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Suicide or Undetermined? A National Assessment of Police Suicide Death Classification

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Abstract: *The validity of police suicide rates is questionable. The objective of this paper is to compare national police suicide rates with "undetermined" death rates and compare across occupations similar in exposure. An additional objective is to compare police suicide and undetermined rates in female and minority officers. Results indicated that male police officer deaths had a 17% increased risk of being misclassified as undetermined (Proportionate Mortality Ratio (PMR) =117, 95% CI=110,123, significant at p <0.01). The risk was higher than both firefighter and military occupations (PMR=101 (1% risk), 95% CI=89,114; PMR=108 (8% risk), 95% CI=104,113 respectively). A high risk of misclassification was also seen in female and African American officer deaths (PMR=198 (98% risk), 95% CI=151-255, sig. p <0.01 and PMR=344 (344% risk), 95% CI=178-601, sig. p <0.01 respectively). The significantly higher ratio of police deaths classified as undetermined is interesting, given the high profile of law enforcement in society and the generally thorough investigations of police officer deaths. Also of interest is the suggestion that police misclassification risk is higher for police than other similar occupations. Future research should suggest possible ways to increase the validity of police suicide rates through methods such as post-suicide psychological autopsies. [International Journal of Emergency Mental Health, 2010, 12(2), pp. 89-94].*

Key words: *Police, suicide, suicide rates, national data, death misclassification*

The validity of suicide rates is questionable; such suicides may be routinely misclassified as accidents or undetermined deaths (Phillips & Ruth, 1993; Aldridge & St. John, 1991; O'Carroll, 1989; Pescosolido & Mendelsohn, 1986). The validity of rates in occupations where the stigma of suicide has an even greater impact may be subject to increased risk of misclassification. The police are one such occupational group (Violanti, 2007). Due to the cohesiveness of the police occupation, suicides of police co-workers may often be classified as "undetermined" in order to protect survivors from the stigma of suicide. Police investigators at the scene of a co-worker suicide are in a position to make investigative determinations which may influence medical examiners or coroners decisions to classify a death. In effect, the initial police investigator is the gatekeeper of information at the scene, and medical examiners have only secondary level discretion in the classification process. For example, a study of the Chicago Police department by Cronin (1982) found fifteen cases of suspected suicide in the Chicago police department that had been officially listed as accidental gunshot wounds.

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Violanti, Vena, Marshall and Petralia (1996) conducted a first attempt to establish a proportional risk estimate for misclassified police suicides. The study was part of an epidemiological retrospective mortality database study of 11,760 city workers, which included police officers and municipal workers (Vena, Violanti, Marshall, & Feidler, 1986; Violanti, Vena & Petralia, 1998). Undetermined death classifications were selected in addition to suicides because suicide has been shown to be systematically misreported within these categories (O'Carroll, 1989; Pescosolido & Mendelsohn, 1986). Information on each officer was compiled from death certificates, medical examiner reports, autopsies, police investigative reports, newspaper accounts, and obituaries and given to an independent panel of medical examiners to consider official death classifications. Seventeen percent of police suicides, as opposed to 8% of suicides in other occupations, were considered misclassified as "undetermined" by the medical examiner board.

The objective of this paper was to compare national police suicide rates with police rates classified as "undetermined" and to compare such rates across occupations similar in exposure. Firefighters and military personnel were considered as most closely resembling police personnel. Firefighters are exposed to many traumatic events in their work that are similar to those which police officers experience (Corniel, Beaton, Murphy, Johnson, & Pike, 1999). Examples are dead bodies, severely injured persons, and human misery. Military personnel are similar to police in that they must be under constant vigilance for the enemy and in danger of death from unsuspected sources. They are also under similar types of rank structure and have ready access to firearms (Mahon, Tobin, Cusack, Kelleher, & Malone, 2005). An additional objective is to examine national police suicide and undetermined rates in female and minority officers, as little is known about gender and ethnic differences in police suicide.

