

The Intersection of Alcohol Use and Suicide Mortality Among Males, age 25–64, in Rhode Island

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INTRODUCTION

Excessive alcohol use is an established risk factor for death by suicide.¹ The Rhode Island Violent Death Reporting System (RIVDRS) collects data on all suicide deaths occurring in the state. Data collected include demographic and injury information, toxicology results, and circumstances associated with the cause of death. During 2018–2022, an average of 109 suicide deaths were observed among Rhode Island residents each year.² Approximately, three-quarters of these deaths were observed among males, with more than half of all suicide deaths (56%) occurring among males, age 25–64.

Data from the Rhode Island Behavioral Risk Factor Surveillance System (RI BRFSS) highlight the burden of alcohol use among Rhode Islanders. From 2018–2022, 59% of Rhode Island adults reported using any alcohol in the past 30 days, a higher prevalence than the US median of 53%.³ Across the life course, male Rhode Islanders reported drinking any alcohol and binge drinking more frequently than female Rhode Islanders. Any alcohol use was most common among male Rhode Islanders, age 25–44, and binge drinking was most common among male Rhode Islanders, age 18–34.³

One in four Rhode Island males, age 25–64, who died by suicide between 2018 and 2022, had a known alcohol dependence or alcohol problem at the time of death.² Given the burden of suicide deaths and increased alcohol use in this population, this article aims to further explore alcohol use and other characteristics among males, age 25–64 who died by suicide between 2018 and 2022.

METHODS

Suicide deaths among Rhode Island residents that occurred between 2018 and 2022 were analyzed from RIVDRS. Toxicology variables were used to identify decedents who were tested for alcohol and the reported blood alcohol content (BAC) around the time of death. BAC levels were used to categorize a death as being alcohol-involved (BAC of ≥ 0.01 g/dl) or associated with legal intoxication (BAC of ≥ 0.08 g/dl). Deaths where alcohol testing was not performed were excluded from the analysis.

For comparative analysis, a binary measure was constructed to classify suicide decedents into two distinct categories: (1) deaths among males, age 25–64 with positive alcohol test results, and (2) all other suicide deaths not

meeting these criteria. Demographic, injury mechanism, and circumstance variables from RIVDRS were recoded and compared across these groups. Demographic characteristics compared included race/ethnicity (Hispanic, non-Hispanic White, non-Hispanic Black, Other, non-Hispanic), education level (less than high school, high school graduate, some college or associate's degree, bachelor's degree or higher), and marital status (married, single/never married or widowed, divorced or separated). Injury mechanisms (hanging, strangulation or suffocation, firearm, poisoning, other) and circumstances associated with the cause of death (alcohol problem, other substance abuse problem, mental health problem, physical health problem) were also evaluated. Proportions were calculated across groups and compared for statistical significance using chi-square tests ($\alpha=0.05$). Data coding and all analyses were completed using SAS (version 9.4).

RESULTS

Of the 547 suicide deaths identified in RIVDRS during the study period, 527 had alcohol testing results available and were included in these analyses. A total of 171 (32.4%) alcohol-involved suicide deaths were identified, and 110 (64.3%) of these deaths were among males, age 25–64 [Table 1]. Compared to all other suicide deaths, a higher proportion of deaths meeting the criteria for alcohol-involved (36.7% versus 26.9%) and legal intoxication (25.7% versus 18.1%) were observed among males, age 25–64 [Table 1, $p<0.05$]. Both the

Table 1. Number and Percentage of Alcohol-Tested Populations in Rhode Island by Toxicology BAC Levels, Males, age 25–64, 2018–2022

Toxicology BAC Levels	Males, 25–64 Alcohol Tested (N=300)		Rhode Island Population Excluding Males, 25–64 Alcohol Tested (N=227)		p-value ¹
	N	%	N	%	
Alcohol-Involved (BAC) ≥ 0.01 g/dl	110	36.7	61	26.9	0.0174
Not alcohol-involved	190	63.7	166	73.1	
Legally Intoxicated (BAC) ≥ 0.08 g/dl	77	25.7	41	18.1	0.0381

¹ Chi-square test

Table 2. Number and Percentage of Males, age 25–64 by Injury Mechanism of Suicide and Alcohol-Involvement status, 2018–2022

Toxicology BAC Levels	Males, 25–64 Alcohol-Involved (N=110)		Males, 25–64 Not Alcohol-Involved (N=190)		p-value ¹
	N	%	N	%	
Hanging, strangulation, suffocation	53	48.2	80	42.1	0.3073
Firearms	36	32.7	54	28.4	0.4328
Poisoning*	14	12.7	22	11.6	0.7680

¹Chi-square test

*Number and percentage can be reported but should be interpreted with caution due to RSE 20–30%

median and average BAC levels of 0.15 g/dl for males, age 25–64, who were tested for alcohol at the time of death indicate levels of intoxication well above Rhode Island's legal intoxication threshold of 0.08 g/dl, suggesting the presence of high alcohol consumption at the time of suicide death. The median and average BAC levels based on injury mechanism of suicide are about the same as the total median and average well above Rhode Island's legal intoxication threshold of 0.08 g/dl.

