

# Dating Violence Against Adolescent Girls and Associated Substance Use, Unhealthy Weight Control, Sexual Risk Behavior, Pregnancy, and Suicidality

Jay G. Silverman, PhD

Anita Raj, PhD

Lorelei A. Mucci, MPH

Jeanne E. Hathaway, MD, MPH

INTIMATE PARTNER VIOLENCE (IPV) against women is a major public health concern. Estimates from a recent large-scale, nationally representative survey<sup>1</sup> indicate that more than 1.5 million women are physically and/or sexually abused by an intimate partner each year in the United States, and 25% will experience IPV at some point during their lifetimes. Research among adults has shown that younger age is a consistent risk factor for experiencing and perpetrating IPV.<sup>2-4</sup> Rates of IPV among nonrepresentative samples indicate that approximately 25% of adolescents have experienced physical and/or sexual dating violence,<sup>5,6</sup> an estimate consistent with the estimated lifetime prevalence of IPV among adult women.<sup>1</sup> However, no representative epidemiologic studies of lifetime prevalence of physical and sexual dating violence experienced by adolescents have been conducted to provide a reliable estimate of the scope of the problem, indicate which groups of adolescents may be at greatest risk, or assess whether other health risks faced by adolescents are associated with a history of IPV.

Most IPV is directed at women. The rate of violence against females by intimate partners is 3 to 6 times that of IPV against males.<sup>1,2</sup> Injuries that re-

**Context** Intimate partner violence against women is a major public health concern. Research among adults has shown that younger age is a consistent risk factor for experiencing and perpetrating intimate partner violence. However, no representative epidemiologic studies of lifetime prevalence of dating violence among adolescents have been conducted.

**Objective** To assess lifetime prevalence of physical and sexual violence from dating partners among adolescent girls and associations of these forms of violence with specific health risks.

**Design, Setting, and Participants** Female 9th- through 12th-grade students who participated in the 1997 and 1999 Massachusetts Youth Risk Behavior Surveys (n = 1977 and 2186, respectively).

**Main Outcome Measures** Lifetime prevalence rates of physical and sexual dating violence and whether such violence is independently associated with substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality.

**Results** Approximately 1 in 5 female students (20.2% in 1997 and 18.0% in 1999) reported being physically and/or sexually abused by a dating partner. After controlling for the effects of potentially confounding demographics and risk behaviors, data from both surveys indicate that physical and sexual dating violence against adolescent girls is associated with increased risk of substance use (eg, cocaine use for 1997, odds ratio [OR], 4.7; 95% confidence interval [CI], 2.3-9.6; for 1999, OR, 3.4; 95% CI, 1.7-6.7), unhealthy weight control behaviors (eg, use of laxatives and/or vomiting [for 1997, OR, 3.2; 95% CI, 1.8-5.5; for 1999, OR, 3.7; 95% CI, 2.2-6.5]), sexual risk behaviors (eg, first intercourse before age 15 years [for 1997, OR, 8.2; 95% CI, 5.1-13.4; for 1999, OR, 2.4; 95% CI, 1.4-4.2]), pregnancy (for 1997, OR, 6.3; 95% CI, 3.4-11.7; for 1999, OR, 3.9; 95% CI, 1.9-7.8), and suicidality (eg, attempted suicide [for 1997, OR, 7.6; 95% CI, 4.7-12.3; for 1999, OR, 8.6; 95% CI, 5.2-14.4]).

**Conclusion** Dating violence is extremely prevalent among this population, and adolescent girls who report a history of experiencing dating violence are more likely to exhibit other serious health risk behaviors.

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sult from such violence are significantly more common among females for both adolescent<sup>7</sup> and adult popula-

tions,<sup>1</sup> and approximately 10% of intentional injuries to adolescent girls are reported to be the result of violence

**Author Affiliations:** Harvard Children's Initiative, Harvard University (Dr Silverman), Department of Social and Behavioral Sciences, Boston University School of Public Health (Dr Raj), Bureau of Health Statistics, Research, and Evaluation (Ms Mucci), and Bureau of Family and Community Health (Dr Hathaway), Massachusetts Department of Public Health, Boston.

Dr Silverman is now with the Division of Public Health Practice and Department of Health and Social Behavior, Harvard School of Public Health, Boston.

**Corresponding Author and Reprints:** Jay G. Silverman, PhD, Division of Public Health Practice, Harvard School of Public Health, 1552 Tremont St, Boston, MA 02120 (e-mail: jsilverm@hsph.harvard.edu).

from male dating partners.<sup>8</sup> Furthermore, according to Uniform Crime Reports from the US Department of Justice,<sup>9</sup> females are approximately 10 times more likely to be killed by an intimate partner than are males. For these reasons, research and prevention efforts are appropriately focused on violence against female partners.<sup>1,10</sup>

Recent events involving fatal violence perpetrated by adolescents have focused additional attention on all forms of youth violence,<sup>11</sup> and there are increasing calls for epidemiologic study of IPV against adolescent girls,<sup>12</sup> in particular. A broad range of physical and mental health concerns have been shown to be associated with IPV among women,<sup>13</sup> and similar morbidity risks are considered likely for adolescents.<sup>14</sup> Despite these concerns, little is known of the prevalence or associated health risks of physical and sexual dating violence against adolescent girls.

