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Non-Suicidal Self-Injury in College Students: Differences Between the Subject Group and Comparison Group

Hye-seung Kim [1], Yong-won Seo [1], Youngil Lee [2], Chang Min Lee [3], Do Hyun Kim [4], Minsun Kim [1,5] and Myung Ho Lim [1,5,*]

[1] Department of Psychology, Graduate School, Dankook University, Cheonan 31116, Republic of Korea; hsjh125@gmail.com (H.-s.K.); syw2690@gmail.com (Y.-w.S.); 12191720@dankook.ac.kr (M.K.)
[2] Department of Anatomy, College of Medicine, Dankook University, Cheonan 31116, Republic of Korea; anat104@dku.edu
[3] Department of Neurology, College of Medicine, Dankook University, Cheonan 31116, Republic of Korea; nrdoc@dku.edu
[4] Department of Psychiatry, College of Medicine, Dankook University, Cheonan 31116, Republic of Korea; uptothebest@gmail.com
[5] Department of Psychology and Psychotherapy, Dankook University, Cheonan 31116, Republic of Korea
* Correspondence: paperose@dku.edu

Abstract: In recent years, self-injury attempts have accounted for 46.2% of emergency room visits by teenagers and young adults. This study aimed to explore the prevalence of non-suicidal self-injury (NSSI) among Korean college students, compare the mean number of NSSI risk factors between those with a history of NSSI and a control group with no history of thoughts or experiences of self-injury, and identify which factors have a greater influence on NSSI. The participants consisted of 403 Korean college students aged 18–29 who were divided into a subject group with a history of NSSI (n = 198) and a comparison group (n = 205) with no history of NSSI. The Functional Assessment of Self-Mutilation (FASM), Childhood Trauma Questionnaire (CTQ-SF), Social Experience Questionnaire (SEQ), Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder 7-item scale (GAD-7), Difficulties in Emotion Regulation Scale—16 item version (DERS-16), Experiences in Close Relationship Questionnaire-Revised (ECR-R), Rosenberg Self-Esteem Scale (RSES), Parents as Social Context Questionnaire-Kids (PSCQ-KA), and Barratt Impulsiveness Scale-11-Revised (BIS-11). The collected data were analyzed using SPSS 25.0. Before a regression analysis, a MANOVA was performed to examine the mean difference between groups of each dependent variable, and a multiple regression analysis was performed to confirm the influence. The mean difference in all risk factors in the subject group compared with the comparison group was found to be statistically significant, with an effect size of 0.8 or greater. As a result of examining the relative influence of each variable on NSSI, emotional dysregulation ($t = 2.481$, $p = 0.014$), anxiety ($t = -2.109$, $p = 0.036$), and adult attachment ($t = 2.004$, $p = 0.046$) were found to significantly influence NSSI ($p = 0.05$). These findings will serve as fundamental data for screening clients at risk of self-injury in counseling and treatment settings, in addition to providing preventive and therapeutic interventions.

Keywords: non-suicidal self-injury (NSSI); childhood trauma; peer bullying; depression; anxiety; emotional dysregulation; adult attachment; self-esteem; parenting attitude; impulsiveness

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1. Introduction

Non-suicidal self-injury (NSSI) refers to direct, deliberate, and repeated harm to one's body in the absence of suicidal intent [1]. The Functional Assessment of Self-Mutilation (FASM) defines NSSI behaviors as including eleven specific acts, such as 'cutting or carving the skin', 'hitting oneself intentionally', 'pulling out one's hair', 'tattooing', 'pinching wounds on the body', 'burning the skin', 'inserting objects under nails or into the skin', 'biting oneself', 'pinching until bleeding', 'scratching skin to the point of causing wounds', and 'peeling the skin'. Nock and Prinstein [2] proposed the "Functional Model of Non-Suicidal Self-Injury" as a primary theoretical framework to explain NSSI. This model categorizes NSSI into two primary functions: intrapersonal and social. Specifically, intrapersonal functions involve an individual's attempt to attain a desired stimulus or sense of calm through NSSI or to alleviate unpleasant emotions, such as anxiety or anger. Social functions of NSSI, on the other hand, include gaining social attention and support or avoiding certain social situations.

