

## Suicide and Occupation: A Review

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This paper examines the available literature dealing with the relation of occupation to suicide for three occupational categories: health care providers, managerial and professional persons, and military and paramilitary personnel. Following a general introduction, evidence relating to group differences in suicidal behavior is presented and assessed. Sources of bias and inaccuracy in suicide statistics are identified and theories purporting to explain variations in the incidence of suicide are considered. Finally, implications are drawn from the analysis presented and possible directions for future research are identified.

Suicide is often thought of as an unusual event. Yet every day some 1000 people throughout the world take their own lives. In the United States alone, over 75 people per day kill themselves. According to the National Center for Health Statistics, the number of suicides in the United States was 27,640 in 1979; 27,294 in 1978; and 28,681 in 1977. Suicide rate ( $R$ ) is generally calculated by the formula  $R = (S/P) \times 100,000$ , where  $S$  is the number of suicides in a given year, or the average annual number, and  $P$  is average population size over a given year or years. Thus,  $R$  is the annual number or mean annual number of suicides per 100,000 population during a year or period of years. The suicide rate in the United States fluctuates around 12.5 per 100,000 total population per annum. In 1979 suicide ranked as the nation's 10th leading cause of death. Indeed, during that year, over 4500 more people took their own lives than were killed in homicides (DHHS, 1980).

Simply put, suicidal behavior has emerged as a significant concern throughout the world (Kruijt, 1977). Admittedly, the act of suicide is not the outcome of a single cause, but the result of the interaction of many forces. The complexity of the motivations of suicidal subjects has been well documented (Maris, 1981). A variety of sociological and psychodynamic formulations has been presented to account for suicidal behavior.

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ior. These range from anecdotal reports in lay publications to systematic studies of the probability of suicide as a function of various factors.

The professional literature contains numerous studies that document the relationship between demographic or sociocultural factors and suicide. Studies continue to report that (a) males have higher suicide rates than females, (b) the highest rates exist among those in the over 55 age group, and (c) blacks have a suicide rate much lower than whites. (For a review, see Frederick, 1978.) The present analysis neither evaluates this body of knowledge nor examines the conclusions reached in these works; rather, it reviews the available literature dealing with the relationship between occupation and suicide. To date, systematic investigations of suicide have focused only intermittently and partially on occupationally related variables. This lack of research can be traced in part to the difficulty of obtaining occupational data on suicide victims. Inquiries to federal, state, and local agencies, insurance companies, and suicide prevention centers revealed that no national data on occupational roles and suicide more recent than 1950 are available. Such information is simply not compiled (Kaminski, Brockert, Sestito, & Frazier, 1981).

Statistics on the relation of occupation to suicide are consequently limited. Thus, in this analysis the aim is to take the available findings on suicide and occupation as a starting point and discuss implications of the research in this area. Since suicide rates of the 1950s and before can be expected to shed only limited light on the causes of suicide in the 1980s, this investigation is primarily restricted to studies analyzing data collected within the last 20 years. Next, theories purporting to explain variations in the incidence of suicide are examined. Following this, certain limitations associated with the reliability of suicide data are noted, and the implications of the information that has been presented are discussed.

## RESEARCH RESULTS

Although it has long been suspected that suicidal tendencies are affected to some degree by occupation, empirical data on the subject are limited. Accordingly, the present analysis is restricted to those occupational groups for which an empirical body of literature is available. Thus, rather than dealing with the area in general, the relation of occupation to suicide is examined for three broad occupational categories: health care providers, managerial and professional persons, and military and paramilitary personnel.

### *Health Care Providers*

*Physicians.* The belief that physicians have an inordinately high suicide rate has long held wide currency in the popular press (see, e.g., "M.D. Suicides," 1981). Contrary to popular belief, the literature on physician suicide generally suggests that physicians do not take their lives with

greater frequency than members of other occupational groups. Although several studies have produced contradictory conclusions in this regard, it is argued that interpretation of such studies has been problematic due to methodological shortcomings.