Public health surveillance surveys represent an important opportunity to collect representative data on the extent of behaviors or experiences that threaten the health of young people and to examine associations among these risk factors. Because lack of such information is a major barrier to improvement of identification, treatment, and efforts to prevent adolescent dating violence, inclusion of queries related to dating violence in such surveys has been recommended.<sup>10</sup>

Previous representative studies have used adolescent health surveys to collect data on severe and/or restricted forms of physical violence involving dating partners (eg, being "beaten up" by a dating partner in the past 30 days or 12 months, boyfriend/girlfriend involved in most recent physical fight among those involved in physical fighting in the past 30 days).<sup>15-17</sup> The present study advances such work by providing a more comprehensive assessment of dating violence (including sexual violence) and extending the reporting period for these experiences. The present analyses (1) provide estimates of the lifetime prevalence of physical and sexual dating violence, (2) iden-

tify demographic characteristics of those most at risk, and (3) assess dating violence history as a predictor of behaviors related to major areas of adolescent health risk (substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality).

## METHODS

The Youth Risk Behavior Survey (YRBS) is conducted in all states every 2 years to track the incidence and prevalence of leading causes of morbidity and mortality among US high school students. The YRBS is a self-report, written instrument; in Massachusetts, a Spanish translation of the survey is available. Each state is charged with administering the core YRBS survey as designed by the Centers for Disease Control and Prevention. States also have the option of including additional questions to assess other adolescent health concerns. In 1997, Massachusetts became the first state to include a question assessing lifetime prevalence of physical and sexual violence from dating partners on the YRBS.

The Massachusetts YRBS was administered in both 1997 and 1999 to 9th-through 12th-grade students in randomly selected classrooms within selected public high schools throughout the state. The probability of an individual school being selected was proportional to its enrollment. All students, including those assigned to special education and limited English proficiency classrooms, were eligible. In 1997, 66 schools were selected and 58 elected to participate, resulting in a school participation rate of 88%. Of the 5026 students selected to participate, 3982 completed the survey, resulting in a student participation rate of 79%. Thus, the overall participation rate (school participation rate  $\times$  student participation rate) for the 1997 Massachusetts YRBS was 70%. Using an identical method, 67 Massachusetts public high schools were chosen to participate in the 1999 YRBS. Sixty-four schools elected to participate, resulting in a school participation rate of 96%. A total of 4415 of the 5589 students in selected classrooms com-

pleted the survey, resulting in a 79% student participation rate and an overall 1999 Massachusetts YRBS participation rate of 75%. Student participation rates for both surveys were similar to attendance levels on the days of survey administrations. For both years of the survey, less than 0.5% of students in attendance refused to participate, indicating a student response rate of more than 99.5%. Scores from individual students were weighted based on demographics of all students attending Massachusetts public high schools to provide rates that accurately reflect this population. These procedures are described in detail elsewhere.<sup>18</sup> All results presented are based on analyses of weighted data.

## Sample Demographics

The 1997 survey included 1977 female participants; the 1999 survey included 2186. Female participants in both surveys were fairly evenly distributed across age groups and grades. Most female students were white (73.0% in 1997 and 72.7% in 1999), with smaller percentages of Hispanic (9.4% in 1997 and 11.0% in 1999), black (6.3% in 1997 and 6.7% in 1999), Asian (5.7% in 1997 and 6.1% in 1999), and other racial/ethnic group (5.7% in 1997 and 3.5% in 1999) participants. Assessment of race/ethnicity differed for the 1997 and 1999 YRBSs. The 1999 YRBS included additional race/ethnicity categories of "native Hawaiian/other Pacific Islander," "multiple Hispanic," and "multiple non-Hispanic." The category "multiple Hispanic" is collapsed into "Hispanic," "native Hawaiian/other Pacific Islander" is collapsed into "Asian or Pacific Islander," and "multiple non-Hispanic" is collapsed into "other" in the present analyses.

