Drug Use and Suicide Ideation and Behavior among North Carolina Public School Students

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ABSTRACT

We used data from 3064 respondents to the 1990 North Carolina Youth Risk Behavior Survey to examine the relationship between adolescent drug use and suicide ideation and behavior. Principal components analysis followed by varimax rotation was performed separately on the drug use and suicide items. Correlation coefficients computed between the two sets of factor scores and comparison of mean drug use factor scores revealed that drug use, particularly of crack/cocaine, was related to increased suicide ideation and behavior. (*Am J Public Health.* 1992; 82:870–872)

Introduction

Suicide, now the second leading cause of death among US youth aged 15 to 19,[1] is a preeminent concern among health professionals seeking to improve the health status of adolescents in the United States.[2] The design of effective intervention strategies to address this problem depends on the identification of risk factors related to suicide ideation and behavior. Among the risk factors currently acknowledged to be in some way linked to adolescent suicide are previous suicide attempts, illness, family violence, precipitous life events, and substance abuse.[3]

The purpose of this study was to determine if a relationship existed between suicide ideation and behavior and substance abuse among adolescents attending North Carolina public secondary schools and, if so, to delineate the nature of that relationship.

Methods

These data were collected as part of a larger study of health risk behaviors of North Carolina public school students.[4] The Youth Risk Behavior Survey (YRBS)[5] was administered during May 1990 to students in 9th- and 12th-grade classes that had been randomly selected using a self-weighting two-stage cluster sampling procedure. The survey instrument consisted of 61 forced-choice items, 4 of which addressed demographic questions; the remaining 57 items dealt with student behavior related to (1) violence; (2) tobacco, alcohol, and drug use; (3) exercise; (4) nutrition; and (5) intentional and unintentional injury.

The responses were randomly divided into two subsamples. For each subsample, responses to 13 questions dealing with drug use and 4 questions about suicide ideation and behavior were analyzed. Descriptive statistics were generated for the 17 questions of interest, and principal component factor analysis, with varimax rotation, was applied separately to the drug use and suicide questions.[6] Relationships between the extracted factors were then determined through correlational analysis and comparisons of mean factor scores. Because the results of the cross-validation analyses were identical, all data were pooled to generate the reported results.

Results

The validity of the self-report data was substantiated by comparison with results of recent surveys of comparable populations. Drug use data were compared with those collected approximately 1 year earlier in the statewide Alcohol and Drug Defense (ADD) survey.[7] Because no previous statewide survey of suicide ideation and behavior had been conducted, these results were compared with those of the National Adolescent Student Health Survey.[8] Although these comparisons were imprecise because of differences in item wording and grade range groupings from which data were collected, the North Carolina YRBS (NCYRBS) data closely paralleled the results of the two comparison surveys. For example, 2.3% of the students in grades 7 through 12 reported having used cocaine within the previous 30 days in the ADD survey, compared with 2.4% of 9th and 12th graders in the NCYRBS. In the ADD survey, 13.6% of the students in grades 7 through 12 reported having used marijuana within the previous 30 days; this response was given by 11.0% and 14.0% of 9th and 12th graders, respectively, in the NCYRBS. Thirty-three percent of the NCYRBS respondents reported having thought about suicide and 4.5% reported that they had actually made a suicide attempt in the 12

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TABLE 1—Results of Principal Components Analysis with Varimax Rotation of Response to Thirteen Drug Use Items

Question	Factor 1 Cocaine/Crack	Factor 2 Alcohol	Factor 3 Marijuana	Factor 4 Needle Drugs
During your life, on how many occasions have you used cocaine in any form (including powder, crack, or freebase)?	.91	...	...	...
During the past 30 days, on how many occasions have you used cocaine in any form (including powder, crack, or freebase)?	.91	...	...	...
How old were you when you used cocaine in any form (including powder, crack, or freebase) for the first time?	−.74	...	...	...
During your life, on how many occasions have you used the *crack* or *freebase* form of cocaine?	.88	...	...	...
During the past 30 days, on how many occasions did you drink alcohol (including wine, wine coolers, beer, liquor, or mixed drinks)?	...	.88	...	...
During the past 30 days, how many times did you have five or more drinks on one occasion? (A "drink" is a glass of wine, a wine cooler, a bottle or can of beer, a shot glass of liquor, or one mixed drink.)	...	.81	...	...
During your life, on how many occasions did you drink alcohol (including wine, wine coolers, beer, liquor, or mixed drinks)?	...	.85	...	
How old were you when you had your first drink of alcohol (other than a sip)?	...	−.77	...	...
During your life, on how many occasions have you used marijuana?	...	...	.86	...
During the past 30 days, on how many occasions have you used marijuana?	...	...	.65	...
How old were you when you used marijuana for the first time?	...	...	−.81	...
During your life, on how many occasions have you used any other type of illegal drugs such as LSD, PCP, MDMA, "Ecstasy," mushrooms, speed, or heroin?	...	...	.58	...
During your life, have you ever injected (shot up) any drug not prescribed by a doctor, such as steroids, cocaine, amphetamines, or heroin?	...	...	...	.92

Note. Ellipses indicate that factor loading is less than 0.5 in magnitude.

months prior to survey administration. Approximately 30% of respondents (aged 12 to 19) to the NASHS reported to have seriously thought about committing suicide, with 18% of girls and 11% of boys reporting to have actually attempted suicide.[8] Detailed tables of the North Carolina YRBS data are available from the authors upon request.

