

Bullying among middle-school students in low and middle income countries

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SUMMARY

This analysis of data from the Global School-based Student Health Survey examined the prevalence of bully victimization in middle-school students in 19 low- and middle-income countries and also explored the relationship between bullying, mental health and health behaviors. In most countries, boys were more likely than girls to report being bullied and the prevalence of bullying was

lower with increasing age. Students who reported being bullied in the past month were more likely than non-bullied students to report feelings of sadness and hopelessness, loneliness, insomnia and suicidal ideation. Bullied students also reported higher rates of tobacco use, alcohol use, drug use and sexual intercourse.

Key words: adolescents; health behaviors; low-income countries

INTRODUCTION

Bullying is intentional peer-victimization, either physical or psychological, that can involve teasing, spreading rumors, deliberate exclusion from group activities and physical violence such as hitting and kicking (Sourander *et al.*, 2000; Bond *et al.*, 2001; Carlyle and Steinman, 2007; Liang *et al.*, 2007). Bullying involves a power imbalance that allows a bully to victimize a less powerful individual (Nansel *et al.*, 2001, 2004). These are not mutually exclusive categories: in some cases, the same individual is a bully in some contexts and a victim in other settings. This paper will focus on the victims of bullying, whether the individual is solely a victim or would be more accurately classified as a bully-victim.

Bullying appears to be common among adolescents. In high-income countries, studies of peer-victimization in middle-school-aged children have found a prevalence rate ranging

from 5 to 57% (Mellor, 1990; Due *et al.*, 1999; Forero *et al.*, 1999; Sourander *et al.*, 2000; Nansel *et al.*, 2001, 2004; Natvig *et al.*, 2001; Solberg and Olweus, 2003; Unnever and Cornell, 2003; Moreno Rodríguez *et al.*, 2004; Kim *et al.*, 2005; Graham *et al.*, 2006; Morris *et al.*, 2006; Schnohr and Niclasen, 2006; Ybarra *et al.*, 2006, 2007; Borup and Holstein, 2007; Carlyle and Steinman, 2007; Nylund *et al.*, 2007; Spriggs *et al.*, 2007). Only a handful of studies have been conducted in low- or middle-income countries, defined by the World Bank as countries with a per capita Gross National Income less than US \$11 455 in 2007 (World Bank, n.d.). These studies have found a wide range of prevalence rates, from 12 to 100% (Eslea *et al.*, 2003; Kepenekci and Cinkir, 2006; Alikasifoglu *et al.*, 2007; Liang *et al.*, 2007; Rudatsikira *et al.*, 2007; Cepeda-Cuervo *et al.*, 2008; Del Rey and Ortega, 2008; Fleming and Jacobsen, 2009).

The aim of this study is to expand the information about bullying victimization in low- and middle-income countries available in the published literature and to identify risk factors for peer victimization among adolescents in more than a dozen low- and middle-income countries. The analysis in this paper uses data from 19 countries that participated in the Global School-based Student Health Survey (GSHS) between 2003 and 2006. The GSHS was developed by the World Health Organization (WHO) in collaboration with UNICEF, UNESCO and UNAIDS, and uses a cross-sectional study design to assess self-reported student health and risk behaviors. The results of this study are presented and compared with previous studies in other populations in this age group.

METHODS

The GSHS is a health behavior measurement tool designed to allow for cross-country comparison of health-related behaviors among middle-school-aged children, who are usually between 13 and 15 years old. Country-level survey results are also used for assessing priorities for health-related policies and programs for adolescent children (WHO, n.d.).

The methodology for the GSHS is standardized across countries. Officials at national ministries of health and/or education select the questions to be included in their country-specific questionnaire from a question databank that contains 10 core modules: demographics; alcohol and drug use; dietary behaviors; hygiene; mental health; physical activity; protective factors; sexual behaviors that contribute to HIV infection, other sexually-transmitted infections and to unintended pregnancy; tobacco use; and violence and unintentional injury. Countries are also responsible for providing a list of schools eligible to participate in the survey. A two-stage cluster sampling is then conducted: schools are randomly selected for inclusion, then specific classes from each of those schools are selected for inclusion using a method that generates a study population that has approximately the same percentage of students in each age group as the total population of school students in the country as a whole. All students from these selected classes are asked to participate in the survey (WHO, n.d.).

The research protocol requires approval by a national government organization in each participating country prior to administration of the survey. Once approval for the implementation of the GSHS is given by officials at selected schools, students in those schools are asked to volunteer to participate in the survey. All students are given the choice to not participate and are assured that their answers will remain anonymous (WHO, n.d.). Students who agree to participate in the GSHS complete the survey during school hours.

After all surveys have been completed and the data compiled, countries submit their data to the US Centers for Disease Control and Prevention (CDC) for preliminary analysis. (Additional administrative support is provided by the World Health Organization.) Results of the analysis are immediately made available to the country's health authorities. Two years after the approval of the country's final report, the country data sets are made available for public use (WHO, n.d.).