## Measures

Each variable was assessed via a single item. Because of the nature of the present analyses, all variables were dichotomized with the exceptions of age and race/ethnicity, which were categorical as described herein. Physical and sexual forms of dating violence against adolescent girls were assessed in the pre-

sent study. Participants were asked if they had “ever been hurt physically or sexually by a date or someone they were going out with. This would include being shoved, slapped, hit, or forced into any sexual activity.” Possible responses included “No, I was not hurt by a date,” “Yes, I was hurt physically,” “Yes, I was hurt sexually,” and “Yes, I was hurt physically and sexually.” Response categories were not combined to avoid overcounting of cases within analyses examining both forms of dating violence. Construct validity of this assessment is indicated by the high percentage of those reporting sexual dating violence who also indicated ever experiencing forced sexual contact (78.1% in 1997 and 79.5% in 1999) and the high percentage of those reporting that their last physical fight was with a dating partner who also reported physical or sexual dating violence (70.1% in 1997; item not included in 1999 YRBS) on separate YRBS items. Reliability (ie, replicability) of this dating violence assessment will be examined through separate analyses of 1997 and 1999 YRBS data sets and tandem presentation of respective results. Substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality were also measured. Reliability of these measures has been demonstrated elsewhere.<sup>19</sup>

### Data Analyses

Preliminary analyses included  $\chi^2$  tests of association between dating violence variables and age and race/ethnicity. Associations between health risk variables and these demographics also were examined through  $\chi^2$  analyses. These tests were conducted to provide indications of whether particular age adolescents or racial/ethnic groups were at relatively greater risk for sexual and/or physical violence from dating partners and/or the health risks assessed. Logistic regression equations were constructed to provide odds ratios (ORs) and 95% confidence intervals (CIs) for the crude associations of dating violence (sexual, physical, or sexual and physical) and major areas of adolescent health risk (sub-

stance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality). To better understand these relationships, potential confounders (health risks and demographics found to be associated with both dating violence variables and health risk outcomes) were entered into multiple logistic regression equations assessing all forms of dating violence as predictors of health risk behaviors. In accordance with procedures recommended by Rothman and Greenland,<sup>20</sup> variables that either altered point estimates by more than 10% or were significant predictors at  $\alpha = .20$  were included in the final models. Analyses assessing associations between dating violence and sexual risk behaviors or pregnancy included only participants who reported ever having had sexual intercourse. Cases involving missing data relevant to analyses were eliminated from those analyses. SUDAAN software was used to conduct all analyses to account for the complex sampling design and weighting of the data.<sup>21</sup>

## RESULTS

### Descriptive Statistics on Dating Violence and Associations Between Dating Violence and Demographics

Approximately 1 in 5 (20.2% in 1997 and 18.0% in 1999) female public high school students in Massachusetts reported ever experiencing physical and/or sexual violence (ie, reported sexual violence only, physical violence only, or physical and sexual violence) from dating partners (TABLE 1). An estimated 1 in 10 (10.1% in 1997 and 8.9% in 1999) adolescent girls reported being physically abused by a date and not experiencing sexual dating violence. Approximately 1 in 25 (3.7% in 1997 and 3.8% in 1999) participants reported ever being sexually assaulted by a date and not experiencing physical dating violence. A larger number (6.4% in 1997 and 5.3% in 1999) reported being both sexually and physically assaulted by dating partners.

Significant differences across age groups were revealed through  $\chi^2$  analy-

ses for “sexual violence only” ( $P < .001$ ) in 1997 and for “physical and sexual violence” in both 1997 ( $P = .001$ ) and 1999 ( $P = .004$ ). Younger female students appeared to be at reduced risk in cases where age-related differences were detected. Results of  $\chi^2$  analyses also indicated significant differences across racial/ethnic groups for “sexual violence only” in both 1997 ( $P = .045$ ) and 1999 ( $P = .008$ ) and for “physical and sexual violence” in 1997 ( $P = .002$ ). Because of the change in assessment of race/ethnicity in 1999, comparisons are not possible across survey years. Using the 1997 classification, black female students appear to be more likely than individuals from other groups to report sexual violence in the absence of physical violence from dating partners (although caution is warranted based on the wide CI for this estimate). In contrast, data related to the 1999 classification indicate that black high school students may be at reduced risk relative to their peers from other racial/ethnic groups for experiencing sexual violence from dating partners.

### Bivariate Relationships Between Dating Violence and Health Risk

Bivariate logistic regression analyses of data from both survey years indicate that experience of physical dating violence (without reported sexual violence) was associated with substance use (heavy smoking, binge drinking, driving after drinking, cocaine use), unhealthy weight control (diet pill use, laxative use), sexual risk behavior (first intercourse before the age of 15 years, not using a condom at last intercourse,  $\geq 3$  sex partners in the past 3 months), pregnancy, and suicidality (considered suicide, attempted suicide) among female adolescents (TABLE 2). Experiencing physical dating violence was also found to predict substance use before last intercourse in analyses of 1997 YRBS data.