The prevalence of self-injury typically begins between the ages of 12–14, peaks between the ages of 12–17, and declines between the ages of 18–20 [3–5]. However, the number of emergency room visits due to self-injury has increased by approximately 2.3 times over the past 10 years, from 2.2% in 2012 to 5.1% in 2022. In particular, the rate of self-injury among young adults in their 20s increased by 15% compared with a 4% year-on-year decrease among other age groups [6,7]. Among college students in early adulthood, 15–20% experience NSSI, and 20–26% of Korean college students experience NSSI at least once. In particular, individuals aged 20–29 account for the largest proportion of DSM-5-diagnosed NSSI [8–10]. Self-injury that begins in adolescence is a serious problem that can persist into adulthood, become a chronic condition, cause significant physical or psychological damage to individuals, and increase the likelihood of suicide [11].

According to a study by the Korean Council for University Education [12], about 14% of college students who participated in the survey were identified as having a potential risk of suicidal behavior and experiencing crippling anxiety about their future. Korean college students currently experience more mental health challenges than ever before. While conflicts with family and friends (27.9%) were the top reason for self-injury in 2012, psychiatric problems (44.1%) were the most recorded response in 2022 [5]. Youth problems have become a serious social issue in Korea, and a new expression called, sophomore slump, has recently been coined. This term is attributed to youths' lack of independence, due to their overreliance on their parents who adopt an overprotective approach to parenting. In the Korean culture, parents are relatively highly influential in many aspects of their children's lives, even after their children begin attending college [13]. Major risk factors for NSSI include unstable childhood, depression, emotional dysregulation, parent–child and peer relationship difficulties, self-deprecation, psychiatric conditions, psychosocial factors, borderline personality disorder, alcohol abuse, impulsiveness, and eating disorders [5,14–20]. In this study, nine major risk factors that were the most frequently presented in previous studies were categorized into four factors that are comprehensively encountered by an individual: parental factors (such as childhood trauma, adult attachment, and parenting attitude), peer factors (such as peer bullying), psychopathological factors (such as depression, anxiety, and emotional dysregulation), and personal factors (such as self-esteem and impulsiveness). This study conducted a hierarchical regression analysis to compare mean differences between the subject and comparison groups and to examine the relative effects of these factors on NSSI (non-suicidal self-injury). Given the cultural context of Korea, emotional factors influenced by parental factors were expected to have a stronger impact on NSSI. Therefore, the relative influence of these risk factors was assessed through regression analysis.

Childhood trauma is a complex form of trauma that has a wide range of adverse effects on emotional regulation and interpersonal relationships [21]. The presence of childhood trauma is one of the most significant risk factors for NSSI [1], and individuals who experience physical and emotional abuse or neglect by their primary caregiver in childhood are more likely to make more severe NSSI attempts as they become adults [1,22,23]. According to a study by the Korea Disease Control and Prevention Agency [6], 83.7% of perpetrators of child abuse are victims' parents. Experiencing parental abuse during childhood can lead to insecure attachment in interpersonal relationships and can become extreme because of the inability to regulate one's emotions. This, in turn, affects depressive and anxiety symptoms and ultimately leads victims to choose self-injury as a maladaptive coping mechanism in stressful situations [24].

Insecure adult attachment is a major factor in self-injury. Experiencing unstable relationships during childhood can lead to insecure attachment styles in adulthood. A study by Kim et al. [25] on the relationship between anxious attachment, avoidant attachment, and NSSI found that childhood abuse at home is more likely to cause insecure attachment and lead to NSSI.

Parenting attitude is a child's perception of their parenting attitude or behavior. Big data and network analysis of self-harm content taken from a KBS broadcast [26] showed that "parents" was a keyword associated with NSSI, particularly in relation to parental care and control. A meta-analysis of 26 studies by Fong et al. [27] found that low parental support, high psychological control, and negative parenting attitudes were consistently associated with NSSI.

Individuals who experience peer bullying are more likely to have high levels of depression and anxiety and attempt NSSI to address feelings of pain and helplessness. Adolescents develop a sense of belonging among peers and an increased need for close relationships; therefore, experiences of physical and psychological bullying and rejection within relationships contribute to a negative self-image and are highly correlated with NSSI [28–30].

Approximately 72% of patients who visit emergency rooms because of self-injury attempts have depressive symptoms [31]. According to the Korea Disease Control and Prevention Agency [7], the proportion of patients with self-harm injuries has increased by about 2.3 times from 2.2% to 5.1% over the past 10 years, and the number one cause of self-injury in 2022 was psychiatric and pathological factors (44.1%), which continue to increase. In addition, comorbid depressive symptoms increased the likelihood of NSSI attempts.