This paper presents the results of secondary analysis of all 19 GSHS surveys conducted between 2003 and 2006 that included questions about bullying victimization and for which data are publicly available: Botswana, Kenya, Morocco, Namibia, Swaziland, Uganda, Tanzania, Zambia, Zimbabwe, Chile, Guyana, Venezuela, China, Philippines, Tajikistan, Jordan, Lebanon, Oman and the United Arab Emirates. (Data for a twentieth country, Senegal, have also been released, but the questionnaire used in Senegal did not include any questions on bullying.) The prevalence of peer victimization is based on the question 'During the past 30 days, how many days were you bullied?' Questions about mental health and health behaviors that were examined include 'During the past 12 months, did you ever feel sad or hopeless almost every day for two weeks or more in a row that you stopped doing your usual activities?', 'During the past 12 months, how often have you felt lonely?', 'During the past 12 months, how often have you been so worried about something that you could not sleep at night?', 'During the past 12 months, did you ever seriously considered attempting suicide?', along with questions about age of first cigarette, the frequency of drinking alcohol within the past 30 days, and illegal drug use.

Analysis of the GSHS data was conducted using SPSS (version 16.0) with a significance

level of $\alpha = 0.05$. The proportion of students who answered each question is noted in the results section; missing data were excluded from the analysis. Questions on bullying, loneliness, sleeplessness, smoking, drinking and illegal drug use were recoded into 'never/ever' variables. A two-sided Pearson Chi-square test was used to identify differences in bullying victimization prevalence by sex, age and grade. The relative risk (RR) and associated 95% confidence interval (CI) were used to estimate the differences in risk of participating in various risk behaviors, including smoking, drinking, drug use and sexual experience, between bullied and non-bullied students. The relative risk is calculated as the prevalence of the health outcome or health behavior in bullied students divided by the prevalence of the factor in non-bullied students. A relative risk greater than 1 indicates that bullied students were more likely than non-bullied students to experience that health outcome or to engage in that specific health behavior. A relative risk is statistically significant if the 95% CI does not contain the number 1.

RESULTS

Prevalence of victimization

A total of 104 614 students completed the GSHS questionnaire in 19 countries around the world. Of the participating students, 52.2% were girls and 46.4% boys. Of the 91 398 (84.8%) students who answered the question on having been bullied in the last month, 31 294 (34.2%) reported having been bullied. Of these students, 55.6% had been victimized 1 or 2 days, 19.7% 3–5 days, 8.3% 6–9 days, 5.5% 10–19 days, 2.9% 20–29 days and 7.9% all 30 days in the past month. The prevalence of bullying within individual countries ranged from 20 to 40% in China, Lebanon, Morocco, Oman, Philippines, United Arab Emirates, United Republic of Tanzania and Venezuela to 41–61% in Botswana, Chile, Guyana, Jordan, Kenya, Namibia, Swaziland, Uganda, Zambia and Zimbabwe. Tajikistan was the only country with a prevalence of bullying of less than 20% (Table 1).

Boys (36.0%) were more likely to report being bullied than girls (32.6%, $p < 0.001$). In 12 of the 19 countries, there was a statistically

significant difference between the prevalence of bullying in girls and boys, in each case showing that boys were more likely to be bullied. Bullying prevalence was significantly lower in older children in 12 of the 19 countries.

Mental health

Surveys from 17 of the 19 countries (all except Oman and Swaziland) included several questions on mental health, including a question about whether the student had been sad or hopeless almost every day for two or more consecutive weeks within the past year, and questions on loneliness, insomnia and suicidal ideation (Table 2; Figure 1).

Feelings of sadness and hopelessness

Of the 90 973 students who answered the question on feeling sad or hopeless, 34.6% reported feeling sad or hopeless for more than two weeks in the last year, including 45.6% of bullied students and 27.6% of non-bullied students. Girls reported a higher rate (36.4%) of sadness and hopelessness than boys (32.5%, $p < 0.001$). The prevalence of sadness and hopelessness was higher in older students ($p < 0.001$). In 16 of the 17 countries that asked this question, bullied students had a higher rate of sadness and hopelessness than non-bullied students.

Other mental health factors

In total, 63.4% of students reported having felt lonely in the past year, including 78.0% of bullied students. Additionally, 60.7% of the students reported having trouble sleeping in the past year, including 75.5% of bullied students. In the 16 countries that asked if the students had considered suicide in the past year, 16.0% of students reported having suicidal ideation, including 25.5% of bullied students. Loneliness, insomnia and suicidal ideation were more prevalent among bullied students in countries where data were available.

