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Non-Suicidal Self-Injury and Suicide Risk Among Adult Medical Inpatients

Nathan J. Lowry, BA¹, Patrick C. Ryan, BA¹, Annabelle M. Mournet, BA¹, Deborah J. Snyder, MSW¹, Cynthia Claassen, PhD², David Jobes, PhD³, Colin Harrington, MD⁴, Maryland Pao, MD¹, Lisa M. Horowitz, PhD, MPH¹, Jeffrey A. Bridge, PhD⁵

¹Office of the Clinical Director, National Institute of Mental Health, Bethesda, MD, USA

²JPS Behavioral Health Service

³Department of Psychology, The Catholic University of America, Washington DC

⁴Rhode Island Hospital

⁵Abigail Wexner Research Institute at Nationwide Children's Hospital and The Ohio State University College of Medicine, Columbus, OH, USA

Abstract

Background: Non-suicidal self-injury (NSSI) is a potent risk factor for suicide among youth. There is limited research, however, on the association between NSSI and suicide risk among adults, particularly among adult medical patients, who are a population at increased risk for suicide. To address this research gap, the current analysis aimed to describe the association between lifetime history of NSSI and suicide risk in an adult medical inpatient population.

Method: Adult medical inpatients aged 18 or older from one of four United States hospitals were screened for suicide risk and a lifetime history of NSSI. Suicide risk was determined using the Ask Suicide-Screening Questions (ASQ). NSSI history, methods, frequency, and severity were assessed via a structured interview based on the Self-Injurious Thoughts and Behaviors Interview.

Results: A total of 621 adult medical inpatients were included in this secondary analysis (55.2% male; 60.9% White; $M[SD]$ age = 50.3[16.7]); 5.8% of patients (36/621) reported a lifetime history of NSSI and 16.1% (100/621) screened positive for suicide risk. Patients with a lifetime history of NSSI were significantly more likely to screen positive for suicide risk (OR = 9.4 [95% CI, 4.4–20.8]; $p < .0001$).

Limitations: This analysis used cross sectional data and could not examine any causal relationships between NSSI and suicide risk.

Corresponding Author: Lisa M. Horowitz, Ph.D., M.P.H., Office of the Clinical Director, National Institute of Mental Health, NIH, 10 Center Drive 10-CRC Rm. 6-5340, Bethesda, MD, 20892-1276, [horowitzl@mail.nih.gov].

Conflict of Interest

The other authors have no conflicts of interest relevant to this article to disclose.

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Conclusions: Adult medical inpatients with a lifetime history of NSSI were significantly more likely to screen positive for suicide risk. Research examining NSSI among adult medical patients is especially relevant for suicide risk detection and prevention efforts.

Keywords

non-suicidal self-injury; adult medical inpatients; suicide

Non-suicidal self-injury (NSSI) occurs when a person deliberately harms themselves without intent to die, and for reasons that are not culturally sanctioned (DeSon et al., 2021). NSSI behaviors typically emerge during adolescence, with youth who engage in NSSI harming themselves in non-lethal manners, such as cutting or burning on the arms, legs, or wrists (Cipriano et al., 2017). Youth report that NSSI serves a variety of functions, most commonly as a method of relieving unwanted negative emotions and dissociative states (Taylor et al., 2018). Notably, while NSSI does not indicate the presence of suicidal ideation or behavior, youth who engage in NSSI are significantly more likely to have thoughts of suicide and attempt suicide (Hamza & Willoughby, 2016; Kiekens et al., 2018).

While NSSI has been studied extensively among adolescent and young adult populations, research examining NSSI among adult populations is limited. Consistent with prior research on youth NSSI, adults who engage in NSSI report doing so to improve negative personal affect (Klonsky, 2011). Unlike youth populations, the prevalence of recent NSSI behavior (within the last 12 months) among adults is lower (4% vs 19.5%, respectively; (Klonsky, 2011; Lim et al., 2019) – although the prevalence of NSSI may be elevated in certain adult populations, such as adult psychiatric outpatients. In a study examining the prevalence of NSSI among patients receiving care in Norwegian outpatient psychiatric clinics, 8% of adults reported engaging in NSSI at least once within the past four weeks (Ose et al., 2021). Moreover, among patients who reported engaging in NSSI, 27.8% experienced concurrent suicidal ideation.

Prior research has found that adults with a history of or current NSSI are at elevated risk for suicide (Chartrand et al., 2020; Nock et al., 2018). However, research on the association between NSSI and suicide risk among adult medical patients – a population at increased risk for suicide (Ahmedani et al., 2017) – is limited. Given that it is becoming more common for medical settings to inquire about suicide risk, it would be advantageous to know how a history of previous psychopathology, such as NSSI, is associated with current suicide risk. Improving this knowledge base has the potential to inform best practices for patient care, risk management, and safety. To address this knowledge gap, the current analysis aimed to describe the association between a lifetime history of NSSI and suicide risk in an adult medical inpatient population. In addition, this analysis aimed to characterize NSSI according to method, recency, and severity of injury.