Much of the misinformation upon which current popular beliefs concerning physician suicide are based may be principally traced to a single study by Blachly, Osterud, and Josslin (1963). The methodology of this investigation consisted of a review of the death certificates of all persons who committed suicide in Oregon for a 12-year period, 1950 to 1961. Of the 2674 reported suicides, eight were physicians. Given this result, Blachly et al. concluded that the "average of the combined suicide rates for physicians, dentists, and attorneys is more than three times that of white-collar workers, and this difference is statistically highly significant" (p. 1279). This finding has been quoted in scores of publications as indicating an abnormally high rate of suicide among physicians (Bergman, 1979). Several factors, however, render this conclusion questionable. First, the "average combined rate" comparison is misleading. Using figures provided by Blachly et al., the rate of suicide for physicians was actually lower than that reported for all males over 19 years of age. It was the dentists and attorneys studied who had higher rates than the white-collar comparison population. Furthermore, Blachly et al. made no attempt to standardize their results for age or sex though both factors have repeatedly been shown to influence suicide rates. Finally, because their findings are presented largely without accompanying levels of statistical significance and are based on so few cases, the results of Blachly et al. would seem open to question.

Two other investigations have reported results that have been interpreted and widely cited as supporting those of Blachly et al. (1963). Drawing on a review of all death certificates filed in California from 1959 to 1961, Rose and Rosow (1973) revealed that the suicide rate for male physicians of the state exceeded that of its general population (adjusted for age and sex) by a ratio of more than 2:1 ( $p < .001$ ). Upon evaluation, however, the generalizability of this result immediately comes into question. Like the Blachly et al. (1963) study, the Rose and Rosow study is based on data collected in one state. Far from being typical, California consistently ranks among the three states (after Nevada and Alaska) with the highest suicide rates in the nation (Frederick, 1978). Indeed, by comparison, Blachly et al. reported only eight physician suicides for the 12-year period of their Oregon study; Rose and Rosow (1973) reported 48 such deaths over the 36 months of their investigation. While the base rate in each case is certainly different, the generalizability of these values (in both instances) must be viewed with suspicion.

A second study that has gained a measure of notoriety in reporting an excess of physician suicides is a 5½-year (March 1965 to August 1970) cross-sectional analysis by Steppacher and Mausner (1974). Based upon

national records maintained by the American Medical Association, their findings indicated that the suicide rate of male physicians was approximately 1.15 times that of the overall U.S. male population, controlling for age. In commenting on this result, Steppacher and Mausner hesitate to ascribe validity to such a low, albeit significant difference, suggesting that "pending further clarification, it seems reasonable that only large and consistent differences in rates should be accepted as valid" (p. 328). Unfortunately, this precaution seems to have been generally overlooked as their study is often unequivocally cited as indicating that physicians take their lives with greater frequency than the general population.

In light of the above difficulties, two studies—Craig and Pitts (1968) and Rich and Pitts (1979)—stand out for their methodological soundness. In the first, Craig and Pitts (1968), using AMA records, analyzed all physician deaths (a total of 8372) occurring in the United States between 1965 and 1967. Based on a total of 228 suicides, Craig and Pitts (1968) calculated an annual suicide rate of 38.4 per 100,000. Standardizing for both age and sex, they concluded that the suicide rate for U.S. male physicians is no different from that of the general population of white males over age 25. Indeed, citing an earlier study by Dublin and Spiegelman (1947), also based on AMA "death files," Craig and Pitts further concluded that the suicide rate for physicians had remained unchanged for at least 30 years.

Rich and Pitts (1979) is an update of the above study for the 5-year period 1967–1972. Utilizing the same methodology and statistical checks, Rich and Pitts (1979) analyzed 17,979 male physician deaths. Of this total, there were 544 reported suicides, resulting in an annual suicide rate of 35.7 per 100,000. It was again concluded that compared to white males 25 years of age or older, male physicians do not commit suicide any more frequently than other men in the United States.

Although a variety of studies have investigated the rate of suicides among physicians in general, fewer have investigated the rate for individual medical specialties. Blachly, Disher, and Roduner (1968) concluded that "specialty seems to be a highly significant variable" in explaining suicide by physicians and pronounced psychiatrists to be the most self-destructive. A simple  $X^2$  test of the data they present, however, reveals that the differences reported between medical specialties are most probably due to chance,  $p < .20$  (Rose & Rosow, 1973). Likewise, Freeman (1967) similarly concluded that psychiatrists commit a "disproportionate number of suicides." He, however, failed to calculate suicide rates or to provide the necessary information for the reader to do so. Moreover, he did not indicate how the figures observed compared with those that might be expected for other individual specialties.

