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Use of Mental Health Treatment among Those Who Had a Criminal Legal Problem Associated with Their Suicide, 2004-2015

An Analysis from the Colorado Violent Death Reporting System

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Introduction

In Colorado and throughout the nation there are growing and concerted public health efforts to reduce suicide and other preventable deaths. In 2015 Colorado was ranked ninth in the country for highest suicide rate with 20.0 suicides per 100,000 people, compared to 13.8 per 100,000 for the nation.[1] A key method for reducing suicide rates is ensuring that those at risk are receiving effective mental health treatment. Mental health treatment can reduce suicidal ideation and suicide through various forms. Traditional mental health care can be administered through contact with a primary care physician,[2] through psychotherapy,[3] and through medication,[4] although it can take on forms outside of this as well.

Among adults, women are almost twice as likely in the United States to receive mental health treatment of any kind when compared to men. Race and ethnicity are also predictors of securing mental health treatment. When only looking at this country's top three most prevalent race and ethnicities, Non-Hispanic Whites receive about 85 percent of all mental health treatment, while Non-Hispanic Blacks/African Americans and Hispanics split the remaining 15 percent,[5] when they represent nearly 30 percent of the population.[6]

Additionally, on this continuum of mental health care usage and suicide risk are those who have struggled with some form of criminal legal problem. This is a population that has an especially high risk of suicide. Those exiting the criminal justice system on probation have been shown to have significantly higher suicide rates than the general population[7] and a history of criminal charges has been associated with an increased risk of suicide.[8] In 2015, 149 (14.0%) people who died from suicide in Colorado had a criminal legal problem contributing to their suicide death.[9] Although there is clear data on the link between suicide risk and contributing criminal legal issues, less is understood about the mental health care that these individuals have received.

During the 2016 legislative session, the Colorado General Assembly passed Senate Bill 147, which highlights the need for systematic support for suicide prevention through the use of the Zero Suicide framework.[10] The bill tasked

the office with expanding the hospital-based framework to also serve a variety of Colorado settings including the justice system, faith community, school-based health centers, and higher education. The Zero Suicide framework has the primary goal of systemic change within health care organizations which focuses on increased safety for all patients as well as health care providers. It also emphasizes the creation and support of a confident and competent workforce, skilled in identifying and engaging patients in need, and treating patients while maintaining care coordination. This system requires the engagement of the entire organization including supportive leadership, frontline clinical care teams, as well as suicide-attempt survivors, family members, policy makers, researchers and others. This evidence-based approach has led to an 80 percent reduction in the suicide death rate[11] within healthcare settings.

Since Colorado adopted Zero Suicide, this initiative has been expanded to involve the criminal justice system. This would most likely involve linking the court system, correctional system, care providers, those charged with or convicted of crimes, and their families together to reduce suicide among those involved with the criminal justice system. Before this system is fully implemented, it is important to understand how often those with a criminal legal problem are using mental health treatment. The Colorado Violent Death Reporting System (CoVDRS) is part of the National Violent Death Reporting System (NVDRS), a state-based surveillance system that links data from law enforcement, coroners, medical examiners, vital death statistics, and crime laboratories to assist each participating state in designing and implementing tailored prevention and intervention efforts. CoVDRS is a rich source of data which includes detailed information about risk factors, and precipitating circumstances for those who died by suicide. It also contains information on whether or not decedents had a criminal legal problem that contributed to their suicide death. The analysis presented in this report is an exploratory examination of the differences in mental health treatment between suicide decedents who had a contributing criminal legal problem, and those who did not.

Methods

A case/control study was conducted using CoVDRS data from 2004 to 2015, specifically, suicide deaths among Colorado residents, and occurring in Colorado. The cohort of cases where suicide decedents were noted as having a contributing legal problem associated with their suicide were compared to the controls who did not have a contributing legal problem associated with their suicide. The NVDRS defines a contributing legal problem as a criminal legal issue which directly contributed to the death. Some examples include upcoming court date, an upcoming jail sentence or being on the run from law enforcement.[12] This circumstance variable, along with all variables in the CoVDRS, are based on information from the death certificate, law enforcement reports and coroner reports. These death investigation reports often incorporate information from (but are not limited to) medical records, mental health records and family/friend interviews. Decedents with missing information were excluded from the analysis.