Method

Sample and Setting

This is a secondary analysis of cross-sectional data collected from a multisite instrument validation study. Participants were recruited between June 2014 and October 2019 from four large urban/suburban United States hospitals (National Institutes of Health Clinical Center, Rhode Island Hospital, Walter Reed National Military Medical Center, and JPS Health Network). To be considered eligible to participate, patients had to be admitted to an inpatient medical/surgical unit, be 18 years of age or older, and be fluent in English. Participants who were cognitively impaired or medically unable to answer questions were deemed ineligible for this study. This study received Institutional Review Board approval from the National Institute of Health and all participating study sites. In addition to the measure listed below, participants completed a demographics survey. All study measures were administered verbally by trained study staff. Additional details of study methodology can be found elsewhere (Horowitz, Snyder, et al., 2020).

Measures

Ask Suicide-Screening Questions (ASQ).—The ASQ is a brief 4-item tool used to identify suicide risk in the medical setting. The ASQ was originally developed for pediatric patients (Aguinaldo et al., 2021; Horowitz et al., 2012; Horowitz, Wharff, et al., 2020) and has since been validated for use among adult medical patients (Horowitz, Snyder, et al., 2020). In the current study, the ASQ was administered verbally by trained nursing staff. Participants who answered “yes” to any item on the ASQ were considered “at risk” for suicide. The ASQ has a sensitivity of 100% and a specificity of 89% for detecting suicide risk among adult medical inpatients (Horowitz, Snyder, et al., 2020). Patients who screened positive on the ASQ received a brief suicide safety assessment by a trained clinician, and when clinically indicated, a full psychiatric consultation.

Non-suicidal self-injury (NSSI).—A structured interview was conducted with study participants to evaluate any history of NSSI behavior. Study questions were based on the Self-Injurious Thoughts and Behaviors Interview (Nock et al., 2007), a validated measure that assesses the presence of self-harm behavior, including NSSI. Participants were first asked a single question to assess a lifetime history of NSSI (“Have you ever done anything to purposefully hurt yourself without wanting to die (for example, cutting or burning yourself)?”). If a participant indicated they had engaged in NSSI previously, free response follow up questions were asked to evaluate NSSI frequency (“How many times in your life have you purposely hurt yourself without wanting to die?”), methods (“What method(s) have you used to hurt yourself?”), recency (“When was the most recent time you hurt yourself without wanting to die?”), and severity (“Have you ever received medical treatment (e.g., stitches) for harm caused by purposely hurting yourself without wanting to die?”).

Data Analyses

For the purposes of this analysis, any participant who did not complete both the ASQ and first NSSI study item were removed. A total of 106 participants were removed from this analysis; participants with missing data were more likely to be female ($p < 0.05$).

To determine which participants had engaged in NSSI within the past year, researchers compared participant answers for NSSI recency (“When was the most recent time you hurt yourself without wanting to die?”) to the date of study participation. Binary logistic regression models were calculated to assess the association between NSSI and suicide risk. Univariate and multivariable statistics were calculated to describe NSSI sample characteristics. Significance was defined as $p < 0.05$, and all tests were 2-tailed.

Results

A total of 621 adult medical inpatients were included in this analysis. Table 1 presents participant demographic information. Most participants were male (55.2%) and White (60.9%), and patient ages ranged from 18 to 93 ($M[SD]$ age = 50.3[16.7]). Out of the entire sample, 5.8% (36/621) of patients reported a lifetime history of NSSI and 16.1% (100/621) screened positive for suicide risk.

NSSI Sample Characteristics.

Among those who indicated a lifetime history of NSSI, 30.6% (11/36) reported that they had engaged in NSSI within the past year. The most common method reported among those with a history of NSSI was cutting or burning (55.6%, 20/36) with several patients (25%, 9/36) reporting multiple NSSI methods. The number of times participants engaged in NSSI ranged from 1 to 800, with a median of 4.5 (interquartile range = 5.75). When asked about the severity of injury sustained from NSSI, most patients reported that they did not receive medical treatment for their injuries (69.4%, 25/36). All NSSI sample characteristics are presented in Table 2.

NSSI and Suicide Risk.

Compared to those without a history of NSSI, adult medical inpatients with a lifetime history of NSSI were 11 times more likely to screen positive on the ASQ (OR = 11.7 [95% CI, 5.7–24]; $p < .0001$). When adjusting the model to account for gender, race, and age, adult medical inpatients with a lifetime history of NSSI were significantly more likely to screen positive for suicide risk (OR = 9.4 [95% CI, 4.4–20.8]; $p < .0001$).

Discussion

Adult medical inpatients with a lifetime history of NSSI were significantly more likely to screen positive on the ASQ, providing further evidence that NSSI may be an important risk factor for suicide risk. Increased levels of perceived burdensomeness associated with severe illness may contribute to elevated rates of suicide risk among adult medical inpatients (Mournet et al., 2021). Moreover, given that NSSI is a potent risk factor for suicide, it is possible that a history of NSSI acts as a moderator to increase medically ill adults’ risk for suicide. To date, research on NSSI has primarily focused on youth populations. However, the association between NSSI and suicide risk found in this analysis indicates the need for future research to examine NSSI among adult medical inpatients to better inform suicide risk detection and prevention efforts.

