Nonsuicidal self-injury, suicide ideation and suicide attempts in the National Guard

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A R T I C L E   I N F O

A B S T R A C T

Background: Among members of the National Guard, suicide rates are higher than age and sex matched civilian counterparts. Across many civilian samples, nonsuicidal self-injury has emerged as a particularly strong correlate of suicide risk. The current study describes the prevalence and correlates of NSSI and suicidal thoughts and behaviors among National Guard members.

Methods: Participants were 897 National Guard personnel recruited online who completed study measures anonymously.

Results: Approximately 6% of males and 14% of females reported a history of NSSI. Almost one third of the sample reported suicide ideation and 3% of men and 11% of women reported a suicide attempt. NSSI was strongly associated with a history of suicide ideation and attempts. Characteristics of NSSI were similar across men and women.

Discussion: Reliable access to effective interventions is essential for National Guard members in light of their risk for suicidal and nonsuicidal self-injurious behavior.

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1. Introduction

Suicide is an especially challenging problem in the military. Rates of suicide have doubled over the past decade for both military personnel and veterans [1]. Suicide within the National Guard component is particularly concerning, as rates are higher than age and sex matched civilian samples, something that is not true of the Regular army [2]. Further, despite a rise in suicide prevention efforts within the military, rates have not changed substantially over the past three years [2].

Outside of previous suicidal behaviors, nonsuicidal self-injury (NSSI) has been identified as a stronger correlate of suicidal behavior than other risk factors [3,4]. Perhaps given their common co-occurrence and their objective similarity, NSSI and suicidal behavior were long believed to be indistinguishable [5], and sometimes are still conceptualized as such [6,7]. However, the behaviors differ on a number of critical domains including prevalence, function, frequency, method, and severity (see Klonsky [4] for a review). While both are self-directed injurious behaviors, NSSI involves intentionally damaging oneself without implicit or explicit suicidal intent [8,9].

While research on suicide is relatively extensive, the focus of NSSI research until recent years has been primarily delineating NSSI from suicidal behavior [10] and has focused on adolescent and young adult populations [11]. Much less is known about NSSI among community samples of adults. A recent meta-analysis identified only 9 samples and estimated a lifetime prevalence rates for NSSI among adults to be 5.5% [12]. Research is even more limited in military populations. Prevalence rates for NSSI vary from 4 to 14% [13,14]. NSSI has been associated with suicidal ideation in Iraq/Afghanistan war veterans [15] and active duty soldiers who endorsed suicidal ideation or attempts in the past [16]. However, no studies have examined NSSI prevalence among members of the National Guard, nor whether the relationship between NSSI and suicide is similar or different in this high-risk group.

The aim of this study was to 1) describe the prevalence and characteristics of NSSI in a sample of the National Guard members and 2) examine the relationship between NSSI and suicidal thoughts and behaviors among National Guard members. Given that many characteristics of suicidal thoughts and behaviors and NSSI vary by sex [17], sex differences were examined.

2. Materials and methods

2.1. Participants

Participants were 897 National Guard personnel. Data on key variables (sex and/or NSSI) were missing from 8 (0.9%) participants, resulting in a useable sample of 889. Participants were from the Utah...
Air National Guard (n = 196, 22%), Utah Army National Guard (n = 289, 33%), the Idaho Army National Guard (n = 396, 45%), and other (n = 8, 1%). Sex distribution was 750 (84%) males and 139 (16%) females. The sample had the following age distribution: 9% 18–21, 27% 22–30, 36% 31–40, 21% 41–50, and 8% over 50. Racial distribution was 745 (84%) White, 51 (6%) Multiracial, 39 (4%) Hispanic/Latino, 26 (3%) Other, 9 (1%) Asian, 8 (1%) Black, 6 (1%) Native American, and 5 (1%) Pacific Islander. Rank distribution was 220 (25%) E1–E4 (Junior Enlisted), 272 (31%) E5–E6 (Non-Commissioned Officers), 208 (23%) E7–E9 (Senior Non-Commissioned Officers), 35 (4%) W01–W5 (Warrant Officers), and 153 (17%) O1–O9 (Officers). Sexual orientation distribution was 858 (97%) heterosexual/straight, 17 (2%) bisexual, and 11 (1%) gay or lesbian. Deployment distribution for personnel was 324 (36%) no deployments, 253 (29%) one deployment, 131 (15%) two deployments, 63 (7%) three deployments, and 117 (13%) four or more deployments.

