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Comparison of Clinical Indicators for Non-Suicidal Self-Injury and Suicide Attempts in the Emergency Department

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ABSTRACT

Background: While differentiating non-suicidal self-injury (NSSI) from minor intent suicide attempts (MSAs) and serious intent suicide attempts (SSAs) is crucial for providing effective crisis interventions in emergency departments (EDs), existing research on this distinction remains limited. Therefore, this study aims to identify clinical indicators differentiating NSSI, MSA, and SSA among ED patients.

Methods: Data were collected from 587 patients who presented with self-injurious behaviors at Chung-Ang University Hospital ED in Seoul from June 2018 to December 2023. The study assessed patients' suicide attempt intentionality, demographic and historical factors, characteristics of self-injury, status at self-injury, as well as suicidal ideation and suicide planning upon presentation to the ED. Patients were classified into NSSI, MSA, or SSA groups based on the intentionality of their self-injury. Hierarchical logistic regression analyses were performed to identify clinical indicators distinguishing these groups.

Results: Among all self-injury patients, sex (odds ratio [OR], 0.45; $P = 0.029$), higher lethality of injury (OR, 5.34; $P < 0.001$), and sustained suicidal ideation (OR, 2.83; $P = 0.002$) were clinical indicators that distinguished intentional suicide attempts (MSA and SSA) from NSSI. Among patients with NSSI and MSA, those with a higher lethality of injury (OR, 2.88; $P = 0.002$) and sustained suicidal ideation (OR, 2.87; $P = 0.005$) were more likely to have MSA. By contrast, for patients with intentional suicide attempts (MSA and SSA), the following factors were significant predictors of SSA: method of cutting (OR, 0.17; $P < 0.001$), higher lethality of injury (OR, 6.01; $P < 0.001$), self-injury under the influence of alcohol (OR, 1.76; $P = 0.041$), and help-seeking at the time of self-injury (OR, 0.48; $P = 0.004$).

Conclusion: Being male, higher injury lethality, and sustained suicidal ideation are significant clinical indicators predicting suicidal attempt rather than NSSI. Among patients attempting suicide, methods other than cutting, high-lethality attempts, self-injury under the influence of alcohol, or not seeking help may indicate serious suicidal intentions, necessitating thorough evaluation and possible emergency hospitalization.

Keywords: Emergency; Risk Factors; Self-Injurious Behavior; Clinical Indicators; Suicidal Ideation

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INTRODUCTION

Self-injury, including non-suicidal self-injury (NSSI) and suicide attempts, is a significant public health concern. Korea's suicide rate is 2.4 times higher than the average for the Organization for Economic Co-operation and Development average, with emergency department (ED) visits related to NSSI or suicide attempts increasing by 37.8% from 2016 to 2020.[1] Globally, ED visits for self-injury among adolescents increased by 135% between 2009 and 2017 in the US,[2] and a recent meta-analysis revealed a NSSI prevalence of 17.7% among adolescents across 17 different countries.[3] This rising prevalence burdens healthcare systems with direct costs including ED visits, hospitalizations, surgeries, and ongoing medical care.[4,5]

NSSI, defined as deliberate self-harm without suicidal intent to cope with emotional pain, sadness, anger, and stress[6,7] affects 17% of adolescents, 13% of young adults, and 5.5% of adults.[8] Female adolescents show a higher prevalence (19.4%) than male adolescents (12.9%).[9] Risk factors include underlying psychiatric disorders such as depression and anxiety, history of abuse or trauma, suicidal ideation, previous suicide attempts, and impulsivity.[10] Protective factors include parental connectedness, high self-esteem, and positive school engagement.[11,12]

Suicide attempts are defined as "nonfatal, self-directed, potentially injurious behavior with an intent to die as a result of the behavior even if the behavior does not result in injury."[13] These attempts employ various methods such as overdose, suffocation/hanging, drowning, cutting, and self-inflicted firearm injuries.[13] Approximately 703,000 suicide deaths occurred globally in 2019.[14] Women attempt suicide 1.5–3 times more often than men, though men have a higher death rate.[15] Risk factors include mental illness, substance abuse, a history of self-injury, suicide plans, ideation, previous suicide attempts, and stressful life events.[16,17] The severity of self-injury, influenced by intent and lethality, guides clinical decisions.[18,19] Comprehensive classification systems, such as the Columbia Suicide Severity Rating Scale[20] consider factors such as premeditation, post-attempt distress, and associated psychiatric symptoms.

