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Suicide in Fulton County, Georgia (1975–1984)

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ABSTRACT: Demographic and trend analysis of 881 consecutive suicides in blacks and whites is presented. For the years 1975 through 1984, the suicide rate was 15.1 / 100 000 and did not significantly change. White males were overrepresented in all age groups, had an overall suicide rate of 34.9, and showed a small but statistically significant increase in rate which was not accounted for by any specific age group. White females, in general, were represented in proportion to their prevalence in the population, and those ages 20 to 24 demonstrated an increasing suicide rate which was small. Black males were at highest risk in their twenties, showed no significant trends, and were also represented near their prevalence in the population. Black females of all ages were underrepresented, and had low suicide rates which decreased with time. No significant rate changes were noted for teenagers or the elderly. Firearms was the method of choice in all groups, although methods varied with age, race, and sex, and male children preferred hanging. Small but significant increases were noted for the prevalence of nondrug methods in females and carbon monoxide deaths in white males. Similarities and differences to larger scale studies are discussed. Suicide may have characteristics unique to given geographical areas and pervasive to all areas. The authors advocate study and publication of local data to clarify further the nature of suicide.

KEYWORDS: pathology and biology, suicide, epidemiology, suicide rates

The phenomenon of suicide is attracting increasingly more attention from the medical profession and public health agencies [1]. A number of demographic studies are available on the topic [2–6]. Recent studies indicate an increasing incidence of suicides in white males and persons 15 to 24 years of age [7–9], while a declining rate has been reported for older persons [3,5]. Large series, however, often pool data from diverse geographical and socioeconomic environments [2,3,7]. The resulting conclusions may not be representative or appropriate for practical application by local agencies which attempt to characterize, diagnose, analyze, and deter suicide.

The present investigation is a review of all known suicides in one urban county during a ten-year period with specific reference to age, race, sex, temporal, and method-related variables. Local trends over the study period are analyzed and compared to larger scale studies reported in the recent literature [2,7].

Methods

The 881 suicides certified by the Fulton County Medical Examiner's Office between 1 Jan. 1975 and 31 Dec. 1984 were identified retrospectively from case files and form the study

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population for this paper. The Office serves the entirety of Fulton County, Georgia, which is largely urban, contains most of the City of Atlanta, and has a 1985 population of approximately 620 000 persons of which similar numbers are black (51%), white (48%), male (47%), and female (53%). With rare exceptions, all suicide victims are investigated with a complete autopsy and toxicologic studies.

Demographic, temporal, and method-related data were obtained from hard-copy files and stored in an IBM PC-XT® personal computer using Visicorp® VisiFile® data filing software. Trend analysis of data was performed using a Visicorp VisiTrend/Plot® software package which performs least-squares regression analysis including an *F*-test and *t*-test. Trends were defined as significant if the trend line *F*-test and *t*-test each had a *p* value of < 0.05.

Population statistics were provided by the Atlanta Regional Commission Data Center and the Fulton County Health Department. These data were based on United States Census Bureau statistics for 1980 and local surveys.

Results

All Groups Combined

The demographic data for the 881 suicide victims are summarized in Table 1. The largest groups consisted of males (72.6%) and whites (77.5%). Slightly more than one half were white males (54.8%). Smaller percentages of white females (22.7%), black males (17.8%), and black females (4.7%) were observed. Compared to their representation in the general population of Fulton County, males, whites, and white males were notably overrepresented while blacks, females, and particularly black females were notably underrepresented. Black

TABLE 1—*Demographic data and suicide rate for a 10-year series of suicides, Fulton County, Georgia.*