Risk behavior

The GSHS also asked students about several health behaviors, including asking them to indicate the age at which they first tried a cigarette, whether they had consumed alcohol in the last 30 days, whether they had used drugs (such as

Table 1: Bullying prevalence and demographics

World region	Country	N	Survey year	% Bullied within country	% Bullied by sex			% Bullied by age					
					Female (32.6% bullied)	Male (36.0% bullied)	X ² p-value (two-sided)	12 or younger (32.3% bullied)	13 (35.0% bullied)	14 (35.2% bullied)	15 (34.2% bullied)	16 or older (32.8% bullied)	X ² p-value (two-sided)
Africa	Botswana	2197	2005	53.0	52.2	54.2	0.393	63.6	47.5	50.7	54.2	54.5	0.310
	Kenya	3691	2003	54.7	55.0	54.1	0.643	67.3	58.1	52.8	53.4	51.2	0.001 ^a
	Morocco	2670	2006	31.9	23.4	41.1	<0.001 ^a	23.3	29.6	32.1	34.0	33.1	0.149
	Namibia	6367	2004	49.9	46.2	53.5	<0.001 ^a	61.4	50.4	46.3	46.3	53.6	<0.001 ^a
	Swaziland	7341	2003	38.6	36.5	42.3	<0.001 ^a	34.1	36.1	38.9	39.5	39.9	0.312
	Uganda	3215	2003	44.2	41.9	46.1	0.024 ^a	61.2	45.5	43.3	43.2	44.5	0.164
	Tanzania	2176	2006	26.2	25.6	26.6	0.605	22.2	26.5	31.9	27.8	29.9	0.012 ^a
	Zambia	2257	2004	60.9	63.1	57.7	0.032 ^a	68.1	62.0	63.6	62.7	55.5	0.023 ^a
	Zimbabwe	5665	2003	58.3	55.6	61.7	<0.001 ^a	64.4	56.0	62.7	58.7	55.1	0.001 ^a
America	Chile	8131	2003	46.6	43.8	49.5	<0.001 ^a	48.5	50.2	45.4	42.8	41.3	<0.001 ^a
	Guyana	1212	2003	38.2	36.6	40.4	0.211	36.8	41.6	38.9	38.3	30.3	0.349
	Venezuela	4415	2003	32.8	29.7	36.7	<0.001 ^a	26.2	34.7	35.1	37.5	34.4	<0.001 ^a
Asia	China	9015	2003	28.4	27.2	29.6	0.013 ^a	27.6	30.1	29.7	25.7	23.2	0.002 ^a
	Philippines	7338	2003	37.1	37.0	37.2	0.873	63.0	42.3	40.8	34.2	35.5	<0.001 ^a
	Tajikistan	12583	2006	7.8	8.2	7.3	0.079	41.2	7.1	7.9	4.8	8.5	<0.001 ^a
Middle East	Jordan	2457	2004	44.2	40.4	49.0	<0.001 ^a	80.0	54.6	49.9	39.9	41.1	<0.001 ^a
	Lebanon	5115	2005	33.6	29.3	38.8	<0.001 ^a	33.1	33.8	32.3	35.4	34.3	0.642
	Oman	2979	2005	38.9	39.1	38.6	0.777	31.7	36.8	39.4	40.6	41.2	0.146
	United Arab Emirates	15 790	2005	20.9	17.4	24.7	<0.001 ^a	21.7	22.3	21.4	18.7	20.2	0.006 ^a

^aStatistically significant difference in bullying prevalence by sex or age.

