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Psychological Factors in the Determination of Suicide in Self-Inflicted Gunshot Head Wounds

REFERENCE: Weinberger LE, Sreenivasan W, Gross EA, Markowitz E, Gross BH. Psychological factors in the determination of suicide in self-inflicted gunshot head wounds. J Forensic Sci 2000;45(4):815–819.

ABSTRACT: Self-inflicted contact gunshot wounds to the head have usually been considered presumptive of suicide. This study evaluates whether sufficient psychological data are gathered in such cases to support a manner of death determination of suicide. We suggest that law enforcement agencies and coroner's departments do not fully explore the decedent's state of mind at the time of death. We studied the first 50 consecutive deaths in 1993 in a major metropolitan county due to self-inflicted gunshot wounds to the head. The sample consists primarily of unmarried, white males, with a median age of 35 years, who displayed psychiatric disturbance, primarily depression, before their death. Younger individuals were often under the influence of alcohol and/or drugs at the time of death. Stressors, such as the loss of a loved one, are common among young and middle-aged persons, while serious health problems are found among the majority of middle-aged and elderly individuals. Many of the findings of this study are consistent with the literature regarding individuals who commit suicide. Although data on many important psychological risk factors are missing in most cases, sufficient psychological material is gathered about the decedent's mental condition at the time of death to support a suicide determination.

KEYWORDS: forensic science, psychological autopsy, suicide, intent, gunshot, head wound

In order for an act of self-killing to be classified as a suicide by law, it must be shown that the act was performed intentionally (1–4). Although direct proof by the decedent of his or her intention in wanting to commit suicide, such as oral statements or a written suicide note, would suffice for a legal determination of suicide, these forms of proof are seldom found (5–8). Therefore, the decedent's intent in the act is often inferred from the circumstances (3). It could be argued that, given the lethality of firearms, the location of mortal gunshots to the head, and the certainty of a contact wound where the weapon touches the body, considerable support exists for the coroner's inference that the decedent intended to commit suicide.

It has been suggested that law enforcement agencies and/or coroner's departments do not fully explore the decedent's state of mind at the time of death because of the presumption of suicide in self-inflicted contact gunshot wounds to the head. The information sought and considered by the medical examiner varies considerably (9). Curphey (10) noted that "problems of certification are resolved on superficial or incomplete evidence or on impressions and preconceived opinions rather than on the objective accumulation of all the possible facts, including histological, toxicological, and psychological data . . ." (p. 44). Jobes et al. (9) wrote that in cases of self-inflicted gunshot wounds, police investigators may lose interest once homicide seems an unlikely mode of death. Litman (11) found that 25% of police reports had little information regarding the decedent's intent to die.

We believe, however, that inferences regarding intent encompass more than simply considering the means of death. We believe "suicide" is a psychological term and should be supported by psychological evidence. The term "suicide," when used in this context, refers to the decedent having a mental condition consistent with that of one who intends to end his or her life. While this may satisfy a mental health clinician's definition of suicide, the law may apply a more specific standard for suicide rulings. In the landmark case of Searle v. Allstate Life Insurance Company (12), the California State Supreme Court opined that mental capacity is very relevant to the determination of whether an act of self-destruction was committed by the decedent with suicidal intent: "If the insured did not understand the physical nature and consequences of the act, whether he was sane or insane, then he did not intentionally kill himself" (p. 439).

Data supportive of a mental state consistent with suicide are essential for a manner of death determination of suicide. The information can be gathered by law enforcement personnel and the coroner's investigators or from a psychological autopsy conducted by mental health professionals. Although psychological autopsies, developed by Litman et al. (8), have been available since the early sixties, Jobes et al. (9), found that coroner's departments do not routinely secure psychological data, nor do they rely upon psychological autopsies to determine the manner of death. This finding is in keeping with our experience as consultants to the Los Angeles County Department of Coroner. Only a few self-inflicted gunshot head wound cases have been referred for a psychological autopsy, and those were instances where the manner of death was contested by members of the decedent's family. Thus, nearly all cases of self-inflicted gunshots to the head were classified as suicide without the benefit of a psychological autopsy.

Given the high number of deaths in Los Angeles County due to self-inflicted gunshot wounds to the head, the rarity of referrals from the Los Angeles County Department of Coroner for psychological autopsies on such deaths, and the literature which suggests that psychological data are not usually obtained in this type of case,

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Received 9 July 1999; and in revised form 8 Oct. 1999; accepted 12 Oct. 1999.

we hypothesized that the Los Angeles Department of Coroner renders suicide determinations with limited supportive psychological data. To test this hypothesis, we assessed all the material gathered by the Department of Coroner on the first 50 self-inflicted gunshot wounds to the head in one year.