In bivariate logistic regression analyses involving both 1997 and 1999 YRBS data, experience of sexual dating violence (without reported physical violence) was associated with substance

use (heavy smoking, driving after drinking, cocaine use), diet pill use, sexual risk behavior (intercourse before the age of 15 years, substance use before last intercourse), and suicidality (considering suicide, attempting suicide). Analyses of the 1999 data set indicated that experiencing sexual dating violence was also associated with binge drinking, laxative use and/or vomiting to lose weight, not using a condom at last intercourse, having 3 or

**Table 1.** Lifetime Prevalence of Violence From Dating Partners Among Adolescent Girls Attending Massachusetts Public High Schools, by Age and Race/Ethnicity\*

Demographic	% (95% Confidence Interval)					
	1997 YRBS Data (n = 1977)			1999 YRBS Data (n = 2186)		
	Physical Violence†	Sexual Violence‡	Physical and Sexual Violence§	Physical Violence†	Sexual Violence‡	Physical and Sexual Violence§
Age, y						
14	6.8 (3.6-10.0)	0.4 (0-2.4)	1.9 (0-4.1)	7.5 (4.2-10.9)	3.3 (0.8-5.8)	4.1 (1.6-6.5)
15	7.9 (5.7-10.1)	3.0 (1.7-4.3)	5.9 (3.9-7.9)	7.1 (4.9-9.2)	3.1 (1.6-4.5)	3.3 (1.6-4.9)
16	11.9 (9.1-14.7)	3.0 (1.7-4.3)	6.0 (4.0-8.0)	9.6 (7.0-12.2)	4.1 (2.4-5.8)	8.2 (5.8-10.5)
17	10.9 (8.5-13.3)	7.5 (5.3-9.7)	6.2 (4.1-8.3)	8.4 (6.1-10.8)	4.7 (2.8-6.5)	4.2 (2.5-5.9)
≥18	11.0 (7.5-14.5)	2.3 (0.5-4.1)	11.1 (7.6-14.6)	12.7 (9.0-16.4)	3.3 (1.3-5.2)	5.7 (3.0-8.3)
Race						
White	11.5 (9.7-13.2)	3.6 (2.6-4.6)	7.3 (5.9-8.7)	9.4 (8.0-10.9)	3.5 (2.6-4.5)	5.4 (4.2-6.6)
Black	9.3 (3.6-14.9)	6.0 (0.6-11.3)	2.6 (0-6.4)	8.0 (3.6-12.5)	1.4 (0-3.4)	2.0 (0-4.2)
Hispanic	6.3 (2.7-9.8)	3.2 (0.5-5.9)	2.7 (0.3-5.1)	6.2 (2.8-9.6)	3.6 (1.0-6.2)	4.7 (1.9-7.5)
Asian/PI	4.6 (0.6-8.6)	2.6 (0-5.5)	5.2 (0.7-10.0)	8.9 (3.3-14.5)	5.7 (1.0-10.4)	5.7 (1.0-10.1)
Other	7.0 (2.1-11.8)	5.7 (1.1-10.3)	5.2 (1.1-9.3)	10.0 (6.9-13.3)	10.8 (7.8-13.8)	10.0 (6.9-13.3)
Total	10.1 (8.7-11.5)	3.7 (2.8-4.6)	6.4 (5.2-7.5)	8.9 (7.7-10.1)	3.8 (2.9-4.6)	5.3 (4.3-6.2)

\*The 1999 Youth Risk Behavior Survey (YRBS) included additional race/ethnicity categories of "Native Hawaiian/other PI," "multiple Hispanic," and "multiple non-Hispanic." "Multiple Hispanic" is collapsed into "Hispanic," "Native Hawaiian/other PI" is collapsed into "Asian/PI," and "multiple non-Hispanic" is collapsed into "other" in the present analyses. PI indicates Pacific Islander.

†Physical violence only, ie, no experience of sexual violence from dating partners.

‡Sexual violence only, ie, no experience of physical violence from dating partners.

§Experience of both physical and sexual violence from dating partners.

**Table 2.** Unadjusted Odds Ratios for Relationships Between Health Risk Behaviors and Lifetime Prevalence of Violence From Dating Partners Among Adolescent Girls Attending Massachusetts Public High Schools\*

