

Bullying Among Middle School and High School Students — Massachusetts, 2009

Multiple studies have documented the association between substance use, poor academic achievement, mental health problems, and bullying (1,2). A small but growing body of research suggests that family violence also is associated with bullying (3). To assess the association between family violence and other risk factors and being involved in or affected by bullying as a bully, victim, or bully-victim (those who reported being both bullies and victims of bullying), the Massachusetts Department of Public Health and CDC analyzed data from the 2009 Massachusetts Youth Health Survey. This report summarizes the results of that analysis, which showed significant differences in risk factors for persons in all three bullying categories, compared with persons who reported being neither bullies nor victims. The adjusted odds ratios (AORs) for middle school students for being physically hurt by a family member were 2.9 for victims, 4.4 for bullies, and 5.0 for bully-victims, and for witnessing violence in the family were 2.6, 2.9, and 3.9, respectively, after adjusting for potential differences by age group, sex, and race/ethnicity. For high school students, the AORs for being physically hurt by a family member were 2.8 for victims, 3.8 for bullies, and 5.4 for bully-victims, and for witnessing violence in the family were 2.3, 2.7, and 6.8, respectively. As schools and health departments continue to address the problem of bullying and its consequences, an understanding of the broad range of associated risk factors is important for creating successful prevention and intervention strategies that include involvement by families.

The Massachusetts Youth Health Survey is an anonymous, paper and pencil survey conducted every 2 years. The survey employs a two-stage cluster sample design. In the first stage, schools are randomly selected to participate. The probability of selection is proportional to the number of students enrolled. In the second sampling stage, classes are randomly selected for participation, and all students in those classes are invited to participate. In 2009, the survey was administered during January–June and completed during one class period in 138

public middle schools and high schools. Sample sizes were 2,859 students from middle schools and 2,948 students from high schools. Response rates among students were 90.6% and 87.2% for middle schools and high schools, respectively. Cooperation rates were 61.6% for middle schools and 76.5% for high schools. Overall response rates were 55.8% for middle school students and 66.7% for high school students. A weight was applied to each survey record to adjust for school non-response, student nonresponse, and distribution of students by grade, sex, and race/ethnicity.

Students were asked two questions related to bullying. The first question was “During the past 12 months, how many times have you been bullied at school (being bullied included being repeatedly teased, threatened, hit, kicked, or excluded by another student or group of students)?” Response categories ranged from zero times to 12 or more times. Those who reported being bullied one or more times were categorized as victims. The second question, which immediately followed the first, consisted of two parts. Students were asked “Did you do any of the following in the past 12 months? a) bully or push someone around, and b) initiate or start a physical fight with someone.” Response options for the second question were yes or no for each part. Those who responded yes to part “a” were categorized as bullies. Responses to part “b” were not considered in categorizing students as bullies because not enough information was available to determine whether or not initiating a physical fight should be considered bullying.

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Responses to the two bullying questions were combined to create four mutually exclusive categories: 1) bullies were those who responded that they were not bullied but acknowledged that they were bullies, 2) victims were those who responded that they had been bullied but were not bullies, 3) bully-victims were those who responded both that they had been bullied and that they were bullies, and 4) “neither” were those who responded that they had been neither bullied nor were bullies. Students with missing responses to the two bully questions were excluded from analysis (55 middle school students and 39 high school students).

The questionnaires for middle schools and high schools included identical questions regarding demographics and suspected risk factors such as poor grades, mental and physical health, suicidality, experiences with family violence, overweight or obesity, and alcohol, tobacco, and drug use. Percentages of bullies, victims, bully-victims, and neither were calculated for each risk factor (bivariate analysis). Statistically significant differences were determined by whether the weighted estimates had overlapping or nonoverlapping 95% confidence intervals (CIs). In addition, AORs were calculated, controlling for age group, sex, and race/ethnicity using logistic regression for each outcome of interest, with “neither” as the reference group (multivariate analysis). AORs were considered statistically significant if CIs did not contain 1.0.