Table 2: Mental health factors associated with being bullied^a

Country	Sad/hopeless			Loneliness			Insomnia			Suicidal ideation		
	% of bullied	% of non-bullied	RR (95% CI)	% of bullied	% of non-bullied	RR (95% CI)	% of bullied	% of non-bullied	RR (95% CI)	% of bullied	% of non-bullied	RR (95% CI)
Botswana	47.8	34.6	1.38 ^b (1.23, 1.55)	79.4	66.7	1.19 ^b (1.12, 1.26)	76.0	57.8	1.31 ^b (1.23, 1.40)	27.0	16.3	1.65 ^b (1.37, 1.99)
Kenya	54.8	36.6	1.50 ^b (1.37, 1.63)	79.7	63.2	1.26 ^b (1.20, 1.32)	75.8	58.0	1.31 ^b (1.24, 1.38)	32.7	17.4	1.88 ^b (1.63, 2.17)
Morocco	48.8	33.5	1.45 ^b (1.31, 1.61)	77.9	57.5	1.35 ^b (1.31, 1.40)	75.3	59.2	1.27 ^b (1.20, 1.35)	18.1	11.5	1.57 ^b (1.27, 1.93)
Namibia	47.4	31.1	1.52 ^b (1.42, 1.64)	72.4	60.0	1.21 ^b (1.16, 1.26)	73.5	54.7	1.34 ^b (1.29, 1.40)			
Uganda	50.2	35.1	1.43 ^b (1.31, 1.56)	69.7	59.0	1.18 ^b (1.12, 1.25)	69.7	57.1	1.22 ^b (1.15, 1.29)	22.7	14.4	1.58 ^b (1.35, 1.85)
Tanzania	34.9	18.2	1.92 ^b (1.63, 2.25)	71.2	39.8	1.87 ^b (1.72, 2.04)	52.6	25.4	2.07 ^b (1.84, 2.33)	17.5	8.7	2.01 ^b (1.57, 2.59)
Zambia	61.1	45.7	1.34 ^b (1.21, 1.48)	78.4	61.6	1.27 ^b (1.19, 1.37)	75.6	61.3	1.23 ^b (1.15, 1.32)	35.5	22.7	1.57 ^b (1.32, 1.86)
Zimbabwe	44.6	29.1	1.54 ^b (1.42, 1.66)	79.0	63.7	1.24 ^b (1.19, 1.29)	70.9	55.2	1.28 ^b (1.23, 1.34)	29.7	18.2	1.622 ^b (1.46, 1.81)
Chile	38.4	22.3	1.72 ^b (1.60, 1.85)	80.9	64.1	1.26 ^b (1.23, 1.30)	77.1	62.2	1.24 ^b (1.20, 1.28)	27.6	15.1	1.82 ^b (1.66, 2.00)
Guyana	42.2	25.5	1.65 ^b (1.39, 1.96)	85.9	71.5	1.20 ^b (1.13, 1.28)	77.4	56.8	1.36 ^b (1.25, 1.48)	28.1	12.5	2.25 ^b (1.74, 2.90)
Venezuela	35.0	20.8	1.69 ^b (1.52, 1.87)	72.2	48.3	1.50 ^b (1.42, 1.58)	69.0	41.5	1.66 ^b (1.57, 1.76)	16.3	6.6	2.48 ^b (2.05, 2.99)
China	26.5	17.6	1.50 ^b (1.38, 1.64)	77.9	57.5	1.35 ^b (1.31, 1.40)	68.1	50.2	1.36 ^b (1.31, 1.41)	26.7	13.2	2.03 ^b (1.85, 2.23)
Philippines	57.4	35.6	1.61 ^b (1.53, 1.70)	87.4	76.1	1.15 ^b (1.12, 1.18)	88.1	75.4	1.17 ^b (1.14, 1.20)	25.9	14.3	1.81 ^b (1.63, 2.01)
Tajikistan	44.6	21.1	2.12 ^b (1.93, 2.32)	75.7	34.4	2.20 ^b (2.10, 2.31)	75.4	29.6	2.55 ^b (2.42, 2.68)	21.5	10.0	2.15 ^b (1.84, 2.51)
Jordan	57.6	74.1	0.78 ^c (0.72, 0.84)	75.6	50.5	1.50 ^b (1.40, 1.60)	78.5	62.2	1.26 ^b (1.19, 1.33)	19.7	10.9	1.81 ^b (1.47, 2.24)
Lebanon	48.5	30.7	1.58 ^b (1.47, 1.70)	75.2	56.5	1.33 ^b (1.28, 1.39)	83.6	66.6	1.26 ^b (1.21, 1.30)	23.4	11.7	2.01 ^b (1.75, 2.29)
United Arab Emirates	51.1	30.0	1.70 ^b (1.63, 1.78)	79.1	56.6	1.40 ^b (1.36, 1.43)	79.9	56.5	1.42 ^b (1.38, 1.45)	22.2	9.3	2.40 ^b (2.19, 2.63)

^aNo data on mental health factors was available from Oman and Swaziland; ^bbeing bullied is associated with a statistically significant increase in mental health factors; ^cbeing bullied is associated with a statistically significant decrease in mental health factors.

