

Rapid Review on Differences in Suicide Risk Factors between National Guard and Active Duty Service Members

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REQUEST: Identify and synthesize any evidence on risk factors related to the differential rates of suicide between the National Guard and Active Duty Components.

RESEARCH SYNTHESIS OBJECTIVE: Identify and synthesize evidence to explore potential factors associated with the higher reported incidence rate of suicide in the National Guard compared to the Active Duty Component.

Key Findings

- The suicide rates for the NG Component are slightly higher than for the AD component.
- Based on the adjusted suicide mortality rate, the National Guard Component experiences 4.8 more suicide deaths per 100,000 service members than does the Active Duty Component.
- We found only four studies that directly compared suicide risk between the National Guard/Reserve and the Active Duty Component. More research is needed to determine whether there are different risk factors between these populations.
- Suicide risk factors are similar among the National Guard, Reserve Component, and Active Duty Component.
- Some research suggests that National Guard members experience challenges in access to care, re-integration issues, and symptom severity differences.
- One study found that National Guard personnel reported higher levels of two risk factors associated with suicide (social disconnection and perceived burdensomeness) than did Active Duty Component soldiers. These particular risk factors may contribute differences in NG and AD suicide rates, but as yet there is insufficient research to confirm that.
- Suicide rate differences between National Guard and Active Duty service members may be influenced by care access challenges, re-integration issues, and symptom severity differences, but as yet there is insufficient research to confirm that.

Methods

Research question: Is there empirical evidence that National Guard (NG) and Active Duty (AD) differ in risk factors associated with suicide?

Rapid review: We used rapid review methodology to evaluate empirical evidence for this research question. A rapid review is a systematic method to synthesize evidence, typically used to inform important health care policy decisions when it is not feasible due to time constraints to conduct a full systematic review. Rapid reviews employ strategic modifications to the systematic review process that enable production of an expedited report while maintaining methodology that minimizes the introduction of errors and biases. To provide a timely review, alterations are made to the scoping of the question, the comprehensiveness of the search strategy, screening and selection of studies, assessments of evidence quality, and synthesis of results (please see Appendix A for a description of the methodology used in this review).

Results

The suicide rate is higher in the National Guard (NG) Component than in the Reserve Component (RC) or Active Duty (AD) Component. The DoD Suicide Event Report (DoDSER) standardizes suicide surveillance efforts across the Services (Air Force, Army, Marine Corps and Navy) to report the most accurate rates of suicide death. According to 2018 DoDSER data, the unadjusted rates of death by suicide for the AD, RC, and the NG populations were 24.8, 22.9, and 30.6 per 100,000 service members, respectively (Department of Defense Under Secretary of Defense for Personnel and Readiness, 2018). After adjusting for age and sex, the rates of AD suicide death were 21.4 per 100,000 service members, compared to 26.2 per 100,000 among the NG Component. This adjusted suicide mortality rate difference corresponds to 4.8 more suicide deaths per 100,000 service members in the NG component than in the AD population (personal communication). In general, the demographic and military profile of suicide deaths identified by the DoDSER are largely similar across AD, the RC, and the NG, with firearms being the most common method of suicide death across all groups.

Research Evaluating Direct Comparison between National Guard and Active-Duty Military on Factors Related to Suicide

To our knowledge, only four studies from three unique data sources have directly compared suicidal behavior between the National Guard and Reserve (NG/R) Component and the AD Component (see Table 1). In two studies that were part of the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS), the probability of lifetime suicide attempts was higher among AD soldiers compared to activated NG/R soldiers (Millner et al., 2018; Millner et al., 2019). In contrast, the 2005/2006 DoD Health-Related Behaviors Surveys found that Reserve Component personnel who had been deployed

reported a higher rate of past-year suicide attempts than did their AD counterparts (Lane, Hourani, Bray, & Williams, 2012). Bullman, Schneiderman, & Bossarte. (2018) analyzed over 1.4 million AD and NG/R veteran personnel and found that both groups had similar trends in suicide risk over time: AD and NG/R veterans both experienced the highest rates of suicide risk during the first year after separation from the military. However, rates decreased more rapidly among NG/R veterans.