A more recent study, however, presents compelling evidence that psychiatrists are more prone to suicide than those in any other speciality. Based on 18,730 male and female deaths recorded by the AMA during

1967 to 1972, Rich and Pitts (1980) found that physicians indicating a preference for psychiatry commit suicide at a rate about twice that expected ( $p < .0001$ ). By comparison, no other group of specialists was found to suicide at a greater than expected frequency.

There is also mounting evidence that the suicide rate among female physicians is also inordinately high. The excessive suicide rate of female physicians was first reported by Craig and Pitts (1968). While, as previously noted, they interpreted their findings to indicate no excess of suicide among male physicians, female physicians were found to suicide some four times more frequently ( $p < .00001$ ) than the overall population of white females 25 years or older. This finding has since been corroborated by two additional studies. The Steppacher and Mausner (1974) analysis described earlier revealed that the suicide rate for female physicians for the 5½-year period March 1967 to August 1970 was fully three times that expected on the basis of national population values. Most recently, Pitts, Schuller, Rich, and Pitts (1979) found that the suicide rate for female physicians was four times that for the general population of white females of the same age. Together, the available studies which have investigated suicide among female physicians suggest that their rate of self-annihilation has continued to be high for at least the last 15 years.

*Dentists.* Research into suicide among dentists, while not as extensive as that among physicians, is equally disarrayed. Numerous articles dealing with the suicide of dentists have been published. The vast majority, however, are general, without supportive, systematic research, and are thus of little value. Short on credible evidence, they employ unsubstantiated "facts" and undocumented references.

Of the studies that have been reviewed with regard to physicians, two included data on suicide among dentists. The Blachly et al. (1963) review of suicide in Oregon over the period 1950 to 1961 reported an average suicide rate of 62.03 for dentists—the highest rate for any of the occupational groups investigated. However, this conclusion is based on so few cases (a total of nine suicides over 12 years) that its true significance is questionable. Rose and Rosow's (1973) review of physician suicide in California between 1959 and 1961 also included data on suicide by dentists. Over the 3-year period covered by their study, 20 suicides were recorded for an annual rate of 83. Dentists were exceeded only by chemists and pharmacists in tendency to suicide. Given the disproportionately high suicide rate in California, however, it is again noted that the generalizability of this result must be interpreted accordingly.

The most recent and comprehensive national study of the causes of death among dentists is that conducted by Orner and Mumma (1976) under the sponsorship of the National Institute of Occupational Safety and Health. This study is also the most important because of its methodological thoroughness. The objective of the study was to investigate

longitudinally mortality among U.S. dentists and compare it with that of the general, white male population. Unlike previous American Dental Association (ADA) reports that relied on admittedly incomplete membership records (Gift, 1977), Orner and Mumma made an attempt to ascertain *all* deaths of dentists in the United States from 1960 to 1965. The study's methodology included using ADA death certificates, contacting all state dental associations and licensing agencies, and searching post office correction lists.

Over the 6-year study period, 8945 deaths of dentists were ascertained. All data were standardized for age, sex, and race. Dentists in general were found to end their lives at a rate roughly comparable to that of the contemporary population of white males.

*Pharmacists.* Even less is known about suicide among pharmacists than either physicians or dentists. It seems to be a popular belief that pharmacists have an unusually high rate of suicide. This notion seems to have sprung from an early study of the relationship between suicide and occupational status. Utilizing death certificates and newspaper obituary files for Tulsa County, Oklahoma, Powell (1958) found that over the 20-year period 1937 to 1956, the suicide rate of pharmacists (annual rate = 120) was 24 times that of carpenters. However, this claim is based on only six suicides, and no attempt was made to control for possible differences in age, sex, or race distribution between pharmacists and the study's reference population. Given both the age of the Tulsa County data and the base rate problem, the results of the Powell study are clearly not definitive. The only other data available, however, do support its conclusion. Though the generalizability of Rose and Rosow's (1973) California study is tenuous, it includes the only other systematically collected data dealing with suicide among pharmacists. Their analysis found that pharmacists (annual rate = 104) are exceeded only by chemists (annual rate = 120) in their tendency to self-destruction. Controlling for both age and sex, pharmacists demonstrated an increased risk of suicide over both the general white male California population and their physician and dental counterparts.