Category	No.	% of B/W Pop.	% of Suicides	Suicide Rate	Age Range	Age Median
All groups	881	100	100	15.1	12/89	37
W males	483	23.8	54.8	34.9	13/89	38
W females	200	25.6	22.7	13.3	12/87	45
B males	157	23.3	17.8	11.7	12/87	31
B females	41	27.3	4.7	2.8	18/80	31
All whites	683	49.4	77.5	24.1	12/89	40
All blacks	198	50.6	22.5	7.3	12/87	31
All males	640	47.1	72.6	23.3	12/89	36
All females	241	52.9	27.4	8.1	12/87	42
Ages 15-19	44	...	5.0	8.3	...	...
W males	21	23.1	47.7	16.9	...	...
W females	11	21.2	25.0	8.9	...	...
B males	9	27.0	20.5	6.7	...	...
B females	3	28.0	6.8	2.1	...	...
Ages 20-24	118	...	13.4	19.8	...	...
W males	58	24.3	49.2	40.2	...	...
W females	19	22.9	16.1	16.3	...	...
B males	30	23.8	25.4	21.6	...	...
B females	11	29.0	9.3	6.2	...	...
Ages 65+	117	...	13.3	16.4	...	...
W males	68	21.2	58.1	46.0	...	...
W females	35	43.8	29.0	11.5	...	...
B males	11	11.0	9.4	14.4	...	...
B females	3	24.0	2.6	1.8	...	...

male and white female suicide deaths were more in line with the prevalence of these race/sex groups in the overall county population.

The suicide rate for all groups was 15.1 per 100 000 over the study period. The suicide rate for whites (24.1) was more than three times that of blacks (7.3), while the rate for males (23.3) was nearly three times that of females (8.1). Similarly, the rate for white males (34.9) was approximately three times that of black males (11.7). White females had nearly five times the rate of black females (13.3 versus 2.8).

The age distribution was bimodal (Fig. 1). The median age for all cases was 37 years, with a range of 12 to 89 years. The median age for blacks (31) was nine years younger than whites (40), while the median age of males (36) was six years younger than females (42). The median age of white males, white females, black males, and black females was 38, 45, 31, and 31, respectively.

White males had the highest suicide rate of any race/sex group and showed a definite upward trend (Table 2). There was a significant downward trend in the black female suicide rate. Analysis of black males, white females, and all race/sex groups combined showed statistically insignificant downward trends.

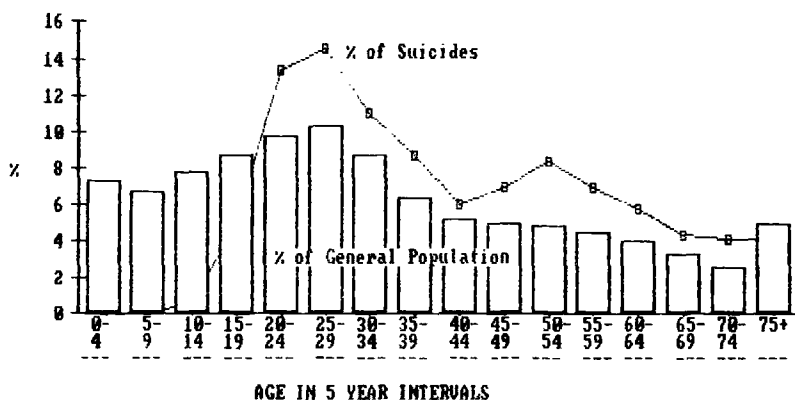
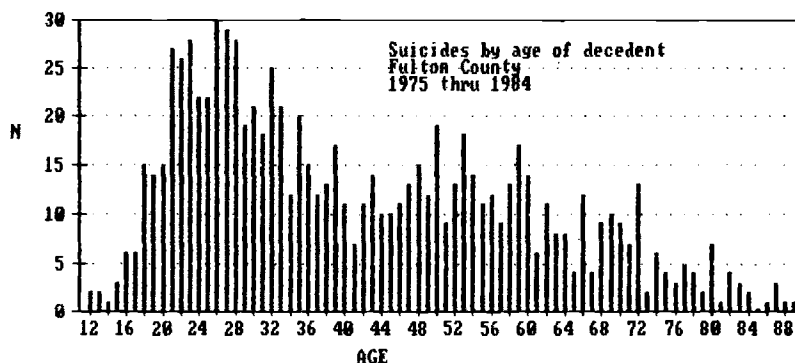


FIG. 1—Age distribution of 881 suicides (above) and representation of age groups in five-year intervals (below).

TABLE 2—Average change in suicide rate per year for a 10-year series of suicides, Fulton County, Georgia, 1975 through 1984.