Health Risk Behavior	Odds Ratio (95% Confidence Interval)					
	1997 YRBS Data (n = 1977)			1999 YRBS Data (n = 2186)		
	Physical Violence†	Sexual Violence‡	Physical and Sexual Violence§	Physical Violence†	Sexual Violence‡	Physical and Sexual Violence§
Substance use						
Heavy smoking (30 day)	5.7 (3.4-9.4)	5.6 (2.7-11.6)	10.8 (6.4-18.0)	3.3 (1.8-5.8)	6.7 (3.4-13.0)	7.2 (4.1-12.7)
Binge drinking (30 day)	2.5 (1.7-3.7)	1.4 (0.7-2.8)	4.2 (2.7-6.4)	2.0 (1.5-2.7)	3.7 (2.3-5.9)	2.9 (1.9-4.2)
Driving after drinking alcohol (30 day)	2.0 (1.2-3.1)	2.8 (1.5-5.1)	4.5 (2.9-7.0)	2.0 (1.3-3.2)	3.4 (2.0-5.9)	2.2 (1.3-3.7)
Cocaine use (ever)	7.6 (4.6-12.7)	4.6 (2.1-10.4)	13.6 (8.0-22.9)	3.4 (2.1-5.5)	7.3 (4.2-12.8)	7.8 (4.8-12.7)
Unhealthy weight control						
Diet pill use (30 day)	2.6 (1.7-4.1)	2.3 (1.1-4.8)	3.9 (2.4-6.3)	1.9 (1.2-2.9)	2.1 (1.1-3.9)	4.2 (2.6-6.6)
Laxative use and/or vomiting (30 day)	2.6 (1.6-4.2)	2.0 (0.9-4.4)	4.8 (3.0-7.8)	1.8 (1.1-3.0)	3.4 (1.8-6.3)	4.4 (2.7-7.3)
Sexual risk behavior						
First intercourse before age 15 y	1.6 (1.1-2.4)	1.8 (1.0-3.2)	3.5 (2.1-5.8)	2.0 (1.4-3.0)	2.6 (1.5-4.4)	2.8 (1.7-4.5)
Substance use before last intercourse	1.8 (1.2-2.9)	2.1 (1.1-3.8)	2.0 (1.2-3.3)	1.4 (0.9-2.2)	2.3 (1.3-4.0)	1.2 (0.7-2.2)
No condom used at last intercourse	2.1 (1.4-3.1)	1.4 (0.8-2.6)	1.1 (0.7-1.7)	1.5 (1.0-2.2)	1.9 (1.1-3.2)	1.4 (0.9-2.2)
≥3 Sex partners (90 day)	2.6 (1.0-6.5)	1.3 (0.3-5.8)	7.4 (3.2-16.7)	3.1 (1.3-7.5)	5.8 (2.0-16.7)	3.5 (1.9-6.2)
Pregnancy (ever)	1.8 (1.1-3.0)	1.2 (0.5-2.9)	3.1 (1.8-5.4)	2.0 (1.2-3.4)	2.9 (1.4-5.7)	3.5 (1.9-6.2)
Suicidality						
Considered suicide (12 month)	2.5 (1.8-3.4)	3.0 (1.8-5.0)	7.2 (4.7-10.9)	2.1 (1.5-2.9)	3.1 (1.9-4.9)	6.3 (4.2-9.5)
Attempted suicide (12 month)	2.2 (1.4-3.4)	2.0 (1.1-3.9)	9.2 (6.0-13.9)	2.3 (1.4-3.7)	4.2 (2.4-7.5)	9.8 (6.2-15.4)

\*YRBS indicates Youth Risk Behavior Survey. Heavy smoking is defined as smoking more than 10 cigarettes per day; binge drinking, 5 or more alcoholic drinks within 2 hours. The time periods in parentheses in the first column reflect the time frames for the health risk behaviors as specified in the survey questions.

†Physical violence only, ie, no experience of sexual violence from dating partners.

‡Sexual violence only, ie, no experience of physical violence from dating partners.

§Experience of both physical and sexual violence from dating partners.

more sex partners in the past 3 months, and having been pregnant.

Experience of both physical and sexual dating violence among adolescent girls was associated with all assessed forms of substance use, unhealthy weight control, and suicidality behaviors and pregnancy in analyses of both survey years. In the area of sexual risk behavior, first intercourse before the age of 15 years and having 3 or more sex partners in the past 3 months were additionally associated with experiences of both physical and sexual dating violence. Substance use before last intercourse was associated with experiencing both physical and sexual dating violence in bivariate analyses of 1997 YRBS data.

**Multivariable Analyses of Relationships Between Dating Violence and Health Risk**

Multiple logistic regression equations constructed to include potential confounders (demographics and other health risks related to both dating violence and predicted outcomes) of bi-

variate relationships of dating violence to adolescent health risk behaviors yielded similar results. In analyses of both survey data sets, experience of physical dating violence continued to be associated with heavy smoking, cocaine use, use of diet pills, laxatives, and/or vomiting to lose weight, intercourse before the age of 15 years, pregnancy, and both considering and attempting suicide (TABLE 3). Not using a condom at last intercourse was also associated with experiencing physical dating violence in analyses of 1997 YRBS data; binge drinking and having 3 or more sex partners in the past 3 months were associated with experiencing physical dating violence in analyses involving 1999 YRBS data.

Experiencing sexual abuse by dating partners remained significantly associated with cocaine use, intercourse before the age of 15 years, and considering and attempting suicide in analyses of both 1997 and 1999 YRBS data. Heavy smoking and driving after drinking were associated with sexual dating violence in analyses of 1997 YRBS data;

binge drinking, laxative use and/or vomiting to lose weight, having 3 or more sex partners in the past 3 months, and pregnancy were associated with sexual violence by dating partners in analyses of the 1999 YRBS data.

