Violent Deaths Among Georgia Workers

An Examination of Suicides and Homicides by Occupation, 2006–2009

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Introduction: Workers in certain occupations may be at an increased risk of a violent-related death such as homicide or suicide. The purpose of this study is to describe rates of violent deaths among Georgia workers by occupation, including cases occurring at work and outside of the workplace, and identify leading circumstances surrounding suicides and homicides for the occupations most at risk.

Methods: Data from the 2006–2009 Georgia Violent Death Reporting System were used. Occupational text fields were recoded into 23 major occupation categories based on the 2010 Standard Occupational Classification system. Crude rates and standardized mortality ratios for violent deaths (suicides and homicides) were calculated by occupation among Georgia workers aged $\geq$16 years. The leading circumstances precipitating violent deaths among the high-risk occupations were described. Analyses were conducted during 2012–2013 and 2015.

Results: A total of 4,616 Georgia resident workers were victims of a violent death during 2006–2009. Of these deaths, 2,888 (62.6%) were suicides and 1,728 (37.4%) were homicides. Farming, fishing, and forestry occupations had the highest rate of violent deaths at 80.5 per 100,000 workers followed by construction and extraction occupations at 65.5 per 100,000. The most common suicide circumstances among workers were having a current depressed mood, a current mental health problem, and an intimate partner problem.

Conclusions: Use of the Violent Death Reporting System provides a unique opportunity to explore violent deaths among workers. This analysis shows the need to ensure that workers have access to workplace and community-based suicide and violence prevention services.

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Introduction

Violence is a serious public health problem that can lead to injury and death.[1,2] WHO defines a death due to violence as a death resulting from the "intentional use of physical force or power against oneself, another person, or against a group or community," which includes homicides and suicides.[2–4] Nearly 2,000 people in Georgia lose their life each year as a result of violence.[5] Over the past 2 decades, suicide and homicide remained two of the 20 leading causes of preventable death in Georgia.[5]

In order for violent deaths to be prevented, the circumstances of their occurrence should be identified. Circumstances that lead to a violent death can be complex and involve an array of individual, social, community, and environmental factors[3] and may include the victim's occupation. However, research on which occupations are most at risk of violent death is limited.[6–9] Occupations such as farming, health care, and construction have been identified as high risk for suicide.[6,7,10,11] Taxi drivers and cashiers have been identified as high risk for homicide.[8,12,13] Higher rates of both suicide and homicide have been observed among non-deployed members of the U.S. military and law enforcement officers.[14,15]

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Violent deaths among workers affect the well-being of the victims' coworkers, family, and friends.[16,17] This can lead to increased absenteeism, turnover, healthcare costs, and reduced productivity.[1] Homicide, whether it occurs at work or outside of the workplace, damages trust, community, and the sense of security.[1,18] A death by suicide can have lingering psychological effects on close relatives, friends, and coworkers and may increase their own suicide risk.[16] Thus, violent death of a worker is not only a workplace issue but a community issue.[1,8,16]

Violent deaths by occupation have not been thoroughly examined in Georgia. Knowledge of the occupations at high risk for violent deaths will allow for increased targeting of intervention and prevention efforts.[6–8,12,19] The purpose of this article is to describe violent deaths among Georgia workers by occupation, including deaths occurring at work and outside of the workplace, and identify leading circumstances surrounding violent deaths for the occupations most at risk.

Methods

Data Sources

Data from the Georgia Violent Death Reporting System (GVDRS) were used to obtain numbers of violent deaths, which are defined as suicides (ICD 10 codes X60–X84, Y87.0) and homicides (ICD 10 codes X85–X99, Y00–Y09, Y87.1),[4,20] occurring during 2006–2009. The GVDRS is a statewide surveillance system that is a part of the National Violent Death Reporting System (NVDRS), which collects data on violent deaths from multiple sources, including death certificates; coroner and medical examiner (CME) reports; and law enforcement reports. The data are abstracted into a standardized electronic database. Information on the circumstances precipitating the death, such as a mental health problem, physical health problem, and recent job problem, are collected from the narratives of CME and law enforcement reports.[2,4] For this study, narrative information from CME and law enforcement reports were reviewed to gauge if the death was work-related or could be attributed to events that occurred in the work environment.

The total number of employed persons in Georgia by occupation were obtained from the 2006–2009 Bureau of Labor Statistics Current Population Survey (CPS) and were used as the denominator for rate calculations. The CPS is a monthly probability selected sample survey of about 60,000 households conducted by the U.S. Census Bureau for the Bureau of Labor Statistics. It provides national and state estimates of demographic, social, and economic characteristics of the civilian non-institutionalized population aged ≥16 years and is the primary source of labor force statistics in the nation. People on active duty in the U.S. Armed Forces are excluded from coverage.[21]

Statistical Analysis

Data analysis was conducted during 2012–2013 and 2015. A total of 8,080 violent death cases were included in the 2006–2009 GVDRS database. Violent deaths in which the manner of death was classified as undetermined, unintentional firearm, legal intervention, or terrorism were not included in analyses. Cases were also excluded if the occupation text stated unknown, not available, homemaker, unemployed, disabled, student, child/infant/toddler, or self-employed. Non-Georgia residents, individuals aged <16 years, and people in military-specific occupations (SOC code 55) were excluded because of lack of denominator data. This resulted in about 43% of cases being excluded from the analyses.

Occupations of the decedents were obtained from the three text variables in the 2006–2009 GVDRS database where occupation was recorded. When the victim's current occupation was not available, the victim's usual occupation or job in which they spent most of their time was coded. The victim's usual business/industry was used if occupation text was not available. A word search was performed on each occupation text variable using Proc SQL (SAS, version 9.3) to create a new occupation variable based on the 23 major occupation groups from the 2010 Standard Occupation Classification coding system. This coding system is the federal standard used to classify workers into occupational categories.[21,22] Table 1 provides examples of how the text variables were used to create the new occupation variable.

Crude mortality rates per 100,000 workers and 95% CIs were calculated to measure the overall magnitude of violent deaths by occupation compared with all Georgia resident workers aged ≥16 years. Standardized mortality ratios (SMRs) were used to compare the risk of violent death for each occupation group to that of a standard population. The 2006–2009 mid-year Georgia resident population aged ≥16 years from the U.S. Census Bureau State Population Estimates was used as the standard population. The age and sex distribution of employed persons by occupation was obtained from the 2006–2009 CPS. Ninety-five percent CIs were calculated to determine statistical significance of the SMR. All frequency analyses were conducted using SAS, version 9.3.

Results

There were 4,616 Georgia resident workers aged ≥16 years who experienced a violent death during 2006–2009. Of these deaths, 2,888 (62.6%) were suicides and 1,728 (37.4%) were homicides. The crude rate of violent deaths among all Georgia resident workers aged ≥16 years was 23.9 per 100,000. Table 2 shows the occupation-specific rates of violent deaths among Georgia resident workers aged ≥16 years. Rates of violent deaths were highest among individuals employed in farming, fishing, and forestry occupations at 80.5 per 100,000 workers and among those employed in construction and extraction (e.g., oil and gas drilling, quarrying, mining) occupations at 65.5 per 100,000 workers.

Suicides

The crude rate of suicide among all Georgia workers was 14.9 per 100,000. Suicide rates were highest for individuals in farming, fishing, and forestry occupations (50.7 per 100,000) and construction and extraction occupations (36.6 per 100,000). SMRs were used to determine