2.2. Procedures

An anonymous online survey was hosted at the National Center for Veterans Studies (NCVS) website. Participants were recruited by distributing the survey information to National Guard leadership and targeted advertising on social media networks. At the end of the survey, participants were informed they were eligible to receive a $20 gift card incentive for participating. As data were anonymous, all responses were self-reported and were not linked to any administrative records. All of the procedures involved in this survey was reviewed and approved by the University of Utah’s Institutional Review Board.

2.3. Instruments

The self-report version of the Self-Injurious Thoughts and Behaviors Interview (SITBI; [18]) was used to assess NSSI (i.e., “Have you ever actually engaged in nonsuicidal self-injury (NSSI), that is, purposely hurting yourself without wanting to die, for example by cutting or burning?”), suicide ideation (i.e., “Have you ever had thoughts of killing yourself?”), and suicide attempt (i.e., “Have you ever made an actual attempt to kill yourself in which you had at least some intent to die?”). Participants who endorsed NSSI, suicide ideation, or suicide attempt were then asked follow-up questions regarding age of first onset, timing of most recent occurrence, frequency of occurrence, methods used, need for medical treatment, and likelihood of future occurrence. Regarding NSSI, participants were specifically asked whether they engaged in each of the following 6 methods: cut or carved skin; hit yourself on purpose, resulting in a bruise; picked areas of your body to the point of drawing blood; burned your skin; inserted sharp objects in to your nails or skin; scraped your skin to the point of drawing blood. Initial validation of the original SITBI found strong test-retest reliability (average κ = 0.70), as well as concurrent validity as evidenced by strong concordance with other measures of suicide ideation (κ = 0.54), NSSI (κ = 0.65), and suicide attempts (κ = 0.87) [18]. Similar results were observed among an inpatient adolescent sample [19].

2.4. Data analysis

To reduce bias, we compared the sex and age composition of the survey sample to the sex and age composition of the Utah and Idaho National Guards. Weighted adjustments were made with respect to age and sex using raking ratio estimation, first within state and then within component. The adjustments resulted in a weighted sample that was demographically matched to the Utah and Idaho National Guard populations. All analyses were conducted using both the weighted and unweighted samples. As results were similar, unweighted analyses are reported (tables of weighted analyses available from the authors). Chi square tests were conducted for categorical dependent variables and Mann-Whitney pairwise comparisons were used for continuous dependent variables to test for difference between males and females.

3. Results

3.1. Prevalence and occurrence of NSSI, suicide ideation, and suicide attempts

A total of 63 (7%) participants reported a lifetime history of NSSI (see Table 1). Overall, a lifetime history of NSSI was more common among females than males. In contrast, the prevalence of past year NSSI was similar across males (2%) and females (3%). A total of 268 (30%) participants reported a lifetime history of suicide ideation, with no differences by sex observed. A total of 40 (5%) participants reported a lifetime history of suicide attempt. Suicide attempts were significantly more common among females (11%) compared to males (3%).

Regarding the co-occurrence of NSSI and suicidal thoughts and behaviors, 46 (73%) participants with a history of NSSI endorsed a lifetime incidence of suicide ideation and 22 (35%) endorsed a lifetime suicide attempt. Among those with a history of suicide attempts, 22 (55%) reported a history of NSSI. See Table 1 for complete results.