Differentiating between NSSI and suicide attempts is essential for effective intervention in EDs, where immediate decision-making is critical.[21] However, there is a lack of research on clinical indicators of suicidal intent in patients presenting to EDs, posing challenges for clinicians. Clinical indicators refer to specific factors that help identifying patients at high risk for clinical events, thereby supporting decision-making.[22]

This study aimed to identify clinical indicators that differentiate NSSI, minor intent suicide attempts (MSAs), and serious intent suicide attempts (SSAs) among ED patients. Factors include demographics, historical factors, characteristics of self-injury, status at the time of self-injury, current suicidal ideation, and future suicide plans. Prior NSSI episodes correlate with higher intent levels.[23,24] Based on these factors, we hypothesized that previous suicide attempts, a history of psychiatric treatment, a history of psychiatric hospitalization, higher lethality of injury, planned self-injury, self-injury under the influence of alcohol, leaving a suicide note, sustained suicidal ideation in the ED, and future suicide plans would indicate high intentionality. Conversely, younger age, being female, using cutting as a method, and seeking help would serve as clinical indicators of low intentionality.

METHODS

Study participants

This study reviewed data from 1,393 patients who visited the ED of Chung-Ang University Hospital in Seoul between June 1, 2018, and December 31, 2023, for self-injurious thoughts and behaviors. Chung-Ang University Hospital participated in a Ministry of Health and Welfare project aimed at providing follow-up care for ED patients who had attempted suicide. Upon arrival, self-injured patients received primary care from emergency physicians and, with consent, were referred to a psychiatrist for evaluation, which included an interview and initial assessment. Consenting patients were enrolled in an aftercare program, involving four in-person or phone consultations over one month. If ongoing support was required, patients were referred to hospital-based and community services.

This study analyzed the initial assessment data applying inclusion and exclusion criteria for patient selection. The inclusion criteria were: 1) completion of the initial assessment and agreement to follow-up, 2) presentation of physical injuries resulting from self-injury, and 3) suicide attempt intentionality assessed by a psychiatrist. The exclusion criteria included: 1) patients with only suicidal or self-injurious ideation but no physical injury, and 2) those with missing values on five or more initial assessment items utilized in the analysis. Based on these criteria, 587 patients were included in the analysis.

Measurements

The initial assessment items included suicide attempt intentionality, demographic and historical factors, self-injury characteristics, status at the time of self-injury, and suicidal ideation or planning at the time of ED presentation.

Intentionality of suicide attempt
Suicide attempt intentionality was assessed by a psychiatrist using the following criteria from the Korea Foundation for Suicide Prevention, a division of the Korean Ministry of Health and Welfare: 1) "I genuinely desired to die and selected that method (SSA)," 2) "I wished to die but recognized it was not a lethal method (MSA)," and 3) "I did not truly desire death but sought help (NSSI)." Evaluation focused primarily on the patient's immediate state upon presentation at the ED, without consideration of past intentionality of self-injury or a psychiatric diagnosis.

Demographic and historical factors
These included age, sex (female/male), previous suicide attempts (yes/no), history of psychiatric treatment (yes/no), and history of psychiatric hospitalization (yes/no).