Methods

This study was conducted with the cooperation and approval of the Los Angeles County Department of Coroner. The data were reviewed at the offices of the Department of Coroner and were based upon information found in the case files. No interviews were conducted. The confidentiality of the decedent was protected through the use of code numbers and removal of readily identifiable information.

The first 50 Los Angeles County Department of Coroner cases in 1993 in which a self-inflicted gunshot wound to the head was the means of death were examined. These deaths occurred between January 1 and February 11, 1993. Case file information from the following documents was considered: Case Report, Investigator's Report, Personal Effects Inventory, Order for Release, Autopsy Report, Medical Report, Report of Toxicological Analyses, Hospital Report, Examination Protocols, Gunshot Wound Report, Gun Shot Residue Data Sheet, Forensic Laboratory Analysis Report, Certificate of Death, Case Notes, Worksheets and Remarks, suicide notes, photographs, and written correspondence between the Department of Coroner and relevant parties. In addition, we reviewed police reports and notes as well as medical notes and test results related to the death.

Results

The final determination of manner of death by the Department of Coroner was "suicide" for all 50 cases. One was originally classified as "undetermined" and one as "accident;" however, both were changed to "suicide." There was no indication that either case was contested.

TABLE 1—*Demographic and situational factors.*

Factor	*N*	%
Ethnic Background		
White	33	68
Hispanic	9	18
African-American	4	8
Asian	2	4
Egyptian	2	4
Marital Status		
Single	15	30
Married	14	28
Divorced	10	20
Widowed	5	10
Separated	3	6
Data missing	3	6
Number of Children		
At least one	26	52
None	14	28
Data missing	10	20
Occupation		
Skilled labor	21	42
Professional	10	20
Manual labor	7	14
Business	2	4
Clerical	2	4
Student	2	4
Data missing	5	10
Employed at time of death		
Yes	25	50
No	7	14
Retired	9	18
Data missing	9	18
Place of residence at time of death		
With relatives	22	44
With significant other	4	8
With roommate	2	4
Retirement or Group Home	2	4
Alone	8	16
Data missing	12	24

Demographic and Situational Information—Of the 50 decedents, 47 (94%) were male. Their ages ranged from 20 to 78 years (median = 35); nine (18%) were above the age of 65. Their education ranged from the tenth grade to 7 years of graduate school (median = four years of high school). The records noted that three (6%) of the decedents had life insurance; information about insurance for the remaining 47 decedents was missing. Data on other variables are presented in Table 1.

Information Regarding the Shooting—Of the 50 decedents, 28 used a revolver, 15 used a semi-automatic gun, five used a rifle, one used a homemade device, and the type of weapon was missing in one case. While data on weapon ownership for 33 (66%) cases were missing, the weapon was owned by the decedent in 10 (20%) cases, owned by a relative in five (10%) cases, and rented or not registered in one (2%) case each. In 34 (68%) cases, only one bullet was discharged.

Thirty (60%) of the head wounds were in the temple, 11 (22%) were in the mouth, five (10%) were in the parietal region, two (4%) were in the forehead, and one (2%) each was in the face or under the chin.

Thirty-one (62%) cases occurred inside the decedent's residence. Four (8%) each occurred in a yard outside the home or in a vehicle. A residence other than the decedent's accounted for three (6%) cases. Two (4%) cases each in a garage and a remote outside area, and one (2%) case each at a shooting range, a restaurant, a hotel room, and a storage room were the remaining locations of the shooting. Eighteen (36%) shootings were committed alone in a residence or garage; nine (18%) were committed alone in a room while others were present in the residence; six (12%) where others were present and it was not Russian roulette; five (10%) were murder/suicide; four (8%) where the decedent was alone in a vehicle; four (8%) where the decedent was alone in various nonremote locations; two (4%) where the decedent was alone in a remote area; and two (4%) were considered as Russian roulette deaths.

Psychological Risk Factors—Table 2 presents the data on the subjects' history of psychological risk factors related to suicide. Of those who had a documented history of mental illness, the records revealed that eight (16%) decedents suffered from substance abuse, six (12%) from major depression, five (10%) from drug abuse and depression, one (2%) from a bipolar disorder, and one (2%) from depression and paranoia. Although data on the presence or absence of other clinically significant psychological traits and features were missing from the majority of records, the following psychological characteristics were noted: four (8%) as having poor control of their temper, two (4%) were described as being impulsive, one (2%) as displaying withdrawn behavior before death, one (2%) as being reckless, and two (4%) as having some type of personality change before death.