3.2. Characteristics of NSSI

The most common method of NSSI was cutting or carving one’s skin, followed by hitting oneself on purpose (Table 2). Participants were close to evenly split between having used one (33%), two (38%), or three or more (28%) separate methods for self-injury. A median of 6 episodes of NSSI (IQR = 3–10) was reported. Very few participants (n = 6, 10% of participants with NSSI) had ever received medical treatment for injuries resulting from NSSI. The median age of NSSI onset was 15 years (IQR = 13–18), the median duration of NSSI was 2 years, though the duration covered a wide span (IQR = 0–9). Regarding the likelihood of future NSSI engagement, the majority (75%) of participants with a NSSI history thought it was unlikely that they would injure again.

Overall, characteristics of NSSI were similar across males and females (Table 2). Among those with a history of NSSI, there were no sex differences observed in NSSI frequency, number of methods used, medical treatment, age of NSSI onset, years of NSSI engagement, or prediction of future NSSI engagement. Sex differences were observed in which NSSI methods were used; however, females were more likely to report cutting (95%) and picking skin to the point of drawing blood (50%) as compared to males (61% and 14%, respectively).

4. Discussion

Nonsuicidal self-injury is a risky health behavior in its own right, as well as being one of the strongest predictors of suicidal behavior. However little is known about NSSI among members of the National Guard, a segment of the military that has seen suicide rates rise over that last twenty years. The most recent data demonstrate that the suicide death rate in the National Guard remains above age and sex-matched civilian levels, while this is no longer the case for the Regular component [2]. Further, the suicide rates among National Guard members may be underestimated due to a reliance on civilian systems to report and record a death as a suicide. The current study described the prevalence, characteristics, and correlates of NSSI and suicidal thoughts and behaviors among men and women in the National Guard.

Rates of NSSI within the National Guard sample were in line with estimates from a meta-analysis of nonclinical samples of adults (5.5%, [12]). Our findings differed in that among our sample, women were almost three times more likely to report NSSI than men. This is in contrast to several other community samples which found small or no sex differences in NSSI prevalence among adults [12,20,21].

Characteristics of NSSI were overwhelmingly similar between men and women and were generally consistent with what has been observed in civilian community samples [20]. Roughly equal proportions of the sample used one, two or three or more injury methods, injuries did not typically need medical attention, NSSI typically began in the
teenage years and lasted for two years, and occurred more than once, but <10 times. Given that NSSI typically began before individuals were old enough to enter military service and rates are similar to those in civilian samples, having a history of NSSI does not appear to preclude individuals from joining the Guard. The one exception to the similarities across males and females is that female participants were more likely to report cutting and skin picking than male participants. This is consistent with both civilian clinical and community samples [21]. However, cutting remained the most common method across the sexes, although rates of cutting differed between men and women. Specifically, almost all females versus less than two thirds of male self-injurers endorsed this method.

Regarding suicide ideation and attempt, approximately one in three of the National Guard members in our sample reported a history of suicide ideation. This is higher than civilian estimates and three times higher than the National Guard and Reserve component reported in Army STARRS (8–11%, [22]), the largest study of mental health among military personnel. This is particularly notable, as Army STARRS included a broader definition of suicide ideation than the present study, suggesting that the difference may be even greater. The same pattern was observed for suicide attempts, such that approximately three times as many men and women in the present study reported a lifetime suicide attempt compared to the Army STARRS Component sample, with the sex differences preserved.

One possible explanation for this stark difference is divergent data collection methods. In the present study, participants completed the survey anonymously online, while in Army STARRS, participants completed the survey as a group with the option to link their data to their administrative record. Previous research has found that military personnel are more likely to report suicide ideation when data collection was anonymous [23–25]. Another possible explanation is that unique characteristics of the Utah and Idaho Air and Army National Guard may relate to a stronger history of suicidal thoughts and behaviors. For example, Utah and Idaho are among the states with the highest suicide death rates in the United States [26], though data are not available on state specific ideation or attempt rates. Further, the present study only included National Guard components and not Reserves, another difference from the Army STARRS sample. In short, while the present study cannot determine the source of the difference, it is notable that depending on methods or specific sub-populations, National Guard members may have a much higher history of suicide ideation and attempts than currently estimated.