There were two main variables examined in this study. The first was whether a decedent was receiving mental health treatment within two months of their suicide death. Mental health treatment included seeing a professional (psychiatrist, psychologist, physician, counselor, etc.), or receiving a prescription for an antidepressant or other psychiatric medicine.[12] This variable does include those who received mental health treatment for substance abuse. The second exposure was ever receiving mental health treatment. This included any individuals who were currently in mental health treatment as well as any of those who had some indication of receiving mental health treatment

at any point in the past.[12] That indication could come from medical records, current or past prescriptions, and/or information from the report of a family member, etc.

Sex, race/ethnicity, age, marital status, military status, education level and area-based poverty estimates were examined and controlled for, in relation to mental health treatment and a criminal legal problem. Area-based poverty estimates describes the percentage of the community (defined using the census tract) where a decedent was living that is under the federal poverty level (FPL).[13] This was categorized as either less than 10 percent, 10 to 19.9 percent, 20 to 29.9 percent, or more than 30 percent of the community living at or below the federal poverty level. Education was only categorized into high school education or less, or more than a high school education. These variables were chosen a priori as common demographic variables or because they are known to be associated with mental health issues or suicide risk.[9, 14, 15]

An initial univariate analysis was performed to determine the distribution of all variables examined in the study. This was followed by a bivariate cross tabulation with a chi squared analysis done between outcome and exposure, and each covariate to both the outcome and exposure. Unadjusted odds ratios (ORs) were calculated along with 95 percent confidence intervals and chi-squared tests for significance (a=0.05). Multivariable logistic regression was used to adjust odds ratios for potential confounding from the covariates previously listed. There were two separate models tested for the analysis. One examined current mental health treatment as the exposure, and one examined whether individuals ever received mental health treatment as the exposure.

Results

The final study sample included 8,481 suicide decedents, between 2004 and 2015. Table 1. presents the frequencies, percentages and p-values (chi-square test) for decedents, by the presence of a criminal legal problem. These data were further broken down into those currently receiving mental health treatment and those who ever received mental health treatment as well as by sex, race/ethnicity, age, marital status, military status, area-based poverty estimates and education. There was not a significant difference between those with a criminal legal problem and not, and their distribution of ever receiving mental health treatment.

Table 1. Suicide decedents by contributing criminal legal problem, frequency, percentage, and chi square p-values, 2004-2015.

Variable	Contributing legal problem	No contributing legal problem	p-value
	N (%)	N (%)	
Total cohort N = 8,481	1,212 (14.29)	7,269 (85.71)	
Current mental health treatment			
Yes	314 (25.91)	2,212 (30.43)	0.0014
No	898 (74.09)	5,057 (69.57)	
Ever received mental health treatment			
Yes	423 (34.90)	2,746 (37.78)	0.0554
No	789 (65.10)	4,523 (62.22)	
Sex			
Male	1,047 (86.39)	5,455 (75.04)	<.0001
Female	165 (13.61)	1,814 (24.96)	