Severe anxiety has a more profound influence on suicidal ideation and planning than depression. Symptoms of depression and anxiety increase the likelihood of regulating aversive emotions and social situations and eliminating negative emotions such as anxiety through NSSI [5,32].

Furthermore, greater emotional dysregulation is associated with an approximately threefold-increased risk of NSSI [33]. A study by Kim et al. [3] also found that those experiencing NSSI experienced more emotional dysregulation than those that did not experience NSSI.

Poudel et al. [20] reported that low self-esteem was a risk factor for NSSI and suicidal behavior. Their findings suggest that low self-esteem acts as a risk factor that mediates with other risk factors to increase the likelihood of NSSI.

Impulsiveness is an important construct in NSSI [34]. Research on the relationship between impulsivity and NSSI has shown that individuals who engage in NSSI are more impulsive than non-injurers, and that negative urgency, in particular, is associated with NSSI [35].

2. Method

2.1. Research Subjects and Procedures

For this study, a nationwide survey targeting college students was conducted through an online agency from 27 November to 29 November 2023. To accommodate the extended duration of college enrollment observed in Korea, the age range for study participants was set broadly, from 18 to 29. Many students remain enrolled while engaging in internships, studying abroad, or taking leaves of absence for financial or work-related reasons. Additionally, non-suicidal self-injury (NSSI) prevalence has been rising in this age group, making it a relevant focus for the study.

The survey was conducted by Online Agency, a leading Korean research firm and EMBRAIN of the Macromill Group company (Seoul, Korea), which has 50 offices across 21 countries and a representative panel of over 1.65 million members distributed by gender, region, and age.

The questionnaire had 165 items about NSSI and risk factors and took approximately 20 min to complete. After explaining the concept of NSSI to the participants, those with a history of NSSI according to the Functional Assessment of Self-Mutilation (FASM) instrument were selected as the subject group, and those with no history of either thoughts or experiences of self-injury were included in the comparison group. After excluding 55 copies with insufficient or missing information, 403 copies were collected, 198 from the subject group and 205 from the comparison group. After excluding 55 copies with insufficient or missing information, 403 copies were collected, 198 from the test group and 205 from the control group. The survey agency rewarded those who completed the survey with approximately 2000 points. The G*Power program (version 3.1.9.2) was employed to calculate the minimum sample size required, based on an a priori power analysis for a two-tailed MANOVA (Multivariate Analysis of Variance) test. The significance level was set at 0.05, achieving a power of 0.8, consistent with prior studies.

In this study, 403 college students aged 18–29 were divided into an NSSI group (n = 198) and a control group (n = 205) to compare the means of each risk factor between the two groups and to analyze which risk factors most significantly influenced NSSI through regression analysis.

Table 1 shows the demographic characteristics of the two groups based on survey data. The participants in this study are distributed nationwide, with 57.1% residing in major cities in Seoul and Gyeonggi and 42.9% in other regional areas.

Table 1. Demographic characteristics.

Variables		N (%)					
		NSSI Group		**Control Group**		**NSSI + Control**	
Gender [a]	Male	32 (16.2)		111 (54.1)		143 (35.5)	
	Female	166 (83.8)		94 (45.9)		260 (64.5)	
total		198 (100)		205 (100)		403 (100)	
Grade [a]	Freshman	34 (17.2)		23 (11.2)		57 (14.1)	
	Sophomore	42 (21.2)		44 (21.5)		86 (21.3)	
	Junior	56 (28.3)		52 (25.4)		108 (26.8)	
	Senior	66 (33.3)		86 (42.0)		152 (37.7)	
total		198 (100)		205 (100)		403 (100)	
Variables		N (%)	M ± SD	N (%)	M ± SD	N (%)	M ± SD
Age [b]	18~29	198 (100)	21.91 ± 2.023	205 (100)	22.63 ± 2.107	403 (100)	22.28 ± 2.095
total		198 (100)		205 (100)		403 (100)	

[a] N (%): χ^2, [b] M ± SD: *t*-test.

2.2. Ethics Statement

The Research Ethics Committee of Dankook University approved this study (project identification code DKU 2024-01-042-001). Before the study began, the participants were fully informed about its purpose and content. Voluntary consent was obtained after informing the participants that they could withdraw from the study at any time without penalty. If they felt emotionally uncomfortable during or after participating in the study, they were provided with a list of psychological counseling institutions where they could receive psychological support. It was also clear that participants could seek counseling if necessary. Participants were informed that the collected data would be used only for research purposes.