Notably, among patients with a lifetime history of NSSI, almost a third reported having engaged in NSSI within the past year. This finding was somewhat surprising, as NSSI is a behavior typically associated with adolescents or young adults. Patients in this investigation who reported past year NSSI behavior had a mean age of 32 (SD=8.1), suggesting that NSSI engagement may continue into adulthood. Consistent with previous research (Klonsky, 2011), cutting and burning were the most common methods of NSSI in this sample, and the majority of patients did not require medical attention for their injuries.

A better understanding of NSSI behaviors may help guide future suicide prevention efforts. Prior research has found the relationship between NSSI and suicide to be moderated by factors such as NSSI frequency, or the number of NSSI methods an individual engages in (Anestis et al., 2015; Whitlock et al., 2013). Future research should aim to further our understanding of NSSI among adults and how aspects of NSSI, such as severity, methods, and frequency, influence an individual's suicide risk.

Limitations

There are limitations to this study which should be noted. Foremost, this study was not designed to examine NSSI among adult medical inpatients. Thus, information that could help to further characterize NSSI in this sample, such as motivations for NSSI, was not collected. This study also used a series of dichotomous “yes/no” questions to assess NSSI history. Previous research has found that behavioral checklists result in more accurate self-reporting of NSSI behavior (Swannell et al., 2014) and should be used in future research. Future research should also collect information on common mental health disorders, such as depression and anxiety, to examine the co-occurrence of NSSI and psychopathology. Additionally, the generalizability of findings from this analysis may be limited by geographical and patient population differences among the cities. Hence, findings from this study may not represent community medical settings and should be interpreted with caution. Future research should aim to characterize population-level differences in NSSI engagement, frequency, and functions.

Conclusion

Patients with a lifetime history of NSSI were significantly more likely to screen positive for suicide risk, providing initial evidence that NSSI may be an important risk factor for suicide among medically ill adults. Given the association between NSSI and suicide risk found in this study, further research on NSSI among adult medical patients can inform suicide risk detection and prevention efforts. Moreover, examination of distinguishing aspects of NSSI among adults has the potential to enhance our understanding of NSSI as a risk factor for suicide.

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Highlights

- Lifetime history of NSSI was associated with suicide risk among adult inpatients
- Almost a third of patients reported engaging in NSSI within the past year
- Cutting and burning are the most common methods of NSSI reported in this sample

Table 1:

Participant Demographics by NSSI History

Characteristic	Entire Sample (N = 621)	NSSI History (N = 36)	No NSSI History (N = 585)	P Value
Gender				
Female	277 (44.6%)	21 (58.3%)	256 (43.8%)	.23
Male	343 (55.2%)	15 (41.7%)	328 (56.1%)	
Unknown	1 (0.2%)	-	1 (0.1%)	
Race				
Asian	15 (2.4%)	-	15 (2.5%)	.87
Black	127 (20.5%)	6 (16.7%)	121 (20.7%)	
Native Hawaiian or Pacific Islander	1 (0.2%)	-	1 (0.2%)	
White	378 (60.9%)	25 (69.4%)	353 (60.3%)	
Multiracial	19 (3.1%)	1 (2.8%)	18 (3.1%)	
Other/Unknown	81 (12.9%)	4 (11.1%)	77 (13.2%)	
Ethnicity				
Latino or Hispanic	61 (%)	4 (11.1%)	57 (9.7%)	.50
Mean age (range 18–93)	50.3 (SD = 16.7)	39.4 (SD = 14.5)	51 (SD = 16.6)	<0.001
Reason for Hospital Admittance				
GM	360 (58.0%)	18 (50.0%)	342 (58.5%)	
S	142 (22.9%)	9 (25.0%)	133 (22.7%)	
Injury	40 (6.4%)	1 (2.8%)	39 (6.7%)	
GM & Psych	7 (1.1%)	2 (5.6%)	5 (0.9%)	
Psych	3 (0.5%)	1 (2.8%)	2 (0.3%)	
Other/Unknown	69 (11.1%)	5 (13.9%)	64 (10.9%)	

Abbreviations: NSSI, non-suicidal self-injury; GM, general medical condition; S, surgical assessment and treatment; Psych, psychiatric reason. Chi-square analyses and t-tests were performed to assess demographic differences between participants with and without a lifetime history of NSSI; Significance defined at the $p < 0.05$ level.

Table 2:

NSSI Sample Characteristics

Characteristic	N (%)
Method	
Cutting/burning skin	20 (55.6%)
Starving or binge eating	1 (2.7%)
Misusing alcohol/drugs	4 (11.3%)
Punching/hitting	1 (2.7%)
Multiple methods	9 (25%)
Unknown	1 (2.7%)
Recency	
>1 year ago	24 (66.7%)
<1 year ago	11 (30.6%)
Unknown	1 (2.7%)
Severity	
No medical treatment required	25 (69.4%)
Required medical treatment	9 (25%)
Unknown	2 (5.6%)
NSSI Lifetime Engagement Frequency (range: 1 to 800)	median = 4.5 (inter quartile range = 5.75)

Abbreviation: NSSI, non-suicidal self-injury

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