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Characteristics of self-harm on an adolescent psychiatric inpatient unit based on neurodevelopmental diagnoses

Annabelle M. Mournet^{a,*}, Alexander J. Millner^{b,c}, Evan M. Kleiman^a

^aRutgers, The State University of New Jersey, NJ, United States

^bFranciscan Children's, MA, United States

^cHarvard University, MA, United States

Abstract

Introduction: Engagement in self-harm is common among youth in psychiatric inpatient units, however the nature of self-harm may be different in psychiatric care due to the increased supervision and theoretically decreased access to typical means of self-harm. This study aims to describe daily reports of self-harm experienced during psychiatric inpatient stays among adolescents and compare these inpatient self-harm experiences based on neurodevelopmental diagnoses (NDDs, including autism) given that self-harm methods differ across NDD diagnostic groups outside of the inpatient unit.

Methods: Data were derived from a larger study of risk factors among a sample of 119 suicidal adolescent inpatients, recruited from a large, urban adolescent inpatient psychiatric unit. Participants answered a daily series of self-report questions, including items about self-harm engagement, frequency, and methods used since the last survey.

Results: There was no difference in the number of participants who reported any engagement in self-harm based on diagnostic group ($\chi^2 = 0.08, p = .96$). There were also no differences in the frequency of self-harm across diagnostic groups ($F = 2.40, p = .12$). There were no differences in the use of any method across diagnostic groups ($ps > 0.05$).

Conclusions: Findings revealed that in an inpatient unit where patients are presenting for self-harm risk, there are no significant differences in engagement, frequency, or methods used for self-harm based on autism and NDD status. These analyses provide valuable clinical information regarding a lack of differences in self-harm by these diagnostic subgroups. Future research should seek to further explore functional purposes of self-harm on inpatient unit and how this differs by diagnoses.

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*Corresponding author: Department of Psychology, Rutgers, The State University of New Jersey, NJ, United States. amm883@psych.rutgers.edu (A.M. Mournet).

CRediT authorship contribution statement

Annabelle M. Mournet: Writing – original draft, Formal analysis. **Alexander J. Millner:** Writing – review & editing, Project administration, Data curation. **Evan M. Kleiman:** Writing – review & editing, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest
None.

Keywords

Adolescents; Inpatient; Self-harm; Neurodiversity

Engagement in self-harm is common among youth admitted to psychiatric inpatient units (Timberlake et al., 2020). Limited prior research has examined self-harm among samples of youth admitted to psychiatric inpatient units. One study to date shows non-suicidal self-injury (NSSI) on a psychiatric inpatient unit is predicted by similar factors (e.g., difficulty with emotion regulation) that are seen in studies outside of the hospital (Preyde et al., 2014). However, there has been limited research that works to characterize what self-harm looks like on an inpatient unit.

It is important to characterize self-harm on inpatient units because inpatient units create a scenario where typical types of self-harm (e.g., cutting, burning) may be less possible due to the increased supervision (e.g., routine checks by clinical staff) and decreased access to means. Indeed, most of the recommendations for safety in inpatient care involve restriction of objects that can be used to harm oneself (Cardell et al., 2009). Thus, it may be that individuals who want to self-harm cannot do so in their typical ways. For example, self-cutting is the most common form of NSSI among the general population of adolescents (Gillies et al., 2018). It may be difficult to obtain a sharp object to cut oneself on an inpatient unit. Thus, individuals who want to self-harm during inpatient care may turn to less common, but easier-to-implement, methods like hair pulling or headbanging.

Interestingly, although many of the ways that may be most possible to engage in self-harm on an inpatient unit are less common in the general population, they are some of the most common forms of self-harm in other populations. Specifically, one study found that the most common forms of self-harm in autistic individuals was head banging (Steenfeldt-Kristensen et al., 2020). While autistic and non-autistic individuals may differ in their preferred method of self-harm outside of an inpatient unit, we speculated that it may be that the differences in form of self-harm are less apparent when the methods typically used by autistic individuals are the most accessible methods to all individuals during inpatient care.