2.3. Measures

Based on previous studies, childhood trauma, peer bullying, depression, anxiety, emotional dysregulation, adult attachment, self-esteem, parenting attitude, and impulsivity were selected as risk factors for NSSI. The following instruments were used to measure these factors. The scale, originally developed overseas and subsequently standardized for use in Korea, can be utilized without additional copyright permissions. It has been extensively employed in prior studies both domestically and internationally, which offers the advantage of enabling comparative analysis with previous research. Should permission be required, we will contact the original author to undertake the necessary procedures.

2.3.1. The Functional Assessment of Self-Mutilation (FASM)

The Korean version of the Functional Assessment of Self-Mutilation (FASM) was used to measure NSSI behavior. It was adapted and validated in Korea by Kwon and Kwon [9], based on the original version developed by Lloyd et al. [36]. The FASM consists of three sections: one section consists of twelve items measuring the method and frequency of NSSI, one section consists of six items about treatment related to self-injury, and one section consists of twenty-three items about the reasons behind and purpose of NSSI. In this study, only twelve items measuring the method and frequency of self-injury were used in the analysis, and each item was rated on a 7-point Likert scale. The scale's reliability was 0.86 in the study by Kwon and Kwon [9], and the reliability in this study was 0.718.

2.3.2. Childhood Trauma Questionnaire (CTQ-SF)

The Childhood Trauma Questionnaire (CTQ-SF), developed by Bernstein et al. [37] and validated in Korea by Yoo et al. [38], was used to measure traumatic experiences experienced by primary caregivers during childhood. The CTQ-SF consists of five subscales: emotional neglect (eight items), emotional abuse (five items), physical neglect (five items), physical abuse (five items), and sexual abuse (five items). It consists of twenty-eight items rated on a 5-point Likert scale. The reliability of the CTQ-SF scale was 0.90 in the study by Bernstein et al. (1994) and 0.79 in Yoo et al. [38]. In this study, the reliability of the CTQ-SF was 0.938 for emotional neglect, 0.858 for emotional abuse, 0.652 for physical neglect, 0.858 for physical abuse, and 0.851 for sexual abuse, with an overall reliability of 0.938.

2.3.3. Social Experience Questionnaire (SEQ)

The Social Experience Questionnaire (SEQ), developed by Crick and Grotpeter [39] and adapted by Choi and Lim [29], was used to measure experiences and feelings in relationships with friends before the age of 18. The SEQ consists of fifteen items divided into three subscales, each of which contains five items rated on a 5-point Likert scale: relational victimization, overt victimization, and receipt of prosocial acts. The reliability of the instrument was 0.76 for relational victimization, 0.83 for overt victimization, 0.84 for

receipt of prosocial acts in the study by Choi and Lim [31], 0.901 for relational victimization, 0.905 for overt victimization, and 0.940 for receipt of prosocial acts, with an overall reliability of 0.923 in this study.

2.3.4. Patient Health Questionnaire-9 (PHQ-9)

The Patient Health Questionnaire-9 (PHQ-9), developed by Spitzer et al. [40] and adapted by Park et al. [41], was used to measure depression. It consists of nine items rated on a 4-point Likert scale. The reliability of the PHQ-9 was 0.81 in the study by Park et al. [41] and 0.905 in this study.

2.3.5. Generalized Anxiety Disorder 7-Item Scale (GAD-7)

The Generalized Anxiety Disorder 7-item scale (GAD-7) developed by Spitzer et al. [42] was used to measure participants' anxiety levels. Each item is rated on a 4-point Likert scale. The scale's reliability was 0.92 in the study by Spitzer et al. [42] and 0.923 in this study.

2.3.6. Difficulties in Emotion Regulation Scale—16 Item Version (DERS-16)

The Difficulties in Emotion Regulation Scale—16 item version (DERS-16) is a 16-item self-report measure that assesses an individual's typical levels of difficulty in emotion regulation based on the original 36-item version of the DERS developed by Gratz and Roemer [43]. It measures five aspects of difficulty in emotion regulation: lack of emotional clarity (two items), difficulty engaging in goal-directed behavior (three items), impulse control difficulties (three items), limited access to emotion regulation strategies (five items), and nonacceptance of emotional responses (three items). The scale consists of sixteen items, each measured on a 5-point Likert scale. Its reliability was 0.92 in the study by Bjureberg et al. [44]. In this study, the reliability was 0.908 for lack of emotional clarity, 0.885 for difficulty engaging in goal-directed behavior, 0.925 for impulse control difficulties, 0.893 for limited access to emotion regulation strategies, and 0.870 for nonacceptance of emotional responses, with an overall reliability of 0.957.

