may be prone to response bias and are not diagnostic. Nonetheless, our study has several limitations. First, we used a cross-sectional design, which prevents the generalization of our results and the determination of definitive causality. Second, we focused on being a victim of peer bullying only within the last 6 mos and did not control for preexistent peer bullying, which may be a possible confounding variable. In addition, because we did not evaluate the dimension of peer bullying about being the bully oneself, it is not possible to exclude the possibility that the participants were also in the bully role. Therefore, our findings need to be replicated and detailed by future longitudinal studies.

CONCLUSION

In conclusion, this study provides comprehensive information about the comparison of different types of peer bullying and self-injury. Our results showed that being a victim of peer bullying was strongly associated with the frequency and severity of self-injury. Lower self-esteem also seemed to be a predictor of being a victim of any type of peer bullying. Given the potentially significant effect of being a victim of peer bullying on self-injury, first, it is critical to be aware of bullying and stop peer bullying early to limit the harm caused by bullying. Second, preventive intervention strategies aimed at reducing peer bullying and its harmful effects should be robustly supported, since these efforts may help the reduction of future self-injury behaviors. Finally, our findings underscored that it would be useful to screen all adolescents who reported self-injury, particularly early-onset self-injury, for being a victim of peer bullying, and vice versa.

ACKNOWLEDGMENTS

The authors would like to thank all the adolescents and their families who participated in this study.

DISCLOSURE

Data accessibility: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available because of privacy or ethical restrictions.

Author contributions: A.U.C., S.A.S., I.U., H.D., and S.C.A. designed and conceptualized the study. A.U.C. and S.A.S. interviewed the participants. A.U.C., S.A.S., I.U., H.D., and S.C.A. analyzed and interpreted data together. A.U.C., H.D., and S.C.A. drafted the original manuscript. S.A.S. and I.U. reviewed and revised the manuscript. All authors have read and approved the final manuscript. **Author contributions:** A.U.C., S.A.S., I.U., H.D., and S.C.A. designed and conceptualized the study. A.U.C. and S.A.S. interviewed the participants. A.U.C., S.A.S., I.U., H.D., and S.C.A. analyzed and interpreted data together. A.U.C., H.D., and S.C.A. drafted the original manuscript. S.A.S. and I.U. reviewed and revised the manuscript. All authors have read and approved the final manuscript.

The authors declare no conflict of interest.

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