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Child and Adolescent Suicide in a Large, Urban Area: Psychological, Demographic, and Situational Factors

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ABSTRACT: We examined all completed suicides by children and adolescents in Los Angeles County who died during 1996 and 1997. There were 46 subjects, aged 11 through 16. The majority of the decedents were males and over age 14. The predominant racial group was Hispanic. There was an almost even split between firearms and hanging as the means of death. Females had a statistically significantly higher rate of prior suicide attempts than males. Over one-third left a suicide note, almost one-half were noted to be depressed, and 22% tested positive for alcohol or illicit drugs. Less than one-quarter were in mental health treatment. Eighty-seven percent had difficulty transitioning to or during adolescence; e.g., problems at home, legal and school difficulties, and relationship losses. These findings are discussed in terms of Eriksonian developmental theory. We offer recommendations for intervention and prevention of suicide.

KEYWORDS: forensic science, child and adolescent suicide

In 1960, suicide was the fifth leading cause of death among 15 through 19-year-olds; by 1993, it had risen to their third leading cause of death (1). In 1980, suicide was the seventh leading cause of death for children 5 through 14-years-old; by 1993, it had become their fifth leading cause of death (2). The Centers for Disease Control and Prevention report that, between 1980 and 1992, the suicide rate for persons aged 15 through 19 increased by 28.3% and for youth aged 10 through 14 by 120% (3). These trends have aroused considerable concern among health and mental health professionals.

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Much has been written about children and adolescents who engage in suicidal behavior (suicidal ideation, suicide threats, or attempts) and factors associated with completed suicide. Between 1959–1961 and 1990–1992, Oregon witnessed a sixfold increase in the rate of suicide for adolescents 15 through 19-years-old, resulting in the state having a 39.6% higher rate than the overall U.S. rate (4). In response, the Oregon state legislature mandated a reporting system for hospitals treating patients 17 years of age and younger for injuries resulting from suicide attempts. The hospital must notify the state's Department of Human Services and refer the patient for counseling. As a result of the mandatory reporting, the state compiled information on 124 fatal suicide attempts and published data for the years 1988–1993 (4). A more recent study was conducted by Lee, Collins, and Burgess (5), who reviewed 31 cases of pediatric suicide referred to the Charleston County Medical Examiner's Office in South Carolina from 1988 to 1998.

Our study examines completed suicides in children and young- and mid-adolescents who live in a large, culturally and racially diverse urban area. It explores demographic, psychological, and situational factors associated with suicide, and how the death occurred. In analyzing young people's suicides retrospectively, we may achieve a better understanding of child and adolescent suicide, as well as suggest interventions for preventing self-destructive behavior.

Methods

This study was conducted at the offices of the Los Angeles County Department of Coroner and under its auspices, with the approval of their Research Committee. The data collected were extracted from the case files; no interviews were conducted. The confidentiality of the decedents was protected through the use of code numbers and removal of readily identifiable information.

All suicides of individuals 16 years of age and younger who died in Los Angeles County during 1996 and 1997 were examined; the sample consisted of 46 subjects, aged 11 through 16-years-old. Case file information from the following documents was considered: Case Report, Investigator's Report, Personal Effects Inventory, Order for Release, Autopsy Report, Medical Report, Report of Toxicological Analysis, Hospital Report, Examination Protocols, Gunshot Wound Report, Gun Shot Residue Data Sheet, Forensic Laboratory Analysis Report, Certificate of Death, Case Notes, Worksheets and Remarks, Laboratory Report from Sexual Assault Kit, suicide notes, photographs, and written correspondence between the Department of Coroner and relevant parties. In

addition, we reviewed police reports and notes as well as medical notes and test results related to the death.

Data obtained from each of the 46 cases relied entirely on the sources listed above. No psychological autopsies were conducted for any of the cases prior to the final manner of death determination. Some coroner investigators may have noted the presence or absence of a particular factor, while in other cases this information may have been missing. Thus, there was no consistency regarding missing data across a psychological factor or within a case.

Hypotheses were tested by Pearson Chi-square tests of goodness-of-fit and of independence.