A greater percentage of middle school students (26.8%) than high school students (15.6%) were categorized as victims of bullying, and for both groups of students, the percentage of

victims was greater than the percentage of bullies (7.5% for middle school and 8.4% for high school) and bully-victims (9.6% for middle school and 6.5% for high school) (Table 1). A significantly smaller percentage of middle school students (56.0%) than high school students (69.5%) were categorized as neither bullies nor victims. Among both middle school and high school students, a greater percentage of males (9.9% for middle school and 12.1% for high school) than females (5.0% for middle school and 4.8% for high school) were categorized as bullies. However, a greater percentage of females (29.8% for middle school and 17.8% for high school) than males (24.1% for middle school and 13.3% for high school) were categorized as victims. No significant difference between males and females was observed in the percentage categorized as bully-victims, either in middle school or high school.

Compared with students who were neither bullies nor bullying victims, both middle and high school bully-victims were more than three times as likely to report seriously considering suicide (24.9% versus 4.5% for middle school; 22.5% versus 6.2% for high school), intentionally injuring themselves (40.9% versus 8.4% for middle school; 28.5% versus 8.6% for high school), being physically hurt by a family member (23.2% versus 5.1% for middle school; 20.4% versus 4.7% for high school), and witnessing violence in their family (22.8% versus 6.6% for middle school; 30.6% versus 7.2% for high school) (Table 2).

Exposure to violent family encounters was more common among bully-victims than among bullies, and more common

The *MMWR* series of publications is published by the Office of Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30333.

Suggested citation: Centers for Disease Control and Prevention. [Article title]. *MMWR* 2011;60:[inclusive page numbers].

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TABLE 1. Number and percentage of victims, bullies, and bully-victims, by selected demographic characteristics — Massachusetts Youth Health Survey, 2009

Characteristic	Total no. in sample*	Neither [†]			Victims [§]			Bullies [¶]			Bully-victims ^{**}		
		No.	% ^{††}	(CI)	No.	%	(CI)	No.	%	(CI)	No.	%	(CI)
Middle school													
Overall	2,859	1569	56.0	(54.1–58.0)	742	26.8	(24.8–28.8)	220	7.5	(6.2–8.8)	273	9.6	(8.3–10.9)
Age group (yrs)													
11–12	1,267	716	57.4	(54.6–60.2)	352	28.5	(26.0–31.1)	73	5.5	(4.1–6.9)	107	8.6	(6.8–10.4)
13–16	1,569	846	55.2	(52.5–57.8)	385	25.4	(22.6–28.1)	145	9.2	(7.4–10.9)	162	10.3	(8.7–11.9)
Sex													
Female	1,363	742	55.4	(52.9–57.9)	397	29.8	(26.9–32.6)	70	5.0	(3.7–6.3)	134	9.8	(8.1–11.6)
Male	1,438	797	56.7	(53.9–59.4)	332	24.1	(21.7–26.5)	145	9.9	(7.9–11.9)	133	9.4	(7.5–11.2)
Race/Ethnicity													
White, non-Hispanic	1,727	956	56.1	(53.8–58.4)	502	29.4	(27.0–31.9)	97	5.8	(4.4–7.2)	149	8.7	(7.3–10.1)
Other ^{§§}	939	506	55.3	(50.9–59.8)	196	21.1	(17.6–24.6)	111	12.3	(9.9–14.7)	104	11.3	(9.2–13.4)
High school													
Overall	2,948	2,029	69.5	(67.2–71.7)	450	15.6	(13.8–17.4)	246	8.4	(7.3–9.5)	184	6.5	(5.6–7.4)
Age group (yrs)													
14–16	1,723	1,124	66.3	(63.9–68.8)	301	17.7	(15.5–19.9)	141	8.4	(6.9–9.9)	127	7.6	(6.2–8.9)
17–18	1,216	902	74.4	(71.6–77.3)	146	12.2	(9.6–14.8)	105	8.5	(6.6–10.4)	56	4.9	(3.6–6.2)
Sex													
Female	1,484	1,068	72.3	(69.2–75.5)	258	17.8	(15.5–20.2)	74	4.8	(3.5–6.1)	74	5.0	(3.8–6.3)
Male	1,412	931	66.9	(64.0–69.8)	181	13.3	(10.8–15.8)	167	12.1	(10.5–13.7)	106	7.7	(6.0–9.4)
Race/Ethnicity													
White, non-Hispanic	1,915	1,299	68.3	(65.7–70.8)	338	17.5	(15.5–19.6)	146	7.9	(6.7–9.1)	116	6.3	(5.2–7.4)
Other	962	690	73.2	(69.6–76.7)	101	10.3	(8.2–12.4)	94	9.8	(7.9–11.6)	62	6.8	(5.1–8.5)

Abbreviation: CI = confidence interval.

