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Differences between inmates who attempt suicide and who die by suicide: Staff-identified psychological and treatment-related risk factors

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Abstract

Suicidal behavior occurs at much higher rates in correctional facilities than in the community, yet little is known about factors that distinguish inmates at risk for attempting versus dying by suicide. Individuals in the current study included 925 inmates housed in two large U.S. jails and eight state correctional systems who attempted (79.5%) or died by (20.5%) suicide for whom archival data were available. Mental health professionals completed a tracking sheet following suicide-related incidents, documenting inmate psychological, diagnostic, and treatment related risk factors. Differences between inmates who attempt versus those who die by suicide indicate that when mental health staff are aware of inmates' current and historical risk factors, deaths by suicide are less likely to occur.

Keywords

inmate; suicide; risk factors; incarceration

Suicide is a leading cause of death in correctional facilities in the United States (Noonan, 2016a, b; Noonan, Rohloff, & Ginder, 2015; World Health Organization, 2007), with substantially higher rates of both suicide attempts and deaths than in the community. It is estimated that 24 to 35% of annual deaths in local jails are due to suicide and 6 to 7% of annual deaths in state prisons are due to suicide (Noonan, 2016a, b). In contrast, approximately 2% of annual deaths in the community are due to suicide (Xu, Murphy, Kochanek, & Bastian, 2016). No national prevalence estimate of suicide attempts in correctional facilities is currently available, but the annual prevalence of suicide attempts in the community is about 0.6% (National Center for Injury Prevention and Control, 2015). Despite these striking estimates, only limited empirical work has been conducted to investigate what puts inmates at risk for engaging in suicidal behavior during incarceration, and, even more specifically, what factors distinguish inmates who attempt suicide but survive from those who die by suicide. The current study attempts to fill this gap in the

literature by examining a wide array of psychological and treatment related risk factors known to correctional mental health staff.

Distinguishing Between Inmates Who Attempt Versus Die by Suicide

Previous research examining factors associated with suicide attempts and deaths in correctional facilities has primarily compared inmates who attempted or died suicide with non-suicidal inmate controls (e.g., Fazel, Cartwright, Norman-Nott, & Hawton, 2008; Kerkhof & Bernasco, 1990), or examine only attempted suicide (e.g., Rivlin, Ferris, Marzano, Fazel, & Hawton, 2013) or only deaths by suicide (e.g., Baillargeon et al., 2009). To our knowledge, only three studies have compared psychological factors that distinguish inmates who attempt from those who die by suicide.

Daniel and Fleming (2005) compared 54 inmates from a large U.S. state prison system who attempted suicide and 37 inmates who died by suicide during a 30-month period. They found that based on inmate records, individuals who died by suicide were more likely to have experienced delusions and hallucinations, psychosocial stressors (e.g., conflict, ridicule), and to have been more impulsive immediately preceding suicidal behaviors compared to inmates who attempted but did not die by suicide. Additionally, inmates who died by suicide were more likely to have a documented medical condition and a history of prior suicide attempts compared to inmates who attempted but did not die by suicide. Daniel and Fleming (2005) found no differences in documented DSM-IV diagnoses, prior or current mental health care, hopelessness, anxiety, depression, hyperactivity, agitation, decreased appetite, and weight loss between these two groups of prison inmates.

Serin, Motiuk, and Wichmann (2002) examined differences among Canadian, male prison inmates who died by suicide ($n = 48$), inmates who attempted but did not die by suicide ($n = 48$), and a comparison group of inmates who neither attempted nor died by suicide ($n = 48$). Those who died by suicide were more likely to be diagnosed with schizophrenia or depression, experience paranoia, have poor relationships with other inmates, and have poor social problem-solving skills compared to those who attempted suicide. Contrary to Daniel and Fleming (2005), Serin and colleagues found that inmates who died by suicide were less impulsive than those who attempted but did not die by suicide. Regarding inmates who attempt suicide and survive, Serin and colleagues (2002) found these individuals were more likely to have a diagnosis of antisocial personality disorder, experience adjustment difficulties and poor family relationships, engage in self-injurious behaviors, and have a history of prior suicide attempts compared to inmates who died by suicide. There were no differences in the severity of psychiatric history between those who attempted versus died by suicide.

Daigle (2004) utilized the Minnesota Multiphasic Personality Inventory (MMPI) to examine personality differences among U.S. male federal inmates who died suicide ($n = 47$), who attempted but did not die by suicide ($n = 43$), and non-suicidal controls ($n = 123$). Inmates who attempted suicide were higher on MMPI scales assessing paranoia, psychasthenia (i.e., anxiety, phobias, obsessions, compulsions), schizophrenia, and social introversion compared to those who died by suicide (and non-suicidal inmates). Daigle (2004) found no differences

on the MMPI hypochondriasis, depression, hysteria, psychopathic deviance, masculinity–femininity, and hypomania scales between inmates who died by suicide and inmates who attempted but did not die by suicide.