2.3.7. Experiences in Close Relationship Questionnaire-Revised (ECR-R)

This study used the Experiences in Close Relationship Questionnaire (ECR), developed by Fraley et al. [45] and validated in Korea by Yoon et al. [46], to measure adult attachment. The short Korean version consists of seven items for each of the anxiety and avoidance subscales. Each item is rated on a 7-point Likert scale, with higher scores indicating higher levels of anxious attachment and lower scores indicating lower levels of avoidant attachment. The reliability of the instrument was 0.93 for anxious attachment and 0.89 for avoidant attachment in the study by Yoon et al. [46], 0.946 for anxious attachment, and 0.922 for avoidant attachment, with an overall reliability of 0.891 in this study.

2.3.8. Rosenberg Self-Esteem Scale (RSES)

The Rosenberg Self-Esteem Scale (RSES), developed by Rosenberg [47] and adapted to Korean by Lee and Won [48], was used to measure self-esteem. The scale consists of ten items, divided into five items each for measuring positive and negative aspects, rated on a 4-point Likert scale. The scale's reliability was 0.89 in the study by Lee and Won [48] and 0.888 in this study.

2.3.9. Parents as Social Context Questionnaire (PSCQ-KA)

The Korean version of the Parents as Social Context Questionnaire (PSCQ-KA), adapted by Kim and Lee [49], is an assessment tool that measures parenting attitudes based on the original Parents as Social Context Questionnaire (PSCQ) developed by Skinner et al. [50]. The 24-item scale consists of subscales divided into three positive di-

mensions of warmth, autonomy support, and structure, and three negative dimensions of rejection, coercion, and chaos, with four items in each dimension measured on a 5-point Likert scale. The reliability of the scale was 0.882 for warmth, 0.836 for autonomy support, 0.766 for structure, 0.797 for rejection, 0.780 for coercion, and 0.725 for chaos in the study by Kim and Lee [49]; the reliability of the scale was 0.947 for warmth, 0.928 for autonomy support, 0.811 for structure, 0.828 for rejection, 0.831 for coercion, and 0.850 for chaos, with an overall reliability of 0.948, in this study.

2.3.10. Barratt Impulsiveness Scale-11 (BIS-11)

The Korean version of the Barratt Impulsiveness Scale-11 (BSI-11), adapted by Lee et al. [51], is a self-report measure used to assess impulsivity based on the original version developed by Barratt [52]. It comprises 30 items measuring three subscales: attentional impulsiveness (10 items), motor impulsiveness (nine items), and non-planning impulsiveness (11 items). Each item is rated on a 4-point Likert scale. The reliability of the scale was 0.623 for attentional impulsiveness, 0.626 for motor impulsiveness, 0.580 for non-planning impulsiveness, and 0.783 overall in the study by Lee et al. [51], and 0.811 for attentional impulsiveness, 0.757 for motor impulsiveness, and 0.814 for non-planning impulsiveness, with an overall reliability of 0.877 in this study.

2.4. Statistical Analysis

The collected data were analyzed using IBM SPSS Statistics 25.0. First, a frequency analysis was conducted to examine the demographic characteristics of the participants, and a descriptive statistical analysis was performed to test the normality of the main variables. Then, before the regression analysis, MANOVA was performed to examine the mean difference between groups of each dependent variable. Finally, the multiple regression analysis was performed to determine the relative influence of the independent and dependent variables.

3. Results

3.1. Independent Samples t-Test

The differences between the means of the subject and comparison groups for the variables of childhood trauma, peer bullying, depression, anxiety, emotional dysregulation, adult attachment, self-esteem, parenting attitudes, and impulsiveness were all significant at the 0.001 level of significance. Table 2 shows the results of the MANOVA for each variable.

Table 2. MANOVA analysis.