Results

The final determination of suicide as the manner of death was made by the Department of Coroner. One case was contested by the parents of the decedent; however, the manner of death was not changed.

Demographic and Situational Information

Of the 46 decedents, 34 (74%) were male. Three (7%) subjects were 11-years-old, two (4%) were 12-years-old, nine (20%) were 13-years-old, two (4%) were 14-years-old, eleven (24%) were 15-years-old, and 19 (41%) were 16-years-old. Their grades in school ranged from fifth to eleventh (median = ninth grade). Prior to their death, 34 (74%) subjects attended school that day or on the most recent scheduled school day, two (4%) attended school within the week, three (6%) attended school within one week to one month, and data on school attendance for seven (15%) subjects were missing.

Eighteen (39%) subjects were Hispanic, fourteen (30%) were white, seven (15%) were African-American, and seven (15%) were Asian or Pacific Islander. We compared the subjects' racial distribution with U.S. Bureau of the Census estimates of the population of Los Angeles County for 1996, stratified by race, age, and sex (6). Our data and the census data are presented in Table 1. A Chi-square test of goodness-of-fit, comparing our observed frequencies with those predicted by the census data was not statistically significant ($\chi^2 = 13.991$, $df = 9$, $p = 0.123$). Thirty-six (78%) subjects were born in the United States, and only four (8%) had lived in the U.S. for less than three years.

At the time of the subjects' death, 39 (85%) lived at home with one or both parents, two (4%) each lived with a legal guardian, a

TABLE 1—Race and sex of child and adolescent suicides.

	Suicides in Study Ages 10–16 Jan. 1, 1996– Dec. 31, 1997		Population of LA County Ages 10–19 July 1, 1996	
	N	%	N	%
Males				
White	9	(20)	157 621	(12)
African-American	6	(13)	82 294	(6)
Asian & Pacific Islander	6	(13)	85 523	(7)
Native-American	0	(0)	4874	(<1)
Hispanic	13	(28)	330 636	(26)
Females				
White	5	(11)	145 654	(11)
African-American	1	(2)	78 717	(6)
Asian & Pacific Islander	1	(2)	80 964	(6)
Native-American	0	(0)	4570	(<1)
Hispanic	5	(11)	305 589	(24)

TABLE 2—Information regarding the suicides.

	N	%
Means		
Firearm	18	39
Hanging	17	37
Jump from cliff or building	6	13
Overdose of drugs	4	9
Carbon monoxide poisoning	1	2
Place of Death		
Inside decedent's residence	23	50
Inside decedent's garage	5	11
Outside decedent's residence	4	9
Outside, remote area	4	9
Building rooftop	2	4
Street	2	4
Residence other than decedent's	2	4
Psychiatric institution	2	4
Car	1	2
Datum missing	1	2
Presence of Others at Place of Death		
Decedent alone in room, others present in residence	18	39
Decedent alone in residence or garage	11	24
Others present in remote area	4	9
Others present in non-remote area	4	9
Decedent alone in non-remote area	3	7
Decedent alone in yard	2	4
Decedent alone on rooftop	2	4
Decedent alone in apartment walkway	1	2
Datum missing	1	2

neighbor, or at a psychiatric institution, and the living situation datum of one (2%) subject was missing. The parents of 22 (48%) subjects were married, ten (22%) were divorced, and three (7%) were widowed; the parents' marital status data for 11 (24%) subjects were missing.

Information Regarding the Death

Data on the means of death, the place of death, and the presence of others at the time of the suicide are presented in Table 2. Of the firearm deaths, 14 (78%) used a revolver and four (22%) used a rifle; 16 (89%) died from a gunshot wound to the head and two (11%) died from a wound to the chest. There were two (4%) Russian roulette deaths. There were two pairs (9%) of adolescents who committed suicide together. One pair was a 15-year-old girlfriend and a 16-year-old boyfriend who jumped from an oceanside cliff. Their suicides received local media coverage. Two months later, two 15-year-old female friends jumped from a nearby oceanside cliff.

