



A population-based longitudinal study of risk factors for suicide attempts in major depressive disorder

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ABSTRACT

No longitudinal study has examined risk factors for future suicide attempts in major depressive disorder in a nationally representative sample. The objective of this study was to investigate baseline sociodemographic characteristics, comorbid mental disorders, specific depressive symptoms, and previous suicidal behavior as potential risk factors for suicide attempts at 3 years follow-up. Data came from the national epidemiologic survey on alcohol and related conditions (NESARC), a large nationally representative longitudinal survey of mental illness in adults [Wave 1 (2001–2002); Wave 2 (2004–2005) $n = 34,653$]. Logistic regression examined associations between risk factors present at Wave 1 and suicide attempts at Wave 2 ($n = 169$) among individuals with major depressive disorder at baseline assessment ($n = 6004$). Risk factors for incident suicide attempts at Wave 2 ($n = 63$) were identified among those with major depressive disorder at Wave 1 and no lifetime history of suicide attempts ($n = 5170$). Results revealed specific comorbid anxiety, personality, and substance use disorders to be associated with incident suicide attempts at Wave 2. Comorbid borderline personality disorder was strongly associated with suicide attempts in all models. Several comorbid disorders were strongly associated with suicide attempts at Wave 2 even after adjusting for previous suicidal behavior, notably posttraumatic stress disorder (adjusted odds ratio (AOR) = 2.20; 95% confidence interval (95% CI) 1.27–3.83) and dependent personality disorder (AOR = 4.43; 95% CI 1.93–10.18). These findings suggest that mental illness comorbidity confers an increased risk of future suicide attempts in major depressive disorder that is not solely accounted for by past suicidal behavior.

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1. Introduction

Major depressive disorder (MDD) carries a significant risk of suicidal behavior (Kessler et al., 1999). Epidemiologic studies suggest that 15% of individuals with MDD have attempted suicide at some point in their life (Chen and Dilsaver, 1996) and rates of 40% have been observed in clinical populations (Malone et al., 1995). Studies of suicide completers reveal that depression is present in approximately 60% of suicide deaths (Lesage et al., 1994; Cavanagh et al., 2003), and that depression is associated with a 20-fold increased risk of suicide (Osby et al., 2001). Studying suicide attempts is an important method to identify those at risk of future completion, since they are more common in the general population and strong risk factors for suicide (Suokas et al., 2001; Suominen et al., 2004). Suicide attempts frequently bring

at-risk individuals to the attention of care providers, thus emphasizing their role as intervention points in suicide prevention strategies (Mann et al., 2005).

To date, much information has been gleaned from studies examining correlates of suicide attempts in MDD. Depression severity (Roy, 1993), comorbid personality (Corbitt et al., 1996; Soloff et al., 2000), anxiety (Bolton et al., 2008; Stein et al., 2001), and alcohol use disorders (Bulik et al., 1990; Claassen et al., 2007) have all been associated with an elevated risk of suicide attempt. Longitudinal studies have consistently demonstrated the importance of past suicide attempts (Oquendo et al., 2005, 2007; Sokero et al., 2005), cigarette smoking (Oquendo et al., 2005, 2007), alcohol use disorders (Maser et al., 2002), and comorbid personality disorder (Hansen et al., 2003; Oquendo et al., 2007) as predictors of future suicide attempts in depressed populations. While these studies have considerably furthered our understanding of risk factors for suicide attempts in depression, there remain areas requiring further clarification. The vast majority of our knowledge is drawn from clinical samples of depressed individuals. To our

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knowledge, there have been no longitudinal studies examining predictors of suicidal behavior among individuals with MDD in a nationally representative epidemiologic sample. The existing literature on suicide attempts in depression reveals varying assessments of potential risk factors between studies. A recent review of prospective studies stressed the need to study a more comprehensive range of factors such as anxiety disorders (Oquendo et al., 2006). Many studies have established borderline personality disorder as a risk factor for suicidal behavior (Friedman et al., 1983; Soloff et al., 2000), whereas cluster A and C personality disorders have received less attention. Another important limitation in the existing literature relates to previous suicide attempts. Most studies examining suicide risk factors in MDD have included subjects with histories of suicidal ideation or attempts. While it is important to understand the contribution of previous suicide attempts to the risk of future attempts, it is also of interest to examine risk factors for incident suicide attempts in individuals with no history of suicidal behavior.

In this study we sought to examine an extensive range of correlates as possible risk factors for future suicide attempts among individuals with MDD in the general population. Using the national epidemiologic survey on alcohol and related conditions (NESARC; Grant et al., 2004a, 2008), we examined correlates including sociodemographic factors, comorbid Axis I and II mental illnesses, specific depressive symptoms, and past suicidal behavior. Predictors of incident suicide attempts were analyzed among depressed people with no previous history of suicidal behavior. Previous suicide attempts and suicidal ideation were also compared with comorbid psychiatric disorders as independent risk factors for future suicide attempts. The NESARC is a large, nationally representative survey of mental illness in community-dwelling adults. Its comprehensive assessment of Axis I disorders and all ten DSM-IV personality disorders, coupled with its longitudinal design and large sample size provided a unique ability to assess risk factors for subsequent suicide attempts in MDD.

