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Suicide attempts among alcohol-dependent pain patients before and after an inpatient hospitalization

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ABSTRACT

Background: This study examined (1) whether pain diagnoses were risk factors for non-fatal suicide attempts before and after inpatient hospitalizations in alcohol-dependent veterans, and (2) the characteristics of pain patients who attempted suicide.
Method: Administrative data from the Veterans Health Administration were used to identify veterans with an alcohol use disorder who had an inpatient hospitalization during fiscal year 2011 (n = 13,047). Logistic regression analyses were used to examine the associations of suicide attempts before and after hospitalizations with pain diagnoses, demographics, medical comorbidity, and psychiatric comorbidity.
Results: Bivariate analyses and analyses controlling for demographics and medical comorbidity, indicated that pain diagnoses were significantly associated with suicide attempts in the 365 days before hospitalization (Odds Ratio $_{\text{Adjusted}}$ [OR] = 1.22). This effect was not significant after controlling for psychiatric disorders. Pain diagnoses were not identified as risk factors of suicide attempts in the 365 days following discharge. Subgroup analyses among only those with a pain diagnosis revealed that being younger (OR = 2.64), being female (OR = 2.28), and having an attempt in the year prior to hospitalization (OR = 4.11) were risk factors of suicide attempts in the year following hospitalization. Additionally, younger age (OR = 2.13) and depression (OR = 3.53) were associated with attempts in the year prior to the hospitalization.
Conclusions: This study suggests that psychiatric disorders account for the relationship between pain diagnoses and past suicide attempts among hospitalized alcohol-dependent veterans. Pain-specific suicide prevention efforts may be better targeted at less intensive levels of care.
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1. Introduction

Suicide is the 10th leading cause of death in the United States (Kochanek et al., 2014) and is more prevalent among military veterans relative to the general population with an estimated 1400 suicide-related events (suicides, suicide attempts, suicidal ideation involving a firearm) per month in 2012 (Kemp and Bossarte, 2013; McCarthy et al., 2009; Sundararaman, 2011) There is a growing literature indicating that pain is associated with suicidal thoughts and behaviors. Although data on veterans are limited, available research implicates pain in suicide risk, including a study showing that veterans with back pain, psychogenic pain, and migraines were at higher risk of suicide after accounting for medical conditions, psychiatric disorders, and demographics (Ilgen et al., 2013). A recent review has also suggested that factors such as severe pain, previous suicide attempts, depression, and pain catastrophizing among other factors are associated with suicidal thoughts and behaviors among individuals experiencing chronic pain (Tang and Crane, 2006).

Among individuals with pain who may be at greater risk of suicidal behavior are those who have comorbid alcohol use disorders (AUD), given that both acute and chronic alcohol use increase risk for suicidal behaviors (Conner et al., 2014a,b; Kaplan et al., 2014). Recent studies in veteran cohorts have indicated that comorbid pain and substance use disorder is associated with suicidal

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ideation and suicide attempts. Finley et al. (2015) found that comorbid substance abuse and pain increased the odds of suicidal ideation, suicide attempts, and their combination. Additionally, among veterans initiating opioid therapy for pain, having a mood, drug use, or alcohol use disorder was associated with suicide attempts in the 6 months after initiating treatment (Im et al., 2015). While these studies provide support for the association between comorbid pain and substance use disorders, there is a paucity of research examining comorbid pain and AUD specifically. This is a key distinction because alcohol use confers greater risk of suicide attempts compared to drug use disorders (Nock et al., 2010).

Research is needed to further clarify the relationship between suicide attempts and comorbid pain and AUD, specifically, to help understand this group that is potentially at greater risk. Additionally, much of the extant research evaluating the relationship between pain and suicidal thoughts and behaviors has assessed this relationship cross-sectionally; only examining past-year suicide attempts. Examining correlates of suicide attempts before and after a critical time point is important in identifying a period of high risk. Additionally, while previous research has investigated suicidal thoughts and behaviors in treatment settings including primary care and pain treatment centers, understanding of risk of suicidal behaviors in other settings, such as acute inpatient units, are needed. Suicide rates following inpatient hospitalizations in veterans are an estimated 20–30 times more common compared to the general population highlighting the importance of examining risk after discharge from this setting (Centers for Disease Control and Prevention, 2015; Desai et al., 2005; Valenstein et al., 2009).