* Subgroups might not sum to total number in sample because of missing responses.

[†] Students who responded 1) zero to the question "During the past 12 months, how many times have you been bullied at school? (being bullied included being repeatedly teased, threatened, hit, kicked, or excluded by another student or group of students)" and 2) no to the question regarding whether they had bullied or pushed someone around.

[§] Students who responded 1) one or more to the question "During the past 12 months, how many times have you been bullied at school?" and 2) no to the question regarding whether they had bullied or pushed someone around.

[¶] Students who responded 1) yes to the question regarding whether they had bullied or pushed someone around and 2) zero to the question "During the past 12 months, how many times have you been bullied at school?"

^{**} Students who responded 1) one or more to the question "During the past 12 months, how many times have you been bullied at school?" and 2) yes to the question regarding whether they had bullied or pushed someone around.

^{††} Weighted percentages. Percentages might not sum to 100% because of rounding.

^{§§} Students who self-identified as Hispanic, regardless of race, and students who self-identified as American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or Other Pacific Islander, or multiracial.

among bullies than victims of bullying. Among middle school students, 23.2% of bully-victims reported being physically hurt by a family member and 22.8% reported witnessing violence, compared with 19.4% and 17.4%, respectively, among bullies and 13.6% and 14.8%, respectively, among victims of bullying. Among high school students, comparisons by category were similar (Table 2).

Sizable percentages of both bullies and bully-victims acknowledged recent use of alcohol (32.7% and 22.7%, respectively, for middle school students; 63.2% and 56.3%, respectively, for high school) and recent use of drugs (32.0% and 19.9%, respectively, for middle school; 47.2% and 41.0%, respectively, for high school). In comparison, smaller percentages of bullying victims and students who had been neither bullies nor victims acknowledged recent use of alcohol (6.9% and 8.1%, respectively, for middle school students; 31.7% and 38.5%, respectively, for high school) and recent use of drugs

(5.0% and 4.5%, respectively, for middle school; 19.6% and 23.1%, respectively, for high school) (Table 2).

After the models were adjusted for age group, sex, and race/ethnicity, and AORs were calculated using as referents those students who had been neither bullies nor victims, the odds were significantly elevated for victims, bullies, and bully-victims for the majority of risk factors considered (Table 3). Among middle school students, the AORs for seriously considering suicide were 3.0 for victims, 4.1 for bullies, and 6.6 for bully-victims; for being physically hurt by a family member, 2.9, 4.4, and 5.0, respectively; for intentionally injuring themselves, 2.3, 3.1, and 7.4, respectively; for witnessing violence in the family, 2.6, 2.9, and 3.9, respectively; for feeling sad or hopeless, 2.3, 2.1, 4.2, respectively; and for needing to talk to someone other than a family member about feelings or problems, 2.8, 2.1, and 5.2, respectively. Similar patterns were observed among high school students (Table 3).

TABLE 2. Percentage of victims, bullies, and bully-victims, by selected risk factors — Massachusetts Youth Health Survey, 2009