TABLE 2—*History of psychological risk factors.*

Factor	*N*	%
Physical Illness		
Yes	15	30
No	1	2
Data missing	33	66
Mental Illness		
Yes	21	42
Data missing	29	58
Drug and Alcohol Abuse		
Yes	14	28
No	2	4
Data missing	34	68
Medical or Psychological Treatment		
Yes	11	22
Data missing	39	78
Suicide Attempts		
Yes	4	8
No	14	28
Data missing	32	64
Suicide Ideation		
Yes	11	22
Data missing	39	78
Criminal Activity		
Yes	7	14
Data missing	43	86
Physical or Sexual Abuse		
Yes	1	2
Data missing	49	98

The records indicated that 11 (22%) decedents had a history of suicidal ideation before their death. Apart from one subject whose time period for suicide ideation was noted as "in the past," the subjects' time interval for suicide ideation preceding their death included one week, two weeks, two to four months, seven to ten months, three years, and 19 years. Four (8%) subjects had attempted suicide in the past. Three had attempted overdoses of medication one week, one and one-half years, and four years before their deaths, respectively. One had attempted suicide by a gunshot wound to the head 19 years earlier.

The records indicated that 32 (64%) subjects displayed psychiatric disturbance near the time of their death. Twenty-nine (58%) individuals were noted to be depressed, two (4%) were described as both depressed and paranoid, and one (2%) was identified as suffering from a drug-induced psychosis. In addition, eight (16%) were under medical or mental health treatment when they died.

Toxicological screens for the presence of alcohol and drugs at time of death were not performed routinely. Depending on the intoxicant, information was missing on between 50% and 62% of the cases. Of those screens that were performed, the following data were available: 14 (28%) subjects were under the influence of alcohol, with toxicology levels ranging from 0.04 to 0.24 g percent; eight (16%) individuals had cocaine in their bodies, with levels ranging from 0.04 to 0.44 μg/mL; four (8%) subjects tested positive for amphetamine, with toxicology levels ranging from 0.04 to 0.92 μg/mL; two (4%) subjects were noted to have smoked marijuana before their death, but toxicology levels were not available on either; one (2%) subject smoked PCP and had a level of 0.01 μg/mL; and one (2%) subject was under the influence of LSD at the time of death and had a level of 0.2 mg/mL. Prescription drugs were also present in two (4%) subjects; one person had a 3.20 μg/mL level of propranolol, and one person had a level of 0.20 μg/mL of Serentil and a level of 10 μg/mL of Mellaril.

Other factors related to suicide risk are psychological stressors; these are summarized in Table 3. Of the 15 decedents who experienced a recent family loss, six had a break-up of a significant relationship, four were separated from their spouse and/or family, two underwent a divorce, two had a death in the family, and one was widowed recently. Other types of important stressors were experienced by 16 decedents prior to their death. Seven were having problems with family members or significant others, three decedents had a wife or father who was seriously ill, two individuals were feeling extremely lonely and unloved, one subject recently obtained custody of his children, one person was experiencing war memories, one decedent had an extreme distrust of others, and one subject was significantly afraid after having been a crime victim.

The records also revealed that 12 (24%) of the subjects had a serious argument with a relative or significant other, ranging from less than one hour to two months before their deaths.

Other Data Related to Suicide—The records indicated that 11 (22%) of the decedents were familiar with the use of guns, while data on this variable were missing on the remaining 39 (78%) subjects. Additional factors associated with suicidal behavior were noted in the records. Six (12%) decedents had made preparations for their death; three wrote a will, one wrote a trust, one bought a burial plot, and one sprinkled holy water upon himself. Eight (16%) subjects gave suicide warnings shortly before their death; these were either in the form of face-to-face contact or telephone calls. The warnings consisted of five explicit statements by the decedents that they were going to kill themselves, two statements that they were tired of living or "better off dead," and one instance of dangerous behavior with the gun shortly before the suicide.

Of the 50 subjects, 20 (40%) left notes. The notes contained single or multiple themes. The themes included 13 (65%) explanations for the death, six (30%) expressions of feelings of regret or

TABLE 3—*Psychological stressors related to suicide.*

Stressor	*N*	%
Experienced Recent Loss		
Employment		
Yes	8	16
No	8	16
Data missing	34	68
Health		
Yes	14	28
No	5	10
Data missing	31	62
Financial		
Yes	6	12
No	1	2
Data missing	43	86
Place of Residence		
Yes	4	8
No	5	10
Data missing	41	82
Significant Relationship		
Yes	15	30
Data missing	35	70
Legal Difficulties		
Yes	5	10
No	1	2
Data missing	44	88
Other Stressors		
Yes	16	32

worthlessness, six (30%) expressions of love, four (20%) of cold and instructional content, four (20%) apologies for past deeds, four (20%) explanations that the decedents were in pain, four (20%) expressions of estrangement or inability to live without a loved one, three (15%) expressions of feelings of anger, two (5%) goodbyes to a loved one, one (5%) apology for committing suicide, one (5%) acknowledgment of committing a mercy killing, one (5%) explanation that the decedent did not want to be a burden, one (5%) simply said, "Help," and one (5%) instruction to the decedent's wife to take care of herself and the dog.