*Nurses.* Data pertaining to the suicidal behavior of nurses are limited and dated. Powell (1958) claimed that nurses have a frequency of suicide six times that of females in general, but his calculations are based on only six deaths. Theodore, Bergen, and Palmer (1956) in a follow-up study of nearly 26,000 student nurses 10 years after entering training found that the incidence of suicide was almost identical to the expected population value. Finally, the Blachly et al. (1963) analysis of death certificates filed in Oregon during 1959 to 1961 revealed that although the average rate of suicide for nurses (annual rate = 10.07) exceeded that for all females over 19 years of age (annual rate = 7.3), with the exception of female teachers (annual rate = 4.38), it was the lowest of any of the other occupational groups investigated.

*Managerial and Professional Persons*

*Business executives.* The belief that there is a tendency for suicide to be higher among persons engaged in managerial occupations has persisted for the last quarter of a century. The basis for this belief is lodged in the sociological tradition that suicide is highest among people at the upper levels of the social status hierarchy. A review of the evidence in this area, however, reveals a host of contradictory conclusions. Stengel (1970), on the basis of an analysis of the relationship of occupational status and suicide in England and Wales, states that the suicide rate for the last few decades has been highest among professional persons, managers, and business executives. Contrary results, however, have been reported by Maris (1969), who claims that social (occupational) status is *inversely* related to the suicide rate. Drawing on data collected in Cooke County, Illinois, over the period 1959–1963, Maris presents evidence suggesting a higher frequency of suicide among persons of lower socioeconomic status (i.e., operatives and kindred workers).

In contrast to both of the above streams of thought, a third set of studies concludes that suicide rates are generally the highest in the most *and* least prestigious occupations, with occupations ranking midway between these extremes having the lowest rates. For example, the rates reported in Powell's (1958) Tulsa County study conform to this pattern, as do those in several other investigations (see Gibbs, 1971, for a review). More specifically, Powell found high rates for both unskilled laborers (annual rate = 38.7) and professional–managerial employees (annual rate = 35.4).

Given the inconsistency of the results cited, several methodological inadequacies are evident. First, studies investigating occupational status and suicide have most often only employed gross occupational distinctions. For example, despite apparent differences, lawyers, engineers, psychologists, and the like are often lumped into a single category labeled “professional–managerial.” Second, a clear majority of the studies in this area rely on impressionistic rankings to measure occupational status. Third, despite research suggesting that the suicide rate for a particular occupation may vary substantially from period to period without any corresponding change in prestige or status, few attempts have been made to account for this variation. Fourth, and finally, very few studies using occupational rankings have controlled for the confounding effects of age, sex, or race. In sum, it is apparent that until more rigorous investigations are performed, the data that have been collected do not provide an adequate explanation of the phenomenon under study.

*Psychologists.* The information relating to suicide among psychologists derives from a single study by Mausner and Steppacher (1973). Working primarily with records provided by the American Psychological Asso-



ciation, they investigated the frequency of suicide among both male and female association members (under 65) for the 10-year period 1960–1969. A total of 865 deaths were recorded for the interval under study. Of this number, 50 suicides were identified. For males, the number of suicides observed (34) was less than that expected (46.1). In contrast, the number of suicides for females (16) was almost three times the expected number (5.7). Mausner and Steppacher did note that the observed excess of suicide among female psychologists is consistent with the pattern revealed for female physicians.

*Attorneys.* In commenting earlier on methodological inadequacies encountered in studies relating suicide to occupational status, it was noted that the suicide rate of an occupational category may vary from period to period. Evidence dealing with the frequency of suicide among attorneys not only supports this observation, but also suggests that the rate for a particular occupation may vary from area to area. For example the suicide rate for attorneys in Tulsa County, during 1937 to 1956, was 36 (Powell, 1958). In Oregon, from 1950 to 1961, the average annual rate was 53.18, compared to 32.4 for the general male population over 19. Finally, Rose and Rosow (1973) report that from 1959 to 1961 the annual rate of suicide among California attorneys and judges was 54. Under scoring the peculiar nature of California suicide statistics, this relatively high rate was the fourth lowest of the 11 professional occupations Rose and Rosow investigated. Together, these three investigations underscore the danger of generalizing the findings of a limited number of studies to other realms (i.e., populations, settings, and times).