Characteristics of self-injury
Self-injury characteristics focused on methods and lethality. Methods were categorized as drug intoxication, gas inhalation, hanging, falling, and cutting, with cutting dichotomized separately due to its correlation with suicide intentionality.[25,26] The lethality of self-injury was assessed using criteria from the Korea Foundation for Suicide Prevention: 1) no or very minor physical damage (e.g., slight abrasions), 2) minor damage (e.g., slurred speech, first-degree burns, minor bleeding, cuts, and scrapes) 3) moderate damage (e.g., patients who are conscious but confused, somewhat responsive, with second-degree burns or bleeding from major vessels), 4) moderately severe (e.g., patients in a coma with intact reflexes, third-degree burns covering less than 20% of the body, heavy but recoverable bleeding, or severe fractures) and 5) severe (e.g., patients in a coma with intact reflexes, third-degree burns covering more

than 20% of the body, heavy bleeding with unstable vital signs, or severe damage to vital areas). For statistical analysis, cases were binomially categorized as having lower lethality if they fell under categories 1 and 2 and higher lethality if they fell under categories 3 to 5.

Status at the time of self-injury
Variables included whether the self-injury was planned (yes/no), alcohol use at the time (yes/no), the presence of a suicide note (yes/no), and help-seeking (yes/no). Help-seeking was binarily categorized as "yes" if assistance was sought before or after the self-injury attempt and "no" if no help was sought.

Statistical analysis

Univariate analyses employed one-way ANOVA for continuous variables and chi-square tests for categorical variables across the NSSI, MSA, and SSA groups. If significant differences emerged among the three groups, post-hoc analyses were conducted to identify specific differences, followed by hierarchical logistic regression analyses. First, a hierarchical logistic regression analysis was conducted for all participants (NSSI+MSA+SSA), with intentional suicide attempts (MSA+SSA) as the dependent variable. Subsequent analyses were performed separately for participants with NSSI and MSA, with MSA as the dependent variable, and for participants with intentional suicide attempts (MSA+SSA), with SSA as the dependent variable.

The model design was identical for all three analyses. Model 1 included demographic and historical factors as well as suicidal intensity. Model 2 incorporated self-injury characteristics, Model 3 included status at the time of injury, and Model 4 included suicidal ideation and plans. Statistical significance was set at $\alpha = 0.05$ (two-sided). All analyses were conducted using the Complex Samples module in PASW Statistics 28 (IBM Corp., Armonk, NY, USA).

Ethics statement

The research protocol was approved by the Institutional Review Board of Chung-Ang University Hospital (2406-012-19527). Informed consent was waived owing to the retrospective nature of the study and the low risk to participants.

RESULTS

Participants' characteristics

Table 1 presents participants' sociodemographic and clinical characteristics. Participants' average age was 30.37 ± 15.84 years, with 70.4% female participants. The gender imbalance was due to fewer male participants seeking treatment in the ED for self-injury. SSA group participants were older than those in the NSSI and MSA groups, more likely to plan self-injury, use alcohol, and leave suicide notes. They were less likely to be female, use cutting, or seek help. Previous suicide attempts and history of psychiatric treatment were significantly more prevalent in the MSA group. Moderate-to-severe injuries were most prevalent in the SSA group, followed by the MSA and NSSI groups. Sustained suicidal ideation and future suicidal plans were significantly more common in the MSA and SSA groups than in the NSSI group.

Hierarchical logistic regression results, with intentional suicide attempts as the dependent variable

Table 2 outlines the hierarchical logistic regression results for intentional suicide attempts. All four models demonstrated significant overall fit, with Model 4 showing χ^2 (95.015, $P < 0.001$)

Table 1. Participants' sociodemographic and clinical characteristics (total N = 587)