Podlogar et al. (2017) directly compared Army NG and AD soldiers on indicators of suicidal behavior – social disconnection, perceived burden on others, and pain tolerance/fearlessness about death (Joiner, Van Orden, Witte, & Rudd, 2009). Army NG personnel reported higher levels of social disconnection and perceived burdensomeness than did AD soldiers (Podlogar et al., 2017). In particular, one risk factor, disruption in marital status (separation, divorce, or being widowed), was associated with greater thwarted belongingness and perceived burdensomeness among NG soldiers than among AD soldiers (Podlogar et al., 2017). Increased rates of social disconnection and perceived burdensomeness among NG personnel may possibly be related to re-integration and care access issues post-deployment.

Mental Health and Other Factors

Suicide rates between NG and AD service members may also be influenced by care access challenges, re-integration issues, and symptom severity differences (Table 2). The Institute of Medicine (2013) noted that NG/R members often lack continuity of care for ongoing mental health services once demobilized. A 2013 review found that the reserve force has significant issues with re-integration into the civilian sector, including mental and emotional health needs, issues of employment, and healthcare concerns, as well as problems re-integrating with family and significant others (Werber et al., 2013). The report claimed that NG personnel may experience a sense of isolation after experiencing a lack of access to needed support resources. This may be especially concerning when also considering additional findings that twice as many NG members were in need of post-deployment mental health treatment than were AD service members, (Milliken, Auchterlonie, & Hoge, 2007), and that at least one out of three NG members with a mental health care need accessed treatment over a year period (Goodwin et al., 2014). In other research, however, NG members have been found to be more likely to seek care than AD soldiers (Kim, Thomas, Wilk, Castro, & Hoge, 2010). Members of the NG/R may also report more concerns than AD personnel about family or relationship disruptions, and report a greater number of post-deployment stressful life events (Han et al., 2014; Vogt, Samper, King, King, & Martin, 2008) that contribute to higher suicide risk (Blow et al., 2018). In a study comprising NG only, Griffith (2015) found that soldiers who experienced financial difficulties after return from deployment, and those lacking social support post-deployment, experienced greater alcohol use, sleeping difficulties, and suicidal thought than those who reported no post-deployment financial difficulties. Finally, Brown, et al. (2015) evaluated access to behavioral health care for service members who lived in geographically remote areas and noted this remoteness was especially an issue for National Guard and Reserves. While only 10% of AC servicemembers live in a remote area for at least some time during a 10-year period, fully half of all National Guard and Reserves meet that criterion.

Several studies examining differences between NG and AD on post-deployment mental health symptoms have yielded inconsistent results. Schaller et al. (2014) reported that deployed NG personnel were at greater risk for posttraumatic stress disorder (PTSD) than were AD personnel (Schaller et al., 2014), whereas several other studies found no differences between NG and AD components in post-deployment disorders (Han et al., 2014; Hines, Sundin, Rona, Wessely, & Fear, 2014). Differences across studies may be due to the timing of PTSD assessment relative to deployment as well as to treatment access issues. For instance, Thomas et al. (2010) found that there were no differences between NG and AD personnel in psychological health at three months after deployment; however, at 12 months following deployment, NG personnel exhibited higher rates of PTSD and depression compared to AD personnel (Thomas et al., 2010). This finding is consistent with Kim et al., (2017) who found that suicide risk increased for returning NG soldiers between 6 and 12 months following their return from Iraq or Afghanistan. Taken together, these findings suggest that suicide screenings and interventions may be needed throughout the NG reintegration process.

We identified thirty-two studies that evaluated suicide risk factors within a NG or NG/R cohort only (Table 3). The most relevant research concluded that suicide risk factors among the NG/R were similar to those in the AD and civilian populations (Griffith, 2012b, 2017; Naifeh et al., 2019). Specifically, younger age, male gender, and Caucasian race were all factors for higher risk among the NG cohort, as is the case in other populations (Griffith, 2017). Griffith (2017) reported descriptive statistics on 706 Army National Guard suicides that had occurred from 2007 through 2014, using a random sample of NG non-suicides from similar years for comparison. The most frequent events surrounding the suicide were poor military performance (36% of all suicides), parent-family relationship problems (28%), substance abuse (27%), past behavioral health problem (20%), current behavioral health problems (10%), income problems (22%), and full-time employment problems (18%). Of particular note, deployment was not a risk factor for NG suicides, and most suicides occurred during nonmilitary status (Griffith, 2017), a finding that has previously been reported in the AD population (Reger, et al. 2015). Other studies have found that specific combat experiences (killing- and death-related exposures) may increase the risk of suicide-related behaviors among NG members (Butterworth, Green, & Anestis, 2017; Kline, Weiner, Interian, Shcherbakovm & St. Hill, 2016).

