

Suicide Among Youth and Young Adults, 15 Through 24 Years of Age. A Report of 392 Cases from Paris, 1989–1996.

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ABSTRACT: The aims of our study were (1) to examine the socio-demographic, clinical characteristics, autopsy and toxicological findings in 392 youth suicides in Paris, between 1989 through 1996, and (2) to analyze the psychodynamic determinants leading up to the onset of the suicide.

During the eight-year study period 392 suicides involving young people were investigated at the Institute of Forensic Medicine of Paris. Two hundred and sixty victims (66%) were males. The mean age was 22 years in both sexes. Fifteen percent of the victims were below 20 years. Ninety-two percent of the subjects were single. Forty percent of the victims were students, 35% were unemployed. One third of the victims had previously attempted suicide. Thirty-five percent of the subjects used to take psychoactive prescription drugs and some of them had been under the care of a mental health professional at the time of the suicide. In 40% of the cases a suicide note was found near the body. Depression (70% of victims), schizophrenia, (10%), affective disorders, parent-child relational problems, partner relational problems, adolescent antisocial behavior, and borderline personality were found to be the most frequent diseases and stressors involved in the suicides. The suicide was rarely an accidental reaction to stress. It was constantly preceded by situational distress, which led to suicidal ideas if the adolescent failed to cope with problems. Ten percent were known as heroin users. In more than 40% of the cases, the victim's parents were divorced or separated. The most frequent method of suicide was poisoning followed by jumping from a height, gunshot, subway death, and hanging/asphyxia. Among firearms, a handgun was more likely to be used than rifles (85/15%). Tranquilizers were the most frequent psychoactive drugs used for suicide followed by antipsychotic drugs, antidepressants, and barbiturates (10%).

KEYWORDS: forensic sciences, suicide, youth, epidemiology

Adolescent suicide is often cited as the signature of a troubled generation. Over the past decades, a significant increase in suicide rates, especially among young people, has been recognized internationally as a major health problem (1–11). In this context, the need for accurate statistics is greater than ever, and determining who is at greatest risk to commit suicide is of great concern. As far as incidence rates are concerned, there is a general acceptance that suicide is underrecorded for various reasons, but there is little agreement over the extent and nature of this underrecording

(4,6,9,10). In the search for risk factors for adolescent suicide, investigators agree that suicide is never the result of a single factor or event but rather results from a complex interaction of many factors and stressors and usually involves a long history of psychosocial problems (1,3,12–24). However, the psychodynamic determinants leading up to the onset of suicide remain unclear. Medicolegal studies provide accurate data on the cause and manner of deaths, useful information on the pattern of autopsy lesions and toxicological findings, and give the opportunity to collect psychosocial data through interviews of the victims' relatives, friends and attending health care personal, conducted not only by the police, but also by forensic psychiatrists. However, medicolegal studies on suicide are infrequent.

The aims of our study were (a) to determine the incidence of suicide among adolescents (i.e., persons aged 15 to 19 years) and young adults (i.e., persons aged 20 to 24 years) in Paris during the 8-year period from 1989 to 1996, (b) to examine the sociodemographic and psychopathological characteristics of victims, autopsy and toxicological findings, and (c) to analyze the circumstances of death and the psychodynamic determinants leading up to the onset of suicide.

Methods

Study Population

We included in our study all persons, aged 15 to 24 years whose deaths were adjudicated as completed suicides by medical examiners, and occurred in Paris during the 8-year period from 1989 to 1996. The cause and manner of death were determined by the medical examiner after external examination of the body, often followed by complete autopsy and, where necessary, after toxicological analyses. Examination of the death scene, circumstances of death and suicide notes were also taken into account. Illicit drug overdose deaths were excluded because, with the exception of cases in which the decedent has left a suicide note, it is difficult if not impossible to distinguish between an accident and a suicide.