In multivariable analyses of data from both survey years, experience of both physical and sexual dating violence was a significant independent predictor of substance use (heavy smoking, binge drinking, cocaine use), unhealthy weight control (diet pill use, laxative use, or vomiting), sexual risk behavior (intercourse before the age of 15 years, ≥3 sex partners in the past 3 months), pregnancy, and both considering and attempting suicide. Driving after drinking was additionally predicted by physical and sexual dating violence in analyses of 1997 YRBS data.

**COMMENT**

Adolescent girls reported experiencing high rates of physical and sexual violence from dating partners. Approximately 1 in 5 adolescent girls (18%-20%) reported being physically and/or

**Table 3.** Adjusted Odds Ratios for Relationships Between Health Risk Behaviors and Lifetime Prevalence of Violence From Dating Partners Among Adolescent Girls Attending Massachusetts Public High Schools\*

Health Risk Behavior	Odds Ratio (95% Confidence Interval)					
	1997 YRBS Data (n = 1977)			1999 YRBS Data (n = 2186)		
	Physical Violence†	Sexual Violence‡	Physical and Sexual Violence§	Physical Violence†	Sexual Violence‡	Physical and Sexual Violence§
Substance use						
Heavy smoking (30 day)	2.9 (1.5-5.5)	4.2 (1.7-9.7)	4.0 (2.1-7.5)	2.0 (1.0-3.8)	2.5 (0.9-6.8)	2.5 (1.1-5.8)
Binge drinking (30 day)	1.2 (0.8-1.9)	0.8 (0.3-1.9)	1.8 (1.0-3.1)	1.6 (1.1-2.3)	2.4 (1.4-4.2)	1.7 (1.1-2.7)
Driving after drinking alcohol (30 day)	1.3 (0.8-2.1)	2.3 (1.2-4.4)	2.7 (1.6-4.5)	1.4 (0.8-2.3)	1.6 (0.8-3.2)	1.2 (0.6-2.1)
Cocaine use (ever)	4.8 (2.7-8.7)	3.3 (1.3-8.2)	4.7 (2.3-9.6)	2.2 (1.3-3.8)	3.1 (1.5-6.7)	3.4 (1.7-6.7)
Unhealthy weight control						
Diet pill use (30 day)	2.0 (1.2-3.3)	1.7 (0.8-3.9)	2.2 (1.2-4.0)	1.7 (1.1-2.8)	1.8 (0.9-3.7)	3.7 (2.3-5.9)
Laxative use and/or vomiting (30 day)	1.8 (1.1-3.1)	1.6 (0.7-3.6)	3.2 (1.8-5.5)	1.9 (1.1-3.1)	3.5 (1.8-7.0)	3.7 (2.2-6.5)
Sexual risk behavior						
First intercourse before age 15 y	3.8 (2.6-5.6)	5.0 (2.7-9.0)	8.2 (5.1-13.4)	2.7 (1.6-4.4)	2.4 (1.3-4.3)	2.4 (1.4-4.2)
Substance use before last intercourse	1.2 (0.7-1.9)	1.8 (0.9-3.5)	1.4 (0.8-2.6)	1.2 (0.7-1.9)	1.7 (0.9-3.3)	0.8 (0.4-1.6)
No condom used at last intercourse	2.0 (1.3-3.0)	1.3 (0.7-2.3)	0.9 (0.5-1.5)	1.3 (0.9-2.0)	1.4 (0.8-2.5)	1.0 (0.6-1.7)
≥3 Sex partners (90 day)	1.5 (0.5-5.1)	1.5 (0.3-8.3)	7.8 (2.5-24.4)	4.1 (1.3-12.6)	5.0 (1.5-16.6)	3.3 (1.0-10.4)
Pregnancy (ever)	2.5 (1.4-4.5)	1.8 (0.7-4.9)	6.3 (3.4-11.7)	2.2 (1.2-4.0)	3.2 (1.5-6.8)	3.9 (1.9-7.8)
Suicidality						
Considered suicide (12 month)	2.2 (1.6-3.1)	2.7 (1.6-4.5)	5.8 (3.7-9.0)	2.1 (1.4-2.9)	2.6 (1.6-4.3)	5.7 (3.7-8.9)
Attempted suicide (12 month)	1.8 (1.1-3.0)	2.1 (1.1-4.1)	7.6 (4.7-12.3)	2.2 (1.3-3.8)	3.5 (1.9-6.5)	8.6 (5.2-14.4)

\*Adjusted for potentially confounding demographics and risk behaviors. YRBS indicates Youth Risk Behavior Survey. Heavy smoking is defined as smoking more than 10 cigarettes per day; binge drinking, 5 or more alcoholic drinks within 2 hours.