Variable	Contributing legal problem N (%)	No contributing legal problem N (%)	p-value
Race/Ethnicity			
White, Non-Hispanic	937 (77.31)	6,166 (84.83)	<.0001
White, Hispanic	197 (16.25)	716 (9.85)	
Black/African American	46 (3.80)	173 (2.38)	
Other	32 (2.64)	214 (2.94)	
Age group			
10-20 years	95 (7.84)	544 (7.48)	<.0001
21-40 years	539 (44.47)	2,260 (31.09)	
41-60 years	489 (40.35)	3,000 (41.27)	
Over 60 years	89 (7.34)	1,465 (20.15)	
Marital status			
Married	382 (31.52)	2,650 (36.46)	<.0001
Divorced	307 (25.33)	1,737 (23.90)	
Never married	490 (40.43)	2,464 (33.90)	
Widowed	33 (2.72)	418 (5.75)	
Ever served in the U.S. Military			
Yes	197 (16.25)	1,473 (20.26)	<.0001
No	1,015 (83.75)	5,796 (79.74)	
Area-based poverty level			
<10%	590 (48.68)	3,431 (47.20)	0.6197
10-19.9%	364 (30.03)	2,311 (31.79)	
20-29.9%	168 (13.86)	1,018 (14.00)	
30%+	90 (7.43)	509 (7.00)	
Education			
High school or less	716 (59.08)	3,537 (48.66)	<.0001
More than high school	496 (40.92)	3,732 (51.34)	

Table 2 presents the frequencies, percentages, adjusted and unadjusted odds ratios (OR) for current mental health treatment, by contributing criminal legal problem. After adjusting for sex, race and ethnicity, age, marital status, area-based poverty level and education those with a criminal problem were 9 percent less likely to have had mental health treatment (OR: 0.91 95 CI: 0.79, 1.05; p = 0.1754), but this was not statistically significant.

Table 2. Suicides by contributing criminal legal problem and current mental health treatment, unadjusted and adjusted odds ratios, 2004-2015.

Variable	Current mental health treatment N (%)	No current mental health treatment N (%)	Unadjusted odds ratios (95% CI)	P value	Adjusted odds ratios (95% CI)	P value
Criminal legal problem	314 (12.43)	898 (15.08)	0.80 (0.70, 0.92)	0.0015	0.91 (0.79, 1.05)	0.1754
No criminal legal problem	2,212 (87.57)	5,057 (84.92)	1.00*		1.00*	
Sex						
Male	1,640 (64.92)	4,862 (81.65)	0.42 (0.38, 0.46)	<.0001	0.42 (0.38, 0.47)	<.0001
Female	886 (35.08)	1,093 (18.35)	1.00*		1.00*	

Variable	Current mental health treatment N (%)	No current mental health treatment N (%)	Unadjusted odds ratios (95% CI)	P value	Adjusted odds ratios (95% CI)	P value
Race/Ethnicity						
White, non-Hispanic	2,229 (88.24)	4,874 (81.85)	1.00*		1.00*	
Hispanic	193 (7.64)	720 (12.09)	0.59 (0.50, 0.69)	<.0001	0.66 (0.55, 0.78)	<.0001
Black/African American	47 (1.86)	172 (2.89)	0.60 (0.43, 0.83)	0.002	0.60 (0.43, 0.83)	0.003
Other	57 (2.26)	189 (3.17)	0.66 (0.49, 0.89)	0.0066	0.60 (0.44, 0.82)	0.0012
Age						
10-20 years	168 (6.65)	471 (7.91)	0.72 (0.60, 0.87)	0.0008	0.85 (0.68, 1.06)	0.1273
21-40 years	819 (32.42)	1,980 (33.25)	0.84 (0.75, 0.93)	0.0012	0.91 (0.81, 1.03)	0.1169
41-60 years	1,154 (45.68)	2,335 (39.21)	1.00*		1.00*	
Over 60 years	385 (15.24)	1,169 (19.63)	0.67 (0.58, 0.76)	<.0001	0.73 (0.63, 0.84)	0.0002
Marital Status						
Married	950 (37.61)	2,082 (34.96)	1.00*		1.00*	
Divorced	613 (24.27)	1,431 (24.03)	0.94 (0.83, 1.06)	0.3097	0.87 (0.77, 0.99)	0.0306
Never married	862 (34.13)	2,092 (35.13)	0.90 (0.81, 1.01)	0.0701	1.02 (0.89, 1.16)	0.9153
Widowed	101 (4.00)	350 (5.88)	0.63 (0.50, 0.80)	0.0001	0.67 (0.52, 0.86)	0.002
Area-based poverty level						
<10%	1,352 (53.52)	2,669 (44.82)	1.00*		1.00*	
10-19.9%	696 (27.55)	1,979 (33.23)	0.69, (0.62, 0.77)	<.0001	0.72 (0.64, 0.81)	<.0001
20-29.9%	324 (12.83)	862 (14.48)	0.74 (0.64, 0.86)	<.0001	0.82 (0.71, 0.95)	0.0099
30%+	154 (6.10)	445 (7.47)	0.68 (0.56, 0.83)	0.0001	0.76 (0.62, 0.93)	0.0084
Education						
High school or less	1,062 (42.04)	3,191 (53.59)	0.63 (0.57, 0.69)	<.0001	0.70 (0.63, 0.77)	<.0001
More than high school	1,464 (57.96)	2,764 (46.41)	1.00*		1.00*	