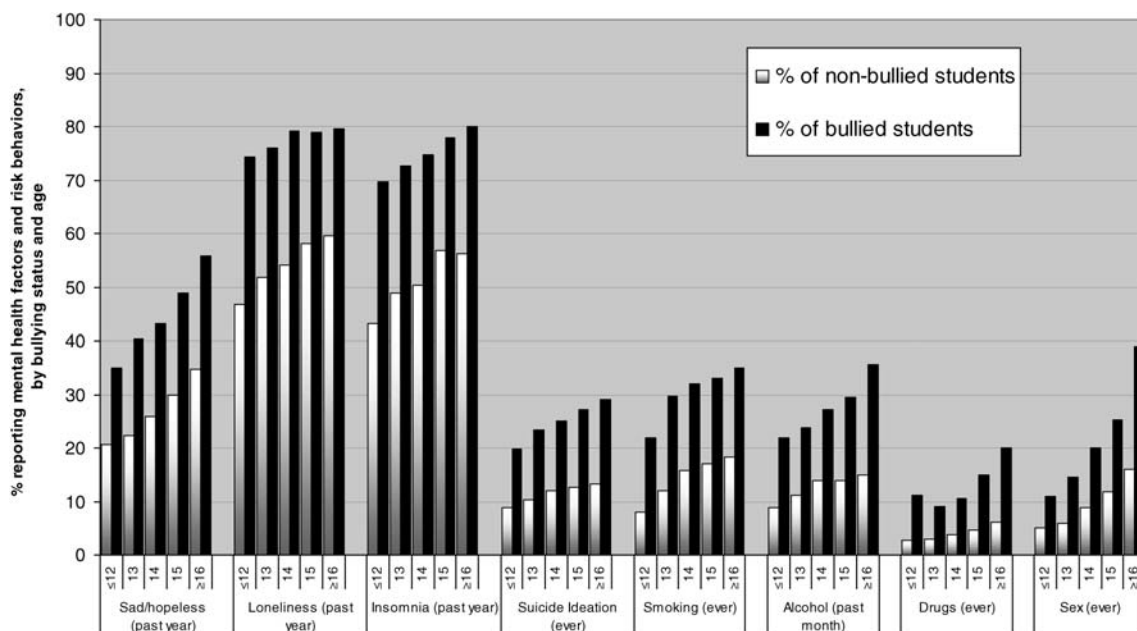


Fig. 1: Prevalence of mental health factors and risk behaviors by age (in years) and bullying status.

marijuana, cocaine, solvents, ecstasy, glue or inhalants) and about whether they had ever had sexual intercourse (Table 3, Figure 1).

Tobacco use

Of the 75 131 students in 14 countries who answered questions about smoking, 20.5% had smoked at least once, including 31.6% of bullied students and 15.3% of non-bullied students. Tobacco use was higher among boys (26.4%) than girls (15.2%, $p < 0.001$) and was higher in older children ($p < 0.001$). In all 14 countries that asked questions about both tobacco use and bullying, smoking was more prevalent among bullied students than non-bullied students.

Alcohol use

A total of 74 859 students answered questions about drinking, of which 18.4% reported having consumed alcohol in the past 30 days, including 31.6% of bullied students and 15.3% of non-bullied students. Alcohol use was higher among boys (21.2%) than girls (16.0%, $p < 0.001$) and was more common in older children ($p < 0.001$). Data on alcohol use were available from 16 countries and all found a higher prevalence

of drinking among bullied students than non-bullied students.

Drug use

Of the 81 436 students who answered the question on drug use, 8.3% reported having used drugs in their lifetime, including 13.3% of bullied students and 4.3% of non-bullied students. Drug use was higher among boys (10.3%) than girls (6.5%, $p < 0.001$) and was higher in older students ($p < 0.001$). All of the 16 countries that asked about illicit drug use and bullying found a higher prevalence of drug use among bullied students than non-bullied students.

Sexual intercourse

A total of 43 948 students answered questions about sexual practices, of which 14.8% reported having had sexual intercourse, including 22.7% of bullied students and 10.4% of non-bullied students. Sexual activity was higher among boys (51.3%) than girls (36.0%, $p < 0.001$) and was more common in older students ($p < 0.001$). Of the 12 countries with data on sexual activity and bullying, 11 (all except Tajikistan) showed a higher rate of reported sexual activity among bullied students than non-bullied students.