Psychological Factors

Data on history of psychiatric disorders, mental condition noted at the time of death, medical or psychological treatment at the time of death, and prescribed medications at the time of death are presented in Table 3.

The decedents' histories of medical or psychological treatment were based on verbal reports by persons known to the decedent (e.g., family, friends, doctors, teachers) and given to coroner investigators and staff. In one (2%) case, the subject was medically hospitalized as a result of a car accident; in two (4%) cases of medical outpatient treatment, one subject was treated for allergies, and another for slashed wrists; in four (9%) cases of psychiatric hospitalization, two subjects were admitted because of a suicide attempt, one suffered from depression and drug abuse, and one suffered

TABLE 3—Decedents' psychological factors.

	N	%
History of psychiatric disorder		
Alcohol/substance abuse	10	22
Major depressive disorder	6	13
Depression and substance abuse	3	7
Substance-induced psychotic disorder	2	4
Attention-deficit/hyperactivity disorder	1	2
Positive history but diagnosis missing	2	4
Mental condition noted near time of death		
Depressed	22	48
Depressed and intoxicated	7	15
Anxious and fearful	4	9
Depressed and psychotic	1	2
Anxious, fearful, and intoxicated	1	2
Medical or psychological treatment at time of death	11	24
Prescribed medications at time of death	8	17

from major depression; and in eight (17%) cases of psychiatric or psychological outpatient treatment, five subjects were treated for depression, one for family problems, one for making the transition from juvenile detention to living in the community, and one for attention deficit/hyperactivity disorder.

The records indicated that nine (20%) subjects had previously attempted suicide. Four of the 25 males (16%) and five of the nine females (56%) had a history of suicide attempts. A Chi-square test of independence of sex and history is statistically significant ($\chi^2 = 5.32$, $df = 1$, $p = 0.021$); females had a statistically significantly higher rate of previous suicide attempts. The prior suicide attempts consisted of five (56%) subjects who slashed their wrists, two (22%) who overdosed on medications, and one (11%) who hung himself; the means datum for one subject was missing. The time intervals between the subject's previous attempt and death included just prior to death, one day, one week, two to three weeks, six months, and four years. A history of suicide ideation was noted in 20 (43%) cases; the time intervals for suicide ideation preceding death included just prior to death, one day, two days, one week, one month, one year, three years, and five years. Three (7%) cases revealed a history of suicide or attempted suicide by family members, and in two (4%) cases, there was a suicide or attempted suicide by others known to the decedent.

Toxicology screens for the presence of alcohol at the time of death were performed on all subjects; however, drug screens were not conducted on all cases. Data were missing on methamphetamine, cocaine, barbiturates, opioid, and THC use in two cases; on PCP use in three cases; and on LSD use in four cases. Prescription drugs were also detected. For the screens that were performed, we found that fifteen (33%) subjects tested positive for the presence of alcohol, illicit drugs, and/or medications; the data are presented in Table 4.

Psychological stressors are related to suicide. Forty (87%) subjects had difficulty transitioning to or during adolescence, as demonstrated by problems at home, legal and school difficulties, and losses of significant relationships. The psychological stressors noted in the case files are presented in Table 5.

The records also indicated that 25 (54%) subjects had a serious argument with a relative, significant other, friend, or roommate, ranging from less than 1 h to 1 day before their deaths. In 15 cases, the decedent's arguments were with their parents. Six (13%) decedents demonstrated physical aggressiveness near the time of their death.

TABLE 4—Toxicology screens of decedents at time of death.

	N	%	Toxicology Levels
Single substance or prescription drug			
Alcohol	3	7	0.03, 0.06, 0.12 g%
Methamphetamine	2	4	0.16, 1.8 $\mu\text{g/mL}$
Cocaine	2	4	0.14,* 0.36 $\mu\text{g/mL}$
Fluoxetine	2	4	0.34, 1.3 $\mu\text{g/mL}$
Paroxetine	1	2	0.27 $\mu\text{g/mL}$
Ritalin	1	2	<4.00 ng/mL
Multiple substances or prescription drugs			
Alcohol, PCP	1	2	0.04 g%, 0.007 $\mu\text{g/mL}$
Alcohol, procardia, diltiazem	1	2	0.03 g%, 151 ng/mL, 1.9 $\mu\text{g/mL}$ *
Nortriptyline, phenobarbital, paroxetine	1	2	0.41, 2.5, 0.12 $\mu\text{g/mL}$ *
Methamphetamine, marijuana, free codeine, free morphine	1	2	0.05 $\mu\text{g/mL}$, 33 ng/mL, 6.6, 0.27 $\mu\text{g/mL}$ *

* Overdose, ruled means of death.