The purpose of this investigation was to assess the relationship between select pain conditions and suicide attempts before and after discharge from an inpatient hospitalization in an alcohol-dependent veteran cohort. Assessing suicide attempts before and after discharge will allow for an examination of suicide attempts during the critical period following inpatient hospitalization discharge, along with a historical recount of attempts leading up to the inpatient hospitalization. This examination provides a unique opportunity to examine if pain disorders provide additional risk in this known, high-risk population, which will help clarify how robust pain disorders are in suicide risk. In a further effort to examine the association between pain and suicide attempts, we conducted further analyses of the subsample of veterans with pain diagnoses for the purpose of identifying correlates of suicide attempts. Much of the extant research on the relationship between suicide and pain examines suicide-related outcomes within a sample of pain patients (Tang and Crane, 2006). Therefore, we could better compare our results within the context of previous literature that looked at associations within pain patients only.

2. Materials and methods

2.1. Study population

Veterans discharged from an acute inpatient hospitalization at a Veterans Health Administration (VHA) facility during Fiscal Year 2011 (October 1, 2010–September 30, 2011) with a discharge diagnosis of AUD (International Classification of Disease-9 Clinical Modification [ICD-9CM] codes 303.0, 303.9, 305.0; Buck, 2013) comprised the sample in the study. All diagnoses described in Sections 2.3.2, 2.3.4 and 2.3.5. were based on the last bed section during hospitalization. Patients were excluded from the analyses if their index visit (i.e., inpatient hospitalization) was hospice or dementia-related. This cohort is described in more detail elsewhere (Britton et al., 2015).

2.2. Data sources

The Department of Veterans Affairs' National Patient Care Database (NPCD) was used to identify the study population and extract data on demographics, psychiatric comorbidity, medical comorbidity, and pain diagnoses. The NPCD is a repository of national VHA data that contains clinical, enrollment, financial, administrative and inpatient and outpatient treatment utilization information for all veterans who receive care at VHA facilities. Suicide attempts in the 365 days before the index visit and after the discharge were obtained from the Suicide Prevention Application Network (SPAN) database. The SPAN database was created after the VA mandated that VHA facilities track attempted suicide. The SPAN database contains compiled reports of all suicide events (suicides, suicide attempts, and serious suicidal ideation involving a firearm) known to VHA providers. Data are collected by suicide prevention coordinators at each VHA facility through a standardized process and suicide behavior report system (Kemp and Bossarte, 2013).

2.3. Variables

2.3.1. Suicide attempts. All suicide attempts recorded in SPAN within 365 days of the hospital admission and 365 days of the discharge from acute inpatient hospitalizations were identified. Only the first attempt was identified if there were multiple attempts. There were 185 suicide attempts recorded on the same day as the index admission day and 18 suicide attempts occurring during the index stay which were excluded from the analysis. We excluded these attempts in order to definitively focus on attempts occurring in the 365 days prior to admission and the 365 days following discharge, respectively.

2.3.2. Pain diagnoses. Pain conditions were based on codes from the ICD-9CM. These included back pain (720.0–724.9), arthritis (710.0–719.9, 725.0–739.9), migraines (346.0–346.9), headache or tension headache (784.0 and 307.81), psychogenic pain (307.8 and 307.89), neuropathy (337.0, 337.1, 356.x, 357.x, 337.x), and fibromyalgia (729.1). These pain conditions were selected based on those examined in a previous study on suicide and chronic pain among veterans, previous research linking these conditions to suicidal behavior, and their associations with mental health conditions (Breslau et al., 1991; Dreyer et al., 2010; Higgins et al., 2014; Ilgen et al., 2013).

2.3.3. Demographics. Demographic characteristics included sex (male, female), age (18–34 years, 35–54 years, and 55 and older), and urban or rural residence

2.3.4. Psychiatric diagnoses. Select diagnoses were examined using ICD-9CM codes including depression (293.83, 296.2, 296.3, 296.90, 298.0, 300.4, 301.12, 309.0, 309.1, and 311), bipolar disorder (296.0–296.8), substance use disorders other than alcohol (304.2, 305.6, 304.0, 304.7, 305.5, 304.3, 305.2, 304.1, 304.4, 304.5, 304.6, 304.8, 304.9, 305.3, 305.4, 305.7, 305.8, 305.9, 291.0, 292.0), posttraumatic stress disorder (309.81), other anxiety disorders (300.00–300.10, 300.20–300.23, 300.29), and schizophrenia and other psychoses (295.0–295.9). The correlations (r) between each of the psychiatric diagnoses ranged from 0.002 (bipolar disorder and other anxiety disorders) to 0.118 (depression and posttraumatic stress disorder) with a mean of 0.04.

2.3.5. Medical comorbidity. We used the Elixhauser/Gagne Index which is a measure used to adjust for medical comorbidity based on