Table 3: Risk behavior associated with being bullied^a

Country	Smoking			Drinking			Drugs			Sex		
	% of bullied	% of non-bullied	RR (95% CI)	% of bullied	% of non-bullied	RR (95% CI)	% of bullied	% of non-bullied	RR (95% CI)	% of bullied	% of non-bullied	RR (95% CI)
Botswana	21.7	9.5	2.29 ^b (1.79, 2.97)	30.7	15.4	2.00 ^b (1.64, 2.43)	11.9	4.3	2.77 ^b (1.94, 3.97)	28.9	16.1	1.80 ^b (1.46, 2.21)
Kenya	31.6	14.3	2.21 ^b (1.90, 2.59)	24.0	8.4	2.88 ^b (2.33, 3.56)	21.2	5.9	3.59 ^b (2.82, 4.57)	41.4	31.0	1.34 ^b (1.19, 1.50)
Morocco	12.0	4.2	2.90 ^b (2.11, 3.98)	7.9	2.6	3.83 ^b (2.04, 4.51)	11.1	5.3	2.11 ^b (1.57, 2.84)			
Namibia	39.8	24.3	1.64 ^b (1.49, 1.80)	40.7	25.0	1.63 ^b (1.49, 1.78)	31.8	14.6	2.17 ^b (1.94, 2.43)	36.6	22.7	1.61 ^b (1.43, 1.82)
Swaziland				21.4	12.1	1.77 ^b (1.56, 2.00)	8.6	5.5	1.56 ^b (1.29, 1.88)	15.0	9.3	1.62 ^b (1.38, 1.90)
Uganda	14.9	6.1	2.43 ^b (1.90, 3.11)	19.8	11.0	1.80 ^b (1.49, 2.17)	12.1	5.2	2.36 ^b (1.82, 3.06)	34.5	23.4	1.47 ^b (1.28, 1.70)
Tanzania	12.2	2.7	1.88 ^b (1.30, 2.72)	10.7	2.9	3.69 ^b (2.47, 5.50)	6.7	2.8	2.38 ^b (1.53, 3.70)	14.7	6.0	2.44 ^b (1.80, 3.32)
Zambia				60.6	12.8	4.75 ^b (3.73, 6.04)	47.5	12.0	3.95 ^b (3.16, 4.93)	58.0	26.7	2.17 ^b (1.76, 2.68)
Zimbabwe	22.4	12.6	1.78 ^b (1.55, 2.05)	23.8	10.4	2.30 ^b (1.98, 2.67)	15.2	5.8	2.61 ^b (2.15, 3.17)	16.9	10.5	1.61 ^b (1.35, 1.92)
Chile	54.7	45.3	1.21 ^b (1.15, 1.27)	33.1	24.8	1.33 ^b (1.24, 1.43)	9.5	8.1	1.18 ^b (1.02, 1.37)	17.1	12.0	1.43 ^b (1.27, 1.61)
Guyana	30.8	21.5	1.43 ^b (1.16, 1.78)	38.9	32.7	1.19 (1.00, 1.41)	12.0	8.0	1.50 ^b (1.04, 2.16)	25.7	19.6	1.31 ^b (1.03, 1.68)
Venezuela				47.6	26.3	1.81 ^b (1.66, 1.98)	4.2	1.8	2.30 ^b (1.58, 3.37)	22.1	12.6	1.75 ^b (1.49, 2.05)
China	25.7	17.3	1.49 ^b (1.35, 1.63)	19.0	11.9	1.60 ^b (1.43, 1.79)	2.3	1.3	1.81 ^b (1.28, 2.57)			
Philippines	31.6	21.2	1.48 ^b (1.36, 1.63)	34.0	21.7	1.57 ^b (1.44, 1.71)	11.5	5.5	2.10 ^b (1.76, 2.49)			
Tajikistan	17.8	3.4	5.26 ^b (4.33, 6.39)	8.3	1.7	4.88 ^b (3.64, 6.53)	4.3	0.9	5.06 ^b (3.41, 7.50)	3.1	2.2	1.41 (0.89, 2.22)
Jordan	35.7	18.1	1.98 ^b (1.69, 2.31)									
Lebanon				24.0	8.4	1.40 ^b (1.24, 1.58)	5.1	2.1	2.43 ^b (1.75, 3.37)			
United Arab Emirates	31.5	15.2	2.08 ^b (1.94, 2.23)									

^aNo data on risk factors was available from Oman; ^bbeing bullied is associated with a statistically significant increase in risky health behavior.

DISCUSSION

Key findings

The prevalence of peer-victimization in the 16 countries included in this analysis of GSHS data ranged from 7.8% in Tajikistan to 60.9% in Zambia. The highest rates tended to be reported by boys and younger students. Being a victim of bullying was generally associated with elevated risk of symptoms of depression, including feeling sad or hopeless for more than 2 weeks and experiencing loneliness, sleeplessness and suicidal ideation. Students who were victimized also had a higher risk of poor health behaviors, such as tobacco use, alcohol use, drug use and sexual activity. The significance level of each mental health factor and risk behavior analyzed did not change after adjusting for sex and age.

More than 80 studies on bullying and peer-victimization in middle-school-aged children have been published in the past 20 years in the public health, psychology and education literature, but few of these papers reported on research conducted in low- and middle-income countries, and these studies did not examine physical and mental health in conjunction with peer-victimization. Therefore, it is only possible to compare the GSHS results with studies from higher income regions. This does, however, allow for an examination of whether feelings of sadness or hopelessness, loneliness, sleeplessness, suicidal ideation and certain risk behaviors such as tobacco and drug use are universally associated with peer-victimization or are tied to socioeconomic status.

Limitations

This analysis faced several limitations. First, it is difficult to compare the prevalence of bully victimization found in different studies because questionnaires group the frequency of bullying in a variety of ways. For example, the Health Behavior in School-aged Children (HBSC) study, which examined youth risk behavior during several waves of cross-sectional surveys in Europe starting in 1983, counted as ‘ever bullied’ those students who had been victimized at least 2 days in the past 12 months, whereas the GSHS data presented above classify as ‘ever bullied’ those students who were victimized at least one time in the past month. It was not

possible to calculate the proportion of students in the GSHS surveys that were bullied two times or more because the next grouping after ‘1–2 days’ was ‘3–5 days’. Second, most surveys, including the GSHS, ask only one or two questions about bullying, which limits the ability of analysts to provide a more nuanced evaluation of the frequency, severity and nature of the victimization. Third, cross-sectional surveys such as the GSHS are unable to determine causality. Thus, while it appears that victims of bullying are more likely to start engaging in poor health behavior, it is also possible that students with poor mental health and those who engage in risky health behaviors are more likely to be targeted by bullies. A prospective study design would be necessary in order to prove the direction of causality for these relationships.