Risk factor	No.*	Neither [†]		Victims [§]		Bullies [¶]		Bully-victims ^{**}	
		%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Middle school									
Poor grades (mostly D or F)	2,557	3.9	(2.7–5.1)	4.1	(2.6–5.7)	19.3	(12.4–26.1)	11.0	(6.9–15.2)
Needed to talk to someone other than family member about feeling or problems in past 12 months	2,755	25.3	(22.9–27.7)	45.3	(41.2–49.4)	37.3	(31.0–43.5)	63.8	(57.7–69.9)
Sad or hopeless ^{††} in past 12 months	2,777	11.7	(9.9–13.4)	22.9	(19.1–26.7)	22.6	(15.7–29.6)	36.8	(31.3–42.3)
Seriously considered suicide in past 12 months	2,767	4.5	(3.5–5.4)	11.7	(9.4–14.0)	16.1	(10.8–21.3)	24.9	(19.0–30.8)
Attempted suicide in past 12 months	2,719	2.5	(1.6–3.3)	4.9	(3.3–6.5)	11.3	(7.0–15.5)	16.8	(10.8–22.7)
Intentionally injured self (not suicide attempt) in past 12 months	2,679	8.4	(6.8–10.0)	17.4	(14.8–20.0)	21.5	(13.9–29.0)	40.9	(34.6–47.3)
Rarely or never use seatbelt when passenger ^{§§}	2,798	7.2	(5.3–9.1)	6.3	(4.2–8.4)	24.6	(17.9–31.4)	15.4	(10.0–20.8)
Physically hurt by family member in past 12 months	2,723	5.1	(3.9–6.4)	13.6	(10.7–16.5)	19.4	(13.3–25.4)	23.2	(17.5–29.0)
Witnessed violence in family in past 12 months	2,709	6.6	(5.3–7.9)	14.8	(12.0–17.5)	17.4	(12.6–22.3)	22.8	(17.8–27.7)
Alcohol use in past 30 days	2,641	8.1	(6.3–10.0)	6.9	(4.5–9.2)	32.7	(25.9–39.5)	22.7	(16.9–28.4)
Drug use in past 30 days	2,608	4.5	(3.3–5.7)	5.0	(3.3–6.7)	32.0	(25.3–38.7)	19.9	(14.6–25.3)
Smoked cigarettes in past 30 days	2,688	2.8	(1.7–3.8)	2.1	(1.0–3.3)	15.0	(9.0–21.1)	11.5	(7.8–15.1)
Disability (physical, emotional, or learning)	2,230	13.8	(11.9–15.7)	27.5	(22.8–32.1)	21.6	(15.6–27.7)	35.7	(29.3–42.1)
Overweight or obese ^{¶¶}	2,167	27.3	(24.3–30.3)	27.1	(22.5–31.6)	32.2	(24.6–39.9)	28.1	(21.6–34.6)
Fair or poor overall health	2,723	2.7	(1.8–3.6)	5.7	(4.0–7.4)	7.2	(3.0–10.5)	12.4	(8.1–16.8)
Parent(s) would be "extremely upset" if found out drank alcohol regularly ^{†††}	2,785	87.7	(85.4–89.9)	88.4	(86.0–90.8)	63.3	(55.5–71.2)	73.6	(68.0–79.2)
High school									
Poor grades (mostly D or F)	2,768	5.7	(4.1–7.3)	5.5	(3.0–8.1)	14.7	(9.1–20.3)	12.7	(7.4–17.9)
Needed to talk to someone other than family member about feeling or problems in past 12 months	2,888	44.9	(42.1–47.7)	66.4	(61.6–71.1)	51.4	(43.2–59.7)	61.0	(52.9–69.1)
Sad or hopeless in past 12 months	2,886	17.2	(14.9–19.6)	36.7	(31.4–42.0)	24.8	(19.2–30.5)	39.6	(31.5–47.7)
Seriously considered suicide in past 12 months	2,891	6.2	(5.0–7.4)	20.4	(16.3–24.5)	13.3	(9.8–16.8)	22.5	(16.6–28.5)
Attempted suicide in past 12 months	2,855	2.7	(1.7–3.8)	10.0	(7.0–12.9)	6.4	(3.5–9.2)	11.4	(6.6–16.2)
Intentionally injured self (not suicide attempt) in past 12 months	2,770	8.6	(7.3–9.9)	28.3	(23.9–32.7)	16.8	(12.0–21.6)	28.5	(21.7–35.2)
Rarely or never use seatbelt when passenger	1,995	12.7	(9.5–15.9)	8.2	(4.7–11.6)	27.7	(18.3–37.1)	19.2	(12.5–25.8)
Physically hurt by family member in past 12 months	2,869	4.7	(3.6–5.8)	12.7	(8.2–17.2)	13.6	(9.6–17.7)	20.4	(15.5–25.3)
Witnessed violence in family in past 12 months	2,871	7.2	(5.8–8.5)	14.9	(10.6–19.2)	15.8	(10.2–21.3)	30.6	(23.6–37.7)
Alcohol use in past 30 days	2,848	38.5	(35.2–41.8)	31.7	(26.5–36.8)	63.2	(56.2–70.1)	56.3	(48.9–63.7)
Drug use in past 30 days	2,844	23.1	(19.9–26.3)	19.6	(15.2–24.0)	47.2	(39.4–55.0)	41.0	(34.6–47.5)
Smoked cigarettes in past 30 days	2,871	13.3	(11.1–15.4)	15.7	(12.0–19.4)	28.0	(20.6–35.4)	29.6	(21.3–38.0)
Disability (physical, emotional, or learning)	2,553	22.5	(19.9–25.2)	34.4	(29.5–39.3)	27.4	(21.0–33.8)	45.8	(35.8–55.9)
Overweight or obese	2,624	24.3	(21.3–27.2)	27.7	(23.6–31.9)	28.2	(22.1–34.3)	28.5	(20.4–36.6)
Fair or poor overall health	2,879	6.3	(5.1–7.6)	9.3	(6.6–12.1)	9.0	(5.1–12.9)	8.5	(4.4–12.6)
Parent(s) would be "extremely upset" if found out drank alcohol regularly	2,885	59.2	(56.1–62.3)	68.2	(63.7–72.7)	39.7	(33.3–46.2)	55.1	(48.0–62.1)

