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EPIDEMIOLOGY OF SUICIDE AMONG COLLEGE STUDENTS**

INTRODUCTION

Suicide is more common among college students than many people realize. A recent survey of the causes of death of 209 Yale University students from 1920 to 1955 revealed the following most common causes of death: (i) accidents—43.8 per cent; (ii) suicide—12 per cent; (iii) heart and circulatory diseases—7.7 per cent; (iv) pneumonia—7.2 per cent; and (v) central nervous system infections—6.3 per cent.[12] Diehl and Shepard[8] made a similar study of 327 deaths among college students from nine universities during the ten-year period from 1925 to 1935. They found the following leading causes of death: (i) accidents—26.3 per cent; (ii) heart and circulatory diseases—10.1 per cent; and (iii) suicide—8.0 per cent. One may conclude from these two studies that suicides account for 8 to 12 per cent of all deaths among college students.

It has been estimated that more than 20,000 people commit suicide in the United States each year.[13] Dublin[5] reported the suicide rate for the United States in 1930, 15.6 per 100,000 living, occupies a middle position among the rates of countries for which the records are available. Collins *et al.*[1] found suicide the fifth most common cause of death in the white population of the United States, for the age group from 15-24, for 1950. A review of the available literature failed to provide any reliable statistics on the incidence of suicide among college students. It is commonly believed that the incidence of suicide is higher among college students than among the non-college population in the same age group. This opinion was recently expressed by Mr. T. R. Henn, Senior Tutor of St. Catherine's College, Cambridge, England when he addressed the World Conference on Medical Education. Mr. Henn stated:

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Although there are no accurate statistics, the incidence of suicide at the two older universities (Oxford and Cambridge) is higher than at the other universities in Great Britain. The incidence was much higher in students than in comparable groups of non-students.[9]

It is obvious that statements of this nature, without facts to support them, merely express the opinion of one individual. In a letter to the editor of *The London Times,* Mr. S. R. Dennison, Senior Tutor of Caius College, Cambridge, replied to Mr. Henn's remarks:

The Senior Tutor of St. Catherine's College is reported to have informed the World Conference on Medical Education that the incidence of suicides among students is higher at Oxford and Cambridge than at other universities, although admitting that no accurate statistics exist and doubting whether they could be made available. I suggest that there are no statistics whatever of the kind needed to make proper comparisons between universities, and with other groups in the non-university population. Until we know some of the simple facts, we should be well advised to avoid diagnosing, and prescribing for, a problem which so far has not been shown to exist.[2]

PURPOSE

The purpose of this report was to collect some of the simple facts which appear to be lacking about suicides among college students, to compare the incidence of suicide among college students with that of the noncollege population, and to determine some of the epidemiological factors related to suicide in this group. There are many theories concerning the psychopathogenesis of suicide and many environmental factors that seem to precipitate the act in an individual; therefore, an epidemiological approach was selected for this study. Gordon[8] emphasized the "biologic gradient" of disease in living organisms—the disease may result in complete recovery, a complication, or death. Previous studies failed to point out a specific cause for suicide, but suggested that suicide is a complex interaction of personality, environment, and culture. The epidemiologist would use slightly different terms—the host, the agent, and the environment. What are these factors in suicide among college students?

MATERIALS

The suicides reported in this study were taken from the files of the Department of Mental Hygiene and Psychiatry, the Department of University Health, and the Alumni Records Office of Yale University. A *student suicide* was defined to include students who took their lives during the academic year or summer vacation, and any student who withdrew from college or was given a psychiatric leave of absence and committed suicide within one year of his separation.

Each suicide was confirmed by a death certificate from the Bureau of Vital Statistics in the town where death occurred. Valuable information was obtained from the individual records of the deceased in the Department of Alumni Records. In most instances these records contained the personal history of the student and his family, the date the student withdrew from college (because of death or a psychiatric leave of absence), a death certificate, and newspaper clippings describing the circumstances of the suicide. Medical records from the Department of University Health provided the student's past medical history, his family medical history, and any diseases he had while in college. The psychiatric record of any student seen in the Department of Mental Hygiene was studied and the diagnosis recorded. The Registrar's Office supplied the student's academic record, and the class yearbooks described his extracurricular activities.

INCIDENCE AND PREVALENCE

Suicide accounted for 25, or 12 per cent, of 209 student deaths among Yale University students from 1920-1955. It was second only to accidents as a leading cause of death in the student population. Each year approximately 20-30 students are seen by the Department of Mental Hygiene who have serious suicidal thoughts. The present study was confined to actual deaths or successful suicidal attempts.

