

Suicide Risk Among Veterans in the General Population

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Good afternoon. My name is Nathalie Huguet, Ph.D., and I am honored to present testimony today on behalf of my colleagues at Portland State University and the Oregon Health and Science University. Today, I will address the results of a collaborative project that focused on suicide risk among veterans in the general population. The National Institute of Mental Health funded the study. I am Research Associate at Portland State University Center for Public Health Studies. Dr. Mark Kaplan, Professor of Community Health at Portland State, is the lead author and principal investigator on this study.

Suicide is a major cause of death in the United States; approximately 30,000 people per year complete suicide; and nearly 650,000 people are seen in emergency departments after they attempted suicide. Suicide rate for men is four times that for women. Veterans may have an even greater risk of suicide than the general population.

Previous studies conducted among veterans have focused on samples derived from patient populations in the Department of Veterans Affairs (VA) system. Equally important, much of the earlier suicide research has been based exclusively on Vietnam-era veterans. According to the literature, suicide risk factors common in VA patients include male gender, older age, diminished social support, substance dependence, combat-related trauma, medical and psychiatric conditions associated with suicide, and the availability and knowledge of firearms.

The reliance on VA clinical samples is particularly limiting from a population-based perspective because three quarters of veterans do not receive health care through VA facilities. Consequently, little is known about suicide risk factors among veterans in the general U.S. population. Estimates of suicide risk may be inaccurate

because the characteristics of veterans who use the VA system differ from those of the larger population of veterans. In light of the high incidence of physical and mental disabilities among veterans of Iraq and Afghanistan, it is important to examine the risk of suicide among veterans in the general population.

Therefore, the purpose of our study was to examine suicide risk factors among veterans in the general population. In pursuing this goal, we used a large, nationally representative, prospective database to: (1) assess the relative risk of suicide for male veterans in the general population, (2) compare male veteran suicide decedents with those who died of natural and external causes, and (3) examine the effects of baseline sociodemographic circumstances and health status on the subsequent risk of suicide.

We used data from the 1986 through 1994 National Health Interview Survey (NHIS). In the NHIS, which was conducted by the National Center for Health Statistics (NCHS), noninstitutionalized people from the 50 states and the District of Columbia were sampled. The total sample of male veterans for the pooled NHIS data used in the analyses was 104,026. The demographic profile for the NHIS veteran sample closely matched that of other surveys, including the 2001 National Survey of Veterans and the Current Population Survey for September 1989.

The NHIS 1986–1994 data file was linked to the Multiple Cause of Death file (1986–1997) through the National Death Index (NDI) in order to ascertain the cause of death of veteran and nonveteran decedents. NHIS participants aged 18 and older were matched from the date of interview through December 1997 using the following criteria: social security number, first and last name, middle initial, race, sex, marital status, birth date (day, month, and year), and state of birth and residence. We used the recommended NCHS scoring cutoff, which corresponds to an estimate of 97% correctly

classified deaths

Suicide cases were identified using the International Classification of Diseases, ninth revision, Clinical Modification (ICD-9 E950-E959). Respondents were identified as veterans if they answered in the affirmative to the question, "Did you ever serve on active duty in the Armed Forces of the United States?" We explored the potential effects of age (18–44, 45–64, or 65+), marital status (married, widow/divorced/separated, or single), living arrangement (alone or with others), race (white or nonwhite), education (less than 12 years or 12 years or more), employment status (employed, unemployed, or not in the labor force - i.e., retired, disabled, or not looking for a job), region of residence (Northeast, Midwest, South, or West), place of residence (rural or urban), body mass index (BMI), number of chronic non-psychiatric medical conditions (ICD-9 001 to 289 and 320 to 779), number of psychiatric conditions (ICD-9 290 to 316), self-rated health, and activity limitations. Activity limitations was assessed with the following question: "Does any health problem now keep you from working at a job or business, keeping house, going to school, or something else?" with the reply options: (1) "Unable to perform major activities," (2) "limited in kind/amount of major activities," (3) "limited in other activities," and (4) "not limited." The first three categories were collapsed and henceforth are referred to as "limited."

The Cox proportional hazards model (also known as survival analysis) was used to estimate the relative risk of suicide adjusting for demographic characteristics, socioeconomic factors, and health. The comparison group consisted of individuals who died of other causes (i.e., non-suicides) or those who survived through the entire period (through December 1997). In addition, we compared the relative risk of suicide to other causes of death among veterans relevant to nonveterans. A statistical program called

SUDAAN (Release 9.0.1; Research Triangle Institute, Research Triangle Park, N.C.) was used to adjust for complex sample design of the NHIS and ensure accurate estimates of the broader population. Because there were too few female veterans in the sample who completed suicide (6 cases), we did not include women in the analyses.

Veterans represented 16% of the NHIS sample but accounted for 31% of the suicide decedents. The findings showed that over time veterans were twice as likely (adjusted hazard ratio or relative risk 2.13, $p < .05$) to die of suicide compared to male nonveterans in the general population. Conversely, the risk of death from “natural” causes (diseases) and the risk of death from “external” causes (accidents and homicides) did not differ between the veterans and the nonveterans after we adjusted for confounding factors.