* Represents the referent/comparison group for odds ratio calculation.

Table 3. presents the second examined variable: Ever treated for a mental health problem. Before adjusting for covariates, those with a criminal legal problem associated with their suicide were 12 percent (OR: 0.88 95 CI: 0.79 - 1.00; p = 0.0555) less likely to have ever had mental health treatment than those who did not have a criminal legal problem associated with their suicide. Similar to the current treatment variable, after adjusting for all covariates there was no statistically significant association.

Table 3. Suicides by contributing criminal legal problem and ever having received mental health treatment, unadjusted and adjusted odds ratios, 2004-2015.

Variable	Ever mental health treatment N (%)	Never mental health treatment N (%)	Unadjusted odds ratios (95% CI)	P value	Adjusted odds ratios (95% CI)	P value
Criminal legal problem	423 (13.34)	789 (14.85)	0.88 (0.79, 1.00)	0.0555	0.96 (0.84, 1.10)	0.5338
No criminal legal problem	2,746 (86.65)	4,523 (85.15)	1.00*		1.00*	
Sex						
Male	2,143 (67.62)	4,359 (82.06)	0.46 (0.41, 0.51)	<.0001	0.48 (0.43, 0.53)	<.0001
Female	1,026 (32.38)	953 (17.94)	1.00*		1.00*	

Variable	Ever mental health treatment N (%)	Never mental health treatment N (%)	Unadjusted odds ratios (95% CI)	P value	Adjusted odds ratios (95% CI)	P value
Race/Ethnicity						
White, non-Hispanic	2,774 (87.54)	4,329 (81.49)	1.00*		1.00*	
Hispanic	252 (7.95)	661 (12.44)	0.60 (0.51, 0.69)	<.0001	0.63 (0.53, 0.74)	<.0001
Black/African American	62 (1.96)	157 (2.96)	0.62 (0.46, 0.83)	0.001	0.59 (0.44, 0.81)	0.0008
Other	81 (2.56)	165 (3.11)	0.77 (0.59, 1.00)	0.0532	0.69 (0.52, 0.91)	0.0083
Age						
10-20 years	222 (7.01)	417 (7.85)	0.78 (0.65, 0.93)	0.005	0.87 (0.70, 1.06)	0.1697
21-40 years	1,080 (34.08)	1,719 (32.36)	0.92 (0.83, 1.02)	0.1024	0.98 (0.88, 1.10)	0.7537
41-60 years	1,417 (44.71)	2, 072 (39.01)	1.00*		1.00*	
Over 60 years	450 (14.20)	1,104 (20.78)	0.60 (0.52, 0.68)	<.0001	0.68 (0.59, 0.78)	<.0001
Marital status						
Married	1,139 (35.94)	1,893 (35.64)	1.00*		1.00*	
Divorced	775 (24.46)	1,269 (23.89)	1.02 (0.90, 1.14)	0.8008	0.95 (0.84, 1.07)	0.401
Never married	1,129 (35.63)	1,825 (34.36)	1.03 (0.93, 1.14)	0.6024	1.08 (0.95, 1.22)	0.2267
Widowed	126 (3.98)	325 (6.12)	0.64 (0.52, 0.80)	<.0001	0.75 (0.59, 0.94)	0.0143
Military						
Yes	492 (15.53)	1,178 (22.18)	1.00*		1.00*	
No	2,677 (84.47)	4,134 (77.82)	1.55 (1.38, 1.74)	<.0001	1.18 (1.03, 1.34)	0.0137
Area-based poverty level						
<10%	1,670 (52.70)	2,351 (44.26)	1.00*		1.00*	
10-19.9%	878 (27.71)	1,797 (33.83)	0.688 (0.62, 0.76)	<.0001	0.71 (0.64, 0.79)	<.0001
20-29.9%	415 (13.10)	771 (14.51)	0.758 (0.66, 0.87)	<.0001	0.83 (0.72, 0.95)	0.0084
30%+	206 (6.50)	393 (7.40)	0.738 (0.62, 0.88)	9E-04	0.80 (0.66, 0.97)	0.0203
Education						
High school or less	1,394 (43.99)	2,859 (53.82)	0.674 (0.61, 0.74)	<.0001	0.73 (0.67, 0.81)	<.0001
More than high school	1,775 (56.01)	2,453 (46.18)	1.00*		1.00*	