Autistic individuals and individuals with neurodevelopmental diagnoses (NDDs, e.g., ADHD) more broadly also represent a population with high engagement in self-harm (Blanchard et al., 2021; Moseley et al., 2019), making these important clinical populations to study in relation to one another. On inpatient units in particular, existing research has shown that autistic adolescents and adults with attention deficit disorders are at an increased risk for self-harm (Humphreys et al., 2018; Mazzone et al., 2016). Despite this, little is understood regarding the characteristics and functions of self-harm among these populations (Symons, 2011), making prevention and intervention a challenge that requires prompt action to address. Accordingly, this study aims to compare aspects of daily reports of self-harm experienced during inpatient stays among adolescent psychiatric inpatients based on having a diagnosis of autism, other NDDs (e.g., attention deficit disorders, tic disorder), or no NDDs. The division of diagnostic groups into autism, other NDDs, and no NDDs is consistent with previous literature examining outcomes and characteristics of these populations (e.g., De Giacomo et al., 2021; Isaksson et al., 2019). Given the

limited existing research on characteristics of self-harm by neurodevelopmental disorders, the present analyses are largely exploratory, however an a priori hypothesis was that autistic individuals would have greater endorsement of headbanging as a method.

1. Methods

1.1. Participants and procedures

Data was derived from a larger study of suicidal adolescent inpatients (Kleiman et al., 2019). Eligible patients were those admitted to the inpatient unit due to recent suicidal behavior or severe suicidal thinking that puts them at risk for suicidal behavior. The sample consisted of 118 adolescents aged 12–19 ($M = 15.78$ years, $SD = 1.77$ years) recruited from a large, urban adolescent inpatient psychiatric unit. The sample was 79.8 % female. Regarding race and ethnicity, the sample was 80.5 % non-Hispanic White, 4 % Asian, 4 % African American, 4 % Hispanic, and 7.5 % of participants endorsed multiple races. Admission data showed that 87 % of the participants reported a history of suicidal ideation, 63 % reported a history of non-suicidal self-injury, and 54 % reported a history of suicide attempts.

The study was conducted while participants were admitted to the inpatient unit. Participants were recruited and enrolled as close as possible to their hospital admission date. For potential participants ages 18 years and older, individuals were approached directly by a study team member to determine interest in participation, eligibility, and complete a written informed consent protocol. For potential participants under 18 years old, parents/guardians were approached and completed a written consent protocol. The potential participant then provided written assent. The governing hospital and affiliated university IRBs approved all study procedures.

Participants completed a baseline clinical intake assessment that queried for self-report of mental health diagnoses, including NDDs, which was used to establish NDD status. The baseline assessment also included the Self Injurious Thoughts and Behaviors Interview – Self Report (Nock et al., 2007). This tool assessed for a history of suicidal ideation, suicide attempts (i.e., “Did you ever make a suicide attempt [that is, purposefully hurt yourself with at least some intent to die]?”), and non-suicidal self-injury history (i.e., “Did you ever do something to hurt yourself on purpose, but without wanting to die [for example, cutting yourself, hitting yourself, or burning yourself]?”). Participants met each weekday with a study staff member for the duration of their stay on the inpatient unit to answer a series of self-report daily diary questions. Self-report questions were completed at approximately the same time each weekday. Questionnaires assessing experiences, emotions, and events since the prior check-in were completed using an iPad. Participants were not compensated, in accordance with hospital policy.

1.2. Measures

Mental health diagnoses.—During the hospital intake assessment, intake clinicians assessed diagnostic history based on parent report, including autism spectrum disorders, attention deficit disorders (hyperactive and inattentive types), learning disorders, tic disorders, nonverbal learning disorders, social communication disorder, and other

neurodevelopmental disorders. The participant's chart was used to obtain diagnostic data. Based on endorsement of these diagnoses, participants were classified into three diagnostic groups: 1) autistic individuals (ASD group), 2) non-autistic individuals with a different NDD diagnosis (NDD group), 3) individuals with no NDD diagnoses (no NDDs group).