*Chemists.* The frequency of suicide among chemists has been the subject of only one study (Li, 1969). The relative, age-adjusted frequency of suicide among American Chemical Society members under the age of 65 was 4.5% compared to 3.7% for other professionally employed males. Among female chemists, however, the relative frequency of suicide was 11.3%. Adjusted for age, this frequency is five times that of the general population of white females and close to three times that of male chemists. Together with the results reported for female physician and female psychologists, this finding is the third to suggest that certain stresses underlying suicide may be unique to women.

#### *Military and Paramilitary Personnel*

*Police.* As with certain other occupations previously discussed, an informal consensus appears to have arisen to the effect that the suicide rate among police is appreciably greater than for other occupational groups. In assessing the validity of this assertion, it should initially be noted that mortality data on police suicide are particularly difficult to obtain. As Heiman (1975, pp. 269–270) notes, “most police departments either state they do not keep such information or if they do keep the information, they are understandably reluctant to part with it.”



suicide (Breed, 1968). As an example, Blachly et al. (1968) claim that many suicides are reported as respiratory failures—which they are, but only by interpretation. Third, even in situations where no attempt is made to conceal a decedent's true cause of death, it may be difficult or impossible to distinguish a suicide from a homicide or an accident.

### IMPLICATIONS AND CONCLUSIONS

The implications emerging from the preceding analysis are obviously important. Our limited knowledge of the relation of occupation to suicide underscores the need for systematic research and programs in this area. To that end, several recommendations are briefly outlined.

1. Preemployment psychological screening efforts should be encouraged, especially in occupations where suicide is a distinct occupational hazard. In the instance of law enforcement personnel, rigorous evaluation at the time of selection has been shown to be related to the emotional stability of those chosen for employment (Langone, 1981).

2. On-the-job training programs should be encouraged to alert individuals to signs of depression. Such educational programs can serve to help individuals achieve greater emotional stability and to accept their own emotions and limitations.

3. The establishment of comprehensive counseling and crisis intervention referral programs should be more widely encouraged. Suicides are often preventable. Although the factors leading to suicide are admittedly complex, many who kill themselves give definite warnings of their intent (Frederick, 1981). A counseling and crisis intervention referral program designed to alert those in high-risk occupations to the early warning signs of emotional distress could save lives.

4. Steps should be taken to make mental health treatment easier and more socially acceptable. Suicides could be avoided if members of such occupational groups as physicians (especially psychiatrists), attorneys, and police were less reluctant to seek psychological help. The attitudes of professional societies, private and public officials, and licensing authorities should be supportive rather than restrictive and punitive.

5. Additional longitudinal studies should be encouraged to assist in identifying potential suicide victims. More data are clearly needed to enable the development of predictive instruments. Since the length of time required and expenses involved might be prohibitive, panel studies could be conducted on selected stratified samples with follow-up over specific time periods. Such studies could be implemented in conjunction with schools awarding professional degrees or through professional organizations (King, 1970).

6. To facilitate greater understanding of suicidal motives, the wider use of what Farberow and Shniedman (1965) have labeled "psychological autopsies" should be encouraged. Experience indicates that by reviewing

the social, emotional, and psychological factors involved in a suicide, it is possible to gather important clues to understanding suicidal motives and characteristics.

7. Further research on the relation of occupation and career to the psychological health of women is needed. The increasing number of women gainfully employed outside the home makes it both feasible and important to study the impact of work experiences on the suicidal propensity of women.

This review has been limited to one aspect of the wide range of factors related to the act of suicide. It has taken as its focus the relationship between suicide and occupation. Unquestionably a dynamic process, a full understanding of suicide will only be achieved through additional systematic study. Statistics alone are incapable of conveying the enormity of the problem. Hopefully, future advances in our understanding of suicide will lead to a minimization of the number of premature and needless deaths resulting from this cause.

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