Each of these studies relied on relatively small samples of inmates who attempted or died by suicide, utilizing a mix of inmate records and inmate self-report. In a recent analysis of a much larger multi-site sample, we examined demographic, criminal justice, institutional, and suicide-related incident factors that differentiated between inmates who attempted ($n = 735$) versus died by ($n = 190$) suicide (Boren et al., 2017). Compared to those who attempted suicide, those who died by suicide tended to be older, male, more educated, and married or separated/divorced, pre-trial (versus post-sentence), arrested for a violent crime, incarcerated in jail (versus long-term prison), housed in an inpatient mental health unit or protective custody (versus “general population”), living in a single cell, not on suicide precautions, and not previously under close observation. Those who died by suicide were also more likely to act during overnight hours and die by hanging/self-strangulation. No differences were observed for race (White versus Black), length of time incarcerated, and month and day of the week when the suicidal incident occurred.

Current Study

The current study extends our examination of differences between inmates who attempted versus died by suicide, drawing on the same sample used by Boren et al. (2017), focusing here on psychological and treatment-related risk factors that were documented by correctional mental health staff. The psychological risk factors examined include diagnostic factors (e.g., diagnosed mood disorder, substance use disorder), treatment factors (e.g., on mental health caseload, compliant with psychotropic medication), concurrent risk factors (e.g., documented depressive symptoms, alienation), proximal risk factors (e.g., documented self-injurious behavior, decline in physical health), and historical risk factors (e.g., documented lifetime history of substance use problems, impulsivity, and trauma). As this is a retrospective study, we relied on reviews of mental health staff’s documentation of risk factors in the inmate’s health record. We believe examining this unique perspective is critical because the information known to mental health staff likely guides their interventions and allocation of time and resources.

Method

Participants

Individuals in the study included 925 inmates who attempted suicide and survived or died by suicide between January 2007 and October 2015 while housed in two large municipal jails and eight state correctional systems where mental health services were provided by MHM Services, Inc. Of the total sample, 79.5% ($n = 735$) had attempted¹ suicide and 20.5% ($n =$

¹We defined suicide attempt as any non-lethal self-harm incident requiring medical intervention that could not be delivered at the facility level; this criterion was used to capture more severe incidents than are typical of NSSI. As in Goss et al., 2002, we did not differentiate between “real” attempts and NSSI due to the often similar characteristics of inmate behavior during each of these types of incidents (Lester, Beck, & Mitchell, 1979) and because the motivation behind an act (e.g., desire to die) does not distinguish insignificant medical from life-threatening events (Dear, Thomson, & Hills, 2000; Haycock, 1989).

190) died by suicide. Inmates in the study were mostly male (82.7%) with an average age of 34.01 years ($SD = 10.49$ years, range = 15 to 75 years). The majority were White (63.4%) or Black (25.5%), had completed 9 to 12 years of education (80.3%), and were never married (70.5%). Additional demographic information for this sample is reported in Boren et al. (2017).

Measures and Procedures

As one part of ongoing suicide prevention and quality improvement efforts, mental health and/or quality improvement professionals at the correctional facilities completed a tracking sheet (see supplemental material) following suicide-related incidents (i.e., suicide attempt or death by suicide). Nearly identical tracking sheets were used for attempted suicides and deaths by suicide, with only slight wording differences between versions (e.g., “prior to attempt” versus “prior to suicide”). In each case, the tracking sheet was completed by reviewing the inmate’s health record. Information recorded on the tracking sheet included inmate-specific psychological and treatment factors, as well as additional information not included in the scope of the current study. Additional information from the tracking sheet, including demographic, institutional, criminal justice, and suicide-related incident factors, is presented elsewhere (Boren et al., 2017). The study was approved by George Mason University’s Institutional Review Board. The following data from the tracking sheets are considered here:

Diagnostic factors included whether inmates had documented diagnoses of a *psychotic, mood, anxiety, substance use, antisocial personality, and/or borderline personality disorder* (from the most recent treatment plan or psychiatric note).

Treatment factors included documentation of being on the *mental health caseload, taking psychotropic medication, compliance with psychotropic medication, change in medication* during the past two weeks, and experiencing active substance use or withdrawal.