An Army STARRS study found that enlisted soldiers in their first two years of service accounted for the majority of suicide attempts in the activated NG/R population, and soldiers with a recently documented mental health diagnosis were at substantially elevated risk (Naifeh et al., 2019). The authors suggested that, because AD soldiers in garrison have military healthcare access, they can be closely monitored by leaders and clinicians. In contrast, deactivated members of the NG/R do not have access to the military healthcare system but instead return to communities that are widely dispersed, often rural, and potentially remote, presenting obstacles to mental health screening and treatment.

Discussion

We found few studies that were sufficiently relevant to the research question to be informative. Transitioning from activated to part-time military status results in changes in healthcare benefits and coverage. Balancing military service and civilian employment demands is particularly difficult without adequate unit and social support (Griffith, 2017). Post-deployment readjustment may also be qualitatively different for NG/R Service members. Those NG who experience financial difficulties post-deployment may be at greater risk for increased alcohol use, sleeping difficulties, and suicidal thoughts (Griffith, 2015). Further investigation of these unique factors and their relationship to mental health-related and quality of life outcomes is needed.

There are some limitations to this review worth noting. The timeline for completing this report was short, necessitating a choice of Rapid Review methodology. The rapid review process is more likely than the more comprehensive systematic review methodology to miss some relevant research. To redress this limitation as much as possible, we conducted supplementary hand searches of the literature. Nonetheless, we were able to identify only four studies that compared suicide risks between NG and AD personnel. Three of these were population surveys with low response rates and limited administrative data. The fourth study included administrative data of veterans who were separated from service but was somewhat restricted in its ability to assess suicide risk factors. The several other studies we identified that did compare NG and AD personnel on suicide-related factors had inconsistent findings and did not assess suicidal behavior. More research is needed to examine risk and protective factors for suicide in NG personnel compared to AD service members.

Conclusion

The suicide rates for the NG component are slightly higher than for the AD component. There are few studies that have directly compared suicide risk factors between the NG and AD populations. The research indicates that suicide risk factors are similar across the different components. Some research suggests that NG members experience challenges in access to care, re-integration issues, and symptom severity differences. One study found that NG personnel reported higher levels of two risk factors associated with suicide (social disconnection and perceived burdensomeness) than did AD soldiers. These particular risk factors may contribute differences in NG and AD suicide rates, but as yet there is insufficient research to confirm that.

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Table 1. Suicide-related Outcomes: Direct Comparisons of National Guard/Reserve (NG/R) with Active Duty (AD) Service Members

Study	Study Design	Sample Size	Population	Study Aims	Outcome Measures	Predictors
Bullman et al., 2018	Retrospective cohort	1,401,382	AD, NG/R veterans	Assess the risk of suicide by time since separation from the military for US veterans who served in Iraq or Afghanistan	Suicide risk (adjusted rates for U.S. population) Suicide mortality-VA/DOD Suicide Data Repository (SDR)	Demographic variables Military-related variables
Lane et al., 2012	Cross-sectional	18,305	AD, NG	Compare rates of mental health indicators between AD and NG Soldiers at 3- and 12-months post-deployment	PHQ Version A Burnam depression screen PTSD Checklist-Civilian Version (PCL-C) Self-reported suicidal ideation, suicide attempts	Perceived impact of stress
Millner et al., 2018	Cross-sectional Prospective cohort	29,982	AD, NG/R	Examine the association between career variables and temporal relationship between joining the Army and suicide ideation, plans, and attempts	Suicidal behaviors-Columbia Suicidal Severity Rating Scale	Demographic variables Military-related variables
Millner et al., 2019	Cross-sectional Prospective cohort	29,982	AD, NG/R	Evaluate the association between prior mental health disorders, career variables, and first onset of suicidal behaviors	Suicidal behaviors-Columbia Suicidal Severity Rating Scale Composite International Diagnostic Interview (CIDI)	Prior MH diagnoses Demographic variables Military-related variables