Category	Suicide Rate per 100 000	Average Change in Suicide Rate per Year
All suicides	15.1	-0.185
White males*	34.9	+1.140
White females	13.3	-0.040
Black males	11.7	-0.461
Black females*	2.8	-0.268
Ages 15-19	8.3	-0.104
Ages 20-24	19.8	+0.269
W males 15-19	16.9	-0.280
W males 20-24	40.2	+1.183
W females 15-19	8.9	-0.812
W females 20-24*	16.3	+2.180
B males 15-19	6.7	+0.687
B males 20-24	21.6	-0.241
B females 15-19	2.1	+0.097
B females 20-24	6.2	-0.757
Elderly (65+)	16.4	-0.128

Note: * denotes statistically significant trend.

Ages 15 to 19

Of all victims, 5% (44 cases) were 15 through 19 years of age. Approximately two thirds were males (68.2%), 72.7% were white, 47.7% were white males, 25% were white females, 20.5% were black males, and 6.8% were black females. Of males and females 70 and 78.6% were white, respectively. Compared to their representation in the general population, white males in this age group were notably overrepresented, white females were slightly overrepresented, black males were slightly underrepresented, and black females were notably underrepresented.

Suicide rates in this age group showed considerable yearly variation overall and within specific race/sex groups. The rate for all persons age 15 to 19 years was 8.3, while rates for white males, white females, black males, and black females were 16.9, 8.9, 6.7, and 2.1, respectively. White males, white females, and the overall group showed a slightly downward trend in rate while black males and black females showed slightly upward trends. However, none of these trends were statistically significant (Table 2).

Ages 20 to 24

Of all victims (118 cases), 13.4% were 20 to 24 years of age. Approximately three fourths were males (74.6%), 65.3% were white, 49.2% were white males, 16.1% were white females, 25.4% were black males, and 9.3% were black females. Of males and females 65.9 and 63.3% were white, respectively. Compared to their representation in the general population of this age, white males were notably overrepresented, white females were slightly underrepresented, black males were slightly overrepresented, and black females were notably underrepresented. The suicide rate for persons 20 to 24 years of age was 19.8, while rates for white males, white females, black males, and black females were 40.2, 16.3, 21.6, and 6.2, respectively. White females were the only race/sex group to show a clearly increasing trend. Black males and black females showed slightly downward trends which were not statistically significant. White males and the overall group showed slightly upward but statistically insignificant trends.

The Elderly

Of suicides in the series (117 cases), 13.3% occurred in persons ages 65 years or older; 88% were white, 67.5% were male, 58.1% were white males, 29% were white females, 9.4% were black males, and 2.6% were black females. Of males and females, 86 and 92.1% were white, respectively. Compared to their representation in the general population, white males were markedly overrepresented, white females were underrepresented, black males were represented in accordance with their percentage in the population, and black females were notably underrepresented. The overall suicide rate for the elderly was 16.4. Suicide rates for white males, white females, black males, and black females were 46, 11.5, 14.4, and 1.8, respectively. A downward but statistically insignificant trend in suicide rate was observed for all elderly persons combined, black males, and black females. Insignificant upward trend were noted for whites.

Childhood Suicide

Five suicides (0.6% of total) occurred in persons fourteen years old or younger; 60% (three) were male, and 80% (four) were white; 40% (two) were white males, 40% (two) were white females, and 20% (one) was a black male. There were no black female childhood suicides. The youngest victims were a twelve-year-old white female and a twelve-year-old black male.

Seasonal Data

More suicides occurred in August and September than other months. The fewest happened in June and July. The mean number of suicides for July was 4.8, which was the only month with a mean significantly different than the mean for all months (7.3). During the ten-year period, January, February, May, August, September, and December each represented peak months for a given year, and September was the peak month in three separate years.