2. Method

2.1. Sample

The NESARC is a nationally representative longitudinal survey of the adult non-institutionalized, civilian population of the 50 United States conducted by the United States Census Bureau under the direction of the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Wave 1 was conducted in 2001–2002 with a sample of 43,093 respondents age 18 and over (Grant et al., 2003b). Wave 2 was a 3-year prospective follow-up comprising 34,653 of the Wave 1 respondents, representing a response rate of 86.7% of eligible respondents (Grant and Kaplan, 2005). In combination with the Wave 1 response rate of 81%, the cumulative response rate for Wave 2 is 70.2%. Trained lay interviewers conducted face-to-face assessments using computer-assisted software. Informed consent was obtained from all participants before beginning the interviews. Interviewers retested a random sample of both the Wave 1 and Wave 2 samples in order to assess the reliability of the survey (Grant et al., 2003a; Grant and Kaplan, 2005). Detailed descriptions of methodology, sampling, and weighting procedures can be found elsewhere (Grant et al., 2003b; Ruan et al., 2008).

2.2. Measures

2.2.1. Suicide ideation and attempts

In the Wave 1 NESARC, suicidal ideation and suicide attempts were assessed only among Wave 1 respondents who endorsed

one of the following two MDD symptoms: “In your entire life, have you ever had a time, lasting at least 2 weeks, when you felt sad, blue, depressed, or down most of the time for at least 2 weeks?” or “In your entire life, have you ever had a time, lasting at least 2 weeks, when you didn’t care about the things that you usually cared about, or when you didn’t enjoy the things you usually enjoyed?” In order to assess suicide ideation and attempts, respondents were then asked whether they thought about committing suicide or attempted suicide, respectively, during that time when their mood was at its lowest or they enjoyed or cared the least about things. The exact question assessing suicide attempts was, “During that time when (your mood was at its lowest/you enjoyed or cared the least about things), did you attempt suicide?” The exact question assessing suicidal ideation was, “During that time when (your mood was at its lowest/you enjoyed or cared the least about things), did you think about committing suicide?”

Suicide attempts that occurred between the Wave 1 and 2 interviews were assessed at Wave 2 among individuals who endorsed depressed mood or anhedonia symptoms of MDD, and also in the general survey among all respondents. Therefore not all suicide attempts at Wave 2 necessarily occurred in the context of a major depressive episode. The exact question assessing suicide attempts was, “During the time since your LAST interview when (your mood was at its lowest/you enjoyed or cared the least about things), did you attempt suicide?” The exact question assessing suicidal ideation was, “During the time since your LAST interview when (your mood was at its lowest/you enjoyed or cared the least about things), did you think about committing suicide?” The question in the general survey assessing suicide attempts was, “In your ENTIRE life did you EVER attempt suicide?”

2.2.2. Sociodemographic factors

Sociodemographic factors of sex, race/ethnicity, age, marital status, education, income, urbanicity and region of residence assessed at Wave 1 were examined as predictors of suicide attempts in the current study. Sex and urbanicity (urban vs. rural) were dichotomous variables while all other sociodemographic factors were categorical (see Table 1 for categories).

2.2.3. Psychiatric disorders

Axis I and II psychiatric disorders were assessed at Waves 1 and 2 according to the *Diagnostic and Statistical Manual of Mental Disorders 4th Edition* (DSM-IV; American Psychiatric Association, 2000) criteria using the *Alcohol Use Disorders and Associated Disabilities Interview* (AUDADIS-IV; Grant et al., 2001). This is a fully-structured diagnostic interview that is appropriate for use by trained lay interviewers. At Wave 1, Axis I disorders of major depression, dysthymia, mania, hypomania, panic disorder with or without agoraphobia, agoraphobia without panic disorder, social phobia, specific phobia, generalized anxiety disorder, alcohol abuse and dependence, and drug abuse and dependence were assessed. All Axis II diagnoses, excluding schizotypal, narcissistic and borderline personality disorders, were also assessed at Wave 1. The Wave 2 interview assessed all Axis I diagnoses included in Wave 1 and additionally assessed posttraumatic stress disorder (PTSD). The Wave 2 interview did not reassess the seven personality disorders assessed in Wave 1, but rather assessed the personality disorders excluded from the Wave 1 interview. Fair to excellent test–retest and inter-rater reliability have been demonstrated for diagnoses generated in both Waves 1 and 2 (Grant et al., 2003a; Ruan et al., 2008). The validity of drug and alcohol diagnoses have been well-documented (Canino et al., 1999; Hasin et al., 1997) and validity of mood, anxiety and personality diagnoses assessed by the AUDADIS-IV has also been established statistically, using the NESARC data (Grant et al., 2004a,b,c).

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