Suicide Rates

In France, official mortality statistics are based on cause-of-death certificates collected by the I.N.S.E.R.M. SC8 (National Institute of Health and Medical Research) (2,7). At the death scene, the cause of death is determined by any doctor (usually a general practitioner) who examines the body. Some deaths may be evaluated by the doctor as nonsuspicious suicides leading to the direct issue of a death certificate without medicolegal investigation. Such

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declarations may be based for example on the doctor's knowledge of psychiatric antecedents or the presence of a suicide note. Only when this doctor considers the death suspicious, that is potentially resulting from homicide, a medicolegal autopsy is required by the "Procureur de la République" (District Attorney). In this case, the cause and manner of death is determined by a medical examiner after complete autopsy. The medical examiner's report is addressed to the District Attorney, but no death certificate is transmitted to the INSERM. Consequently, only those suicidal deaths considered nonsuspicious are recorded by the INSERM, while those considered suspicious are recorded by the Institute of Forensic Medicine and the Department of Justice. No death certificate will be issued. This process creates two separate databases. The first (INSERM) includes nonsuspicious suicide deaths for which a death certificate has been issued. The second database (Institute of Forensic Medicine) includes suspicious deaths for which autopsies were performed. In addition, some persons are recorded in this database only because their body is kept for some period at the Institute of Forensic Medicine for hygienic reasons. No autopsies are performed in such cases because the suicide has been considered nonsuspicious. These individuals are subsequently issued death certificates. Consequently, records exist at both offices (INSERM and Institute of Forensic Medicine) for these particular individuals. In order to avoid counting these cases twice, suicidal deaths recorded at the Institute of Forensic Medicine were matched case-by-case to suicidal deaths recorded by the INSERM. The extent of the difference between data obtained from the two databases is examined in the present paper. This also enabled us to estimate the true suicide rate for 1990, a national census year. In France a national census is done every seven to eight years. Numerators for suicidal rates were calculated using suicides among residents of Paris. Denominators for suicidal rates were calculated using demographic data from the 1990 national census. By definition, Paris residents, aged 15 to 24 years who died outside Paris were taken into account for the calculation of the suicidal rates.

Paris has a population of approximately 2,200,000 inhabitants (1990: 2, 152, 423; 20,495 inhabitants/km²). Since 1990, the last census year in France, calculation of population has been performed by extrapolation. These data obtained from the INSEE (National Institute of Statistics and Economical Studies) showed no significant increase in the population of Paris.

In the 15 to 24 age group, approximately 292,000 persons live in Paris, 139,000 males (47.5%) and 153,000 females. In this age range, 85% of the people who live in Paris are French, in both sexes. In Paris, persons aged 15 to 24 years represent 13.6% of the whole population.

Sociodemographic and Psychological Study

In the second part of the study, we focused on the sociodemographic patterns of suicide victims, autopsy and toxicological findings, and psychological patterns. For these purposes, we examined only those data obtained from the suicidal deaths investigated at the Institute of Forensic Medicine of Paris. The psychological study consisted of reconstructing the lifestyle and personality of the deceased with details of the circumstances, behaviors and events that led to the suicide of that individual. The data were collected through interviews of the victims' relatives, friends and attending health care personal and from official records. The suicide notes sometimes left by the victims were also analyzed.

Results

During the 8-year period (1989–1996), 392 suicidal deaths involving persons aged 15 to 24 years were recorded at the Institute

of Forensic Medicine of Paris. Fifty-three occurred in 1989, 45 in 1990, 56 in 1991, 42 in 1992, 51 in 1993, 47 in 1994, 43 in 1995, and 55 in 1996. Table 1 shows the annual distribution of cases by gender.

The suicide rate calculated for 1990 using the INSERM data was approximately 4 per 100,000 Paris residents, and that calculated using the matching procedure, was approximately 11 per 100,000 Paris residents. The calculated underrecording of the official mortality statistics was 65%.