METHODS

The National Occupational Mortality Surveillance (NOMS) database developed by the National Institute of Occupational Safety and Health (NIOSH) was the descriptive data source for this study (Burnett, Maurer, Rosenberg, & Dosemeci, 1997). NIOSH maintains the NOMS System database of death certificate data with standard coded occupation and industry information. Twenty-eight states (Alaska, Colorado, Georgia, Hawaii, Idaho, Indiana, Kansas, Kentucky, Maine, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Utah, Vermont, Washington, West Virginia, and Wisconsin) have participated in the project for two or more years from 1984 -1998. NOMS includes over 8.5 million death certificates collected during that period. Although the NOMS database lacks information on length of employment, specificity of job description, or estimates of workplace exposures, its advantages include its size, its broad geographic coverage, and the recent date of death of cases. Depending on date of death, the usual occupation of the decedent is coded according to the 1980 and 1990 Bureau of the Census classification system (U.S. Bureau of Census, 1990). Cause of death is coded according to the 9th Revision of the (ICD-9) International Classification of Diseases (World Health Organization, 1977).

We limited our examination to ICD-9 external based deaths and to the occupational categories "police and detectives" and "police supervisors" (occupation codes 414, 418-424), "firefighters" (occupation codes 413,416, 417), and "military personnel" (occupation code 905). ICD codes 950-959, 9th revision, "suicide and self inflicted injury" were used for suicide classification across the three occupational groups. To compare suicide with a death category for which suicide is commonly misclassified, we examined ICD-9 categories E-980-E-989, "injury undetermined whether accidentally or purposely inflicted" in the NOMS database (O'Carroll, 1989). This category is used when a medical examiner, coroner, or other legal authority cannot determine whether deaths are accidental, suicidal, or homicidal. They include self-inflicted injuries when not specified as accidental or as intentional.

The measure of association used with NOMS data is the proportionate mortality ratio (PMR) (Kupper, McMichael, Symons, & Most, 1978). The PMR indicates whether the age-standardized proportion of deaths from a specific cause of death for a particular occupation appears to be higher or lower than the expected proportion for that particular occupation. To test for statistical significance of the PMR, two-sided 95% confidence intervals (95% CI) were calculated, based on the Poisson distribution for observed deaths and using the normal approximation to the Poisson for large numbers. A PMR greater than 100 indicates that more deaths than expected were associated with the condition in an occupation.

RESULTS

As table one indicates, the male police PMR for undetermined death classification (PMR=117, 95% CI=110,123, significant at p <0.01) was higher than expected in the police occupation. It was also higher than undetermined death PMR's found among firefighters (PMR =101, 95% CI =89,114) and military personnel (PMR =108, 95% CI=104,113). In terms of percentages, this equates to a 17% increased risk of possible misclassification for police, 1% for firefighters, and 8% for the military. For male police, the PMR for undetermined deaths was nearly equal to the PMR for suicide (PMR =120, 95% CI =113-128, p <0.01).

Even higher proportionate ratios of undetermined deaths were seen in female and African American officers (PMR=198, 95% CI =151-255, sig. p <0.01 and PMR =344, 95% CI =178-601, sig. p <0.01 respectively). Ratios also paralleled suicide rates in these groups. This result equates to a significant 198% increased risk for female police, and a 344% increased risk for African-American police of being classified as undetermined. Compared to fire and military occupations, there was a near two-fold risk of an undetermined death classification for Caucasian policewomen and more than a three-fold risk for African American policewomen.

In terms of raw numbers, almost as many police deaths were classified as undetermined as were classified suicides (n =1036 undetermined vs. n =1148 actual suicides). This was also true for firefighters and military personnel; however, the ratio of misclassification (PMR) was higher for the police than either the firefighters or military.

DISCUSSION

The results suggest that the proportionate mortality ratio of police deaths classified as "injury undetermined whether accidentally or purposely inflicted" was significantly higher than expected in police work. Additionally, the risk of undetermined death classification nearly equaled that of suicide in the police. For male officers (PMR=117, 95% CI=110,123, sig p <0.05) this equates to a significant 17% higher risk for police deaths being classified as undetermined. For female and African American officers, a near two-fold significant risk of undetermined death classification is suggested (PMR =198, 95% CI =110,123, sig p <0.05 and PMR =206, 95% CI =162,158, sig. p <0.05 respectively). Due to the smaller numbers of suicide among women and minority officers, these rates may appear somewhat inflated. The present results do suggest, however, that further suicide research is necessary among women and minority officers.