Method-Related Data

The methods used to commit suicide are summarized in Table 3. Of all suicides, 64.6% were accomplished with a gun. Of males and females, 69.5 and 51.5% shot themselves, respectively. The remaining males selected hanging (11.4%), drugs (8.3%), jumping

TABLE 3—*Suicides, Fulton County, Georgia, 1975 through 1984, categorized by age, race, sex, and method.*

Method	All Cases	All Ages				Ages 15-19		Ages 20-24		Ages 65+	
		WM	WF	BM	BF	M	F	M	F	M	F
% Guns	65	70	51	70	54	63	64	64	67	91	37
% Drugs	13	10	27	4	22	7	36	7	13	4	24
% Hanging	9	10	4	17	7	10	0	16	7	4	0
% Jumping	6	5	9	6	12	10	0	6	7	0	13
% CO	3	4	4	0	0	3	0	3	0	0	0
% Other	4	1	5	3	5	7	0	4	6	1	26
	100	100	100	100	100	100	100	100	100	100	100

Note: Sharp force, poison, vehicles, burning, drowning, electrocution, and noncarbon monoxide asphyxial mechanisms accounted for less than 3% of all suicide deaths.

(5.2%), and carbon monoxide (2.8%), while all other methods totaled 2.8%. Other than firearms, females chose drugs (25.7%), jumping (9.5%), hanging (4.2%), and carbon monoxide (2.9%), while all other methods for females totaled 6.1%. Drug deaths in women significantly decreased over the ten-year period, while the trend line for all other methods combined showed a significant increase. However, there was no significant increase in any single method.

Although the number of cases was small, the use of carbon monoxide significantly increased in whites, particularly white males. There were no blacks who used cutting, stabbing, nonhanging asphyxia, or carbon monoxide as a means of demise. The prevalence of hanging in black males (16.6%), blacks (14.6%), and males (11.4%) exceeded the prevalence for all suicide victims combined (9.4%), and was the second most frequent method used by black males. White males selected hanging and drugs with equal frequency, firearms being the only method used more often.

In the 15-to-19-year age group, firearms were the most frequent means used to commit suicide. Nearly two thirds of males (63.3%) and females (64.3%) used a gun. All other females in this age group died from drugs (35.7%), while the remaining males used hanging (10%), jumping (10%), drugs (6.7%), carbon monoxide (3.3%), poison (3.3%), or other methods (3.3%). Only males in this age group jumped, hanged themselves, used poison or carbon monoxide (Table 3).

In persons 20 to 24 years of age, two thirds of males (63.6%) and females (66.7%) committed suicide with guns. The remaining males chose hanging (15.9%), drugs (6.8%), jumping (5.7%), carbon monoxide (3.4%), or other mechanisms. The remaining females died from drugs (13.3%), hanging (6.7%), jumping (6.7%), poison (3.3%), and fire (3.3%). No females in this age group used carbon monoxide as a method. Fourteen of sixteen hangings (eighty-seven and one-half percent) in this age group occurred in males (Table 3).

Suicide in the elderly was accomplished with a gun 75% of the time. Of males in this age group, 91.1% shot themselves. Males who did not shoot themselves used drugs, hanging, and nonhanging asphyxial methods in 3.8, 3.8, and 1.3% of male cases, respectively. Of drug-caused suicides, 75% in the elderly occurred in females, but females were still more likely to use guns (36.8%) than drugs (23.7%). Jumping and drowning accounted for 13.2 and 7.9% of female deaths, while no males in the elderly group jumped or drowned themselves. There were no carbon monoxide suicides in the elderly. Of nonhanging asphyxial deaths, 75% occurred in females (three of four cases). In the elderly, only white males hanged themselves, but this was an uncommon event (3 of 117 cases). Of 14 suicides in black, elderly individuals, 12 (85.7%) were committed with guns, and 78.6% were male. A 77-year-old white female was the sole suicidal electrocution in the 881 cases reported in this series.

Discussion

The unadjusted suicide rate of 15.1 / 100 000 population remained relatively constant between 1975 and 1984. The median age of suicide victims was 37 years which approximates the national median age of 39.9 years [3]. Whites tended to take their own lives at an older median age than blacks (40 versus 31 years). The racial age differences were even more pronounced when white females, median age 45 years, were compared to black females, median age 31 years.

Whites accounted for over three fourths (77.5%) of suicide deaths yet composed slightly less than half of the total population. Nearly 55% of all suicides involved white males, a group amounting to less than a quarter (23.8%) of the county's population. Black females accounted for only 4.7% of total suicides but constituted the largest group in the general

population (27.3%). The incidence discrepancy in white-black suicides was most pronounced in the elderly population. Nearly 9 of 10 persons ages 65 or older who committed suicide were white. Suicides in elderly black females were distinctly uncommon and accounted for only 2 of 881 total deaths.