		NSSI Group (n = 198)		**Control Group (n = 205)**		***t*(*p*)**	**Cohen's d**
		M	**SD**	**M**	**SD**		
1	CTQ-SF	58.8636	9.721 ***	44.0585	12.37314	9.721 ***	0.98888
	ECR-R	38.8889	8.453 ***	30.3707	9.87417	8.453 ***	0.83063
	PSCQ-KA	79.7424	−9.739 ***	95.2829	12.50286	−9.739 ***	−0.95734
2	SEQ	34.0707	7.929 ***	25.9512	8.53927	7.929 ***	0.82854
3	PHQ-9	18.8939	12.092 ***	12.5512	3.64121	12.092 ***	1.21779
	GAD-7	14.7980	11.103 ***	9.7220	3.03020	11.103 ***	1.16643
	DERS-16	46.3687	12.344 ***	30.0195	11.62905	12.344 ***	1.23723

Table 2. *Cont.*

		NSSI Group (n = 198)		Control Group (n = 205)		$t(p)$	Cohen's d
		M	SD	M	SD		
4	RSES	28.2374	6.45163	34.7659	6.10880	−10.434 ***	−1.03281
	BIS-11	77.0404	12.14625	68.9951	10.50280	7.120 ***	0.68928

Adjusted for gender, *** $p < 0.001$. 1. Parental factors, 2. Peer factors, 3. Psychopathological factors factors, 4. Personal factors CTQ-SF (Childhood Trauma Questionnaire), ECR-R (Experiences in Close Relationship Questionnaire-Revised), PSCQ-KA (Parents as Social Context Questionnaire—Korean Adolescents), SEQ (Social Experience Questionnaire), PHQ-9 (Patient Health Questionnaire-9), GAD-7 (Generalized Anxiety Disorder 7-tem scale), DERS-16 (Difficulties in Emotion Regulation Scale-16), RSES (Rosenberg Self-Esteem Scale), BIS-11 (Barratt Impulsiveness Scale-11).

3.2. Multiple Regression Analysis

The multiple regression analysis was performed to examine the relative influence of childhood trauma, peer bullying, depression, anxiety, emotional dysregulation, adult attachment, self-esteem, parenting attitude, and impulsiveness on NSSI. The results showed that emotional dysregulation ($t = 2.544$, $p = 0.012$), anxiety ($t = -2.148$, $p = 0.033$), and adult attachment ($t = 2.025$, $p = 0.044$) influenced NSSI at a 0.05 level of significance. Table 3 presents the results of the multiple regression analysis for each variable.

Table 3. Multiple regression analysis.

		(n = 198)				
Independent Variables		**B**	**se**	**β**	***t* Value**	***p* Value**
	constant	1.307	4.065		0.322	0.748
1	CTQ-SF	−0.002	0.024	−0.007	−0.063	0.950
	ECR-R	0.063	0.031	0.171	2.025	0.044
	PSCQ-KA	−0.016	0.022	−0.080	−0.739	0.461
2	SEQ	0.021	0.027	0.066	0.781	0.436
3	PHQ-9	0.106	0.064	0.178	1.660	0.099
	GAD-7	−0.155	0.072	−0.231	−2.148	0.033
	DERS-16	0.061	0.024	0.234	2.544	0.012
4	RSES	0.018	0.056	0.030	0.316	0.753
	BIS-11	−0.002	0.023	−0.007	−0.097	0.923

1. Parental factors, 2. Peer factors, 3. Psychopathological factors, 4. Personal factors FASM (The Functional Assessment of Self-Mulilton), CTQ-SF (Childhood Trauma Questionnaire), ECR-R (Experiences in Close Relationship Questionnaire-Revised), PSCQ-KA (Parents as Social Context Questionnaire- Korean Adolescents), SEQ (Social Experience Questionnaire), PHQ-9 (Patient Health Questionnaire-9), GAD-7 (Generalized Anxiety Disorder 7-tem scale), DERS-16 (Difficulties in Emotion Regulation Scale-16), RSES (Rosenberg Self-Esteem Scale), BIS-11 (Barratt Impulsiveness Scale-11).

4. Conclusions and Discussion

The present study compared the mean differences in NSSI risk factors between Korean college students with a history of NSSI and a comparison group with no history of thoughts or experiences of self-injury and examined the relative influence of these risk factors on NSSI through regression analysis. These findings will help improve the understanding of self-injury in counseling and treatment settings and provide a basis for appropriate interventions.