### Table 1

<table>
<thead>
<tr>
<th>NSSI lifetime (among the full sample)</th>
<th>% (n)</th>
<th>95% CI</th>
<th>% (n)</th>
<th>95% CI</th>
<th>% (n)</th>
<th>95% CI</th>
<th>X²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7.1 (63)</td>
<td>[5.4, 8.8]</td>
<td>5.7% (43)</td>
<td>[4.0, 7.4]</td>
<td>14.4% (20)</td>
<td>[8.6, 20.2]</td>
<td>13.34</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note. All results are similar with or without weights. Results without weights are reported. NSSI = nonsuicidal self-injury. SI = suicide ideation. SA = suicide attempt.

### Table 2

<table>
<thead>
<tr>
<th>Characteristics of NSSI in male and female National Guard personnel.</th>
<th>Total sample (N = 63)</th>
<th>Male (n = 43)</th>
<th>Female (n = 20)</th>
<th>X²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSSI methods</td>
<td>% (n)</td>
<td>95% CI</td>
<td>% (n)</td>
<td>95% CI</td>
<td>% (n)</td>
</tr>
<tr>
<td>Cut</td>
<td>71.4% (45)</td>
<td>[60.2, 82.6]</td>
<td>60.5% (26)</td>
<td>[45.9, 75.1]</td>
<td>95.0% (19)</td>
</tr>
<tr>
<td>Hit</td>
<td>38.1% (24)</td>
<td>[26.5, 50.1]</td>
<td>44.2% (19)</td>
<td>[28.4, 59.0]</td>
<td>25.0% (5)</td>
</tr>
<tr>
<td>Pick</td>
<td>25.4% (16)</td>
<td>[14.7, 36.1]</td>
<td>14.0% (6)</td>
<td>[3.6, 24.4]</td>
<td>50.0% (10)</td>
</tr>
<tr>
<td>Burns</td>
<td>23.8% (15)</td>
<td>[13.3, 34.3]</td>
<td>23.3% (10)</td>
<td>[10.7, 35.9]</td>
<td>25.0% (5)</td>
</tr>
<tr>
<td>Scrapes</td>
<td>20.6% (13)</td>
<td>[10.6, 30.6]</td>
<td>14.0% (6)</td>
<td>[3.6, 24.4]</td>
<td>35.0% (7)</td>
</tr>
<tr>
<td>Insert</td>
<td>14.3% (9)</td>
<td>[5.7, 22.9]</td>
<td>16.3% (7)</td>
<td>[5.3, 27.3]</td>
<td>10.0% (2)</td>
</tr>
<tr>
<td>No. of methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>33.3% (21)</td>
<td>[21.7, 44.9]</td>
<td>37.2% (16)</td>
<td>[22.8, 51.6]</td>
<td>25.0% (5)</td>
</tr>
<tr>
<td>2</td>
<td>38.1% (24)</td>
<td>[26.5, 50.1]</td>
<td>41.9% (18)</td>
<td>[27.2, 56.6]</td>
<td>30.0% (6)</td>
</tr>
<tr>
<td>3+</td>
<td>26.8% (18)</td>
<td>[17.4, 39.8]</td>
<td>20.9% (9)</td>
<td>[8.8, 33.1]</td>
<td>45.0% (9)</td>
</tr>
<tr>
<td>Medical treatment</td>
<td>9.5% (6)</td>
<td>[2.3, 16.7]</td>
<td>9.3% (4)</td>
<td>[0.0, 18.0]</td>
<td>10.0% (2)</td>
</tr>
<tr>
<td>Future NSSI likelihood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unlikely</td>
<td>74.6% (47)</td>
<td>[63.9, 85.3]</td>
<td>69.8% (30)</td>
<td>[56.1, 83.5]</td>
<td>85.0% (17)</td>
</tr>
</tbody>
</table>

Note. All results are similar with or without weights. Results without weights are reported. NSSI = nonsuicidal self-injury. Cut = cut or carved skin. Hit = hit yourself on purpose. Pick = picked areas of your body to the point of drawing blood. Burns = burned your skin. Scrapes = scraped your skin to the point of drawing blood. Insert = inserted sharp objects in to your nails or skin.