Whites had more than three times the suicide rate of blacks. In contrast, other authors report the suicide rate for whites and blacks to be approximately equal in urban centers [10]. Several reports have advanced theories that attribute such racial variations to economic, cultural, and psychological factors [10, 11]. In addition, underreporting of black suicides has been proposed as one explanation for racial differences [12]. Nearly 40% of all deaths of Fulton County residents are reported to the Medical Examiner, minimizing the potential effect of underreporting.

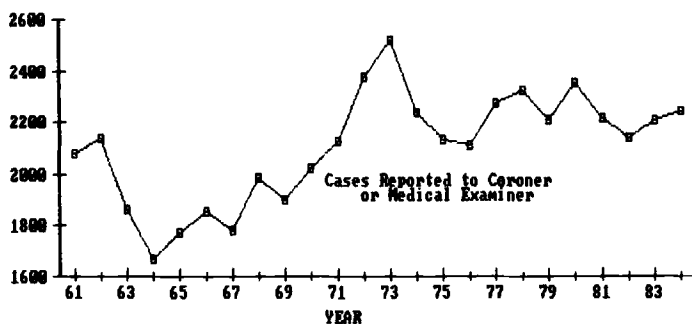
In general, regardless of age, males, whites, and white males were notably overrepresented, blacks and black females were notably underrepresented, and black males and white females were represented more in line with their representation in the general population. Black suicide victims whose suicide rate exceeded an age-matched white group included black males in their twenties (that group's suicide rate was higher than white females of the same age), and in the elderly, a finding similar to that of Davis [13]. The only group of females overrepresented was white females ages 15 to 19, who were moderately overrepresented. Suicide rates for that group were slightly higher than those most recently reported [14].

The highest suicide rates were observed among white males. Suicide rates for white males ages 25 to 29, 50 to 54, 65 and older, 20 to 24, and all ages were 52.6, 49.3, 46, 40.2, and 34.9, respectively, similar to national trends [14]. The lowest rate was observed among elderly black females (1.8). Irrespective of age, all black female groups had suicide rates far below the overall rate of 15.1. Except for ages 20 to 24 (rate of 6.2), black females in all age groups had suicide rates well below the overall rate for females (8.1) and white females (13.3). These data are in concert with those found in national vital statistics publications [14].

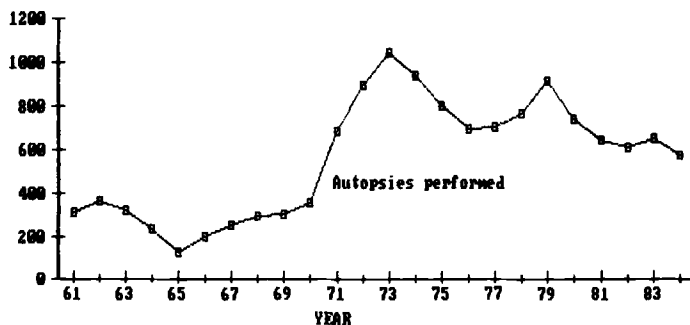
The Fulton County data did not indicate a statistically significant increasing or decreasing suicide rate in the overall 15-to-19-year age group or any of its race/sex groups. Neither did the data indicate a significant change in the overall suicide rate for persons ages 20 to 24 years. Other reports indicate that white males ages 20 to 24 have the steepest rise in suicide rate of any race/sex group [3, 7]. Although white males ages 20 to 24 in Fulton County had a high suicide rate, white females in that age group showed a significant upward trend in suicide rate while white males did not.

Suicide rates for all race/sex groups in the 15-to-19-year age range were below the rates for the same race/sex group of all ages combined. In the 20-to-24-year age group, all race/sex groups had suicide rates higher than the rates for the same race/sex group of all ages combined. In the elderly, males had suicide rates above the overall rates for their respective race, while females had rates lower than overall rates.