Variables	Total (N = 587)	NSSI (N, n = 99)	MSA (M, n = 203)	SSA (S, n = 285)	Statistics F/c²	P
Demographics factor						
Age, yr	30.37 ± 15.84	26.91 ± 12.53	25.81 ± 11.71	34.81 ± 18.09	23.68	< 0.001, N = M < S
Sex (female)	413 (70.4)	83 (83.8)	159 (78.3)	171 (60.0)	29.47	< 0.001, N = M > S
Past historical factor						
Previous suicide attempts (yes)	358 (63.8)	57 (59.4)	142 (74.3)	159 (58.0)	13.96	0.001, M > S
Psychiatric treatment (yes)	474 (80.9)	80 (80.8)	180 (88.7)	214 (75.4)	13.58	0.001, M > S
Psychiatric hospitalizations (yes)	168 (30.4)	26 (29.9)	68 (35.4)	74 (27.1)	3.69	0.158
Characteristics of self-injury						
Cutting (yes)	151 (25.7)	45 (45.5)	87 (42.9)	19 (6.7)	105.53	< 0.001, N = M > S
Lethality of injury (higher)	424 (72.2)	41 (41.4)	123 (60.6)	260 (91.2)	111.87	< 0.001, N < M < S
Status at the time of self-injury						
Planned (yes)	61 (10.4)	1 (1.0)	13 (6.4)	47 (16.5)	24.10	< 0.001, N = M < S
Alcohol (yes)	194 (33.3)	24 (24.2)	58 (28.9)	112 (39.6)	10.47	0.005, N = M < S
Suicide note (yes)	55 (9.6)	4 (4.1)	9 (4.6)	42 (15.1)	18.44	< 0.001, N = M < S
Seeking help (yes)	286 (50.3)	56 (57.7)	112 (57.7)	118 (42.4)	13.29	0.001, N = M > S
Current suicidal ideation and plans						
Sustained suicidal ideation (yes)	54 (72.3)	54 (55.1)	160 (80.0)	199 (72.9)	20.46	< 0.001, N < M = S
Future suicidal plans (yes)	216 (37.8)	20 (20.6)	70 (35.0)	126 (45.8)	20.37	< 0.001, N < M = S

NSSI = non-suicidal self-injury, MSA = minor intent suicide attempt, SSA = serious intent suicide attempt.

Table 2. Participants' hierarchical logistic regression analyses results,[a] with intentional suicide attempts[b] as the dependent variable (N = 494[c])

Independent variables	Model 1 B	Wald	OR	Model 2 B	Wald	OR	Model 3 B	Wald	OR	Model 4 B	Wald	OR
Demographics and historical factors												
Age, yr	0.02	2.90	1.02	0.01	0.63	1.01	0.01	0.65	1.01	0.01	0.59	1.01
Sex (female)	−0.96	7.91	0.38**	−0.82	5.29	0.44*	−0.80	4.86	0.45*	−0.80	4.78	0.45*
Previous suicide attempts (yes)	0.43	2.33	1.54	0.41	1.84	1.50	0.36	1.41	1.44	0.15	0.21	1.16
Psychiatric treatment (yes)	0.31	0.83	1.36	0.56	2.32	1.75	0.67	3.13	1.95	0.50	1.63	1.64
Psychiatric hospitalizations (yes)	−0.06	0.04	0.95	−0.10	0.10	0.91	0.06	0.04	1.06	0.21	0.38	1.24
Characteristics of self-injury												
Cutting (yes)				−0.45	2.33	0.64	−0.30	0.98	0.74	−0.27	0.73	0.77
Lethality of injury (higher)				1.37	23.09	3.95***	1.34	21.10	3.81***	1.67	27.41	5.34***
Status at the time of self-injury												
Planned (yes)							2.20	4.38	9.041*	2.00	3.22	7.38
Alcohol (yes)							0.56	3.27	1.75	0.63	3.81	1.88
Suicide note (yes)							1.06	1.90	2.90	0.86	1.23	2.36
Seeking help (yes)							−0.47	2.98	0.62	−0.45	2.47	0.64
Current suicidal ideation and plans												
Sustained suicidal ideation (yes)										1.04	9.25	2.83**
Future suicidal plans (yes)										0.74	3.94	2.10
Statistics of the model												
-2LL	423.880			387.997			370.882			345.822		
Model χ²	16.957 (df = 5)**			52.839 (df = 7)***			69.954 (df = 11)***			95.015 (df = 13)***		
Step χ²	16.957 (df = 5)**			35.883 (df = 2)***			17.115 (df = 4)**			25.061 (df = 2)		
Nagelkerke R²	0.057			0.172			0.224			0.296		
Classification accuracy	83.6			83.4			83.4			84.0		