Concurrent risk factors included documentation of *agitation, hopelessness, psychological turmoil, alienation, depressive symptoms, psychotic symptoms, suicide plan identified, and sudden change in mental status* observed during the most recent contact with mental health staff. Each variable was examined separately and a count of the number of concurrent risk factors endorsed was also considered.

Proximal risk factors included documentation of *self-injurious behavior, a decline in physical health, conflict with inmates, receiving bad news, and experiencing a sudden stressor*, occurring during the two months prior to the suicide-related incident. Each variable was examined separately, as well as in a count of the number of proximal risk factors endorsed.

Historical risk factors included documentation of a lifetime history of *substance use problems, impulsivity, suicide/self-injurious behavior, trauma, or participation in psychological treatment*. Each variable was examined separately, as well as in a count of the number of historical risk factors endorsed.

Plan of Analysis

Analyses compared inmates who attempted versus died by suicide. For individuals with multiple suicide-related incidents, data related to the most recent incident were utilized. Since most factors considered were categorical, chi-square tests were conducted. Mann-Whitney U Tests were utilized for comparisons with continuous data (i.e., number of concurrent, proximal, and historical risk factors).

Given the large number of planned analyses comparing inmates who attempted suicide and survived with those who died by suicide, a Benjamini Hochberg (B-H) correction (Benjamini & Hochberg, 1995) was applied to control for familywise error. We utilized this procedure rather than the Bonferroni procedure because it has greater power and stability in power as the number of comparisons increases (Williams, Jones, & Tukey, 1999).

Results

Diagnostic Factors at the Time of the Suicide-Related Incident

As shown in Table 1, a diagnosis of borderline personality disorder (BPD) was associated with a greater likelihood of attempting suicide and surviving (from here forward referred to as attempting for brevity of language), but a lower likelihood of dying by suicide, relative to inmates without BPD. Diagnoses of psychotic, mood, anxiety, substance use disorders (in remission in a controlled environment), and antisocial personality disorder (ASPD) were unrelated to likelihood of attempting versus dying by suicide.

Treatment Factors

As shown in Table 2, inmates were disproportionately more likely to attempt than die by suicide if they were on the mental health caseload, prescribed psychotropic medication, or documented as compliant with psychotropic medication. Experiencing a change in medication within the two weeks prior to the incident and documented active substance use or withdrawal were unrelated to likelihood of attempting versus dying by suicide.

Concurrent Risk Factors

As shown in Table 3, inmates were disproportionately more likely to attempt than die by suicide if they were noted by staff to have exhibited agitation, hopelessness, psychological turmoil, alienation, depressive symptoms, psychotic symptoms, an identified suicide plan, or a sudden change in mental status. Individuals who died by suicide had significantly fewer documented concurrent risk factors than those who attempted suicide ($U = 44075, p < 0.001$).

Proximal Risk Factors

As shown in Table 4, inmates were disproportionately more likely to attempt than die by suicide if they were known to have recently engaged in self-injurious behavior or have conflict with other inmates. In contrast, individuals who had a documented recent decline in physical health were disproportionately more likely to die by suicide than attempt suicide. Documentation of recently receiving bad news and having a sudden stressor were unrelated to likelihood of attempting versus dying by suicide. Number of documented proximal risk

factors was unrelated to the likelihood of attempting versus dying by suicide ($U = 68462.00$, $p = 0.94$).

Historical Risk Factors

As shown in Table 5, inmates were disproportionately more likely to attempt than die by suicide if they were known to have a documented history of substance use problems, impulsivity, suicide/self-injurious behavior, trauma, and lack of participation in psychological treatment. Those without a documented history of substance use problems, impulsivity, suicide/self-injurious behavior, trauma, and participation in psychological treatment, were less likely to have attempted suicide than expected by chance, as compared to their counterparts. Documented family history of suicide was unrelated to likelihood of attempting versus dying by suicide. Individuals who died by suicide had significantly fewer documented historical risk factors than those who attempted suicide ($U = 53977$, $p < 0.001$).

Benjamini Hochberg Correction

Following the B–H correction, the only factors that were no longer statistically significant were whether inmates were on psychotropic medication and whether inmates experienced concurrent psychotic symptoms. These factors should be explored in future research to determine whether the results can be replicated.

Discussion

Results from the current study suggest when correctional mental health staff are aware of inmates' current and historical psychological state and social context, deaths by suicide are less likely to occur. It is possible that awareness of inmates' risk for suicide leads mental health staff to further intervene, for example through monitoring on the mental health caseload or prescribing psychotropic medication; mental health intervention, in turn, seems protective against deaths by suicide. Although mental health staff's awareness of relevant risk factors does not prevent suicide attempts, it appears those most at risk for dying by suicide are individuals for whom mental health staff do not know about crucial risk-relevant information (e.g., suicide plan).