Prevalence of victimization

While it is difficult to compare prevalence of bullying in between various countries, the range of results found in this study is consistent with the range found in other large studies (500 or more participants) that focused on adolescents. The prevalence of bullying was low (5–20%) in some studies from Europe (Sourander *et al.*, 2000; Natvig *et al.*, 2001; Eslea *et al.*, 2003; Solberg and Olweus, 2003; Nansel *et al.*, 2004; Roland, 2002; Schnohr and Niclasen, 2006), North America (Nansel *et al.*, 2001; Graham *et al.*, 2006; Carlyle and Steinman, 2007; Spriggs *et al.*, 2007), and China and Japan (Eslea *et al.*, 2003); middle (21–40%) in some studies in Europe (Due *et al.*, 1999; Mellor, 1990; Eslea *et al.*, 2003; Moreno Rodríguez *et al.*, 2004; Nansel *et al.*, 2004; Alikasifoglu *et al.*, 2007), North America (Unnever and Cornell, 2003; Morris *et al.*, 2006; Carlyle and Steinman, 2007; Nylund *et al.*, 2007; Ybarra *et al.*, 2007), Australia (Forero *et al.*, 1999; Bond *et al.*, 2001), Korea (Kim *et al.*, 2005) and South Africa (Liang *et al.*, 2007); and high (41% or greater) in some studies from Europe (Mellor, 1990; Due *et al.*, 1999; Nansel *et al.*, 2004; Seixas, 2005; Kepenekci and Cinkir, 2006; Borup and Holstein, 2007), North America (Nansel *et al.*, 2004; Nylund *et al.*, 2007) and Namibia (Rudatsikira *et al.*, 2007). No trends for the prevalence of peer-victimization by world region were found in this or other studies.

Most studies of sex and bullying found the prevalence of victimization to be higher among boys than girls (Mellor, 1990; Due *et al.*, 1999, 2005, 2007; Kaltiala-Heino *et al.*, 1999, 2000; Sourander *et al.*, 2000; Bond *et al.*, 2001; Ma, 2001; Nansel *et al.*, 2001; Natvig *et al.*, 2001; Gofin *et al.*, 2002; Roland, 2002; Solberg and Olweus, 2003; Kim *et al.*, 2005; Nishina *et al.*, 2005; Graham *et al.*, 2006; Kepenekci and Cinkir, 2006; Morris *et al.*, 2006; Schnohr and Niclasen, 2006; Ybarra *et al.*, 2006; Alikasifoglu *et al.*, 2007; Brunstein-Klomek *et al.*, 2007; Borup and Holstein, 2007; Liang *et al.*, 2007; Klomek *et al.*, 2008). Only one previous study found that the prevalence of peer-victimization was higher among girls than boys, and this study focused on internet harassment (Ybarra *et al.*, 2007). Studies of age consistently agreed with the results of the GSHS: younger students are more likely to be victimized than older students (Due *et al.*, 1999; Forero *et al.*, 1999; Sourander *et al.*, 2000; Ma, 2001; Nansel *et al.*, 2001; Gofin *et al.*, 2002; Nansel *et al.*, 2004; Graham *et al.*, 2006; Morris *et al.*, 2006; Alikasifoglu *et al.*, 2007; Carlyle and Steinman, 2007; Liang *et al.*, 2007).

Mental health

The GSHS and several other studies have evaluated the relationship between peer-victimization and mental health status. In particular, these studies have looked at sadness, hopelessness, loneliness, insomnia and suicidal thoughts.

Several studies have found an association between symptoms of depression and being a victim of bullying, including studies from Europe (Kaltiala-Heino *et al.*, 1999, 2000; Roland, 2002; van der Wal *et al.*, 2003), North America (Graham *et al.*, 2006; Morris *et al.*, 2006; Brunstein-Klomek *et al.*, 2007; Carlyle and Steinman, 2007; Nylund *et al.*, 2007; Klomek *et al.*, 2008) and Australia (Bond *et al.*, 2001). These studies, such as the GSHS results presented in this paper, consistently found that students who were victims of bullying were more likely than non-bullied students to feel sad or hopeless. Some of these studies also found that girls were more likely to report poorer mental health status than boys (Kaltiala-Heino *et al.*, 1999, 2000; Bond *et al.*, 2001; Brunstein-Klomek *et al.*, 2007; Carlyle and Steinman, 2007).