OR = odds ratio, MSA = minor intent suicide attempt, SSA = serious intent suicide attempt.
*P < 0.05, **P < 0.01, ***P < 0.001.
[a]Participants included non-suicidal self-injury, MSAs, and SSAs.
[b]Intentional suicide attempts include MSA and SSA.
[c]Cases with missing values for any independent variable were excluded from the analysis.

and Nagelkerke's R² value of 0.296, explaining approximately 29.6% of the variance. Model 4's classification accuracy was 84.0%. Wald statistics were used to determine significant predictors of intentional suicide attempts. Key clinical indicators included female sex, higher lethality of injury, and sustained suicidal ideation. While planned self-injury was statistically significant in Model 3, it was no longer significant in Model 4. Being female was associated

with a decreased likelihood of intentional suicide attempts (odds ratio [OR], 0.45), whereas higher lethality of injury (OR, 5.34) and sustained suicidal ideation (OR, 2.83) were associated with increased likelihood.

Hierarchical logistic regression analyses of participants with NSSI and MSA, with MSA as the dependent variable

Table 3 presents the regression analysis for participants with NSSI and MSA. All models demonstrated a significant overall fit, with Model 4 yielding χ^2 (41.126, $P < 0.001$) and a Nagelkerke R^2 value of .214, explaining 21.4% of the variance. Classification accuracy for Model 4 was 68.8%. Higher lethality of injury (OR, 2.88) and sustained suicidal ideation (OR, 2.87) were significant predictors of MSA. Previous suicide attempts were significant in Model 1 but not in later models. Psychiatric treatment was significant in Model 3 but not in other models.

Hierarchical logistic regression analyses of participants with intentional suicide attempts, with SSA as the dependent variable

Table 4 presents the regression analysis for participants with intentional suicide attempts (MSA and SSA), with SSA as the dependent variable. All models demonstrated a significant fit, with Model 4 yielding χ^2 (160.387, $P < 0.001$) and a Nagelkerke's R^2 value of .435, explaining 43.5% of the variance. The classification accuracy was 77.2%. Higher lethality of injury (OR, 6.01) and self-injury under the influence of alcohol (OR, 1.76) increased the likelihood of SSA, whereas the use of self-injury methods other than cutting (OR, 0.17) and absence of seeking help (OR, 0.48) decreased the likelihood. Age and sex were significant in Model 1 but not in other models.

Table 3. Hierarchical logistic regression analyses results of participants with NSSI and MSA, with MSA as the dependent variable (N = 247[a])

Independent variables	Model 1			Model 2			Model 3			Model 4		
	B	Wald	OR	B	Wald	OR	B	Wald	OR	B	Wald	OR
Demographics and historical factors												
Age, yr	< 0.01	< 0.01	1.00	< 0.01	0.04	1.00	< 0.01	0.08	1.00	< 0.01	0.03	1.00
Sex (female)	−0.59	2.27	0.56	−0.49	1.50	0.62	−0.47	1.38	0.62	−0.28	0.48	0.75
Previous suicide attempts (yes)	0.64	4.02	1.90*	0.57	3.01	1.76	0.53	2.53	1.69	0.27	0.58	1.31
Psychiatric treatment (yes)	0.61	2.24	1.84	0.80	3.53	2.23	0.96	4.73	2.60*	0.78	2.84	2.17
Psychiatric hospitalizations (yes)	−0.09	0.07	0.91	−0.11	0.10	0.90	< 0.01	< 0.01	1.00	0.15	0.16	1.16
Characteristics of self-injury												
Cutting (yes)				0.16	0.29	1.18	0.21	0.46	1.23	0.21	0.40	1.23
Lethality of injury (higher)				0.66	4.77	1.93*	0.67	4.83	1.95*	1.06	9.85	2.88**
Status at the time of self-injury												
Planned (yes)							1.98	3.08	7.21	1.96	2.46	7.12
Alcohol (yes)							0.36	1.11	1.44	0.50	1.85	1.64
Suicide note (yes)							0.55	0.43	1.74	0.64	0.58	1.90
Seeking help (yes)							−0.32	1.13	0.73	−0.35	1.25	0.70
Current suicidal ideation and plans												
Sustained suicidal ideation (yes)										1.06	7.94	2.87**
Future suicidal plans (yes)										0.72	3.29	2.05
Statistics of the model												
-2LL	303.173			298.317			291.680			271.431		
Model χ^2	9.384 (df = 5)			14.241 (df = 7)*			20.877 (df = 11)*			41.126 (df = 13)***		
Step χ^2	9.384 (df = 5)			4.857 (df = 2)			6.636 (df = 4)			20.249 (df = 2)***		
Nagelkerke R^2	0.052			0.078			0.113			0.214		
Classification accuracy	67.2			68.8			66.4			68.8		