Two-thirds of victims were males. The proportion of male victims remained roughly stable during the 8 years (Table 1). The mean age of victims was 22 years in both sexes and remained stable over the study period (22 years in 1989; 21.5 years in 1990; 22.15 years in 1991; 22.12 years in 1992, 21.9 years in 1993, 22.1 years in 1994, 21.8 in 1995, and 22.15 in 1996). Figure 1 shows the percentage distribution of suicides by year of age. A similar age pattern was found in both sexes. Eighty-five percent of victims were in the 20 to 24 age range. It appears that one-third of victims were 24 years old, while less than 1% were 15 years old. In the 15 to 19 age group, it appeared that, for each year of age, the number of cases did not increase during this 8-year period. From 1989 to 1990, the number of suicides in this age group increased from 6 to 9 cases, but this increase is not significant, given the small number of cases.

Eighty-two percent of victims were French. This proportion is slightly but not significantly less than that among all Paris residents. The remaining victims consisted of Africans, 3.5% Asians, 2.5%, and Arabs, 5.5%. Fifty-five percent of victims were born in Paris or its suburbs. Approximately three-quarters of victims were Paris residents.

The father was the interviewed person in 30% of cases and the mother in 60%. Both parents were interviewed in only 5% of cases. In only 50% of cases the victims' parents were living together. One of the parents was dead in 10% of cases. One-fourth of victims' parents were separated or divorced. Ninety-two percent of victims were single. Forty percent were students; only one-fourth had a job. Thirty-five percent of victims were living with their parents at the time of death.

Regarding psychopathological factors involved in the suicides, 60% of victims were known to suffer a mental disorder, with depression being the most frequent (70% of victims), followed by psychosis, specially schizophrenia (10%) and antisocial disorder (5%). One-third of victims had expressed suicidal ideation. One-third of victims had attempted suicide at least once. Of those, 60% had attempted suicide once and 30% two or three times. Two-thirds of the victims had a treatment for their mental illness (antipsychotic substance, 40%, tranquilizers, 30%, and antidepressants, 25%). Ten percent of victims had a history of drug abuse, with heroin being the most frequent drug used. Figures 2 and 3 show the percentage distribution of suicides in the year, and in the week, respectively. The suicide deaths were not clustered in any month or day. The months of April and July with 14 and 12%, respectively, of suicide deaths had the highest number of cases, whereas June had the least number of suicide deaths. Monday had the highest number of cases, whereas Sunday had the lowest.

The suicide occurred in the victim's home in 45% of cases, in another home (friend's, relative's . . .) in 14% of the cases. Ten percent of suicides occurred in a hotel room and 10% in the subway. In all cases, the victims committed suicide alone. Poisoning suicides were the most frequent with 28% of cases followed by jumping from height (22%), shooting (21%), and hanging (18%). The other means included subway train, cutting, and electrocution.

TABLE 1—Annual distribution of suicides between 15 and 24 years of age, by gender, in Paris, 1989–1996.

	1989	1990	1991	1992	1993	1994	1995	1996	Total
Males	33 (62.2%)	31 (68.9%)	39 (69.6%)	30 (71%)	35 (67%)	32 (69%)	30 (70%)	37 (68%)	267 (68%)
Females	20	14	17	12	16	15	13	18	125
Total	53	45	56	42	51	47	43	55	392

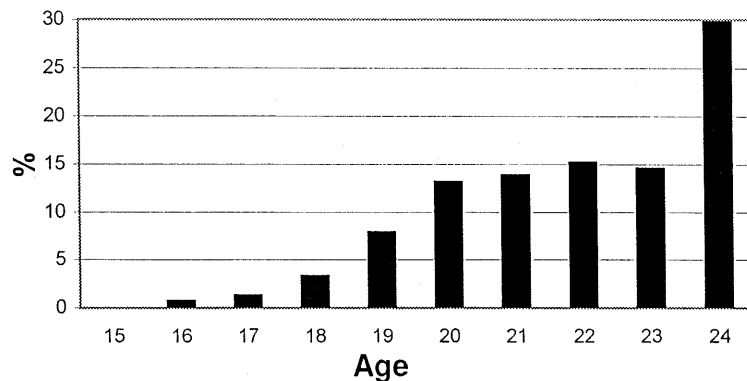


FIG. 1—Percentage distribution of suicides by year of age.