Just how many suicide cases classified as undetermined were actually suicides is not possible to determine without conducting further comprehensive and detailed psychological autopsies. Such information was not available in the NOMS database. The significantly higher ratio of police deaths classified as undetermined is interesting, given the high profile of law enforcement in society and generally thorough investigations of police officer deaths.

There are limitations to the present study. NOMS data is presently available only up to 1998 and is presently being updated. Additional national data is available through The National Violent Death Reporting System (NVDRS) through the Centers for Disease Control. This database has death information for 7-17 states for 2003-2007 and includes occupational codes. This may be an additional source for future studies on occupational suicide.

We cannot accurately predict trends of police suicide misclassification beyond the data available. Updated national data will also add information for military suicide. The present NOMS data covers military personnel in an essentially peacetime environment. Since 1998, the United States has been in several wars and this may impact suicide numbers. Additionally, police officers in the military reserve returning from war zones may also be at increased suicide risk. (Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004)

A second limitation concerns PMRs. Although suggestive of risk, a statistically significantly elevated PMR should be interpreted cautiously. When a large number of PMRs are tested for statistical significance, many of the elevated or decreased PMRs will occur due to chance. Other elevated PMRs may be due to confounding factors. A lack of significantly increased PMRs may represent the selection of healthy workers for particular occupations.

Work exposures of police officers are confounders that add considerable weight to an analysis of suicide. Incidents such as witnessing death, encountering abused children, and street combat weigh heavily as precipitants to depression, alcohol use, and suicide. There is not information available in NOMS to adequately address this problem. Coroner or medical examiner determinations of death are dissimilar across various jurisdictions, which may to some degree account for discrepancies in classification. Lastly, this study

Table 1.
Proportionate Mortality Ratios – Suicide and Undetermined Deaths
(Police, Firefighters, and Military) by Gender and Ethnicity, NOMS, 1984-1998.

	Caucasian						African-American					
Occupation	Males			Females			Males			Females		
	N	PMR	95% CI	N	PMR	95% CI	N	PMR	95% CI	N	PMR	95% CI
POLICE AND DETECTIVES												
Undetermined Deaths	1036	117**	110-123	59	198**	151-255	76	206**	162-258	12	344**	178-601
Suicide Deaths	998	120**	113-128	59	206**	157-265	80	203**	161-252	11	415**	207-742
FIREFIGHTERS, FIRE PREVENTION OCCUPATIONS												
Undetermined Deaths	271	101	89-114	5	259	84-604	85	195**	155-241	12	212**	145-432
Suicide Deaths	260	103	91-116	5	243	79-567	18	228**	135-160	---	--	--
MILITARY PERSONNEL												
Undetermined Deaths	1820	108**	104-113	55	168**	127-219	220	165**	144-188	6	189	69-411
Suicide Deaths	1734	110**	105-114	52	178**	133-234	201	175**	151-201	6	189	69-411

**- P < 0.01
Military deaths N=74,860
Police deaths N=40,188
Firefighter deaths N=14,184

is descriptive. Other than PMRs, direct comparisons using standardized methods could not be employed because we did not have full access to NOMS data, but an aggregate of the number of suicides across the three occupations. This descriptive data limited our analysis to the use of percentages and PMRs, and we were not able perform more sophisticated statistical analysis such as that found in Stack and Kelly (1994). Our present analysis thus provides only a basic level view of suicide in these occupations.

A positive point is that this study involves 1148 police suicides, more than many previous studies.

The significantly increased risk of police deaths being classified as undetermined may mask the true suicide rate in police work. While there is not yet an apparent solution to this problem, there is a concerted effort to further standardize medical examiner determination of suicide. The Operational Criteria for the Determination of Suicide (OCDS) was one such effort (O'Carroll, 1989). This form would assist medical examiners and coroners to conduct a standardized investigation of suicide.

Adding to the problem of standardization is the influence of police subculture. The stigma of suicide in police work appears to be a strong force which denies such deaths could possibly occur in this occupation. Stigma may prevent many officers from seeking professional mental health help with their problems, believing that doing so would jeopardize their careers and stigmatize them as "weak" and unable to do police work. If a suicide does occur, investigating officers may make efforts to avoid a classification of suicide in order to protect the family and avoid even further stigma (Violanti, 2007).