†Physical violence only, ie, no experience of sexual violence from dating partners.

‡Sexual violence only, ie, no experience of physical violence from dating partners.

§Experience of both physical and sexual violence from dating partners.

sexually hurt by a dating partner in 2 independent representative surveys of Massachusetts public high school students. A recent nationally representative survey of adult women found a 25% lifetime prevalence of IPV.<sup>1</sup> The comparability of lifetime prevalence rates for adolescents and adults suggests that the incidence rate of partner violence against adolescent girls may be higher than for adult populations. This is consistent with findings that younger age places females at relatively higher risk for IPV.<sup>1,2</sup>

In this study, there were few differences between adolescent girls who reported only sexual dating violence and those who reported only physical dating violence in terms of associated health risk behaviors; only use of diet pills to lose weight was predicted by physical and not sexual violence across both surveys. Thus, distinctions among forms of dating violence experienced may not be helpful in assessing other risks associated with such experiences. In addition, use of "sexual violence only" as an exclusive variable may be less informative than "physical and sexual violence" during investigations of sexual dating violence. As seen in Table 1, most cases of sexual dating violence in both surveys were reported within the "physical and sexual violence" category. This study's finding that sexual violence from dating partners is less likely to occur in the absence of some experience of physical partner violence is supported by results of the recent National Violence Against Women Survey.<sup>1</sup> Data from that survey indicate that less than one third of women reporting rape by an intimate partner report no physical IPV.<sup>1</sup>

Younger adolescent girls were found to be at lower risk for experiences of dating violence. This may be due to reduced opportunity for such experiences among younger girls based on their relatively lower prevalence of dating or sexual activity and the cumulative nature of lifetime prevalence assessment. Findings were inconclusive regarding racial/ethnic differences in reports of dating violence. This assess-

ment may have been hindered by the relatively small numbers of nonwhite participants and the inconsistency in assessment of race/ethnicity across survey years.

Adolescent girls who reported abuse from dating partners were found to be at significantly elevated risk for a broad range of serious health concerns in analyses of data from both the 1997 and 1999 YRBSSs, even after controlling for the effects of confounding risk behaviors and demographics. These risks included being more likely to (1) use alcohol, tobacco, and cocaine, (2) engage in unhealthy weight control, (3) engage in sexual health risk behavior, including first intercourse before the age of 15 years and multiple partnering, (4) have been pregnant, and (5) seriously consider or attempt suicide. Of further importance is that many of the risks associated with experiences of either physical or sexual dating violence (eg, unhealthy weight control, pregnancy, suicidality) were heightened for adolescent girls who reported both forms of abuse.

Previous studies<sup>22,23</sup> have found that smoking, binge drinking, and cocaine use are higher among adolescent and adult females who experience sexual and/or physical abuse not specific to dating partners. Our study confirms these findings for a representative sample of high school girls who experienced abuse from dating partners. However, we cannot know from this type of cross-sectional data whether experiencing dating violence places adolescent girls at greater risk for substance use, whether substance use places adolescent girls at greater vulnerability to violence from dating partners, or whether other factors place them at higher risk for both of these concerns.

Similar to studies of severe physical dating violence<sup>15</sup> and sexual abuse not specific to dating partners,<sup>22,24-27</sup> adolescent girls who reported experiencing both physical and sexual IPV were more likely to report having experienced early first intercourse and having multiple recent sexual partners. What cannot be

concluded from these findings is to what extent earlier sexual experiences were abusive or coercive in nature, thus accounting for the high association with sexual and physical dating violence. Similarly, it is not possible to conclude whether multiple partnering practices put these adolescents at greater risk due to increased exposure to potentially abusive dating partners, whether dating violence affects adolescent girls such that they are more likely to seek multiple sexual partners, or whether external factors not examined confer increased risk for both concerns. These data do imply, regardless of directionality or mechanism, that adolescent girls experiencing dating violence are at significantly elevated risk for having greater numbers of sex partners, making them likely more vulnerable to contracting human immunodeficiency virus and other sexually transmitted diseases than adolescent girls who are not abused by dating partners.

High school girls reporting experiences of violence from dating partners were found to be approximately 4 to 6 times more likely than their non-abused peers to have ever been pregnant in this study. This finding advances previous work in the area of teen pregnancy and abuse that has focused on sexual assault not specific to partners<sup>26-28</sup> and partner abuse among non-representative clinical samples.<sup>29</sup> A major limitation of the present assessment, however, is the inability to determine whether an abusive dating partner was involved in the pregnancy. Furthermore, the mechanism and chronology involved in the relation between dating violence and pregnancy cannot be described by these data. It remains unclear, for instance, whether dating violence is associated with inability to use contraception and, if so, whether abusive partners actively prevent contraception or whether abused teens fear attempting to implement such measures. Although it may also be possible that other factors are responsible for both the occurrence of dating violence and pregnancy among adolescents, the implicit coercion involved in both sexual

and physical partner abuse is likely to have implications for pregnancy prevention.