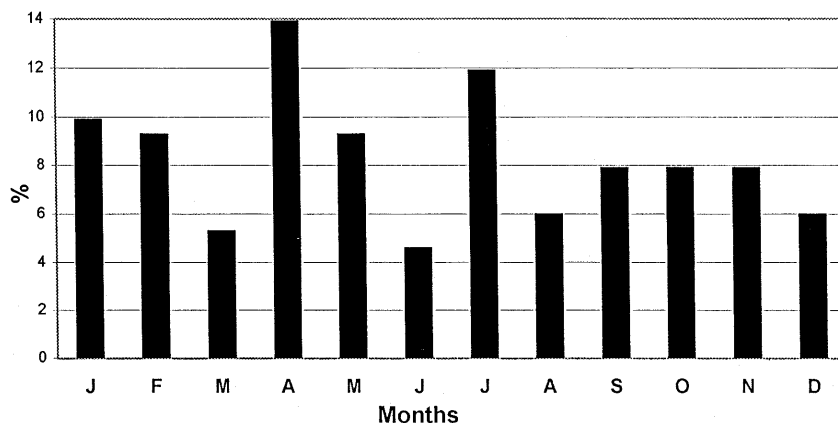


FIG. 2—Percentage distribution of suicides by month.

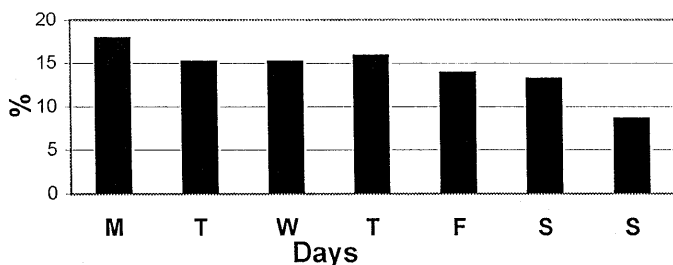


FIG. 3—Percentage distribution of suicides by week.

Among toxic deaths, tranquilizers (22%) followed by antipsychotic drugs (14%) and antidepressants (13%) were by far the most frequent drugs used. Alcohol was found in the blood of 30% of victims. Propoxyphene, heroin and codeine were found in only five victims. Among firearms, handguns were used in 85% of cases, shotguns in 10% and rifles in 5%. Forty percent of victims left a

suicide note. The suicide motivations and precipitants obtained from suicide notes and family and/or relative/friend interviews were as follows: interpersonal conflict/marital conflict/ending a relationship, 15% of cases; parent divorce or disruption, 10%; death of family member, 6%; financial, school or legal problems, 15%; loss of job or change in job status, 6%. In 27% of cases no explanation for the suicide was given by the interviewed persons. In 20% of cases the victim was considered as a depressed person, but no precise precipitant or stressor was given by the interviewed persons.

Discussion

Findings from the present study stress the important contribution of medicolegal studies to the knowledge of suicide among young people. Most epidemiological studies have relied heavily on analysis of official counts of suicide. There are a number of limitations to suicide mortality data, not all of which are related to the question of their validity and reliability (4,6,9,10). For example, the number

of variables available for investigation is quite limited because the data are derived entirely from death certificates. There is an enormous body of literature that question the validity and reliability, and thus the usefulness of suicide mortality statistics (4,6,9,10). Certain investigators have suggested that the quality of official suicide statistics is so dubious that these data should not be used for research or even for purely descriptive purposes (10). Among causes of underestimation of suicide many who question the validity of suicide statistics argue that at least some true suicides are incorrectly certified sometimes deliberately in response to a variety of factors, such as sociocultural, religion, or financial. The degree to which suicide statistics are invalidated by these influences is difficult to gauge (10). Moreover, a number of investigators have concluded that cross-national comparisons of suicide rates may be inappropriate because of widely varying methods used in death certification from country to country (10). However Kleck (6) found little evidence supporting claims that suicides are seriously underreported at least in the United States. In Paris, we were able to calculate the true suicide rate among the 15- to 24-year-olds by cross-matching INSERM and Institute of Forensic Medicine databases, and found a suicide rate of 11 per 100,000 Paris residents for 1990. This suicide rate was 65% higher than that obtained from official data sources. The underrecording was found to be 73.6% for the 15 to 44 age group among Paris residents in 1990 (7). Most suicidal deaths misrecorded in the official data source had been certified as deaths of undetermined mode. In the age range 15 to 24 years, in France, the suicide rate was found to be 7.4 per 100,000 in males and 5.7 per 100,000 in females (INSERM source of data) for 1990 (7). These statistics did not take our data into account and this underestimated the number of suicides. Nevertheless, suicide still represents the second leading cause of death in young people, after road traffic accidents.