First, the mean differences between the subject and comparison groups were found to be significant for all nine risk factors for NSSI at a 0.001 level of significance. These results support those of previous studies that found childhood trauma, peer bullying, depression, anxiety, emotional dysregulation, adult attachment, parenting attitude, self-esteem, and

impulsiveness to be risk factors for NSSI [5,14,15,19,20]. In particular, many college students in Korea are dependent on their parents who are not completely psychologically and physically independent [13]. Due to Korea's cultural and social characteristics, it is no exaggeration to say that, until entering university, Korean college students live largely under the management and control of their parents in economic, psychological, and environmental aspects. Particularly, individuals with vulnerabilities arising from stress related to entrance exams, career paths, and competition may struggle to achieve independence as fully autonomous adults even after reaching adulthood. This unhealthy parent–child relationship increases the likelihood of individuals experiencing more severe adult attachment and emotional dysregulation problems as they grow up, which may lead to an increase in self-injurious behavior due to pathological issues such as depression and anxiety [7,53–55]. On the other hand, the findings of this study that self-esteem and parenting attitude had a negative effect on NSSI suggest that both factors may act as protective factors for NSSI. Positive parenting attitudes can boost children's self-esteem and help them develop positive self-images. Consequently, they may be more likely to choose more adaptive approaches without engaging in NSSI. This means that self-esteem and positive parenting attitudes ate important protective factors against NSSI [56,57].

Second, among the nine risk factors for NSSI selected from previous studies, emotional dysregulation, anxiety, and adult attachment had a relatively significant effect on NSSI at a 0.05 level of significance, which is consistent with the results of previous studies [1,32,33,53,54,57–59]. In other words, insecure attachment causes pathological problems such as anxiety, which makes it difficult for individuals to regulate their emotions, and higher anxiety leads to externalizing problem behaviors, which ultimately increases the likelihood of engaging in NSSI as a maladaptive coping mechanism. In the present study, emotional dysregulation had the most significant influence on NSSI. This supports the findings of previous studies that emotional dysregulation is a more proximal predictor of NSSI and that individuals who experience emotional dysregulation are more likely to repeat self-injury behavior [3,59]. As a result of examining multiple aspects of NSSI risk factors compared to previous studies, it can be surmised that emotional dysregulation, anxiety, and adult attachment have a relatively greater impact on NSSI than do other risk factors. However, the non-significant results for childhood trauma and peer bullying may be explained by the fact that these scales consisted of recall questions, which may reflect the tendency of individuals to hide past experiences.

The limitations of this study are as follows: First, the gender ratio of the test group was 83.5% female and 16.5% males, indicating that the proportion of females was four times higher than that of males. This difference may be interpreted in light of sex differences in the prevalence of NSSI based on previous studies showing that females are twice as likely to report a history of NSSI than males and that females are at a higher risk of self-injury [4,7,14,15,18]. However, future studies should be conducted with an evenly distributed group of both sexes to investigate the differences in risk factors. Second, this study was a cross-sectional study conducted on students who experienced the COVID-19 pandemic; therefore, the effects of COVID-19 cannot be excluded. Third, although this study found that self-esteem and parenting attitude had a negative effect on NSSI, it did not examine the protective factors in more detail. Although studies on the protective factors of NSSI are limited, high self-esteem, optimism about the future, and satisfaction with life have been suggested as protective factors that moderate NSSI [3,57]. Follow-up studies should also include research that examines protective factors for NSSI. Self-esteem may have varying effects, depending on different cultural contexts, age groups, and genders [60]. Future research should explore how self-esteem functions as a protective factor against NSSI (non-suicidal self-injury) across gender and age groups. Lastly, this study did not measure

the socioeconomic status (SES) of participants, which may limit the generalizability of the findings. Future research should consider including socioeconomic status as a variable to examine its potential impact on the results and to provide a more comprehensive understanding of the factors influencing the outcomes.

Despite these limitations, this study is significant in that it examined the risk factors for NSSI from multidimensional aspects, which sets it apart from previous studies. This study also reviewed previous studies to select nine major risk factors for NSSI and examined the relative influence of each variable in the four categories surrounding an individual from multiple aspects. Second, few studies in Korea and abroad have examined the differences between those with and without a history of NSSI on a large-scale and comparable basis. This study is the first in Korea to involve a large group of individuals with a history of NSSI that matched the size of the control group.

These findings will help improve the understanding of NSSI risk groups in counseling and treatment settings, serve as a basis for treatment and interventions for NSSI risk groups, and provide reliable data for future research on NSSI.

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