Unhealthy weight control behaviors (using diet pills, laxatives, or vomiting to lose weight) were also more prevalent among adolescent girls who reported experiencing violence from dating partners. Earlier work has found that both adolescent girls<sup>30</sup> and adult women<sup>31,32</sup> who experienced forced sex are more likely to exhibit eating disorders. However, physical IPV was not associated with eating disorders in adults,<sup>31</sup> and when other risk factors were accounted for including physical abuse in the adolescent study, sexual abuse was no longer related to eating disorders.<sup>30</sup> In this study, both sexual and physical violence from dating partners predicted unhealthy weight control behaviors after controlling for the effects of potential confounders.

Finally, recent suicide ideation and actual suicide attempts were approximately 6 to 9 times as common among adolescent girls who reported having been sexually and physically hurt by dating partners. These disturbing findings advance previous work identifying associations between both severe dating violence and sexual assault not specific to dating partners and suicidality.<sup>16,24-27</sup> The pain and humiliation of those who experience IPV may play a major role in predisposing teens to suicidal ideation and behavior. Furthermore, based on recent data from abused adults,<sup>33</sup> adolescents who experience dating violence may be less likely than other teens to receive treatment for mental health concerns.

### Limitations

There are several important limitations to this study. The reliance on a single item with limited known validity to assess dating violence may be considered less reliable than a detailed, multiple-item instrument with known psychometrics. Lack of information on the specific forms or severity of reported violence, duration and recency of this abuse, and current relationship to the perpetrator also limits the na-

ture of hypotheses tested and our interpretation of results. In addition, risk behaviors assessed in this study may be more prevalent among adolescents with poorer school attendance, who were, therefore, less likely to participate in the survey. Hence, the risk behaviors examined may be underestimated and the relationships assessed biased because of the potentially nonrepresentative nature of this sample. We also do not know whether the findings from this sample of public high school attendees generalize to other groups of adolescents, such as private high school students or individuals who have dropped out of high school. In addition, we were unable to directly assess the sex of dating partners involved in reported violence. However, most sexual partners reported by participants were male (98.0% reported heterosexual sexual contact; 95.6% reported no same-sex sexual contact). Thus, the portion of dating violence perpetrated by female partners is likely to be small. Finally, limited categories for race/ethnicity within these surveys, differences in assessment of race/ethnicity across survey years, and the smaller numbers of participating racial/ethnic minority students limit understanding of how the issues investigated may differ across different racial/ethnic groups.

### Conclusions

Although the results of this study clearly demonstrate a link between health risk behavior and the experience of dating violence among adolescent girls, further research is necessary to identify mechanisms by which violence from dating partners may relate to other health risk behaviors and determine the chronology of these factors. Both longitudinal studies and large-scale qualitative examinations are needed to identify the direction of associations between dating violence and health risks and to provide insight into the etiology of dating violence and associated adolescent risk behavior.

Furthermore, although this study focuses on those who have experienced abuse, perhaps the most pressing need

for research involves the development of this behavior among perpetrators of abuse against dating partners. Parents and peers appear to play a role in supporting adolescent males' violence toward dating partners,<sup>34,35</sup> but we know little of the other social contexts and experiences that make perpetration of IPV more likely. Moreover, we know even less about what developmental factors make this behavior less likely. Identification and support of such resiliency factors may interrupt the development of abusive male behavior and thus prevent dating violence and adult IPV and its many potential deleterious effects on female health.

Despite the need for additional research, findings of this study have significant implications for prevention programming with adolescents in a number of important areas. First, violence against adolescent girls from dating partners is extremely prevalent. As a result, prevention efforts in this area should be expanded, and support should be provided for development and implementation of prevention programs and services specific to teen dating violence. Second, as in cases of IPV against adults, health care professionals may play a crucial role in identifying those who have experienced dating violence and offering assistance. Medical and mental health professionals should routinely screen adolescents for dating violence and be aware of appropriate referrals.<sup>14</sup> Finally, our findings strongly indicate that girls who experience dating violence are at greater risk for other serious adolescent health concerns. Therefore, practitioners working to combat substance use, risky sexual behavior, pregnancy, eating disorders, and suicide among teens should address dating violence as a potential factor in all of these behaviors.

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*Acquisition of data:* Silverman, Hathaway.  
*Analysis and interpretation of data:* Silverman, Raj, Mucci.  
*Drafting of the manuscript:* Silverman.  
*Critical revision of the manuscript for important intellectual content:* Raj, Mucci, Hathaway.  
*Statistical expertise:* Silverman, Mucci.  
*Obtained funding:* Silverman.

*Administrative, technical, or material support:* Raj, Hathaway.  
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