The crude death rate of Yale students was lower than the crude death rate of a comparable noncollege population. Of the 209 students who died during the 35-year period studied, 95 per cent were white males, and 86 per cent were in the 15-24-year age group. This being the case, Yale suicides were compared with suicides in the general population for the year 1950 (white males 15-24 years of age).[1] There was only one death at Yale in 1950, consequently the suicides from 1945-1950 were used to calculate the specific-cause-of-death rate. This procedure seemed legitimate since the student population and the national economy remained stable during that period. There were 5.1 suicides expected, if the national rates prevailed, and 7.0 suicides observed. The national suicide death rate was 6.6 per 100,000 for white males 15-24 years of age, and the Yale student suicide death rate was 9.0 per 100,000. This difference was not statistically significant using the Chi-square technique.

AGE, SEX, AND CLASS

All of the suicide victims were white males except for one white female. This uneven sex distribution should not be considered unusual, for women

are admitted only to the graduate and professional schools. All of the students were native-born Americans, except for one French graduate student.

There were 15 suicides among undergraduate students, and 10 among graduate and professional school students. The age of the undergraduates ranged from 18-24 years with an average of 20.2 years. The ages of the graduate students ranged from 21-31 years with an average age of 26.4 years. There were 13 suicides in the age group from 18-21, 7 in the age

TABLE 1. DEATH RATE FROM SUICIDE AMONG YALE STUDENTS 1920-1955

Class	*Number of suicides*	*Population at risk***	*Death rate per 100,000*
Freshman*	2	32,231	6.2
Sophomore*	7	27,590	25.4
Junior*	2	27,590	7.2
Senior*	4	27,590	14.5
Medical	2	8,172	24.5
Law	1	12,614	7.9
Divinity	1	9,001	12.2
Graduate	5	25,349	19.7
Nursing	1	3,781	26.4

* Undergraduate classes.
** These figures calculated from University Catalogues of Yale University, 1920-1955.

group from 22-25, and 5 in the age group from 26-31. The lower incidence in the latter group can be accounted for by a smaller population at risk, since 86 per cent of 209 students who died from all causes were in the age group from 15-24 years. Table 1 shows the number of suicides in each class, the population at risk in each class, and the suicide death rate per 100,000 for each class. The highest rates were found in the undergraduate sophomore class, the medical classes, and the nursing classes. The lowest rate was in the undergraduate freshman class. The difference in these death rates was not statistically significant because the number of suicide cases studied was small. They do suggest that more extensive investigation might prove fruitful.

PLACE AND METHOD

Ten students committed suicide in the college community, New Haven; nine in either their dormitory or fraternity house room, and one in a local hotel. They were enrolled in school at the time of death. Eleven took their lives at home—four of them were enrolled in school at the time of death,

and seven were home on a psychiatric leave of absence or had withdrawn from school. Four students killed themselves in localities away from both school and home. They were all enrolled in school at the time.

Dublin[4] stated that about four-fifths of those who die by their own hand in the United States use one of four methods—shooting, hanging, poisoning, or asphyxiation by gas. White males use firearms as the most frequent method of suicide. In keeping with this observation, 96 per cent of Yale students died by one of these four methods. Table 2 summarizes the method of suicide selected by the students.

TABLE 2. METHOD OF SUICIDE USED BY YALE STUDENTS 1920-1955

Method	*Number*	*Per cent*
Firearms	10	40
Hanging	6	24
Asphyxiation	5	20
Poisoning	3	12
Jumped from a a high place	1	4
Total	25	100

Some of the student suicide victims seemed to show psychic determinants in the choice of their method. It is interesting that three of the ten students who used firearms were gun collectors and disposed of themselves with a favorite weapon. The three students who used poison had an intimate knowledge of chemistry. Two undergraduate chemistry students selected potassium cyanide, a classical poison. One medical student chose "Black Leaf 40," a deadly insecticide containing nicotine, in spite of the fact that sleeping pills were readily accessible to him. Possibly he realized that sedatives have a slower onset of action, and his chances of being discovered and revived were greater if he used sedatives.

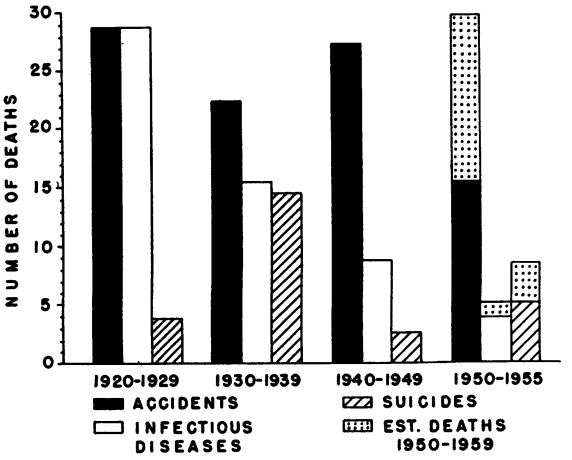
TIME RELATIONSHIPS

Studies of large numbers of suicides show an incidence peak in the spring and early summer months. The largest number of suicides found in this report were in January (five) and April (four). The number of suicides by months were: five in January, one in February, none in March, four in April, two in May, one in June, two in July, one in August, three in September, one in October, two in November, and three in December. Four of

the deaths occurred during the Christmas vacation period, six during the summer vacation period, and fifteen during the school year.