Self-injury.—Self-injury was assessed during each daily check-in by asking participants whether they had hurt themselves on purpose (regardless of suicidal intent) since their most recent check-in. Participants who endorsed self-harm since the last check-in were asked a series of follow-up questions including how many times they had hurt themselves in that time period as well as what method they used to hurt themselves in each instance of self-harm since the last check-in. They were provided with a series of eight method categories: “cut/carved myself,” “hit myself on purpose,” “burned myself on purpose,” “head-banged,” “scraped my skin to the point of drawing blood on purpose,” “picked my skin to the point of drawing blood,” “hit, punched or kicked something on purpose to hurt myself,” and “other” (e.g., stabbing with a pencil, pinching self) with a textbox to provide a description.

1.3. Analytic strategy

Descriptive statistics are reported on engagement, frequency, and method across diagnostic groups (autism, other NDD, no NDD). A chi-square test was used to examine differences in the number of participants who reported any engagement in self-harm during the duration of the study based on the diagnostic group. An ANOVA was used to examine differences in the frequency of self-harm across diagnostic groups and a series of generalized linear models were used to examine differences in engagement in each self-injury method by diagnostic groups.

2. Results

The ASD group was comprised of 6 participants, with 3 of these participants endorsing self-injury at least once during the study. The NDD group was comprised of 25 participants, with 9 endorsing self-injury at least once during the study. The no NDDs group consisted of 87 participants and 31 of these participants endorsed at least one instance of self-injury during the study. There was a total of 762 daily surveys. On average, ASD participants were on the inpatient unit for 18.67 days and completed 4.16 surveys, whereas NDD participants were on the unit 29.50 days and completed 6.00, and no NDDs participants were on the unit 17.49 days and completed 6.75 surveys across the duration of their time in the study. There was no significant difference in the number of days on the unit ($F = 1.91, p = .154$) nor the number of surveys completed based on diagnostic group ($F = 0.85, p = .359$).

There was no significant difference in the number of participants who reported any engagement in self-harm during the duration of the study based on the diagnostic group ($\chi^2 = 0.08, p = .96$). On the daily check-ins, among participants endorsing self-injury, the average number of reported self-injury engagements since the most recent check-in was 2.00 for the ASD group, 1.91 for the NDD group, and 2.47 for the no NDDs group. There were also no significant differences in the frequency of self-harm since the most recent check-in among those reporting self-injury across diagnostic groups ($F = 2.40, p = .12$). For each self-injury method, there were no significant differences in the use of any method across

diagnostic groups ($p > 0.05$; Table 1; Fig. 1). Of note compared to the no NDDs group, the NDD group approached significance for being statistically more likely to engage in skin picking as a method (OR = 4.02, 95 % CI = 0.92–17.55, $p = .06$).

3. Discussion

Findings revealed that in an inpatient unit where patients are presenting for serious self-harm risk, there are no significant differences with regards to engagement, frequency or methods used for self-harm on the inpatient unit based on autism and NDD status. This may be due to inherent limitations to patients' typical self-harm practices on an inpatient unit, resulting in individuals going beyond their typical behavioral repertoire in this setting due to being constrained to use only methods available to them on an inpatient unit. These analyses provide valuable clinical information regarding a lack of differences in self-harm by these diagnostic subgroups.

The lack of differences in methods may be particularly reflective of limitations to patients' usual methods of self-harm. For instance, while headbanging is a common behavior observed among autistic individuals (Summers et al., 2017), in the present study the other NDDs and no NDDs diagnostic groups reported similar rates of headbanging during their inpatient stay. In an inpatient setting, with limited access to other means of self-injury, non-autistic individuals may be more prone to this self-injury method than they may otherwise be when not admitted to the unit. This suggests a need for investigation into why an individual engages in one method rather than another and how this might deviate from typical self-injury behaviors. Additionally, regarding methods used by autistic individuals, it is important to consider that some autistic individuals may engage in headbanging but not consider this self-injury, but rather stimming (e.g., repetitive hand and finger movements, or other repetitive physical movements or vocalizations intended to provide calmness or expression of feelings) (Kapp et al., 2019). Accordingly, more research is needed to explore how autistic individuals classify the function of certain behaviors that may externally appear to be self-injury but internally serve an alternative function for the patient. Furthermore, while no significant differences in methods were found and small samples were utilized, preventing generalizability, the striking proportion of autistic participants engaging in cutting as a self-injury form reveals a need for increased attention towards the presence of sharp objects in inpatient units to further means restriction efforts and is consistent with prior research of NSSI among autistic adults using community samples (Moseley et al., 2022). Different clinical management techniques may be needed based on neurodevelopmental status for managing self-harm.