Abbreviation: CI = confidence interval.

* Number of respondents who answered both the bullying questions and the risk factor questions.

† Students who responded 1) zero to the question "During the past 12 months, how many times have you been bullied at school? (being bullied included being repeatedly teased, threatened, hit, kicked, or excluded by another student or group of students)" and 2) no to the question regarding whether they had bullied or pushed someone around.

§ Students who responded 1) one or more to the question "During the past 12 months, how many times have you been bullied at school?" and 2) no to the question regarding whether they had bullied or pushed someone around.

¶ Students who responded 1) yes to the question regarding whether they had bullied or pushed someone around and 2) zero to the question "During the past 12 months, how many times have you been bullied at school?"

** Students who responded 1) one or more to the question "During the past 12 months, how many times have you been bullied at school?" and 2) yes to the question regarding whether they had bullied or pushed someone around.

†† Students who answered yes to the question "During the past 12 months, did you ever feel so sad or hopeless almost every day for 2 weeks or more in a row that you stopped doing some usual activities?"

§§ Students who responded "never" or "rarely" when asked how often they wore a seatbelt as a passenger. Other choices were "sometimes," "most of the time," and "always."

¶¶ Includes students whose body mass index (BMI) was calculated as at or above the 85th percentile and lower than the 95th percentile (overweight) and students whose BMI was calculated as at or above the 95th percentile (obese) among persons of the same age and sex.

*** Students who responded "fair" or "poor" when asked about their health in general. Other choices were "excellent," "very good," and "good."

††† Students who responded "extremely upset" when asked how their parents would react if they found out their child drank alcohol regularly. Other choices were "fairly upset," "a little upset," and "not upset at all."

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TABLE 3. Adjusted odds ratios (AORs)* for victims, bullies, and bully-victims, by selected risk factors — Massachusetts Youth Health Survey, 2009