TABLE 5—Psychological stressors related to decedents' suicides.

	N	%
Change of residence		
Living away from parents	5	11
Moved recently to Los Angeles	4	9
Placement in psychiatric institution	2	4
Legal difficulties		
Citations by police or feared arrest	4	9
On probation and having problems	3	7
Long-term problems at home		
Fought chronically with parents	10	22
Felt rejected by parents or family	5	11
Other	14	30
Disciplinary crisis		
"Grounded" by parents	4	9
Other	6	13
School difficulties		
Suspended from school	4	9
Failing classes	3	7
Truant	1	2
Placed in special education	1	2
Parent-Teacher conference scheduled	1	2
Off-track schooling	1	2
Wanted to quit school	1	2
Needed "in-home" assistance	1	2
Difficulty transitioning from juvenile hall to community	1	2
Loss of significant relationship		
Break-up with girlfriend or boyfriend	6	13
Parents divorced	2	4
Death of parent or relative	2	4
Had to leave family and reside elsewhere	1	2
Beloved pet poisoned	1	2

Other Data Related to Suicide

Additional factors associated with suicide were noted in the records. One (2%) decedent made preparations for her death by telling her siblings what songs she wanted at her funeral and having her friends promise that they would attend. Eleven (24%) subjects gave suicide warnings shortly before their death. In nine cases, the warnings were expressed to family members or friends, with the warnings ranging from that day to within two days of death.

TABLE 6—Themes found in suicide notes.

Themes	N	%
Expressions of love	13	76
Expressions of emotional pain	8	47
Apology for committing suicide	7	41
Giving instructions to others	7	41
Feelings of low self-esteem	7	41
Belief that they were going to a better place	5	29
Belief that they had no alternative to suicide	5	29
Expressions of anger	4	24
Feeling misunderstood by others	3	18
Apology for past deeds	2	12
Lost desire to live	2	12
Expressions of being unable to live without a loved one	1	6
Saying goodbye	1	6

NOTE: Numbers sum to more than 17 and percentages sum to more than 100% because many notes contained multiple themes.

Of the 46 subjects, 17 (37%) left a suicide note. The themes in the notes are summarized in Table 6.

Individual Case Synopses

In addition to tallying the data regarding demographics, psychological factors, and other indices related to suicide, we analyzed each case to assess a plausible explanation for the decedent's death. In 38 (83%) of the 46 cases, there were sufficient data obtained from the records to identify a psychological reason for the suicide. This information was derived through suicide notes or communications made by the youth to others before their death. In five (11%) additional cases, a factor associated highly with suicide (e.g., depression, intoxication, family problems, legal difficulties, or a previous suicide attempt) was present.

Ten decedents were under the influence of alcohol and/or illicit drugs when they died; eight were males, the youngest of whom was 14-years-old, and two were females, one 13 and one 15-years-old. There was no statistically significant difference in the rate of being under the influence between males and females ($\chi^2 = 0.25$, $df = 1$, $p = 0.620$). Of these ten subjects, seven were both intoxicated and depressed at the time of their death.

Nineteen subjects, twelve males and seven females, experienced one identified stressor. The stressors were family problems, feelings of hopelessness, relationship problems, school difficulties, involvement with the legal system, and feelings of rejection by their family.

Twenty-three subjects, 19 males and 4 females, experienced multiple stressors. In addition to the stressors listed above, change of living situation and fear of pregnancy were identified.

There was no statistically significant difference between males and females in the frequency of no, single, or multiple identified stressors ($\chi^2 = 2.04$, $df = 2$, $p = 0.360$).