* Represents the referent/comparison group for odds ratio calculation.

Discussion

The results reveal that there was no significant difference in the prevalence of mental health care received, whether within the past two months or ever, among those suicide decedents with a contributing criminal legal problem when compared to those with no criminal problem. These results may indicate some positive and negative trends. For one, the population with a criminal legal problem associated with their suicide were not necessarily less likely to receive mental health treatment than those without a criminal legal problem. At the very least, the criminal population should be receiving as much mental health treatment as those from the general population, especially when thinking about the disproportional number of individuals with mental illness currently in jails and prisons.[16]

Although the data explored in this analysis included any contributing legal problem, and not just for those incarcerated, data from prisons and jails offer insight into both the need for care as well as some known at-risk time

periods. Suicide is the leading cause of death among inmates in local jails, but the suicide rate in prisons are lower.[17] One proposed theory for this difference is the instability and crisis that is associated with those who are facing pending charges, or are awaiting trial, contrasted with the less ambiguous prison sentence. Major life stressors, instability, and large life changes have been shown to increase the risk of suicide and suicidal ideation.[18] Extending this to the entire population that is dealing with some form of criminal legal problem, points of transition and crisis may represent opportune times to provide mental health services and work to reduce suicide risk.

Another interesting finding of this study was the overall lack of mental health treatment among the entire population studied. Female suicide decedents were the only population where over 40 percent received mental health treatment within two months of their suicide (44.7%). This was more than 10 percent higher than most other demographics examined, including males (25.2%), non-Hispanic Whites (31.4%), Hispanics (21.8%) and Blacks/African Americans (21.5%). This low use of treatment could be due to a social self-stigma amongst those who have mental illness.[19] Additionally, it could be due to a lack of services available, economic stressors and even a lack of knowledge about where and how to get treatment.[20,21]

The results of this analysis present an opportunity to find ways to increase mental health treatment among this criminal justice population. Specifically, continuing efforts like Zero Suicide which can help connect charged and convicted individuals with appropriate mental health treatment. This will require a system of care that helps improve access for this population. Judges, parole officers, lawyers, law enforcement, correctional facilities, health care practitioners and families of those involved can work collaboratively to create a web of care which supports individuals charged or convicted of crimes that are at risk of suicide and divert them to mental health treatment. This diversion process could include specialty courts such as drug, DUI and mental health specialties.

The results of this analysis aim to highlight some of the trends in mental health treatment, and suicide among individuals who have struggled with a criminal legal problem. These data aim to support and inform the ongoing and ever improving suicide prevention efforts at the local, state and national level. In Colorado there is a clear will and data-driven approach to this issue with the implementation of Zero Suicide. The data explored in this report suggest that as Zero Suicide efforts continue to expand and make improvements within organizations, we will see a reduction in these suicide deaths.

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