Victimization by Peers and Adolescent Suicide in Three US Samples

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Objective To investigate the association between victimization by peers and suicidal ideation and behavior in 3 samples of adolescents in the United States.

Study design This study was a secondary analysis of data from 3 cohorts of adolescents: (1) a nationally representative survey of adolescents in grade 7 through 12, Wave I of the National Longitudinal Study of Adolescent Health, conducted by the Carolina Population Center in 1994-1995; (2) a nationally representative survey, the Youth Risk Behavior Surveillance System, conducted by the Centers for Disease Control and Prevention in 2005; and (3) a survey in a high-risk community conducted by the Centers for Disease Control and Prevention in 2004.

Results Controlling for differences in age, sex, race/ethnicity, and depressive symptomology, adolescents reporting more frequent victimization by peers were more likely to report suicidal ideation and suicidal behavior. Adjusted odds ratios ranged from 1.67 (95% confidence interval [CI] = 1.30-2.15) to 3.83 (95% CI = 2.78-5.27) for the different outcome measures and data sets.

Conclusions Our results provide further support for the need for effective prevention of peer victimization. Inclusion of questions about victimization experiences might aid formal and informal suicide screening efforts. *(J Pediatr 2009;155:683-8)*.

Suicide is currently the third-leading cause of death among adolescents,[1] with 1 in 12 high school students having engaged in nonfatal suicidal behavior and 1 in 6 having seriously considered suicide.[2] Most prevention approaches focus on precipitating or proximal risk factors for suicidal behavior (eg, previous suicidal behavior, barriers to help-seeking, access to lethal means) or on identifying, referring, and treating at-risk individuals.[3] Thus, these programs do not address the underlying factors that cause new individuals to become at risk for suicide. A better understanding of these factors will provide insight into promising primary prevention strategies.

One risk factor that regularly generates attention after an adolescent suicide is bullying. For example, in the early 1980s, high-profile media attention on 3 cases of bullying-related youth suicide in Norway prompted Norway's Ministry of Education to mount a national campaign against school bullying, including implementation of a prevention program in 42 schools.[4] At that time, there were no published studies of peer victimization and suicide. More recently, international studies[5-17] and a few US studies with samples of limited generalizability[18-23] have documented an association between peer victimization experiences and suicidal thoughts and/or behaviors. The present study was designed to explore the association between victimization by peers and suicide using more diverse and representative samples of US adolescents.

Previous research has consistently shown that victims of bullying are more likely to self-report and exhibit a range of internalizing symptoms than nonvictims.[24-29] A study of monozygotic twins who were discordant for victimization status indicated that being bullied contributes uniquely to internalizing problems and does not appear to be an artifact of genetic or family environment predisposition.[30] Internalizing problems are, in turn, frequently highlighted in the suicide prevention literature as indicators of or antecedents to suicidal thoughts, plans, and behaviors.[31] Furthermore, adolescents who are victimized by peers are less likely to utilize mental health services than those who are not victimized,[32] suggesting that many youth at risk for suicide may not receive services that could prevent them from engaging in suicidal behavior. Thus, the central hypothesis tested was that being victimized by peers is significantly and uniquely associated with an increased likelihood of suicidal ideation and behavior in adolescence.

Methods

We conducted parallel analyses with 3 data sets, selected for their inclusion of items related to suicide and victimization by peers and for diversity of the samples: 2 nationally representative samples of adolescents and 1 large sample of adolescents from a high-risk community. All 3 data sets were collected under the auspices of the institutional review boards of the respective institutions. For this analyses, only deidentified data were made available to the investigators; thus, no additional institutional review was required.