Discussion

Some investigators have suggested that whites have a higher risk of suicide than nonwhites (7–9). The racial composition of our sample might imply that race is a risk factor and that Hispanics have a higher risk of suicide than whites; however, before a variable can be declared a risk factor, the frequencies of that variable among the decedents must be compared with the frequencies in the population where they lived. We did not find any statistically significant difference between the racial composition of our sample

and the racial composition of 10- through 19-year-olds in Los Angeles County in 1996, where Hispanics comprised 49.8% of the population. Therefore, race cannot be considered a risk factor in this population.

We examined the possibility of temporal or geographic clustering, but found nothing remarkable other than the two cases of joint suicides by jumping from oceanside cliffs noted above.

Unlike the recent Oregon (4) and South Carolina (5) studies, where firearms represented the predominant means used by children and adolescents to commit suicide, we found an almost even split between firearms and hanging accounting for the majority of deaths. Our sample also had much higher rates of suicidal ideation and the presence of a note than found in the South Carolina study.

Our findings were consistent with prior studies of child and adolescent suicides on several other variables, confirming the consistency of such factors as potential risk markers for suicide. Males and older aged youth (over 14), as well as suicidal ideation near the time of death and prior suicide attempts, characterize youth who commit successful suicides (4,5,10–16). Mood disorder, namely depression, and substance abuse have also been recognized as factors strongly associated with suicidal behavior (10,12,14,16–23).

A history of sexual abuse has been cited as a factor linked to child and adolescent suicidal behavior (24). In our study, a sexual assault kit was conducted initially on a limited number of subjects as a pilot project. Since no meaningful results were obtained from the analyses, no further laboratory examinations were conducted on the remaining subjects.

While this study was a retrospective analysis of suicides by youth, with no special effort made by the Department of Coroner's investigators to uncover reasons for the suicide, we were able to infer some factors which may have been related to the deaths. The majority of the decedents were having problems at home near the time of the suicide. These relational characteristics have been linked to teenage suicidal behavior (25). Other important factors regarding the decedent's family are the youths' perceptions of a lack of emotional support from their families and conflict in their homes (26–29).

We found other life stressors associated with adolescent suicide (10,27,29–32). The loss of a significant person or pet seemed to be an important factor in the lives of these youth, causing them to feel depressed and hopeless. In addition, disciplinary events or involvement in the criminal justice system led to feelings of fear, anxiety, and shame. A recent change of residence was also perceived by the subjects as being disruptive and distressing, given the loss of support from being close to familiar persons and surroundings.

The majority of the suicides in our study occurred in or around the decedent's home, and many adolescents expressed a suicide warning prior to their death. Notably, most of the adolescents were at school, either on the day of their suicide or on the last possible school day. These findings imply the suicides were far from being acts occurring in an isolated setting and by withdrawn children; these minors were engaged with others prior to their deaths. This suggests that lethal self-destructive behavior by adolescents may be more preventable than has been assumed. Programs designed to educate teachers, counselors, and other school staff, as well as students, about warning signs related to adolescent suicide should help detect youth at risk. In addition, the school may be an appropriate place for developing peer support programs, and other interventions, when students learn of classmates who have attempted or completed suicide. While it may be argued that discussing this topic may influence vulnerable juveniles to think about or engage

in self-injurious behavior, an appropriate forum should be available for youth to learn about approaches and resources for ameliorating problematic psychological and situational issues.

The etiology of child and adolescent suicide is a complex topic beyond the scope of this paper. However, the data from the suicide notes left by the subjects point to some common developmental themes for youth. These themes involved expressions of emotional pain, love for those being left behind, an apology for their act, and expressions of low self-esteem. Erickson (33) identified the key developmental struggle in puberty and adolescence as involving that of identity versus role diffusion (confusion). This period of youth involves the transitions from childhood to adolescence, and from adolescence to early adulthood. The successful navigation of these transitions involves the adolescent's ability to develop a sense of self as an emerging adult, taking on the task of moving out of childhood, forming a sexual and personal identity, and developing the basis for living in the adult world. Erikson (34) postulated that every adolescent is likely to go through some serious struggle sometime; those who fail to win the struggle against identity confusion may experience feelings of being or wanting to be "nobody," which may lead to withdrawal from reality and, in extreme cases, mental illness or suicide.