Risk factor	Victims [†]		Bullies [§]		Bully-victims [¶]	
	AOR	(95% CI ^{**})	AOR	(95% CI)	AOR	(95% CI)
Middle school						
Poor grades (mostly D or F)	1.0	(0.6–1.8)	5.0	(3.0–8.2)	2.6	(1.6–4.3)
Needed to talk to someone other than family member about feeling or problems in past 12 months	2.8	(2.3–3.5)	2.1	(1.6–2.8)	5.2	(3.7–7.5)
Sad or hopeless ^{**} in past 12 months	2.3	(1.8–2.9)	2.1	(1.4–3.5)	4.2	(3.2–5.5)
Seriously considered suicide in past 12 months	3.0	(2.2–4.2)	4.1	(2.5–6.6)	6.6	(4.4–9.9)
Attempted suicide in past 12 months	2.1	(1.3–3.3)	4.4	(2.6–7.7)	7.5	(4.4–12.8)
Intentionally injured self (not suicide attempt) in past 12 months	2.3	(1.8–3.0)	3.1	(1.8–5.1)	7.4	(5.4–10.3)
Rarely or never use seatbelt when passenger ^{††}	0.9	(0.6–1.3)	3.8	(2.5–5.9)	1.9	(1.2–3.2)
Physically hurt by family member in past 12 months	2.9	(2.0–4.1)	4.4	(2.7–7.1)	5.0	(3.5–7.2)
Witnessed violence in family in past 12 months	2.6	(1.9–3.5)	2.9	(1.8–4.4)	3.9	(3.0–5.2)
Alcohol use in past 30 days	0.8	(0.5–1.2)	5.3	(3.8–7.5)	2.6	(1.6–4.2)
Drug use in past 30 days	1.2	(0.7–1.8)	9.4	(6.1–14.3)	4.7	(3.1–7.1)
Smoked cigarettes in past 30 days	0.5	(0.2–1.1)	5.1	(3.1–8.3)	3.8	(2.3–6.2)
Disability (physical, emotional, or learning)	2.4	(1.8–3.1)	1.8	(1.2–2.7)	3.3	(2.3–4.6)
Overweight or obese ^{§§}	1.0	(0.8–1.4)	1.2	(0.8–1.7)	1.0	(0.7–1.4)
Fair or poor overall health	2.1	(1.4–3.4)	2.6	(1.4–4.9)	4.3	(2.6–7.3)
Parent(s) would be "extremely upset" if found out drank alcohol regularly	1.1	(0.8–1.5)	0.3	(0.2–0.4)	0.5	(0.3–0.7)
High school						
Poor grades (mostly D or F)	1.0	(0.6–1.6)	2.8	(1.8–4.5)	2.1	(1.3–3.4)
Needed to talk to someone other than family member about feeling or problems in past 12 months	2.6	(2.1–3.3)	1.7	(1.2–2.3)	2.5	(1.8–3.4)
Sad or hopeless in past 12 months	3.0	(2.4–3.9)	2.0	(1.5–2.8)	3.7	(2.6–5.3)
Seriously considered suicide in past 12 months	3.9	(2.9–5.3)	2.9	(2.1–4.2)	4.9	(3.2–7.5)
Attempted suicide in past 12 months	4.3	(2.7–6.9)	3.1	(1.6–5.8)	5.7	(2.9–11.1)
Intentionally injured self (not suicide attempt) in past 12 months	4.2	(3.4–5.3)	2.7	(1.9–3.9)	5.3	(3.7–7.4)
Rarely or never use seatbelt when passenger	0.6	(0.4–0.9)	2.5	(1.5–4.3)	1.5	(0.9–2.5)
Physically hurt by family member in past 12 months	2.8	(1.8–4.3)	3.8	(2.5–5.7)	5.4	(3.9–7.5)
Witnessed violence in family in past 12 months	2.3	(1.6–3.4)	2.7	(1.7–4.4)	6.8	(4.5–10.3)
Alcohol use in past 30 days	0.8	(0.6–0.9)	3.0	(2.2–4.1)	2.7	(2.0–3.7)
Drug use in past 30 days	0.9	(0.6–1.1)	3.1	(2.3–4.1)	2.7	(1.9–3.7)
Smoked cigarettes in past 30 days	1.2	(0.9–1.6)	2.8	(2.0–4.0)	3.4	(2.3–5.1)
Disability (physical, emotional, or learning)	1.7	(1.4–2.0)	1.5	(1.1–2.1)	2.9	(1.9–4.2)
Overweight or obese	1.3	(1.0–1.6)	1.1	(0.8–1.6)	1.1	(0.8–1.7)
Fair or poor overall health	1.5	(1.1–2.2)	1.8	(1.1–2.9)	1.5	(0.9–2.4)
Parent(s) would be "extremely upset" if found out drank alcohol regularly	1.4	(1.1–1.7)	0.5	(0.3–0.6)	0.8	(0.6–1.1)

Abbreviation: CI = confidence interval.