Table 2. Mental Health Related Outcomes: Direct Comparisons of National Guard/Reserve (NG/R) with Active Duty (AD) Service Members

Study	Study Design	Sample Size	Study Population	Study Aims	Outcome Measures	Predictors
Gahm et al., 2007	Cross-sectional	1,626	AD, NG/R	Determine the relative contributions of reported childhood and adulthood trauma on screened PTSD and depression symptoms for soldiers in a military outpatient mental health setting	PTSD (PC-PTSD) Depression (PHQ-9)	Childhood trauma Adulthood trauma
Han et al., 2014	Prospective cohort	1,008	AD, NG/R	Examine the independent associations of unit and social support on postdeployment PTSD symptom severity after adjusting for predeployment PTSD symptom levels among AD and NG soldiers	PTSD (PCL-C) Combat experiences scale Unit support scale (Deployment Risk and Resilience Inventory)	Predeployment unit support Unit support during deployment Postdeployment social support
Hines et al., 2014	Systematic review	ND	AD, NG/R	Determine prevalence estimates for current PTSD between military subgroups to determine how groups may be differentially affected by deployment	ND	Demographic variables Military-related variables
Kim et al., 2010	Prospective cohort	10,386	Mixed: U.S. military personnel in Millennium Cohort Study	Longitudinally investigate mental health indicators among Reserve, NG, and AD	PHQ PTSD Checklist (PCL) Self-reported symptoms	PTSD Depression
Milliken et al., 2007	Prospective cohort	88,235	AD, NG/R	Evaluate whether there are differences in health concerns between AD Soldiers and RC veterans who have returned to civilian life	PDHA and PDHRA (PHQ)	PTSD Major depression Alcohol misuse Referral and use of mental health services

Table 2. Continued

Study	Study Design	Sample Size	Study Population	Study Aims	Outcome Measures	Predictors
Ouma et al., 2011	Cross-sectional	426	AD, NG	Examine prevalence of occupational burnout, assess whether deployment experiences and posttraumatic stress symptomatology differ for AD and NG/R personnel	Maslach Burnout Inventory (MBI-GS) Self-reported symptoms	Occupational stressors Operational stressors Combat stressors
Podlogar et al., 2017	Cross-sectional	3,965	AD, NG	Examine if demographic variables and levels of thwarted belongingness, perceived burdensomeness, and acquired capability significantly differed between NG and AD soldiers	Interpersonal Needs Questionnaire Acquired Capability for Suicide Scale	IPTS predictors (thwarted belongingness, perceived burdensomeness, and hopelessness)
Schaller et al., 2014	Prospective cohort	50,000+	Mixed: U.S. military personnel in Millennium Cohort Study	Longitudinally investigate PTSD and depression between Reserve, NG, and AD while adjusting for deployment-related and other covariates	PTSD Checklist-Civilian Version (PCL-C) PHQ	Demographic variables Military-related variables PTSD Depression
Thomas et al., 2010	Cross-sectional	18,305	AD, NG	Compare prevalence rates of mental health indicators between AD and NG personnel at 3- and 12-month post-deployment time points	PCL PHQ-9 Self-reported symptoms	PTSD Depression Alcohol misuse Aggressive behavior
Vogt et al., 2008	Cross-sectional	311	AD, NG	Assess whether deployment experiences and their associations with posttraumatic stress symptomatology (PTSS) differ between AD and NG/R	Deployment Risk and Resilience Inventory (DRRI) PTSD Checklist (PCL) Self-reported symptoms	Combat experiences Perceived threat Sexual harassment Deployment social support
Key: ND=not described; AD=active duty; NG=National Guard; NG/R=National Guard and Reserve; RC=Reserve component; PDHA=Post-Deployment Health Assessment; PDHRA=Post-Deployment Health Re-Assessment						

