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

W. Michael Felts, PhD, Thomas Chenier, PhD, and Robert Barnes, EdD

Introduction

Suicide, now the second leading cause of death among US youth aged 15 to 19, is a preeminent concern among health professionals seeking to improve the health status of adolescents in the United States. 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.

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. The Youth Risk Behavior Survey (YRBS) 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. 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. 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. 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

W. Michael Felts and Robert Barnes are with the Department of Health Education and Thomas Chenier is with the Biostatistics Research Program, East Carolina University, Greenville, NC.

Requests for reprints should be sent to W. Michael Felts, PhD, Department of Health Education, East Carolina University, Greenville, NC 27858.

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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. 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.

Correlation coefficients computed between the drug factor and suicide factors were as follows: suicide ideation/intention with cocaine/crack, $r = -0.08$ ($P = .0001$); with alcohol, $r = -0.16$ ($P = .0001$); with marijuana, $r = -0.10$ ($P = .0001$); with needle drugs, $r = 0.08$ ($P = .0001$); and suicide behavior/severity with cocaine/crack, $r = 0.32$ ($P = .0001$); with alcohol, $r = 0.08$ ($P = .0001$); with marijuana, $r = 0.11$ ($P = .0001$); with needle drugs, $r = -0.07$ ($P = .0003$). 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,
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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