* Odds ratios are adjusted for age group, sex, and race/ethnicity. Reference group is those students whose responses categorized them as neither victims nor bullies.

† Students who responded 1) one or more to the question "During the past 12 months, how many times have you been bullied at school?" and 2) no to the question regarding whether they had bullied or pushed someone around.

§ Students who responded 1) yes to the question regarding whether they had bullied or pushed someone around and 2) zero to the question "During the past 12 months, how many times have you been bullied at school?"

¶ Students who responded 1) one or more to the question "During the past 12 months, how many times have you been bullied at school?" and 2) yes to the question regarding whether they had bullied or pushed someone around.

** Students who answered yes to the question "During the past 12 months, did you ever feel so sad or hopeless almost every day for 2 weeks or more in a row that you stopped doing some usual activities?"

†† Students who responded "never" or "rarely" when asked how often they wore a seatbelt as a passenger. Other choices were "sometimes," "most of the time," and "always."

§§ Includes students whose body mass index (BMI) was calculated as at or above the 85th percentile and lower than the 95th percentile (overweight) and students whose BMI was calculated as at or above the 95th percentile (obese) among persons of the same age and sex.

¶¶ Students who responded "fair" or "poor" when asked about their health in general. Other choices were "excellent," "very good," and "good."

*** Students who responded "extremely upset" when asked how their parents would react if they found out their child drank alcohol regularly. Other choices were "fairly upset," "a little upset," and "not upset at all."

Editorial Note

This report presents the first state-specific data on a broad range of risk factors suspected to be associated with bullying among both middle school and high school students. The data

indicate sizable prevalences of middle school (43.9%) and high school (30.5%) students involved in or affected by bullying. Among middle school students, 26.8% reported being victims of bullying, 7.5% acknowledged being bullies, and 9.6%

What is already known on this topic?

Studies have documented associations between bullying and substance use, poor academic achievement, and mental health problems, and a limited number of studies have indicated an association with family violence.

What is added by this report?

The findings of increased risk for bullies, victims, and bully-victims of being physically hurt by a family member or witnessing family violence underscore the association between bullying and events outside of the school.

What are the implications for public health practice?

A comprehensive approach that encompasses school officials, students, and their families is needed to prevent bullying among middle school and high school students.

reported being bully-victims. Among high school students, 15.6% reported being victims of bullying, 8.4% acknowledged being bullies, and 6.5% reported being bully-victims.

Multivariate analysis suggested associations between violent family encounters (i.e., being physically hurt or witnessing violence by a family member) and being bullied, bullying, and being a bully-victim. Bully-victims were more likely to report violent family encounters than bullies, and bullies were more likely to report such encounters than victims. This finding expands upon previous documentation of an association between childhood exposure to family violence and subsequent mental health problems (e.g., anxiety and depression) (4) and involvement in general physical aggression, dating violence, and weapon-carrying (5). The results underscore the importance of primary bullying prevention programs and of comprehensive programs and strategies that involve families. Although evidence of bullying prevention programs changing behavior among U.S. students is mixed (6), several violence prevention programs and strategies, including some involving families, have demonstrated effectiveness in decreasing violent behavior.*

The results from this study are consistent with previous findings showing that 1) risks for both depression and suicide are higher among bullies and victims (7), 2) many risk factors are more common among bully-victims than students categorized as bullies or victims (7–9), and 3) being a bully is associated with alcohol and drug use (2,9). These results differ from those presented in some studies (2,8), which found males more likely to be bullies and victims. However, in this report, bullying victimization is defined broadly, encompassing physical, verbal, and relational bullying. Because relational bullying, such as social exclusion and spreading rumors, is more

prevalent among females (3), inclusion of this type of bullying might account for the difference.