Table 3. Suicide Outcomes: National Guard and/or Reserve Only

Study	Study Design	Sample Size	Study Population	Study Aims	Outcome Measures	Predictors
Anestis et al., 2015	Prospective cohort	934	Mixed: 934 US military personnel (84% Army NG)	Test if the interpersonal-psychological theory of suicidal behavior (IPTS) predicted suicidal ideation, resolved plans and preparations, and attempts	Acquired Capability for Suicide Scale PHQ-9 Beck Scale for Suicidal Ideation Depressive Symptom Index Suicidality Subscale	IPTS predictors (thwarted belongingness, perceived burdensomeness, and hopelessness)
Anestis et al., 2019a	Cross-sectional	497	Mixed: 497 US military personnel (90.1% Army NG)	Test if thwarted belongingness, perceived burdensomeness, and hopelessness predicted suicide ideation	Beck Scale for Suicidal Ideation	IPTS predictors (thwarted belongingness, perceived burdensomeness, and hopelessness)
Anestis et al., 2019b	Cross-sectional	598	Mixed: 598 US military personnel (91.2% Army NG)	Test hypothesis that opioid use would differentiate individuals with lifetime suicidal ideation without suicide attempts from those with lifetime ideation and a history of suicide attempts	Suicide Behavior Questionnaire-Revised	Opioid medication use

Table 3. Continued

Study	Study Design	Sample Size	Study Population	Study Aims	Outcome Measures	Predictors
Blow et al., 2018	Prospective cohort	712	NG only	Examine associations between mental health symptoms, relationship satisfaction, and suicidality among NG SM at 6 months postdeployment; Assess longitudinal impact of 6-month mental health symptoms and relationship satisfaction on 12-month suicide risk	Suicide Behavior Questionnaire-Revised	Mental health symptoms (depression, anxiety, PTSD) Satisfaction with intimate relationships
Bryan & Bryan, 2019	Cross-sectional	997	NG only	Describe prevalence of indicators of financial strain; examine the associations between multiple indicators of financial strain and suicide ideation/attempt	Self-Injurious Thoughts and Behaviors Interview (SITBI)	Financial strain
Bryan et al., 2018	Cross-sectional	930	NG only	Determine if the combination of PTSD and moral injury is associated with increased risk for suicidal thoughts and behaviors	Self-Injurious Thoughts and Behaviors Interview (SITBI)	PTSD Moral injury
Bryan et al., 2017	Cross-sectional	971	NG only	Determine if rates of mental health conditions and suicidal thoughts and behaviors would be significantly higher among participants who reported suicide exposure, a greater number of suicide losses, and greater closeness to a suicide decedent	Self-Injurious Thoughts and Behaviors Interview (SITBI)	Knowing someone who died by suicide
Butterworth et al., 2017	Prospective cohort	400	Mixed: 400 US military personnel (89.3% Army NG)	Examine relationship between deployment, combat exposure to injury, killing, and death with suicide risk and Interpersonal Theory of Suicide (ITS) elements of thwarted belongingness, perceived burdensomeness, and capability for suicide	Interpersonal Needs Questionnaire (INQ) Acquired Capability for Suicide Scale (ACSS) Beck Scale for Suicidal Ideation (BSS)	Deployment Combat exposure (to injury, killing, and death)
Calabrese et al., 2011	Cross-sectional	2,616	NG only	Study the relationship between PTSD and suicidal ideation	PHQ-9 Item 9	PTSD
Cohen et al., 2017	Prospective cohort	1,582	NG only	Examine the relationship between coincident alcohol dependence and depression on risk of suicidal ideation among NG SM	PHQ-9 Item 9	Alcohol dependence Depression
Foster, 2011	Retrospective cohort	17,754	NG, Reserve	Examine effects of deployment on six health outcomes, including suicidal ideation	DoD Survey of Health Related Behaviors (suicidal ideation)	Deployment
Ganocy et al., 2016	Prospective cohort	418	NG only	Investigate the association of spiritual well-being with suicidal ideation/behavior, PTSD, depression, and alcohol use disorders	Spiritual Well-Being Scale	Spiritual well-being
Gewirtz et al., 2016	Intervention-RCT	336	NG, Reserve	Evaluate whether a parenting prevention program for NG/R families is effective in reducing psychological distress and suicidal ideation among parents	Hopkins Symptom Checklist-25 (HSCL-25)	Parenting prevention program