The day of the week students selected to do away with themselves were: four on Monday, two on Tuesday, four on Wednesday, nine on Thursday, one on Friday, two on Saturday, and three on Sunday. The day a student chose for suicide seemed significant in three instances—two students selected New Year's Day, and one student took his life on the birthday of a former roommate who had committed suicide two years before.

TABLE 3. DEMOGRAPHIC CHANGES OF YALE STUDENT DEATHS 1920-1955



The time of day students killed themselves was as follows: ten died from 12 midnight to 6 a.m.; four died from 6 a.m. to 12 noon; six died from 12 noon to 6 p.m.; and four died from 6 p.m. to 12 midnight. The time of death could not be found for one student. These data suggest that insomnia associated with suicidal thoughts accounts for a large number of suicides late at night and in the early morning hours.

A study of the demographic changes of Yale student deaths from 1920-1955 may be found in Table 3. Deaths from communicable diseases have declined since 1920-1929, placing accidents as the number one killer of college youths. The number of suicides rose sharply during the depression years, then dropped to a lower level during, and immediately following, World Wars I and II. In general, suicide rates increase during periods of economic stress, and decline during wars. This held true for the incidence of suicide among college students.

DIAGNOSIS

Only 11 of the 25 students who committed suicide were seen in the Department of Mental Hygiene and Psychiatry. The Department was not organized until October 3, 1925; the actual patient work began a year later. One suicide occurred in 1925 before the Department was organized. Therefore, only 45 per cent of those who took their lives received psychiatric treatment. Three students were referred to the Department by faculty members, four by physicians from the Department of University Health, one by a roommate who majored in psychology, one by a private psychiatrist who had been treating a student, one by a freshman counselor (a student), and one was a self-referral (a medical student). Of the students who were treated by the Department, the following diagnoses were made: psychotic depression—3; schizophrenia, paranoid type—1; anxiety reaction—2; acute dissociative reaction with paranoid features—1; severe character neurosis—1; chronic alcoholism—1; and psychopathic personality with homosexuality—1.

Eight of the students not seen by the Department killed themselves unexpectedly; no personality changes were noted by either faculty members or classmates. Four students who were not seen by the Department had expressed feelings of futility and depression to classmates, and, in addition, two students who showed a lack of interest in their school work, excessive absence from classes, and infraction of school regulations were known to the faculty. They were not referred for counseling.

The symptoms observed among students, in order of their frequency, were: feelings of despondency and futility; lack of interest in school work with, or without, frequent class cutting; a feeling of tenseness around people; insomnia; suicidal thoughts communicated to others; fatigue and malaise without an apparent organic cause; a feeling of inadequacy and unworthiness; excessive use of alcohol; antisocial behavior with frequent infraction of school regulations; and brooding over the death of a loved one.

It has been stated that physical illness, especially in older people, is a frequent motive for suicide. This did not prove the case among these students. Only one patient had a serious medical problem: a duodenal ulcer which was asymptomatic at the time of death.

COLLEGE ACTIVITIES

A common fallacy is that only brilliant, talented students commit suicide. Only 3 of the 25 students in this study were Phi Beta Kappa members. Of those who took their lives, 6 were excellent students, 5 were poor students, and the majority, 14, were average students. There were noticeable changes

in the academic records of 5 students the semester before their act of self-destruction. Their grades declined from 12 to 25 points with an average drop of 15 points per student. This sudden drop in grades probably reflects the anxious, agitated state of a student with lack of interest in, and inability to concentrate on, scholastic material. A sudden change in grades may provide the alert teacher or administrator with a clue that a student is emotionally disturbed.

What type of student is more prone to take his own life? Many people have the preconceived notion that the introvert—the quiet, bookworm who doesn't mix well socially—is more susceptible. Of 25 students who destroyed themselves, 10 were very active in extracurricular activities, 3 were moderately active, and 12 were not active. There were 10 fraternity men and 15 nonfraternity members. Six of the group were outstanding athletes. There were 22 single students, 2 married students with children, and 1 separated student with a child. Fourteen students came from families in which both parents were living together, 5 came from broken homes, 3 came from families in which one parent had died and the other had remarried, 2 came from families in which one parent was deceased and the other had not remarried, and 1 came from a family in which both parents were dead. Only three of the family histories were positive for mental disease. The father's occupation in 6 instances was an executive, 4 were professional men, 4 were bankers, 3 were educators, 3 worked in business offices, 2 were writers, and 1 was a farmer. Thus, 14 students came from families that were financially well-to-do.