At the baseline, veteran suicide decedents were significantly ($p < 0.05$) more likely than were nonveteran decedents to be older, white, high school graduates and less likely to be never married. Veteran suicide decedents had more activity limitations at baseline than nonveteran decedents. Furthermore, at the time of death, veterans were more likely to have completed suicide using a firearm than were their nonveteran counterparts.

An examination of only veterans over time showed that whites, those with 12 years or more of education, and those with activity limitations (after adjusting for medical and psychiatric morbidity) were at a greater risk for suicide completions. An interesting result was that relative to those with normal weight (BMI, 20.0 to 24.9 Kg/m²), overweight (BMI, 25.0 to 29.9 Kg/m²) male veterans were at lower risk of completing suicide.

In summary, using prospective population-based health and mortality data, we

examined suicide risk among male veterans of military service. The results revealed that male veterans are at elevated risk of suicide relative to nonveterans.

The results of this study are especially noteworthy because they were derived from a sample representative of all veterans in the U.S. general population, whether or not they sought care in the VA system. Conversely, nearly all previous studies examined suicide in VA-based samples and such studies may over- or underestimate suicide risk because the VA serves only a minority of veterans.

Our results also showed that activity limitation is an important suicide risk factor among veterans compared to nonveterans in the general population. Health care providers are well positioned to intervene with at-risk veteran patients who have physical and/or mental disabilities. Primary care physicians, as the gatekeepers of the health care system, along with other specialists, have important roles to play in the assessment and management of depression and suicidality among veterans in clinical settings.

Another important finding was the higher probability that veterans used firearms as a mode of suicide compared with nonveterans. Supplementary analyses with data from the National Mortality Followback Survey (NMFS) showed that veteran suicide decedents were 58% more likely than nonveterans to use firearms than other suicide methods, after adjusting for potential confounding factors, including sex, age, marital status, race, education, region, metropolitan status, psychiatric visit in the last year of life, number of half-days in bed for illness or injury in the last year of life, and alcohol use. Furthermore, an analysis of veteran suicide decedents in the NMFS revealed that those who owned guns were 21.1 times more likely to use firearms than were those who did not own guns after adjusting for sex, age, marital status, race, education,

region, and metropolitan status. Other data show that active duty military personnel are more likely to own and use firearms to complete suicide than the nonmilitary population. According to recent data from the Behavioral Risk Factor Surveillance System, veterans are substantially more likely to own guns than are individuals in the general population (46% versus 32%).

Although there is a debate among suicidologists and policymakers about the association between the availability of firearms and risk of suicide, the preponderance of the evidence suggests that a gun in the house, even if unloaded, increases the risk for suicide in adults. Case-control studies on the prevalence of guns and suicide risk have shown significant increases in suicide in homes with guns, even when adjustments were made for other factors, such as education, arrests, and drug abuse.

Because veterans are familiar with and have greater access to firearms, health care providers need to be more attentive to the critical role that firearms play in suicidal behavior among veterans. Unfortunately, some physicians find it difficult to ask directly about suicide. Previous research by Dr. Kaplan and colleagues found that only half of the primary care physicians who identified patients as suicidal would inquire about their access to firearms.

There are several potential limitations to this study. The first limitation concerns the reliability of suicide data derived from death certificates. Second, a further constraint of the NHIS-NDI design was the absence of time-varying covariates. However, most suicides occurred shortly after the interview (i.e., 75% died within 3 years) so there was a limited opportunity for baseline measures to change (such as marital status). Third, data were unavailable on important measures such as suicide attempts, source of health care coverage, or combat experience--all of which are related to suicide risk.

Fourth, psychiatric conditions are critical risk factors in suicide. One would expect over 90% of suicide decedents to have psychiatric illness. However, little information about baseline psychiatric morbidity was available in the NHIS. Therefore, we were unable to examine the role of well-established risk factors such as major depressive disorders (MDD) or post-traumatic stress disorder (PTSD) because of the small number of suicide decedents and because MDD and PTSD were not available as a separate psychiatric conditions in the NHIS-NDI dataset. Finally, we could not address cohort and period effects associated with suicide rates. For example, there have been major developments in suicide prevention since the NHIS was conducted, particularly the enormous change in the last 10 years in rates of antidepressant prescriptions and reduced suicide rates.

In spite of these limitations, the results have substantial clinical and public health implications. Clinicians outside the VA system need to be alert for signs of suicidal intent among veterans, as well as their access to firearms. Similarly, health care facilities that serve veterans outside the VA system should also recognize the elevated risk of suicide in this population. With the projected rise in functional impairments and psychiatric morbidity among veterans from the conflicts in Afghanistan and Iraq, clinical and community interventions directed toward patients in both VA and non-VA health care facilities will be needed.

Thank you again for coming to Portland and for the opportunity to appear today. I am happy to answer any questions you may have. We look forward to continuing to work with you to address veteran mental health issues.