Diagnostic Factors

Those who attempted suicide but survived and those who died by suicide differed on only one of the six diagnostic factors. Individuals diagnosed with BPD were more likely to attempt suicide than expected by chance, while those without the diagnosis were more likely to die by suicide than expected by chance. This finding parallels previous research examining suicidal behaviors among individuals with BPD (e.g., Black, Blum, Pfohl, & Hale, 2004). Of note, engaging in recurrent suicidal behavior is a criterion for a diagnosis of BPD (American Psychiatric Association, 2013) and therefore may have increased the frequency of BPD being documented in the sample.

Although none of the other five diagnostic factors distinguished between those who attempted suicide and those who died by suicide, this does not imply having these diagnoses are unrelated to suicidal behavior. Many inmates who engaged in suicidal behavior in the

current study had mental health diagnoses, such as a mood disorder. It is likely many other inmates in the sample who were not assigned psychiatric diagnoses would in fact meet criteria for a disorder, but mental health staff were either not aware of their diagnostic history or these individuals had not come to the attention of mental health staff. In other words, it may be an issue of staff awareness rather than an inability of these factors to distinguish between those who attempt and those who die by suicide. Results of prior research examining diagnostic factors are mixed, and further exploration is therefore needed.

Treatment Factors

Individuals who attempted suicide but survived and those who died by suicide differed on three of the five treatment factors. Inmates who were not prescribed psychotropic medication or were noted by staff as not compliant with psychotropic medication were more likely to die by suicide than expected by chance, while those who were more compliant with taking medication were more likely to attempt, but not die by, suicide than expected by chance. Experiencing a change in medication within the past two weeks and documented active substance use or withdrawal were unrelated to the likelihood of attempting versus dying by suicide.

Importantly, inmates who were not on the mental health caseload were more likely to die by suicide than expected by chance. This finding is inconsistent with prior research, which has found no differences between those who attempted suicide and survived versus those who died by suicide in terms of prior or current mental health care (Daniel & Fleming, 2005). The current study, however, has a larger sample size than previous studies, and therefore has more power to detect smaller effects. It is likely involvement of mental health staff benefited inmates; not being on a mental health caseload may result in more deaths by suicide due to less targeted monitoring and intervention by mental health staff.

Concurrent Risk Factors

Those who attempted suicide but survived and those who died by suicide differed on all eight concurrent risk factors. Inmates with fewer documented concurrent risk factors were more likely to die by suicide than expected by chance; inmates exhibiting alienation or psychological turmoil, who had an identified suicide plan, or who had a sudden change in mental status were more likely to attempt suicide and survive than expected by chance. Some of these findings are seemingly paradoxical. Of note, one might expect inmates with fewer documented concurrent risk factors to be *less* likely to die by suicide. In this case, it is important to consider the source of information being studied. The current study relied upon mental health staff's documented reports of inmates' risk factors, which inherently requires an awareness on the part of the staff that may not always be present. For example, consider the risk factor of having an identified suicide plan. When staff are aware that an inmate has a plan to commit suicide, they can more effectively intervene to prevent a lethal attempt. Staff not being aware of a suicide plan does not mean one does not exist.

Findings from the current study are seemingly inconsistent with previous research, but again, it is important to consider the source of information. For example, our findings indicate inmates with documented depressive symptoms were disproportionately more likely

to attempt than die by suicide; others found inmates reporting depressive symptoms were more likely to die by than attempt suicide (Serin et al., 2002). Our study reflects mental health staff's awareness of inmates' depressive symptoms, which likely influences their ability to intervene. Serin et al. (2002), in contrast, relied on inmates' self-report of depressive symptoms, so mental health staff may or may not have been aware of their depressive symptoms. A lack of awareness would inhibit mental health staff's ability to intervene, which could prevent lethal suicide attempts.

Proximal Risk Factors

Inmates who attempted suicide but survived and those who died by suicide differed on three of the five proximal risk factors. First, inmates who had a recent decline in physical health were disproportionately more likely to die by than attempt suicide. Declines in physical health can be associated with loss of functioning and with unrecognized depression, including a sense of hopelessness and helplessness, chronic pain, identity threat, and a need for increased social support that may be difficult to meet in the context of incarceration. These changes may not be readily recognized by mental health staff if the inmate is not already receiving ongoing mental health care and may not be appreciated by medical staff who are focused on treating the inmate's physical health.