Table 3. Continued

Study	Study Design	Sample Size	Study Population	Study Aims	Outcome Measures	Predictors
Goldberg et al., 2019	Cross-sectional	2,292	NG only	Examine the association between firearm ownership, reasons for ownership, and firearm familiarity with suicide risk factor (capability for suicide) among NG SM	Acquired Capability for Suicide	Firearm ownership, familiarity, and training
Goodwin et al., 2014	Prospective cohort	1,189	NG only	Investigate the prevalence and predictors of mental health service use in a representative sample of NG SM	Suicidal ideation via diagnostic assessments	Mental health service use
Goodwin et al., 2013	Prospective cohort	1,776	NG only	Examine the relationship between smoking and subsequent risk of suicidal ideation in a representative sample of NG SM	PHQ-9	Smoking
Griffith, 2012a	Cross-sectional	4,546	NG only	Examine the relative contribution of war exposure, PTSD, and negative mood to suicidality and analyze the mitigating effect of social support on suicidality	Army Reintegration Unit Risk Inventory (R-URI) Suicide ideation	Combat experiences PTSD Negative mood Social support
Griffith, 2012b	Cross-sectional	294 suicides, 1,000 nonsuicides	NG only	Conduct analyses of existing data to answer: Who are ARNG suicides? What makes soldiers at risk for suicide? Are suicides in the Army a homogenous group or do they represent several distinct groups for which different preventive strategies can be developed? Are there discernible trends in responses to the aforementioned questions? In what ways are answers to these questions different from those concerning civilian suicides?	Suicide rates in ARNG from 2007–2010 Data from AR Form 15-6	Demographic variables Military-related variables
Griffith, 2015	Cross-sectional	4,567	NG only	Determine estimates of ARNG soldiers who resumed predeployment jobs after returning from deployment and estimates of changed financial status from deployment to postdeployment	Army Reintegration Unit Risk Inventory (R-URI) Suicide ideation	Resumption of predeployment job Changes in financial status from deployment to post-deployment Combat experiences
Griffith, 2017	Cross-sectional	668 suicides, 6,831 nonsuicides	NG only	Conduct analyses of demographic and military characteristics of ARNG suicides from 1/2007–9/2014 compared to random samples of nonsuicides in the ARNG population	Suicide rates in ARNG from 2007–2014 Data from AR Form 15-6	Demographic variables Military-related variables
Griffith & Bryan, 2017	Cross-sectional	705	NG only	Examine the frequency of suicide-related events from 2007–2014 in deployed and nondeployed soldiers, determine whether these events and other soldier demographics were associated with the timing of suicide	Data from Reserve Component Manpower System (RCMS) Data from Critical Incident Management System (CIMS)	Demographic variables Military-related variables Suicide-related variables

Table 3. Continued

Study	Study Design	Sample Size	Study Population	Study Aims	Outcome Measures	Predictors
Kim et al., 2017	Prospective cohort	1,474+	NG only	Assess overall suicide risk in newly-returning NG soldiers at 6 and 12 months post-deployment, describe changes in suicide risk from 6 to 12 months, and evaluate factors associated with either moving from high to low risk or from low to high suicide risk	Suicide Behavior Questionnaire-Revised (SBQ-R) PHQ-9 item 9	Demographic variables Post-deployment re-adjustment
Kline et al., 2011	Cross-sectional	1,665	NG only	Examine associations between suicidal ideation and postdeployment readjustment problems using cross-sectional survey data from NG SM recently returned from Iraq	Addiction Severity Index (ASI)	Post-deployment re-adjustment
Kline et al., 2016	Cross-sectional Prospective cohort	1,665	NG only	Explore relationships between morbid thoughts and suicidal ideation (MTSI), general combat exposure, and combat-related killing to understand the effect of morally injurious combat experiences on suicide risk	PHQ item 9 (MTSI) PCL-C Self-reported symptoms	Morbid thoughts and suicidal ideation (MTSI) General combat exposure Combat-related killing Readjustment stress
Martin et al., 2018	Cross-sectional Prospective cohort	564	NG only	Test the hypothesis that post-battle experiences would be associated with both thwarted belongingness (TB) and suicidal ideation	Beck Scale for Suicidal Ideation	IPTS predictors (thwarted belongingness, perceived burdensomeness, and hopelessness)
Martin et al., 2019	Cross-sectional	512	NG only	Test the hypotheses that (1) distress tolerance will have an indirect effect on the relationship between PTSD and ITS variables, (2) that there will be differences in the relationships that distress tolerance has with PTSD and ITS variables, (3) there will be a negative relationship between PTSD and distress tolerance, (4) a negative relationship between distress tolerance and suicidal desire variables, and (5) a positive relationship between distress tolerance and capability for suicide	Interpersonal Needs Questionnaire-15 Acquired Capability for Suicide Scale-2	PTSD Distress tolerance
May et al., 2018	Cross-sectional	897	NG only	Describe the prevalence and characteristics of nonsuicidal self-injury (NSSI) in a sample of the NG members, examine the relationship between NSSI and suicidal thoughts and behaviors among NG SM	Nonsuicidal self-injury (NSSI; Self-injurious Thoughts and Behaviors)	Nonsuicidal self-injury
Naifeh et al., 2019	Retrospective cohort	1,103	Reserve only	Examine predictors of suicide attempts among activated RC soldiers	DoDSER records ICD-9-CM E950-E958 diagnostic codes Administrative records	Demographic variables Military-related variables
Stokes et al., 2019	Retrospective cohort	230	NG, Reserve	Examine suicide attempt risk factors and timing among RC enlisted soldiers	DoDSER; ICD-9-CM (E950–E958)	Demographic variables Military-related variables