NSSI = non-suicidal self-injury, MSA = minor intent suicide attempt, OR = odds ratio.
*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.
[a]Cases with missing values for any independent variable were excluded from the analysis.

Table 4. Hierarchical logistic regression analyses results of participants with intentional suicide attempts,[a] with SSA as the dependent variable (N = 413[b])

Independent variables	Model 1			Model 2			Model 3			Model 4		
	B	Wald	OR	B	Wald	OR	B	Wald	OR	B	Wald	OR
Demographics and historical factors												
Age, yr	0.03	12.18	1.03***	0.02	3.56	1.02	0.02	2.72	1.02	0.02	2.82	1.02
Sex (female)	−0.55	4.83	0.58*	−0.42	2.24	0.66	−0.37	1.60	0.69	−0.39	1.78	0.68
Previous suicide attempts (yes)	−0.34	1.90	0.71	−0.42	2.10	0.66	−0.50	2.85	0.61	−0.51	2.88	0.60
Psychiatric treatment (yes)	−0.41	1.67	0.66	−0.49	1.76	0.62	−0.42	1.23	0.66	−0.40	1.10	0.67
Psychiatric hospitalizations (yes)	0.03	0.01	1.03	0.10	0.13	1.11	0.15	0.28	1.17	0.16	0.30	1.17
Characteristics of self-injury												
Cutting (yes)				−1.88	33.67	0.15***	−1.79	29.28	0.17***	−1.75	27.69	0.17***
Lethality of injury (higher)				1.75	30.62	5.78***	1.79	30.13	5.98***	1.79	29.58	6.01***
Status at the time of self-injury												
Planned (yes)							0.80	2.96	2.22	0.71	2.33	2.04
Alcohol (yes)							0.56	4.11	1.75*	0.57	4.18	1.76*
Suicide note (yes)							0.79	2.74	2.20	0.80	2.78	2.22
Seeking help (yes)							−0.73	8.14	0.48**	−0.74	8.37	0.48**
Current suicidal ideation and plans												
Sustained suicidal ideation (yes)										−0.07	0.05	0.93
Future suicidal plans (yes)										0.31	1.07	1.36
Statistics of the model												
-2LL	514.304			415.113			397.343			396.163		
Model χ²	42.246 (df = 5)***			141.437 (df = 7)***			159.207 (df = 11)***			160.387 (df = 13)***		
Step χ²	42.246 (df = 5)***			99.191 (df = 2)***			17.770 (df = 4)**			1.180 (df = 2)		
Nagelkerke R²	0.131			0.392			0.432			0.435		
Classification accuracy	63.2			77.5			77.5			77.2		

SSA = serious intent suicide attempt, OR = odds ratio.
*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.
[a]Intentional suicide attempts included minor intent suicide attempts and SSA.
[b]Cases with missing values for any independent variable were excluded from the analysis.