Second, consistent with prior research (Serin et al., 2002), inmates who recently engaged in self-injurious behavior were differentially more likely to attempt than die by suicide. Third, inmates experiencing conflict with other inmates were more likely to attempt than die by suicide than expected by chance. Although Daniel and Fleming (2005) found inmates experiencing conflict were more likely to die by than attempt suicide, again it is important to note that our sample reflects mental health staff's awareness of conflict, whereas Daniel and Fleming's finding reflects self-report of conflict.

Historical Risk Factors

Those who attempted suicide but survived and those who died by suicide differed on three of the five treatment factors and differed on all but one (i.e., family history of suicide) of the six historical risk factors. Inmates with fewer historical risk factors were more likely to die by than attempt suicide than expected by chance. As previously noted, this reflects mental health staff's awareness of inmates' historical risk factors, as documented in the record, and as such may be an incomplete picture. If staff know about fewer historical risk factors, this may simply mean they were less familiar with an inmate and his or her history – not a true absence of risk factors – and thus were less able to appropriately intervene. Inmates not receiving ongoing mental health services are unlikely to have risk factors documented in their health record.

Results of the current study indicate inmates with a documented history of participating in psychological treatment, substance use problems, trauma, and impulsivity were less likely to die by suicide than expected by chance. It is promising that participation in psychological treatment protects against suicide related deaths. Relatedly, results suggest that when staff are aware of risk factors such as substance use problems, trauma, and impulsivity, they can intervene more effectively to prevent deaths by suicide.

Limitations

The current study only included archival data from facilities in which mental health services were provided by MHM Services, Inc.; permission to use the archival data was granted. The sample represents a convenience rather than a random sample, and one which may not be nationally representative. Additionally, we did not include a matched sample of inmates who never engaged in suicidal behavior. The current sample, however, is larger and more diverse than previous studies (e.g., Daigle, 2004; Daniel and Fleming, 2005; Serin et al., 2002), including inmates incarcerated within eight different states and within both jails and prisons.

Additionally, reports of risk factors were solely based on mental health staff's documentation. It is possible inmates possessed certain risk factors (e.g., family history of suicide), but mental health staff were unaware. It is also possible staff were aware of certain risk factors and did not document them or failed to document them in a way which directly translated to the tracking sheets used in the current study. For example, it is possible staff described psychological turmoil in an inmate's record without using that specific term, and as such it was not coded on the tracking sheet. The authors of the current study did not have access to inmates' records themselves to determine how often this may have occurred.

Finally, it is possible some of the psychological risk factors were documented at the time of or immediately following the suicide-related incident for those who survived the suicide attempt. Staff may have been able to obtain additional information from inmates who did not die by suicide to provide a more complete picture of their psychological state. The authors are unable to determine whether or how often this occurred.

Future Directions for Research

Results of the current study underscore multiple psychological and treatment-related factors that place inmates at risk for dying by suicide compared to surviving a suicide attempt. Future research should consider whether these risk factors interact with demographic, criminal justice, institutional, and suicide-related incident characteristics (e.g., method used), as prior research has found these are important areas to assess when determining risk for suicide related deaths as well (Boren et al., 2017). For example, it may be that inmates who are living in a single cell and who have a history of impulsivity will be more likely to die by suicide than an inmate with a history of impulsivity who is housed in a dormitory setting, where peers can more quickly alert staff following a suicide attempt. Due to the number of possible combinations of risk factors for engaging in non-lethal suicide attempts compared to dying by suicide, future research could consider whether there are differential profiles of risk characteristics for each of these groups. Furthermore, future research should consider differences between clinician-reported and self-reported psychological factors, as who reports this information may not only reflect differential opportunities for intervention, but also may relate to the accuracy of the data and therefore its ability to distinguish between those who die by suicide and those who survive suicide attempts.

Clinical Implications

Although it is often difficult to predict suicidal intent and death by suicide accurately, suicide prevention can be achieved by proactively assessing the psychological risk factors

identified in this study. For example, it is important to identify inmates who are at risk for suicide and to monitor them on a mental health caseload. A brief suicide screen (e.g., Modified Scale for Suicidal Ideation [Miller, Norman, Bishop, & Dow, 1986]; Columbia Suicide Severity Rating Scale [Posner et al., 2008]) could be conducted when an individual is newly incarcerated to flag those who are at risk for suicide for closer monitoring. This could be followed by a more comprehensive suicide risk assessment adding the current study's risk factors, as well as other known risk factors (see Boren et al., 2017), for inmates who are deemed at risk based on the initial screen. Additionally, the findings of the current study support the need for on-going suicide risk screenings throughout incarceration, rather than relying on a one-time assessment of risk at the time of intake. It is likely that risk factors can arise during an inmate's incarceration that were not reported or were not present at the time of intake into the correctional system.