The GSHS surveys identified that bully victimization is associated with greater risk of

loneliness, insomnia and suicidal ideation. Studies conducted in Europe (Due *et al.*, 1999; Roland, 2002), North America (Nansel *et al.*, 2001; Graham *et al.*, 2006; Morris *et al.*, 2006), Israel (Gofin *et al.*, 2002) and Australia (Forero *et al.*, 1999) also found that students who have been victims of bullying are more likely than non-bullied students to report feelings of loneliness. Other studies in the USA (Nishina *et al.*, 2005; Graham *et al.*, 2006) and Finland (Kaltiala-Heino *et al.*, 2000) have linked bullying and anxiety. Also, insomnia and bullying have been found to be associated in studies from several countries in Europe (Natvig *et al.*, 2001; Schnohr and Niclasen, 2006; Due *et al.*, 2007). Increased anxiety and stress, and decreased sleep can contribute to reductions in physical health, as demonstrated in several studies of victimization in early adolescents that examined psychosomatic health outcomes. These studies, from Europe and the USA, found that being bullied can lead to lower mental and physical health status. In these studies, bullied students had lower overall health status than their peers, and were more likely than their peers to experience headaches, stomach aches, backaches, nervousness, fatigue and dizziness (Due *et al.*, 1999, 2005, 2007; Kaltiala-Heino *et al.*, 2000). Suicidal ideation is also more common in bullied students, as observed in all GSHS countries included in this analysis and in studies from Finland (Kaltiala-Heino *et al.*, 1999), the Netherlands (van der Wal *et al.*, 2003), Norway (Roland, 2002), South Korea (Kim *et al.*, 2005; Park *et al.*, 2006), the USA (Brunstein-Klomek *et al.*, 2007; Klomek *et al.*, 2008) and South Africa (Liang *et al.*, 2007).

Risk behavior

The GSHS and several other studies have examined the association between being bullied and engaging in certain health behaviors. Tobacco, alcohol and drug use are some of the more commonly assessed health behaviors.

All of the GSHS-participating countries that examined the relationship between victimization and tobacco use found that bullied students were more likely to use tobacco than non-bullied students. These findings are consistent with at least one study in the USA (Tharp-Taylor *et al.*, 2009). Yet the opposite results—lower tobacco use by victims—have

been observed in several studies from high income countries (Due *et al.*, 1999; Eslea *et al.*, 2003) and some studies from low- and middle-income countries, including China (Eslea *et al.*, 2003) and South Africa (Liang *et al.*, 2007). A few other studies from high income areas found no statistically significant association between these variables (Nansel *et al.*, 2001; Morris *et al.*, 2006; Schnohr and Niclasen, 2006).

Victimization and changes in alcohol intake are also not consistently linked. Higher rates of alcohol use among bullied students were found in three studies in the USA (Carlyle and Steinman, 2007; Ybarra *et al.*, 2007; Tharp-Taylor *et al.*, 2009) and in nearly all of GSHS countries, but studies from Greenland (Schnohr and Niclasen, 2006) and Canada (Morris *et al.*, 2006) did not find a statistically significant association between alcohol use and peer-victimization, and other studies in Europe (Due *et al.*, 1999; Kaltiala-Heino *et al.*, 2000; Nansel *et al.*, 2004) and the USA (Nansel *et al.*, 2001) found reduced alcohol use among victims of bullying.

Consistent findings about illegal drug use and bullying may be simply the result of so few studies asking questions about these risk behaviors. A higher rate of illegal drug use was found among victims of bullying in the four studies on this topic, which were conducted in the USA (Carlyle and Steinman, 2007; Ybarra *et al.*, 2007; Tharp-Taylor *et al.*, 2009) and Finland (Kaltiala-Heino *et al.*, 2000), and these findings are consistent with the findings of the present GSHS study. None of the reviewed studies evaluated sexual behavior and bullying, so it is not possible to compare the GSHS data that indicate higher levels of sexual activity among students who are victims of bullying.

The differences in tobacco and alcohol use by bullied students in different settings highlight the importance of conducting studies of risk factors in multiple cultural contexts and seeking, in each setting, to understand the dynamics that contribute to choices about health behaviors. None of the studies mentioned above examined why bullied students in different locations are more or less likely than their peers to engage in risky behaviors. Future studies of bullying would benefit from inquiring about attitudes toward substance use among participating students.

Conclusion

This analysis of GSHS data from 19 countries and an extensive review of the literature on bullying prove that peer-victimization is common among young adolescents across the globe in low-, middle-, and high-income countries. This study suggests that bully victimization is associated with reduced mental health and higher participation in risk behavior, and that the impact of victimization on health behavior may vary by age and sex, and by culture.

Because bullying has been shown to affect both mental and physical health, it requires the attention of schools, parents and communities. Additional research is needed to better understand the differences in the risk factors for and outcomes of bully victimization by sex, age and culture so that appropriate interventions can be developed, implemented and evaluated. Future studies should also seek to establish causal relationships between bullying and negative physical and mental health behaviors and outcomes.

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