The findings in this report are subject to at least five limitations. First, this was a cross-sectional study, and causality cannot be implied. Second, the relatively low overall response rate among middle school students (55.8%) might limit the generalizability of the data, although the sample included classes in 69 middle schools across the state, and no differences were observed by region, urban/rural classification, or student enrollment between schools that chose to participate and those that declined. In addition, the sample was limited to students attending public schools; some data have shown that students attending public schools are more likely than students attending private schools to be bullied (10). Third, the definition of being bullied (i.e., being repeatedly teased, threatened, hit, kicked, or excluded by another student or group of students) was much more specific than the definition for bullying (i.e., bully or push someone around), which might account, at least in part, for the greater prevalence of victims than bullies and bully-victims. Fourth, all data were self-reported and subject to recall and social desirability bias. Finally, the sample was limited to students present on the day of survey administration. Those bullied are absent more frequently (9) and, therefore, less likely to be included in the sample.

Bullying is a pervasive public health problem requiring comprehensive solutions. Evidence suggests that classroom prevention programs alone in the United States often are unsuccessful in changing bullying behaviors (6). In May 2010, Massachusetts joined 44 other states with similar laws by enacting a comprehensive bullying prevention law that covers all types of bullying and requires all school districts to develop, adhere to, and update a plan to address bullying prevention and intervention in consultation with school staff members, families, and community members.

To assist schools in their efforts to implement comprehensive strategies to prevent bullying, other types of violence, and unintentional injuries, CDC developed School Health Guidelines to Prevent Unintentional Injuries and Violence. These guidelines include the following recommendations: 1) establish a social school environment that promotes safety; 2) provide access to health and mental health services; 3) integrate school, family, and community prevention efforts; and 4) provide training to enable staff members to promote safety and prevent violence effectively. Because bullying is associated with many other risk factors, including exposure to violence outside of the school setting, comprehensive strategies that encompass the school, family, and community are most likely to be effective. To assist schools and communities in their efforts to prevent youth violence, including bullying, CDC has launched the national initiative, Striving To Reduce Youth

* Center for the Study and Prevention of Violence. Blueprints for violence prevention. Boulder, CO: University of Colorado at Boulder. Available at <http://www.colorado.edu/cspv/blueprints>.

Violence Everywhere (STRYVE), which promotes increased awareness that youth violence can be prevented using strategies based on the best available evidence. Links to resources are available on the STRYVE website (<http://www.cdc.gov/violenceprevention/stryve>).

References

1. Gini G, Pozzoli T. Association between bullying and psychosomatic problems: a meta-analysis. *Pediatrics* 2009;123:1059–65.
2. Nansel TR, Overpeck M, Pilla RS, Ruan WJ, Simons-Morton B, Scheidt P. Bullying behaviors among US youth: prevalence and association with psychosocial adjustment. *JAMA* 2001;285:2094–100.
3. Cook CR, Williams KR, Guerra NG, Kim TE, Sadek S. Predictors of bullying and victimization in childhood and adolescence: a meta-analytic review. *Sch Psychol Q* 2010;25:65–83.
4. Johnson RM, Kotch JB, Catellier DJ, et al. Adverse behavioral and emotional outcomes from child abuse and witnessed violence. *Child Maltreat* 2002;7:179–86.
5. Duke NN, Pettingell SL, McMorris BJ, Borowsky IW. Adolescent violence perpetration: associations with multiple types of adverse childhood experiences. *Pediatrics* 2010;125:e778–86.
6. Merrell KW, Gueldner BA, Ross SW, Isava DM. How effective are school bullying intervention programs? A meta-analysis of intervention research. *Sch Psychol Q* 2008;23:26–42.
7. Kaltiala-Heino R, Rimpelä M, Marttunen M, Rimpelä A, Rantanen P. Bullying, depression, and suicidal ideation in Finnish adolescents: school survey. *BMJ* 1999;319:348–51.
8. Haynie DL, Nansel T, Eitel P. Bullies, victims, and bully/victims: distinct groups of at-risk youth. *Journal of Early Adolescence* 2001;21:29–49.
9. Lysznicki JM, McCaffree MA, Robinowitz CB. Childhood bullying: implications for physicians. *Am Fam Physician* 2004;70:1723–30.
10. Robers S, Zhang J, Truman J. Indicators of school crime and safety: 2010. Washington, DC: US Department of Education, National Center for Education Statistics, and US Department of Justice, Bureau of Justice Statistics; 2010. Available at <http://nces.ed.gov/programs/crimeindicators/crimeindicators2010>. Accessed April 18, 2011.