The finding that inmates who have experienced a recent decline in physical health are at increased risk for dying by suicide also points to the need for increased screening and integration of care. There is growing awareness of the need to treat correctional patients holistically through integration of behavioral and physical healthcare (e.g., Barboza & Wilson, 2013). Medical and mental health staff may need to pay more attention to negative changes in patients' physical health as a risk factor for suicide. Screening for depression during primary care and chronic care encounters may be helpful in detecting medical patients most at risk. A holistic approach to suicide prevention is needed.

Borderline personality disorder (BPD) is the single diagnosis that was related to a higher likelihood of attempting than dying by suicide in our sample. Previous research has found that the prevalence of BPD among inmates ranges from 16.9% to as high as 61.5% (Black et al., 2007; Conn et al., 2010; Jordan, Schlenger, Fairbank, & Caddell, 1996; Komarovskaya, Loper, & Warren, 2007; Trestman, Ford, Zhang, & Wiesbrock, 2007). A more comprehensive approach for understanding suicidal and self-injurious behavior among inmates with BPD would be beneficial to assess what prevents individuals with BPD from dying by suicide. For example, if individuals with BPD are more likely to engage in cutting than in hanging or are more likely to be on the mental health caseload, mental health and medical professionals may simply be able to intervene more quickly.

Lastly, the findings underscore the importance of training frontline staff to recognize and actively document suicide-related risk factors, and for this information to be monitored by correctional mental health professionals. Results indicate that when given the benefit of knowledge of risk, staff can often work effectively to enhance inmate safety.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5. Arlington, VA: American Psychiatric Publishing; 2013.
- Boren EA, Folk JB, Loya JM, Tangney JP, Barboza SE, Wilson JS. The suicidal inmate: A comparison of inmates who attempt versus complete suicide. *Suicide and Life-Threatening Behavior*. in press.
- Baillargeon J, Penn JV, Thomas CR, Temple JR, Baillargeon G, Murray OJ. Psychiatric disorders and suicide in the nation's largest state prison system. *Journal of the American Academy of Psychiatry and the Law Online*. 2009; 37:188–193.
- Barboza SE, Wilson JS. Your patient is my patient: The need for integrated medical-mental healthcare for inmates with serious mental illness. *CorrDocs*. 2013; 17(3):11, 14.
- Black DW, Blum N, Pfohl B, Hale N. Suicidal behavior in borderline personality disorder: Prevalence, risk factors, prediction, and prevention. *Journal of Personality Disorders*. 2004; 18:226–239. [PubMed: 15237043]
- Black DW, Gunter T, Allen J, Blum N, Arndt S, Wenman G, Sieleni B. Borderline personality disorder in male and female offenders newly committed to prison. *Comprehensive Psychiatry*. 2007; 48:400–405. [PubMed: 17707246]
- Conn C, Warden R, Stuewig J, Kim EH, Harty L, Hastings M, Tangney JP. Borderline personality disorder among jail inmates: How common and how distinct? *Corrections Compendium*. 2010; 35:6–13. [PubMed: 27065512]
- Daigle M. MMPI inmate profiles: suicide completers, suicide attempters, and non-suicidal controls. *Behavioral Sciences and the Law*. 2004; 22:833–842. [PubMed: 15568200]
- Daniel AE, Fleming J. Serious suicide attempts in a state correctional system and strategies to prevent suicide. *The Journal of Psychiatry & Law*. 2005; 33:227–247.
- Fazel S, Cartwright J, Norman-Nott A, Hawton K. Suicide in prisoners: A systematic review of risk factors. *Journal of Clinical Psychiatry*. 2008; 69:1721–1731. [PubMed: 19026254]
- Goss JR, Peterson K, Smith LW, Kalb K, Brodey BB. Characteristics of suicide attempts in a large urban jail system with an established suicide prevention program. *Psychiatric Services*. 2002; 55:574–579.
- Haycock J. Manipulation and suicide attempts in jails and prisons. *Psychiatric Quarterly*. 1989; 60:85–98. [PubMed: 2813645]
- Jordan BK, Schlenger WE, Fairbank JA, Caddell JM. Prevalence of psychiatric disorders among incarcerated women: II. Convicted felons entering prison. *Archives of General Psychiatry*. 1996; 53:513–519. [PubMed: 8639034]
- Kerkhof AJ, Bernasco W. Suicidal behavior in jails and prisons in the Netherlands: Incidence, characteristics, and prevention. *Suicide and Life-Threatening Behavior*. 1990; 20:123–137. [PubMed: 2385856]
- Komarovskaya I, Loper AB, Warren J. The role of impulsivity in antisocial and violent behavior and personality disorders among incarcerated women. *Criminal Justice and Behavior*. 2007; 34:1499–1515.
- Lester D, Beck AT, Mitchell B. Extrapolation from attempted suicides to completed suicides: A test. *Journal of Abnormal Psychology*. 1979; 88:78–80. [PubMed: 422804]
- Miller IW, Norman WH, Bishop SB, Dow MG. The Modified Scale for Suicidal Ideation: reliability and validity. *Journal of Consulting and Clinical Psychology*. 1986; 54:724–725. [PubMed: 3771893]
- National Center for Injury Prevention and Control. Suicide: Facts at a glance. 2015. Retrieved from <http://www.cdc.gov/ViolencePrevention/pdf/Suicide-DataSheet-a.pdf>
- Nock MK, Borges G, Bromet EJ, Cha CB, Kessler RC, Lee S. Suicide and suicidal behavior. *Epidemiologic Reviews*. 2008; 30:133–154. [PubMed: 18653727]
- Noonan ME. Mortality in local jails, 2000–2014, Statistical tables. Washington, D.C: U.S. Department of Justice; 2016a. Bureau of Justice Statistics
- Noonan ME. Mortality in state prisons, 2001–2014, Statistical tables. Washington, D.C: U.S. Department of Justice; 2016b. Bureau of Justice Statistics