Table 3. Continued

Study	Study Design	Sample Size	Study Population	Study Aims	Outcome Measures	Predictors
Ursano et al., 2018	Retrospective cohort	2,937	NG, Reserve	Examine trends and sociodemographic correlates of suicide attempts, suspicious injuries, and suicide ideation among activated RC soldiers 2004–2009	DoDSER Army Suicide Event Report ICD-9-CM (E950–E958)	Demographic variables Military-related variables
Vanderploeg et al., 2015	Cross-sectional	3,098	NG only	Examine relationships among risk and protective factors and suicidal ideation in deployed and non-deployed NG SM, particularly examining for possible differential effects of deployment on SI	PHQ-9 PDHA Generalized Anxiety Disorder (GAD-7) Deployment Risk and Resiliency Inventory	Demographic variables Military-related variables Pre-deployment traumatic events History of prior TBI Combat-related experiences Perceived post-deployment social support Current psychiatric diagnoses
White et al., 2018	Cross-sectional	997	NG only	Examine the association of military sexual trauma with suicide ideation and suicide attempts among NG personnel	Life Events Checklist, version 5 PTSD Checklist for DSM-5 PHQ Item 9 AUDIT Self-Injurious Thoughts and Behaviors Interview	Military sexual trauma Posttraumatic stress disorder) Major depressive disorder Alcohol use disorder

Appendix A. Rapid Review Methodology

Based on the timeline and needs of the requester, the rapid review methodology included the following:

- A systematic search of a single database
- Additional hand searching and citation chasing
- English articles only
- Single-person screening
- Single-person data abstraction
- No formal assessment of quality
- No quantitative synthesis

Electronic Database Search

Search strategies included both free text and Medical Subject Headings (MeSH) for the concepts of NG members and suicide-related behaviors. Searches were limited to a single database, MEDLINE via PubMed. Additional hand searching was conducted using Google Scholar to identify any additional, relevant peer-reviewed articles, government reports, or policies. Reference lists of included articles were reviewed to identify additional, relevant articles. All study designs were included.

- Population:
 - Concept: Members of the National Guard
 - Key Words: “national guard” OR guard AND (army OR “armed forces” OR military OR soldier* OR veteran* OR service member* OR servicemen OR servicewomen) [title/abstract]
- Variable of interest:
 - Concept: Suicide-related behaviors
 - Key Words: suicide* OR sdv OR “self-directed violence” OR self-harm OR self-injur* OR parasuicid* [title/abstract]
 - MeSH Terms: “Suicide” [exploded]

Records retrieved from database searches were downloaded into bibliographic database software (EndNote) and duplicates were removed. Titles and abstracts were screened by a single reviewer according to the following exclusion criteria:

- Not English language
- Not original research
- Sample does not include separate analyses on National Guard members
- Did not investigate risk factors for suicide and related outcomes

Full-text articles were obtained for records not excluded. See the literature flow diagram (Figure 1) for a detailed accounting of search results and exclusion reasons. For articles not excluded at this stage (46), a single reviewer abstracted study characteristics (Table 1).

Figure 1. PRISMA Literature Flow Diagram