Regarding sociodemographic and psychopathological patterns of suicide victims our findings are to be considered in the context of the strengths and limitations of this study. The strengths of this study include a rather large sample of victims and the accuracy of the determining of the cause and manner of deaths. The limitations of this study include a number of unavoidable missing data, because some potential informants were not interviewed. Some authors discussed the difficulties of obtaining parental cooperation for interviewing the parents themselves or relatives and friends (16,24). In our series, the father was interviewed in only one-third of cases and the mother in 60%. Both parents were interviewed in only 5% of cases. Furthermore, it has already been noted that the data collected retrospectively after a suicide by interviews of significant others are often incomplete and may be biased. Parents tend to underreport psychopathology in their children, and they are often unaware of their children's affective symptoms, substance abuse, anxiety-related symptoms, suicidal ideation and suicide attempts (4,6,9,10,16). In our series, the motive of suicide was unknown in almost 30% of cases. The same figure was found by Haring et al. (16). Within these limitations our findings are in accordance with those of previous psychosociological studies (1–3). Overall, the profile at greatest risk for suicide is a single man, 22-years-old, with no job and a long-standing history of problems. In accordance with other authors, we found the suicide to be embedded in a situation of not just the problems every adolescent has to deal with but turmoil in family life already rooted in childhood and not stabilizing during adolescence, in combination with traumatic events during the period of adolescence and social instability in the year or month preceding the suicide. Regarding familial stressors, despite a lack of detailed assessment of family

environment, our data indicate that familial contribution to suicidal risk is among the most potent risk factors. As others, we have noted parent-child discords, high rates of parent loss, separation and divorce.

Regarding psychopathology of the victims we confirmed the strong relationship between suicide and depression. Previous studies yielded rates of depression among adolescents and young adult suicide victims ranging from 35 to 76%, and has shown high rates of psychiatric disorders among suicide victims (over 90%) and a high occurrence of comorbidity often characterized by personality disorders (1–3,5,6,8–25). Despite a high frequency of psychiatric disorders only a small proportion of suicide victims had been under active psychological treatment at the time of suicide. Moreover, one-third of victims had made previous suicide attempts, and one-third of persons who had committed suicide had previously verbalized their wish to die or threatened suicide. For Shafii et al. (24), “the talkers become the doers.” Since then, life events in the year or months before death must be examined with caution: separation, changes in habits and moving were often noted as major events in the deceased's life. Finally, interpersonal conflict was noted to be a decisive precipitant in at least 70% of suicide victims with a high number having experienced conflict with a girlfriend or boyfriend. Drug abuse was much less frequently involved than in other studies (13,25). However, it should be noted that in our series illicit drug overdose deaths were excluded, although some of these were possibly suicides. Thus, the number of drug abusers and chronic alcoholics has probably been underestimated in our series.

Like others, we have found violent suicide methods (shooting, jumping from height, jumping in front of a subway train, hanging) to be commonly used, especially by males. In our series firearms were the second most frequent means of suicide, with poisoning suicide the first.

Accurate assessment of the cause and manner of death, toxicological analyses, and evaluation of psychological factors in death are necessary contributions of forensic scientists to the improvement of knowledge about and prevention of teen suicide. Our findings should therefore be of use not only to forensic scientists but also to mental care professionals and epidemiologists.

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