

RESEARCH BRIEF

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MENTAL AND PHYSICAL HEALTH-RELATED RISK FACTORS AMONG FEMALES WHO DIED BY FIREARM SUICIDE

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BACKGROUND

Suicide is a leading cause of death for females through middle age and has increased in the past two decades. Approximately one-third of all suicides among females are caused by a firearm, and firearm access among females is evolving, as first-time firearm ownership among females has increased in recent years. Understanding **patterns of health-related risk factors** among females who died by firearm suicide may identify **specific health care settings** and **types of health care professionals** who should be involved in **intervention development**.

STUDY GOAL

Researchers sought to identify **clinical typologies** (i.e. classes) of **female firearm suicide decedents** based on preceding mental and physical health-related risk factors for suicide.

APPROACH

Using data from the **Centers for Disease Control and Prevention National Violent Death Reporting System (NVDRS) Restricted Access Database**, researchers included all-age firearm suicides among females from January 2014 to December 2018 across all 50 US states, Puerto Rico, and Washington, DC. The NVDRS compiles data from death certificates, coroner or medical examiner reports, clinical data, court records, next-of-kin interviews, and law enforcement reports to create coded variables as well as narrative summaries. Using pre-existing coded variables and natural language processing of incident narratives, researchers generated clinical typologies using risk factors such as anxiety, alcohol use disorders, suicidal thoughts, physical health problems, and acute or chronic pain. Researchers conducted a **latent class analysis (LCA)**, a technique that assigns a probability to each individual of belonging in a specific class, to form clinical typologies of female firearm suicide decedents using identified risk factor variables.

RESULTS

8,318 female firearm suicide decedents were identified in the NVDRS from 2014 to 2018. More than half (51.7%) of the sample had documented mental health problems prior to their death, and over one quarter (28.6%) had evidence of receiving mental health treatment. Physical health problems (21.2%) and intimate partner problems (26.9%) were also common preceding suicide.

Among the total sample, 3,502 females were excluded from the LCA due to poor fit. A higher proportion of female firearm suicide decedents with zero or one identified risk factor were Black (7.0%), compared to the demographics of those with multiple risk factors (3.8%), and they were more likely to be excluded from the sample. Four clinical typologies were identified among the included 4,816 decedents:

26.4%

Class 1

Females with a substance use or alcohol use disorder

47.5%

Class 2

Females with a history of depression and suicidal thoughts

21.9%

Class 3

Females experiencing pain or a physical health problem

4.2%

Class 4

Females with a high probability of all variables (i.e. multimorbid)

Unclassified

Females with a 0 or 1 risk factor

Notable characteristics of each typology:

- Highest proportion of unmarried females as well as documented intimate partner problems and recent disputes preceding suicide.
- Highest proportion of Black female firearm suicide decedents.
- Older relative to the rest of the sample and lower proportion of intimate partner problems and recent disputes.
- Highest proportion of financial problems and job problems preceding suicide.
- Black females were overrepresented and mental health diagnoses and treatment, substance use disorders, and most circumstantial variables were less commonly reported.

IMPLICATIONS

Given the increasing rates of female firearm suicide, assessing the profile of females at risk, including circumstantial and demographic traits, is an important first step towards prevention. These findings illustrate that **suicide is influenced by physical health** and **social factors** in addition to **mental illness** and **substance use disorder**. Suicide prevention interventions should be **implemented across diverse settings**, including in psychiatric and non-psychiatric care, physical and occupational therapy, and within community spaces, and **involve a range of provider types**. Greater emphasis should be placed on **lethal means assessment**, rather than relying solely on traditional mental health counseling.

FOR ADDITIONAL INFORMATION, REFER TO:

Prater LC, Noghrehchi P, Duan N, Takagi-Stewart J, Mooney SJ, Hefner JL, Goldstein EV. Mental and Physical Health-Related Risk Factors Among Females Who Died by Firearm Suicide. JAMA Netw Open. 2025;8(4):e255941. doi:10.1001/jamanetworkopen.2025.5941

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