Table 5. Statistically significant results and directionality of associations (positivity or negativity for coefficients, B value) of three hierarchical logistic regression analyses summary

Variables	Statistical significance (positive/negative coefficients)		
	Analysis 1. NSSI vs. MSA+SSA	Analysis 2. NSSI vs. MSA	Analysis 3. MSA vs. SSA
Demographics and historical factors			
Age, yr			
Sex (female)	(−)		
Previous suicide attempts (yes)			
Psychiatric treatment (yes)			
Psychiatric hospitalizations (yes)			
Characteristics of self-injury			
Cutting (yes)			(−)
Lethality of injury (higher)	(+)	(+)	(+)
Status at the time of self-injury			
Planned (yes)			
Alcohol (yes)			(+)
Suicide note (yes)			
Seeking help (yes)			(−)
Current suicidal ideation and plans			
Sustained suicidal ideation (yes)	(+)	(+)	
Future suicidal plans (yes)			

NSSI = non-suicidal self-injury, MSA = minor intent suicide attempt, SSA = serious intent suicide attempt.

DISCUSSION

Among all self-injury patients, clinical indicators that distinguished MSA and SSA from NSSI were sex, higher lethality of injury, and sustained suicidal ideation. For NSSI and MSA patients, higher lethality of injury and sustained suicidal ideation were significant predictors

of MSA. Among MSA and SSA patients, predictors of SSA included the use of self-injury methods other than cutting, higher lethality of injury, self-injury under the influence of alcohol, and absence of help-seeking at the time of injury. Psychiatric history, including past suicide attempts, psychiatric treatment, and psychiatric hospitalization was not significantly associated with suicidal intent (**Table 5**).

This study offers several novel contributions that distinguish it from prior research. By categorizing self-injurious behaviors into NSSI, MSA, and SSA, it captures the subtle differences in intentionality, overcoming the limitations of aggregated data. Its focus on the ED-specific context provides practical insights for high-stakes environments where rapid decision-making is critical, addressing a gap left by previous research that primarily focused on community or outpatient settings. Furthermore, the use of hierarchical logistic regression models offers a structured approach to identifying high-risk patients, with OR values highlighting the relative importance of key predictors. Conducted in South Korea, this study also provides valuable insight into a unique cultural and epidemiological context, filling a significant gap in global suicide research.

Being female was negatively associated with intentional suicide attempts among participants with self-injury. Hence, being male emerged as a significant clinical indicator predicting suicide attempts rather than NSSI, aligning with the prevalence of NSSI among women.[15,27] A South Korean study found the 12-month prevalence of NSSI was 2.85 times higher in female than male students.[28] A 2015 meta-analysis also suggested that women were significantly more likely than men to report NSSI, especially cutting.[29] Psychological distress played a key role in this pattern,[27] suggesting that NSSI might serve as a coping mechanism for negative emotions, which women tend to experience more than men.[30] Although women show higher suicide attempt rates (MSA and SSA),[31] male sex remains a prominent risk factor for suicide completion, known as the gender paradox of suicidal behavior.[32] Men tend to use more lethal methods and are generally more likely to complete suicide.[33] Our study focused on non-fatal suicide attempts, which explains the absence of significant sex differences between the MSA and SSA groups.

Higher lethality of injury was a significant factor across all regression models. Lethality was defined based on the severity of medical attention required. Participants with even minor suicidal intents presented to the ED with more severe injuries than those with NSSI. Additionally, individuals with more serious suicidal intentions experienced more fatal self-injuries. Suicide attempts differ from NSSI in intent and function, with NSSI often aimed at emotional relief rather than death.[34-36] Mortality rates for suicide attempts are significantly higher and correlates with the lethality of the methods employed.