While we cannot yet be certain that police work in and by itself is a suicide risk factor, we can with some assurance state that it serves as a fertile arena for suicide precipitants, including relationship problems, culturally approved alcohol use and maladaptive coping , firearms availability, and exposure to psychologically adverse incidents (Violanti, 2007). Contextually, police work is likely a probable part of the causal chain of suicide; however misclassification of suicide deaths muddles accurate assessment of this tragic problem. We will be better informed for preventive actions if we know the true rate among those in this difficult and unforgiving occupation.

REFERENCES

Aldridge, D. & St. John, K. (1991). Adolescent and pre-adolescent suicide in Newfoundland and Labrador. *Canadian Journal of Psychiatry, 36*, 432-436.

Burnett C., Maurer J., Rosenberg H.M., & Dosemeci M. (1997). *Mortality by Occupation, Industry, and Cause of Death: 24 Reporting States* (1984-1998) ((NIOSH) 97-114). Cincinnati, OH: NIOSH, U.S. Department of Health and Human Services, Cincinnati, Ohio. DHHS (NIOSH) Publication No. 97-114.

Corneil, D.W., Beaton, R., Murphy, S., Johnson, C. & Pike, K. (1999), Exposure to traumatic incidents and prevalence of post-traumatic stress disorder symptomatology in urban firefighters in two countries, *Journal of Occupational Health Psychology,* 4, 131-141

Cronin, T.J. (1982). *Police suicides: A comprehensive study of the Chicago Police Department 1970-1979.* (Unpublished masters thesis) Lewis University, Chicago, Illinois.

Hoge, C.W., Castro, C.A., Messer, S.C., McGurk, D., Cotting, D.I., & Koffman, R.L. (2004). Combat duty in Iraq and Afghanistan, metal health problems and barriers to care, *New England Journal of Medicine,* 351, 13-22.

Kupper L.L., McMichael A.J., Symons M.J., & Most B.M. (1978). On the utility of proportional mortality analysis. *Journal of Chronic Disease,* 31, 15-22

Mahon, M. J., Tobin, J. P., Cusack, D. A., Kelleher, C. & Malone, K. M. (2005). Suicide among regular-duty military personnel: A retrospective case-control study of occupation-specific factors for workplace suicide. *The American Journal of Psychiatry,* 162, 1688-1696.

National Institute for Occupational Safety and Health. (1993). *Fatal injuries to workers in the United States, 1980-1989: A decade of surveillance* (DHHS NIOSH No. 93-108). Cincinnati, Ohio: NIOSH.

O'Carroll. P.W. (1989). A consideration of the validity and reliability of suicide mortality data. *Suicide and Life-Threatening Behavior,* 19, 1-16.

Pescosolido, B., & Mendelsohn, R. (1986). Social causation or construction of suicide? An investigation into the social organization of official rates. A*merican Sociological Review, 51,* 80-101.

Phillips, D.P., & Ruth, T.E. (1993). Adequacy of official suicide statistics for scientific research and public policy. *Suicide and Life-Threatening Behavior, 23,* 307-319.

Stack, S., & Kelley, T. (1994). Police suicide: An analysis. *American Journal of Police,* XIII, 73-90.

United States Bureau of the Census. *1990 Census of population and housing: Alphabetical index of industries and occupation.* Washington, DC: U.S. Government Printing Office.

Vena, J.E., Violanti, J.M., Marshall, J.R., & Feidler, F. (1986). Mortality of a municipal worker cohort III: Police officers. *Journal of Industrial Medicine, 10,* 383-397.

Violanti, J.M., Vena, J.E., Marshall, J.R., & Petralia, S. (1996). A comparative evaluation of police suicide rate validity. *Suicide and Life-Threatening Behavior, 26,* 79-85.

Violanti, J.M., Vena, J.E., & Petralia, S. (1998). Mortality of a police cohort: 1950-1990. *American Journal of Industrial Medicine,* 33, 366-373.

Violanti, J.M. *Police suicide: Epidemic in blue,* 2nd edition (2007). Springfield, Illinois: Charles C. Thomas.

World Health Organization (1977). *International classification of diseases. Manual of the international statistical classification of diseases, injuries, and causes of death. Based on the recommendations of the ninth revision conference.* Geneva: World Health Organization.

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