### Table 3

<table>
<thead>
<tr>
<th>Characteristics of NSSI in male and female National Guard personnel.</th>
<th>Total sample (N = 63)</th>
<th>Male (n = 43)</th>
<th>Female (n = 20)</th>
<th>U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of onset</td>
<td>15 (13–18)</td>
<td>[13, 16]</td>
<td>16 (13–20)</td>
<td>[14, 18]</td>
<td>13 (13–16)</td>
</tr>
<tr>
<td>Years of NSSI</td>
<td>2 (0–9)</td>
<td>[1, 3]</td>
<td>2 (0–9)</td>
<td>[1, 4]</td>
<td>2 (0.5–6)</td>
</tr>
<tr>
<td>NSSI frequency</td>
<td>6 (3–10)</td>
<td>[5, 8]</td>
<td>5.5 (3–10.5)</td>
<td>[4, 8]</td>
<td>7 (3–10)</td>
</tr>
</tbody>
</table>

Note. All results are similar with or without weights. Results without weights are reported. NSSI = nonsuicidal self-injury. Cut = cut or carved skin. Hit = hit yourself on purpose. Pick = picked areas of your body to the point of drawing blood. Burns = burned your skin. Scrapes = scraped your skin to the point of drawing blood. Insert = inserted sharp objects in to your nails or skin.

### Notes

- a Totals add up to >100% as participants could chose multiple methods.
- b Yates’s correction applied (and reported) as at least 20% of expected frequencies were <5.
- c 0 years represents participant who reported on and offset of NSSI within the same year.
- d Frequency of NSSI missing for 7 cases.
Among National Guard members with an NSSI history, three quarters had considered suicide, while one third had made a suicide attempt. Consistent with findings from civilian samples [4], NSSI remained a strong correlate of suicidal thoughts and behaviors among both men and women. NSSI and suicide are inextricably linked if considered through the lens of two theories for suicide – the Interpersonal Theory of Suicide [27] and the Three-Step Theory [3ST; [28]]. Both theories posit that the capability to act on suicidal thoughts is a key component of the transition from suicidal thoughts and behaviors and one component of that capability is habituating to the experience of causing pain and injury to oneself. NSSI may confer increased capability as it consists of repeatedly causing injury and pain to oneself in the context of emotional pain [29].

A primary limitation of this study is sample size. While a sample of almost 900 participants is substantial, for a low base rate behavior such as NSSI, it still results in a small sample of injurers, constricting power and resulting in wide confidence intervals for some estimates. However, this limitation is linked to a strength of the study, that it is made up of National Guard members from two states and that it closely matched the population demographics (National Center for Veterans Studies [30,31]). While clinical or selected sample provide larger numbers of injurers, they do not allow for estimates of the prevalence of the behavior in a particular population. The use of self-report measures was another limitation, as they rely on participants to correctly classify their self-injurious behavior. Additionally, the method by which participants found out about the study was not collected, limiting our ability to adjust for different recruitment strategies. Finally, results may not be generalizable to other populations of the National Guard outside of Utah and Idaho.

5. Conclusions

Despite these limitations, the study provides useful information about the prevalence and characteristics of NSSI, suicide ideation, and suicide attempts in an understudied and at risk population. Members of the National Guard evidence high rates of suicide ideation and suicide attempts and female members reported higher than average rates of NSSI. Assuring that National Guard members have prompt and reliable access to effective mental health care is critical to address their heighten risk due to histories of self-injurious behaviors.

Acknowledgement

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References