Cutting was negatively associated with SSA as less lethal methods such as cutting are more common in NSSI.[37] The most common methods of committing suicide in Korea were hanging (51.93%), jumping (15.81%), and gas poisoning (13.73%).[38] However, NSSI typically involves cutting, scratching, hitting oneself, banging objects, and biting.[39] Suicide attempts are fatal in 10–20% of all cases, whereas NSSI results in death in 0.6% of cases, most often caused by cutting an artery.[40]

Help-seeking behaviors were negatively associated with SSA among participants with intentional suicide attempts, suggesting serious suicidal intentions in those who did not seek help. Individuals often reduce healthcare interactions before death,[41] which makes

help-seekers typically lower risk for lethal attempts.[42] Our findings align with these results. No significant difference in help-seeking behavior was found between the NSSI and MSA groups, likely due to the lower severity and lethality of injuries. NSSI can attract care and attention, serving as a means of connection, communication, or distraction from negative emotions.[43-46] Mental disorders, including borderline personality disorder and depression, often linked to emotional dysregulation and impulsivity, may lead to repetitive NSSI and more help-seeking behaviors. However, assuming that help-seeking indicates a lack of serious intent is risky, as some survivors view self-injury as attention-seeking and may avoid seeking help despite serious intentions.[47-49]

Self-injury under the influence of alcohol was a significant predictor of SSA, as alcohol increases impulsivity and self-injury intentions. Alcohol impairs judgment and heightens susceptibility to risky behaviors, including suicide attempts.[50,51] Furthermore, acute psychiatric patients who abuse alcohol often exhibit more severe suicidal ideation.[52] While this study included alcohol consumption at the time of self-injury as an independent variable, it did not account for a history of alcohol use disorder, which was grouped under psychiatric treatment history. This limitation should be considered when interpreting the results. The findings underscore the importance of addressing harmful alcohol consumption and intoxication as a key factor in suicide prevention.

Sustained suicidal ideation was a clinical indicator for predicting intentional suicide attempts among participants with self-injury. Suicidal ideation significantly increases the risk of suicide attempts.[16] Other studies have shown that individuals with high suicidal intent present with sustained suicidal ideation, depression, premeditation, and older age compared to those with low or intermediate intent.[53] However, this study found no significant differences in sustained ideation rates between MSA and SSA groups, suggesting SSA is driven more by impulsivity, often linked to alcohol use. The close relationship between alcohol abuse and depression complicates the identification of the leading condition.[54,55] Additionally, this study found no significant differences in planned suicide attempts among the three groups. Therefore, ED evaluations should include suicidal ideation as a key clinical indicator for identifying individuals at risk of developing SSA, which is crucial for determining patient admission and appropriate follow-up care.

Contrary to previous research, psychiatric history, including past suicide attempts, psychiatric treatment, and hospitalization, showed no significant association with suicidal intent. However, prior suicide attempts are strong predictors of completed suicide.[56] Recent studies also identify psychiatric treatment, agitation, intense emotions, and self-reproach as risk factors.[57] Some findings suggest that higher depression levels may reduce the ability to plan and execute lethal attempts, resulting in fewer severe cases.[58] These inconsistencies highlight the need to further explore the relationship between attempt severity and intent. In the ED, psychiatric history is often under-evaluated due to brief questioning, patient reluctance, confusion, or disorientation, suggesting that clinical indicators of suicidal intent may differ from those used in psychiatric or counseling settings.

This study has limitations. First, it was conducted at a single tertiary hospital in a metropolitan area, potentially introducing selection bias. Second, the sample only included participants in the national aftercare program, excluding those who refused participation, completed suicide, or were unconscious, possibly leading to bias. Third, structured questionnaires limited data collection on variables such as interpersonal relationships,

economic status, and occupation. Key risk factors, including trauma and violence, were not assessed due to reliance on ED data. Future research should involve in-depth interviews and multicenter surveys to address these gaps.

This study identified key clinical indicators for the rapid evaluation of suicidal intent in self-injury patients presenting to the ED. Male sex, injury lethality, and sustained suicidal ideation are significant clinical predictors of suicidal attempts rather than NSSI. Among suicide attempters, those who used methods other than cutting, made high-lethality attempts, self-harmed under the influence of alcohol, and did not seek help may have serious suicidal intentions and require more thorough evaluation for crisis intervention, including emergency hospitalization. It is crucial to recognize that clinical indicators of suicidal intent in self-injury patients in the ED may differ from those typically evaluated in community or outpatient settings.

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