Demographic characteristics and known circumstances at the time of death were compared among males, age 25–64, with a BAC of ≥ 0.01 g/dl to males, age 25–64, who were not alcohol-involved at the time of death (data not shown). The only significant difference observed was the percent with a known alcohol problem (43.7% versus 16.0%, $p < .0001$). When comparing injury mechanisms across groups, proportions of deaths by hanging, firearm, and poisoning did not vary significantly [Table 2]. Among males, age 25–64, where the deaths were found to be alcohol-involved, the median BAC was observed to be the same (0.15 g/dl) across all injury mechanisms.

DISCUSSION/RECOMMENDATIONS

The findings of this analysis support alcohol use as a risk factor for suicide death among Rhode Island males, age 25–64. Approximately one-third of all suicide deaths involved alcohol, and the majority of alcohol-involved suicide deaths were among males, age 25–64. Most suicide deaths with a BAC at or above legal intoxication were also among males, age 25–64. Alcohol is a well-established risk factor associated with suicide deaths and has been identified by the World Health Organization and other public health bodies as a key concept in suicide prevention.^{1,4,5} Despite the substantial amount of research conducted on alcohol and suicide, there remains a gap in including alcohol in suicide prevention policy and practice.⁴ Given the significant relationships observed in our study and nationally between alcohol and

suicide, it is important to screen for suicidality among people who use alcohol excessively and evaluate alcohol use among individuals who may be at risk of suicide.¹ Using the Screening, Brief Intervention, and Referral to Treatment (SBIRT) model for patients with a recent suicide-related visit and an evidence-based suicide screener such as the Columbia Suicide Severity Rating Scale (CSSRS) following alcohol-related visits can help identify individuals at risk for attempting suicide while under the influence of alcohol and ultimately help prevent these deaths. It is important to note, however, that administering the CSSRS or other suicide screener during clinical sobriety is the best practice due to potentially unreliable responses while using alcohol.⁶ In addition, the expansion of these screenings from primary care and emergency departments to additional healthcare settings such as Certified Community Behavioral Health Centers (CCBHCs) and urgent care centers would provide more opportunities to identify individuals at risk and refer them to appropriate services.

Ensuring this population of individuals at risk for suicide, who are also excessively using alcohol, get referred to substance use, and mental health services is vital to ensure a holistic approach to treatment. Clinicians and/or peers who are providing therapeutic services should follow evidence-based guidelines for implementing safety plans to prevent future suicide attempts. Discussions around removal or secure storage of alcohol in the home during the safety planning process may decrease the potential for an alcohol-involved suicide death.⁷

This study has several strengths. First, it included all suicides in the state of Rhode Island, allowing for comprehensive analysis on suicides among males, age 25–64. Additionally, though alcohol and suicide have been studied extensively, much of the literature surrounding alcohol-involved suicide among adult males is dated, making this study a timely contribution. This study and other recent research demonstrate that addressing alcohol consumption among at-risk populations for suicide is important for reducing alcohol-involved suicide deaths.¹

There are also a few notable limitations to this analysis. BAC levels entered in RIVDRS were used to classify deaths as being alcohol-involved or legally intoxicated. Testing is typically performed after death, and the level of body decomposition at the time of testing could influence the alcohol results. The RIVDRS coding manual provides guidance on how toxicology results should be entered and notes that alcohol detected because of decomposition rather than ingestion does not generally measure more than 0.040%.⁸ Thus, while misclassification is possible, any impacts to the analysis were likely minor. Additionally, though five years of data were combined for analyses, small sample sizes were still observed, limiting the analysis and statistical power. Although a statistically significant difference was not observed by injury mechanism in this sample, this could be

related to the sample size or differences in the Rhode Island population.

Additional research in the area of excessive alcohol use and suicide is needed. While the data examined demonstrate the burden of alcohol use among adult male suicide decedents in Rhode Island, a larger sample size may show a stronger association identifying those most at risk for suicide. Current lethal means safety trainings do not include alcohol as a potential lethal mean for suicide. While prescription and over the counter medications are viewed as lethal means, piloting the inclusion of alcohol in these trainings could lead to decline in alcohol-involved suicide deaths, alcohol-related suicide deaths, and polysubstance suicide deaths.^{9,10}

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