The themes in the suicide notes, and in the verbal warnings the subjects made to others prior to their death, suggested that the youth who committed suicide had serious difficulty in overcoming adaptively their struggles and in developing a solid sense of self. Their emotional distress and suicide ideation speak to the strong sense of confusion and hopelessness dominating their lives. Adolescence is a time of great physical and psychological upheaval. If a young person cannot rely on adults important in their lives who will let them experiment, support and promote them, and correct and guide them, the adolescent may not be able to correct the inner confusion they experience during this time (34). It could be speculated that, for these minors, their lack of support from significant adults and poor coping resources to deal with adolescent conflicts caused and perpetuated depression and a sense of hopelessness about their ability to adapt to the increasing demands and conflicts in emerging adulthood. Overholser and his colleagues (35) note that programs designed to identify and remediate self-esteem deficits at an early stage could reduce the risk of adolescent suicide. Treatment should also focus on the minor's method of coping with stress. What are their interpersonal skills such that they can communicate to others their distress and needs? Do they have the ability to solve their problems, control their impulses, tolerate frustration, and reexamine their situation?

A strong social support system is an essential component in reducing suicide risk. Minors need to have others whom they trust and who are supportive of them. Because familial conflicts are so prevalent in cases of adolescent suicide, family members may not be aware of the minor's problems or have the ability to help them. Indeed, the family conflicts may stem from problems that other family members are experiencing; consequently, these persons may be so preoccupied with their own needs, or those of other members, that the adolescent's issues are lost (36). Brent and Perper (37) advocate treatment of the entire family system to reduce suicide risk. This type of intervention, particularly when viewed in the context of the Eriksonian model, would have the advantage of identifying the adolescent's familial relationship conflicts, and the extent to which such conflicts add to role confusion and difficulty building a bridge into adulthood. Further, this intervention could provide the family with instruction on how to recognize the salient factors related to adolescent suicide. The issue of family interven-

tion is of particular note, given that almost half of our sample had arguments with family members prior to their death.

Brent and his colleagues (38) indicate that particular attention should be paid to youth who are facing legal or serious disciplinary crises, and that suicide ideation expressed under these situations should be taken seriously, even in the absence of mood or other psychiatric psychopathology. Our data suggest that even more minor conflicts, such as arguments with siblings, parents, or peers, can be a trigger for suicide; therefore, emotional distress stemming from such conflicts in adolescents should be taken seriously.

It has been recommended that youth who present with factors strongly linked to suicide should have access to firearms restricted (12,38-41). The American Academy of Pediatrics has advocated for the absence of guns from homes and communities because it is the most effective measure to prevent firearm-related injuries (42). While absence or restriction of access to firearms are certainly important preventive measures, we found that there were almost equal numbers of subjects in our study who committed suicide by hanging themselves as those using a firearm. The hangings did not take place in remote settings; rather, they occurred in or around the minor's residence. Both of the subjects who were psychiatrically hospitalized when they died committed suicide by hanging. These findings emphasize the need for family and professionals to pay particular attention to youth's suicidal risk factors and be vigilant about not leaving the person unattended. If persons are intent on dying, they can find an available means to carry out the lethal act.

Pediatricians, family practitioners, and other primary care providers may be the health care professionals most likely to see the adolescent professionally, given our finding that less than one-quarter of the subjects were in mental health treatment at the time of their death. The American Academy of Pediatrics' Committee on Adolescence recommends that pediatricians be cognizant of risk factors associated with adolescent suicide and ask questions related to these factors during their routine history taking (43). All health care practitioners should be aware that an adolescent who appears angry, isolated, or is having school or peer difficulties may be reacting to family conflicts, and that these behaviors may be early signs of the type of emotional distress that can develop into suicide ideation, attempts, and completion. These health providers may want to employ the strategy of recommending family intervention as a preventive method. At least, these professionals may be able to foster a sense of trust in the minor so as to provide support and direction.

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