- Noonan M, Rohloff H, Ginder S. Mortality in local jails and state prisons, 2000–2013, Statistical tables. Washington, D.C: U.S. Department of Justice; 2015. Bureau of Justice Statistics
- Posner K, Brent D, Lucas C, Gould M, Stanley B, Brown G, ... Mann J. Columbia-suicide severity rating scale (C-SSRS). New York, NY: Columbia University Medical Center; 2008.
- Rivlin A, Ferris R, Marzano L, Fazel S, Hawton K. A typology of male prisoners making near-lethal suicide attempts. *Crisis*. 2013; 34:335–347. [PubMed: 23685335]
- Serin RC, Motiuk L, Wichmann C. An examination of suicide attempts among inmates. *Forum on Corrections Research*. 2002; 14(2):40–42. Correctional Service of Canada.
- Trestman RL, Ford J, Zhang W, Wiesbrock V. Current and lifetime psychiatric illness among inmates not identified as acutely mentally ill at intake in Connecticut's jails. *Journal of the American Academy of Psychiatry and the Law*. 2007; 35:490–500. [PubMed: 18086741]
- Williams VSL, Jones LV, Tukey JW. Controlling error in multiple comparisons, with examples from state-to-state differences in educational achievement. *Journal of Educational and Behavioral Statistics*. 1999; 24:42–69.
- World Health Organization. Preventing suicide in jails and prisons. 2007. Retrieved from: http://www.who.int/mental_health/prevention/suicide/resource_jails_prisons.pdf
- Xu J, Murphy SL, Kochanek KD, Bastian BA. Deaths: Final data for 2013. *National Vital Statistics Reports*. 2016; 64:1–118. [PubMed: 26905861]

Table 1

Differences Between Non-Lethal Attempts and Deaths Based Upon Diagnostic Factors

Diagnostic Factor	Non-Lethal Attempt Observed (Expected)	Death Observed (Expected)	Chi-Square Test
<i>Psychotic Disorder</i>			
No	603 (599.5)	151 (154.5)	0.57
Yes	119 (122.5)	35 (31.5)	
<i>Mood Disorder</i>			
No	352 (357.9)	98 (92.1)	0.95
Yes	371 (365.1)	88 (93.9)	
<i>Anxiety Disorder</i>			
No	635 (633.9)	162 (163.1)	0.07
Yes	88 (89.1)	24 (22.9)	
<i>Substance Use Disorder</i>			
No	569 (572.5)	151 (147.5)	0.51
Yes	153 (149.5)	35 (38.5)	
<i>Antisocial Personality Disorder</i>			
No	560 (568.5)	153 (144.5)	3.10
Yes	152 (143.5)	28 (36.5)	
<i>Borderline Personality Disorder</i>			
No	606 (617.1)	168 (156.9)	7.42**
Yes	106 (94.9)	13 (24.1)	

Note. *Ns* ranged from 893–909.***
 $p < .001$,**
 $p < .01$,*
 $p < .05$

Table 2

Differences Between Non-Lethal Attempts and Deaths Based Upon Treatment Factors

Treatment Factor	Non-Lethal Attempt Observed (Expected)	Death Observed (Expected)	Chi-Square Test
<i>Mental Health Caseload</i>			
No	166 (183.3)	65 (47.7)	10.62**
Yes	565 (547.7)	125 (142.3)	
<i>Psychotropic Medication</i>			
No	258 (270.4)	82 (69.6)	4.44*
Yes	473 (460.6)	106 (118.4)	
<i>Compliant with Medication</i>			
No	126 (136.7)	41 (30.3)	7.83**
Yes	208 (197.3)	33 (43.7)	
<i>Change in Medication</i>			
No	370 (364.0)	100 (106.0)	2.28
Yes	80 (86.0)	31 (25.0)	
<i>Active Substance Use or Withdrawal</i>			
No	508 (510.8)	123 (120.2)	0.82
Yes	57 (54.2)	10 (12.8)	