Individual Casé Synopsis—Apart from tallying the data regarding demographics, psychological risk factors, and other indices related to suicide, we analyzed each case to assess a plausible explanation for the decedent's death. In 41 (82%) of the 50 cases, we were able to identify a psychological reason for the suicide. In 5 (10%) additional cases, a high risk factor (i.e., intoxication) was present, although no psychological explanation for the individual committing suicide could be determined.

Of the five decedents who committed murder-suicide, all but one were between 31 and 36-years-old; the fifth was 64-years-old.

Fifteen decedents were under the influence of alcohol and/or drugs at the time of their death; all of them were between the ages of 20 and 50. Not one of the 15 decedents over 50 years of age was under the influence of alcohol or other substances.

Twenty-six decedents, all of whom were between 20 and 64-years-old, experienced the loss of a significant loved one either through death, separation, or break-up of a relationship, or they had significant problems in such relationships. Two of the three women in the study had these experiences; not one of the nine decedents over age 64 experienced such a loss prior to their death.

Fourteen decedents had, or believed they had, serious health problems; ten of them were aged 62 or older, three were between 23 and 38-years-old, and one was 52.

We examined the incidence of multiple stressors impacting the decedents' lives. The stressors were the loss of a loved one or a serious relationship/family problem, legal or financial difficulties, loss of employment or residence, or health problems. Eighteen of the decedents, all of whom were males, experienced multiple stressors. Six of the seven male decedents between the ages of 40 and 60 experienced multiple stressors. All three females in the study were between the ages of 40 and 60; none of them experienced multiple stressors. Five of the 17 (29%) decedents in their 20's, five of the ten (50%) decedents in their 30's, one of the six (17%) decedents in their 60's, and one of the seven (14%) decedents in their 70's experienced multiple stressors.

Discussion

Many of the findings of our study are consistent with the literature regarding individuals who commit suicide. In prior studies, young, white males have high suicide risk (13–22), as do elders (23–25). Our sample also confirmed the relationship between marital status and risk of suicide; specifically, that being unmarried is linked to a higher suicide risk (14,26). Depression was the most common psychiatric diagnosis, followed by substance abuse, primarily alcohol; these findings corroborate earlier reports (15,17,22,23,26–31).

While it can be argued that a death from a self-inflicted contact gunshot wound to the head will be ruled a suicide in the majority of cases based solely on the nature of the act, we found that the coroner's office in Los Angeles County did not follow such a protocol. The Los Angeles County Department of Coroner conducted a more detailed investigation of such deaths and looked for many predisposing psychological risk factors. Many data that would be needed to satisfy the requirements for a complete psychological autopsy were missing, such as noting the presence or absence of a history of suicide attempts or ideation, or routinely performing toxicology screens. This lack of information, however, was not sufficient to preclude a psychological investigator or coroner from concluding, for the majority of cases in our sample, that the determination of suicide could be supported with psychological material.

Finding missing data on crucial psychological risk factors was expected. What was not expected was that the overwhelming majority of deaths could be explained reasonably, as supporting a mental state consistent with suicide. Two-fifths of the sample left suicide notes; some persons made preparations for their death or gave warnings. While the investigators might not have explored the decedent's psychological history, they did note the decedent's mental condition around the time of death. The material filed by the coroner's investigators indicated that there were many persons who were clearly experiencing a stressful life event, such as domestic conflict, loss of a significant relationship, financial difficulty, legal problems, or illness. These factors have been found to play a role in suicidal behavior (15,32–36).

We were somewhat surprised to find the cases had many psychological elements supporting the suicide determination without the benefit of a psychological autopsy. Given this, the decedent's intent in engaging in the self-inflicted act could be inferred as suicide from the psychological evidence in the coroner's records. This finding may be unique to the Los Angeles County Department of Coroner in that the department has a long-standing history of consulting with mental health professionals in making manner of death determinations. While some important risk factors were not explored, we cannot justly criticize the office for not conducting a more thorough investigation. We recognize the time, financial, and personnel limitations for such an evaluation. However, for those coroner departments that do not explore each self-inflicted death to the extent that a psychological reason and/or the presence of a high suicide risk factor can be identified, we recommend that a protocol based on the psychological risk factors outlined here be used when investigating the death (see Tables 2 and 3). Such an approach would not only be feasible in terms of resources, but more importantly, it would satisfy the legal requirement for determining the decedent's intent. Finally, by examining these cases for psychological motivations supporting suicide, our knowledge of such behavior will increase; it is hoped that this should lead to earlier and more intensive preventive measures.

Acknowledgment

Special thanks to Dr. Lakshmanan Sathyavagiswaran and the staff of the Los Angeles County Department of Coroner for their assistance and cooperation in the data gathering for this study.

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