Table 1 contains results of the exploratory factor analysis of the 13 drug use items. On the basis of observed eigenvalues, four factors were extracted by means of a principal components algorithm and then subjected to varimax rotation. Factor 1 (cocaine/crack) is made up of four questions dealing with cocaine and crack use. Factor 2 (alcohol) comprises four questions dealing with patterns of alcohol use. Factor 3 (marijuana) is composed of three questions dealing with marijuana use and a single item dealing with the use of a variety of illicit substances including LSD, heroin, and mushrooms. Factor 4 (needle drugs) consisted of a single question dealing with use of injectable drugs. Factor analysis of the four suicide questions yielded a two-factor solution (Table 2). Factor 1 is associated with suicide ideation and intention and factor 2 with suicide behavior and the severity of its outcome.

TABLE 2—Results of Principal Components Analysis with Varimax Rotation of Responses to Suicide Ideation/Behavior Items

Question	Factor 1 Suicide Ideation	Factor 2 Suicide Behavior
During the past 12 months, have you ever *seriously* thought about attempting suicide?	.89	...
During the past 12 months, did you make a specific plan about how you would attempt suicide?	.84	...
During the past 12 months, how many times did you actually make a suicide attempt?	...	.76
If you attempted suicide during the past 12 months, did that attempt result in an injury or poisoning that had to be treated by a doctor or nurse?	...	.93

Note. Ellipses indicate that factor loading is less than 0.5 in magnitude.

Correlation coefficients computed between the drug factor and suicide factors were as follows: suicide ideation/intention with cocaine/crack, r = −.08 (P = .0001); with alcohol, r = −.16 (P = .0001); with marijuana, r = −.10 (P = .0001); with needle drugs, r = .08 (P = .0001); and suicide behavior/severity with cocaine/crack, r = .32 (P = .0001); with alcohol, r = .08 (P = .0001); with marijuana, r = .11 (P = .0001); with needle drugs, r = −.07 (P = .0003). The valence of these coefficients is a function of the directionality of the questions loading on each factor. In each case the valence is consistent with the hypothesis that increased drug use,

TABLE 3—Mean Drug Use Factor Scores for Three Suicide Questions

Question[a]		n	Cocaine/Crack[b]	Alcohol[b]	Marijuana[b]	Needle Drugs[c]
During the past 12 months, have you ever *seriously* thought about attempting suicide?	Yes	712	0.17[d]	0.28[d]	0.17[d]	−0.11[d]
	No	2148	−0.05	−0.09	−0.06	0.04
During the past 12 months, did you make a specific plan about how you would attempt suicide?	Yes	417	0.40[d]	0.35[d]	0.25[d]	−0.23[d]
	No	2473	−0.07	−0.06	−0.04	0.04
If you attempted suicide during the past 12 months, did that attempt result in an injury or poisoning that had to be treated by a doctor or nurse?	Yes	57	1.93[d]	0.66[d]	0.82[d]	−0.41
	No	2675	−0.04	−0.03	−0.01	0.02

[a]These questions were prefaced by the following statement: Some people sometimes feel so depressed and hopeless that they may even consider attempting suicide, that is taking some action to end their own life.
[b]Higher scores for the cocaine, alcohol, and marijuana factors represent greater frequency of use.
[c]Lower scores for the needle drugs factor represent greater frequency of use.
[d]Differences in mean scores are significantly different ($P < .01$) in these cells.

early onset of drug use, or both is associated with a greater tendency to think about or actually attempt suicide. This pattern of relationships was supported by comparison of mean drug factor scores as a function of responses to the individual suicide questions. Significant differences existed between mean factor scores for all but one case (needle drug factor and severity of suicide attempt) (Table 3). Correlation coefficients calculated between drug factor scores and the number of reported suicide attempts were as follows: cocaine/crack, $r = .29$ ($P = .0001$); alcohol, $r = .13$ ($P = .0001$); marijuana, $r = .11$ ($P = .0001$); and needle drugs, $r = -.09$ ($P = .0001$).

Discussion

The relationship between substance abuse and suicide ideation and behavior has been explored by a number of researchers. Substance abuse appears to be associated with more frequent suicide ideation and suicide attempts, particularly in retrospective studies among high-risk youth.[9] Our study generalizes these relationships to noninstitutionalized public school youth and further specifies the nature of the substance abuse–suicide relationship.

In this study the use of cocaine/crack was more closely associated with a self-reported incidence of attempted suicide than was use of alcohol, marijuana, or needle drugs. This effect may have been due to a differential influence produced by the substance of choice or to a tendency of individuals with a heightened susceptibility to the emotional conditions leading to attempted suicide to use cocaine/crack. Use of cocaine/crack, alcohol, or marijuana was significantly related to a student's report of seriously thinking about attempting suicide or making specific suicide plans.

A precise cause-and-effect relationship between drug use and suicide behavior cannot be established from these data. Information concerning previous life events, family violence, illness, and other potential confounding factors was not available in the NCYRBS data base. The results of this study do, however, agree with the findings of previous researchers linking substance abuse to adolescent suicide. Recognition of this relationship is important for health educators involved in designing intervention programs for high-risk youth as well as for the general school population. □

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