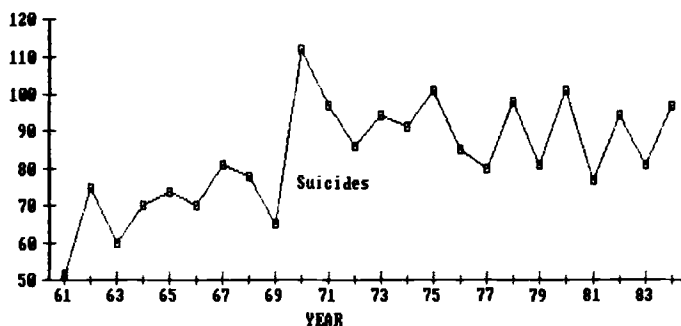
In all age groups except childhood, guns were the preferred method for committing suicide, being most frequent in elderly white males (91.1%). Although men were more apt to shoot themselves, females showed a significant trend away from drugs and used a gun more than 50% of the time. This trend has been observed nationally [3], and represents a deviation away from the less traumatic means formerly more frequent among women. Such observations may be related to the changing role of women in our society [15]. Hanging was most prevalent among young males (childhood through 24 years of age), blacks, and particularly black males, and was less prevalent in middle-aged and elderly individuals. Drug-related suicides were most prevalent in females, particularly in the 15-to-19-year old group and the elderly. Jumping was most prevalent in young males (10%) and elderly females (13.2%). Carbon monoxide and cutting/stabbing deaths were limited to whites. Methods other than



Coroner>>>>>Medical Examiner>>Present Medical Examiner System>>>>>



Coroner>>>>>Medical Examiner>>Present Medical Examiner System>>>>>



Coroner>>>>>Medical Examiner>>Present Medical Examiner System>>>>>

FIG. 2—Vertical relationship of total cases reported, autopsies performed, and suicides detected along the horizontal axis of transition from coroner to medical examiner system.

TABLE 4—Significant trends pertaining to suicide in Fulton County—real change in cases per year, based on population of 600 000 persons.

Category	Real Change
All white males	up 1.4 cases/year
All black females	down 0.5 cases/year
White females 20-24	up 0.1 cases/year
Drug deaths in females	down 1.9 cases/year
Other methods in females	up 1.9 cases/year
CO death in whites	up 0.4 cases/year
CO death in white males	up 0.6 cases/year

guns, drugs, hanging, jumping, and carbon monoxide were infrequently encountered. Diversity of methods increased with age in females, while males diversified at younger adult ages then favored guns when elderly.

Seven statistically significant trends emerged from the data, including an increasing suicide rate for all white males combined, a decreasing suicide rate for all black females combined, an increasing rate for white females ages 20 through 24, a decreasing prevalence for drug deaths in females, an increasing prevalence for nondrug-related methods in females (with no single method showing a significant increase), and increasing prevalences for carbon monoxide deaths in whites and white males. Although the trends in these categories were statistically significant, the real increase or decrease in terms of lives per year was small (Table 4). No other statistically significant trends were found for age, race, sex, or method-related data.

Regardless of any real or suspected trends, suicide is a public health problem by virtue of its present incidence. This paper serves to illustrate that analysis of local suicide data may show trends which are similar to large-scale trends in some respects, while differing substantially in other respects. Data for Fulton County, Georgia indicates that overall suicide rates have remained relatively constant between 1975 and 1984. No trends were noted which could be regarded as indicative of a short-term epidemic for any age, sex, or race-specific group. The suicide rate for white females ages 20 to 24 increased more than the rate for white males of the same age. An increase in the overall suicide rate for white males was apparently due to the combined effect of all ages, since no specific age group of white males showed significant upward trends. Specifically, suicide rates for children and teenagers were low, and did not demonstrate significant upward or downward trends. Recent data from North Carolina and Seattle show similar findings [16,17], and support data from Fulton County that reported increases in suicide rates over the past 25 years may in part be an artifact produced by replacement of coroner systems by medical examiner systems (Fig. 2). The authors encourage study and publication of suicide data on local levels to evaluate such possibilities, and to help identify characteristics of suicide which pervade all areas and are unique to certain areas. Such an approach will hopefully lead to a better understanding of the phenomenon of suicide and the ultimate identification and treatment of high-risk individuals characteristic of given geographical areas.

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