Note. *N*s ranged from 408–921.***
 $p < .001$,**
 $p < .01$,*
 $p < .05$

Table 3

Differences Between Non-Lethal Attempts and Deaths Based Upon Concurrent Risk Factors

Concurrent Risk Factor	Non-Lethal Attempt Observed (Expected)	Death Observed (Expected)	Chi-Square Test
<i>Agitation</i>			
No	296 (332.1)	123 (86.9)	36.92 ***
Yes	384 (347.9)	55 (91.1)	
<i>Hopelessness</i>			
No	406 (439.9)	144 (110.1)	38.69 ***
Yes	257 (223.1)	22 (55.9)	
<i>Psychological Turmoil</i>			
No	310 (335.7)	113 (87.3)	19.21 ***
Yes	355 (329.3)	60 (85.7)	
<i>Alienation</i>			
No	488 (500.0)	136 (124.0)	5.79 *
Yes	177 (165.0)	29 (41.0)	
<i>Depressive Symptoms</i>			
No	345 (373.9)	127 (98.1)	23.87 ***
Yes	333 (304.1)	51 (79.9)	
<i>Psychotic Symptoms</i>			
No	531 (541.1)	152 (141.9)	4.51 *
Yes	148 (137.9)	26 (36.1)	
<i>Suicide Plan Identified</i>			
No	464 (507.4)	178 (134.6)	67.96 ***
Yes	222 (178.6)	4 (47.4)	
<i>Sudden Change in Mental Status</i>			
No	527 (541.6)	153 (138.4)	10.35 **
Yes	138 (123.4)	17 (31.6)	

Note. *N*s ranged from 829–868.***
 $p < .001$,**
 $p < .01$,*
 $p < .05$

Table 4

Differences Between Non-Lethal Attempts and Deaths Based Upon Proximal Risk Factors

Proximal Risk Factor	Non-Lethal Attempt Observed (Expected)	Death Observed (Expected)	Chi-Square Test
<i>Self-Injurious Behavior</i>			
No	363 (374.2)	143 (131.8)	4.80*
Yes	148 (136.8)	37 (48.2)	
<i>Decline in Physical Health</i>			
No	462 (450.6)	151 (162.4)	12.34***
Yes	32 (43.4)	27 (15.6)	
<i>Conflict with Inmates</i>			
No	352 (366.9)	142 (127.1)	9.67*
Yes	133 (118.1)	26 (40.9)	
<i>Recent Bad News</i>			
No	361 (367.9)	132 (125.1)	2.05
Yes	127 (120.1)	34 (40.9)	
<i>Sudden Stressor</i>			
No	388 (397.9)	113 (103.1)	3.21
Yes	249 (239.1)	52 (61.9)	

Note. *N*s ranged from 653–802.***
 $p < .001$,**
 $p < .01$,*
 $p < .05$

Table 5

Differences Between Non-Lethal Attempts and Deaths Based Upon Historical Risk Factors

Historical Risk Factor	Non-Lethal Attempt Observed (Expected)	Death Observed (Expected)	Chi-Square Test
<i>Substance Use Problems</i>			
No	91 (105.0)	42 (28.0)	10.45 **
Yes	587 (573.0)	139 (153.0)	
<i>Impulsivity</i>			
No	171 (202.8)	82 (50.2)	36.03 ***
Yes	495 (463.2)	83 (114.8)	
<i>Suicide/Self-Injurious Behavior</i>			
No	175 (197.4)	73 (50.6)	17.41 ***
Yes	528 (505.6)	107 (129.4)	
<i>Trauma</i>			
No	293 (305.4)	91 (78.6)	4.84 *
Yes	333 (320.6)	70 (82.4)	
<i>Psychological Treatment</i>			
No	118 (134.0)	51 (35.0)	11.43 ***
Yes	583 (567.0)	132 (148.0)	
<i>Family History of Suicide</i>			
No	423 (428.4)	119 (113.6)	2.04
Yes	86 (80.6)	16 (21.4)	

Note. *N*s ranged from 644 – 884.***
 $p < .001$,**
 $p < .01$,*
 $p < .05$