CDC	Centers for Disease Control
CI	Confidence interval
YRBS	Youth Risk Behavior Surveillance System

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Table I. Operationalization of key variables in each data set

	Add Health (Wave 1)	YRBS (2005)	Linkages
Depressive symptoms	Modified centers for Epidemiological Studies depression scale (19 items; $\alpha = 0.86$)	Felt sad or hopeless every day for at least 2 weeks in past 12 months (no/yes)	Modified Depression Scale (6 items; $\alpha = 0.85$)
Victimization by peers	Frequency of physical victimization by peers in past 12 months; for examples, "you were jumped" or "someone pulled a gun or knife on you" (4 items; $\alpha = 0.66$)	Number of times threatened or injured on school property in past 12 months (0 vs 1 or more times)	Frequency of physical victimization by peers in past 12 months; for example, someone your age and sex "hit or slapped you" or "threatened or injured with knife or gun" (9 items; $\alpha = 0.90$)
Suicidal ideation	Seriously thought about committing suicide in past 12 months (no/yes)	Seriously considered attempting suicide in past 12 months (no/yes)	Seriously considered attempting suicide in past 12 months (no/yes)
Suicidal behavior	Attempted suicide in past 12 months (0 vs 1 or more times)	Attempted suicide in past 12 months (0 vs 1 or more times)	Attempted suicide in past 12 months (0 vs 1 or more times)

Data Set 1: National Longitudinal Study of Adolescent Health (Add Health), Wave 1

The Add Health study was developed by the Carolina Population Center at the University of North Carolina-Chapel Hill to examine the attitudes, behaviors, health, and well being of a large sample of middle-school and high-school age youth. Wave 1 data were collected in 1994-1995 from students in grades 7 through 12. Although Waves 2 and 3 of the Add Health study have been conducted and released, those data follow the original youth longitudinally up to 6 years later. To provide age comparability with the other 2 data sets, we used Wave 1 data in the present study. Full details of this data set are available elsewhere.[33]

The questions for these analyses come from the in-home survey, which was completed by a total of 20 745 youths, 18 924 of whom had a sampling weight. When the sampling weights are incorporated into analyses, the results are considered nationally representative of students in this age range (ie, 11 to 21 years) at the time of data collection. An additional 248 respondents were excluded because they were missing information on outcome variables or covariates, resulting in a final study sample of 18 676 participants.

Data Set 2: Youth Risk Behavior Surveillance System (YRBS)

The YRBS, developed by the Centers for Disease Control and Prevention (CDC) to measure and monitor health risk behaviors of the nation's youth, is conducted in odd-numbered years. The data used in the present analysis were collected in 2005 from 13 917 participants who completed the survey questionnaire. The final analysis sample included 12 133 adolescents age 12 to 18 years with complete data on outcome variables and covariates. When analyzed using sampling weights, the data are representative of students attending regular public, Catholic, and other private high schools in the US in the year of data collection. More complete sampling and administration details are available elsewhere.[34]

Data Set 3: Youth Violence Survey: Linkages Among Different Forms of Violence (Linkages)

The Linkages survey, conducted in 2004, was designed by the CDC to examine common risk and protective factors for various types of interpersonal and self-directed violence. The sample was a census of youth from grades 7, 9, 11, and 12 in all 16 schools in a high-risk community in the northeastern United States. The community was selected because it had some of the nation's highest rates of poverty, unemployment, single-parent households, and serious crime. Thus these data represent an environmentally high-risk sample of middle school and high school students. More specific sampling and administration information has been reported previously.[35] The Linkages study collected data from 4131 participants, 464 of whom were excluded from the present study because they were missing information on outcome variables or covariates. This resulted in a final study sample of 3667 participants, ranging in age from 12 to 18.

Measures

The key variables of interest were suicidal ideation, suicidal behavior, and victimization by peers (Table I). All 3 data sets also provided indicators of depression, the experience of which has been consistently shown to increase the likelihood of suicide. Thus, depressive symptoms were included as a control variable in the analyses, to allow the predictive power of victimization by peers on suicide risk to be disentangled from the predictive power of depressive symptomatology. Finally, sex, age, and race/ethnicity were included as control variables, to adjust for commonly documented differences in suicidal ideation and behavior among the various demographic groups represented in these samples.

Statistical Analysis

All analyses were conducted using Stata SE version 9 (StataCorp., College Station, Texas). The Stata software allows for the control of complex survey design effects of individuals clustered in sampling units of school and stratification of geographic region. Poststratification weights were applied to generate national estimates for the Add Health and YRBS samples. Multiple logistic regressions were conducted to assess the relationships between victimization by peers and suicide for the 3 data sets.

Results

In the YRBS and Add Health data sets, sampling weights were used so as to approximate nationally representative samples;