The religious affiliation listed by the deceased were: Protestant—20, nonaffiliated—4, and Roman Catholic—1. There were no suicides among the Jewish students. One difficulty with statistics of this kind is that often the population at risk—the number of students of each denomination—is not known. Fortunately, these data are available. During the past 35 years there have been approximately 62 per cent Protestant students, 14 per cent Catholic students, 13 per cent Jewish students, and 11 per cent nonaffiliated students. Of course, these data do not relate how "deeply religious" an individual may have been. No valid conclusions can be drawn about the incidence of suicide among these different religious groups.

AREAS OF STRESS

Financial problems were an important source of environmental stress for eight students. Six students were either on scholarships or working to support themselves. One student took his life when he lost a job that would have allowed him to continue his education. A graduate student who was

teaching while working for an advanced degree became despondent when his wife became pregnant for the third time. Evidently, his teaching assignments, his studies, and his financial worries with four mouths to feed were too much for him. Another scholarship student was observed by his professor to be working too hard; this was just two weeks before he killed himself. Two students who were unable to keep up with their wealthy friends complained of insufficient funds; one of them committed suicide the day he received a letter from his mother reprimanding him for overspending and stating that if this practice did not stop he would have to withdraw from school.

Sexual adjustments were contributing difficulties for six students. Three of them had proposals for marriage rejected, and shortly afterwards found life unbearable. One student murdered the girl who turned him down, then shot himself. One medical student who had suffered a depression during college killed himself just 10 days after becoming engaged. He feared that he would become insane and ruin his marriage. One student with marital difficulties took his life soon after becoming estranged towards his wife. Another student, an overt homosexual, was overcome by feelings of guilt and anxiety.

Moss and Hamilton[11] recently called attention to "the death trend" as a significant feature of suicide patients. "The death trend involves the death or loss under dramatic and often tragic circumstances of individuals closely related to the patient, generally parents, siblings, and mates." Only 5 of the 25 students in this study had lost a parent or close relation. Two of these patients suggest a strong death trend. One student expressed a morbid longing for a younger sister who died seven years earlier, and another student committed suicide on the birthday of a former roommate who had committed suicide two years earlier.

DISCUSSION

Suicide is an important public health problem among college students; it is the second most common cause of death in this group, accounting for 8 to 12 per cent of all deaths. Students in college are faced with many psychological and emotional stresses: they are usually away from home for the first time and have to adjust to a new environment, make new friends, and plan their own personal lives; they must adjust from a dependent mode of existence to an independent one; adjustments and attitudes towards the opposite sex are being worked out; new ideas related to life, customs, mores, and religion are presented and often conflict with what has been taught at home; and often for the first time the student begins to realize the

importance of doing well in his academic studies because his future livelihood depends on it. Fry[7] mentioned that a student has the following adjustments to make: sexual and behavioral adjustments, family adjustments, scholastic adjustments, and social adjustments. Many students find it impossible to make these unaided. Farnsworth[6] estimated 10 per cent of all college students need professional help with their conflicts and emotional problems.

American colleges and universities have not assumed their full share of responsibility where the physical and mental health of their student population is concerned. It was estimated from a 1953 survey of 1,157 colleges that one in three has no clinical service, one in three has clinical services for minor disorders, and one in three has clinical services for both major and minor disorders.[10] When one realizes that there are approximately two and one-half million students enrolled in American colleges, the problem of preventive psychiatry and mental hygiene becomes a stimulating challenge. Abnormal behavior can be diagnosed early in a college setting—the problem is to teach students and faculty members the basic principles of mental hygiene and to provide students with adequate psychiatric counseling services.

SUMMARY

1. This study found that suicide accounted for 25, or 12 per cent, of 209 deaths among college students from 1920-1955. The death rate from suicides among college students is not significantly higher than a comparable group of the noncollege population.

2. Of the 25 suicides investigated in this study, 40 per cent committed suicide in the college community, 40 per cent at home, and 20 per cent away from both home and college. Ninety-six per cent of them selected one of four methods for self-destruction—firearms, hanging, asphyxiation by gas, or poisoning.

3. Though symptoms of emotional upset are frequently observed in a college environment, only 40 per cent of the patients who eventually took their lives were referred for psychiatric treatment. Only 6 of the 25 students in this study were brilliant in their studies; most of the students who committed suicide were average students.

4. Financial worries, sexual adjustments, scholastic difficulties, and family adjustments were significant areas of added stress in the lives of the students in this study.

5. The college community provides an excellent setting for preventive psychiatry and mental hygiene, but American colleges have not assumed their full share of responsibility for this problem.

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