This study has several limitations to consider. First, some youth, particularly autistic youth, may have been engaging in certain behaviors defined in the self-injury methods, but did not classify or report it as self-injury, thereby impacting the results. Second, while the daily diary nature of this study allowed for sufficient samples to perform the current analyses, we were nonetheless limited with small sample sizes for the autism group preventing further investigation into risk factors associated with self-injury and limiting our results in terms of generalizability. Future research with larger sample sizes across diagnostic groups should seek to replicate and build upon these findings. Additionally, we lack research data for

individuals that declined to participate which limits assessment of generalizability of the results. Finally, this study is limited by the use of self- or informant- report measures both for assessing self-harm behaviors and for obtaining diagnostic information. Subsequent studies in this research area should seek to use validated structured clinical interviews for these purposes.

Overall, this study revealed that for self-injury engagement, frequency, and methods used while on an inpatient unit, there were no significant differences based on diagnosis of autism or another NDD. These findings have important implications regarding future steps for researchers to continue to understand how self-injury functions differently on an inpatient unit, as a way to work towards further keeping patients safe while hospitalized for risk of self-harm.

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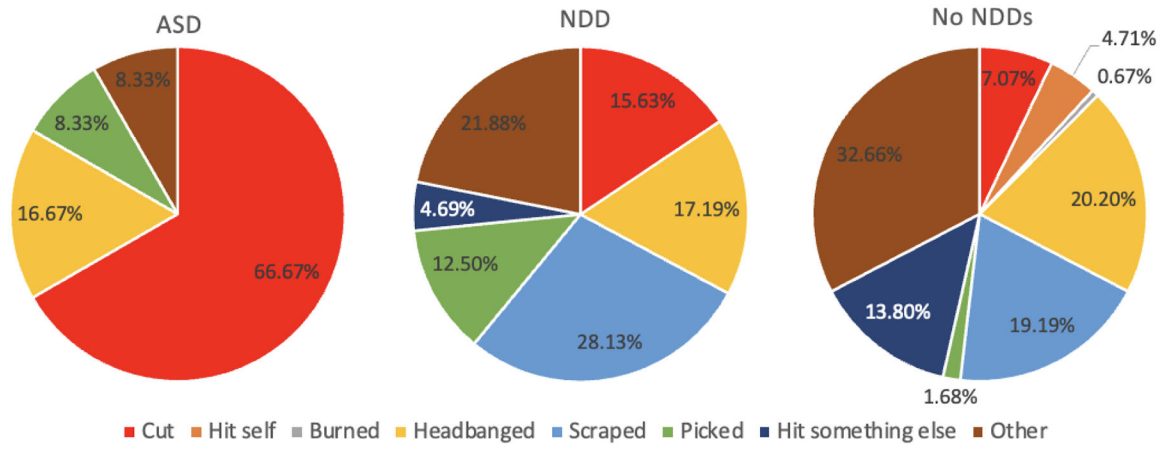


Fig. 1. Self-injury methods by diagnostic group.

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Table 1

Generalized linear logistic models for comparison of self-injury methods by diagnostic group.

Method	Odds Ratio	95 % CI	<i>p</i>
Cut/carved self			
ASD	3.27	0.04 – 298.84	.607
NDD	2.27	0.16 – 31.51	.543
Hit self			
ASD	–	–	–
NDD	–	–	–
Burned self			
ASD	–	–	–
NDD	–	–	–
Headbanged			
ASD	1.20	0.01 – 103.60	.936
NDD	0.77	0.06 – 9.95	.843
Scraped skin			
ASD	–	–	–
NDD	1.91	0.56 – 6.51	.299
Picked skin			
ASD	4.19	0.32 – 54.11	.273
NDD	4.02	0.92 – 17.55	.064
Hit something else			
ASD	–	–	–
NDD	0.75	0.02 – 23.97	.869
Other			
ASD	0.80	0.00 – 145.08	.933
NDD	1.26	0.09 – 16.97	.861

*The comparison group is no NDDs for all models.

–Insufficient sample size.