Bullying among youth from eight African countries and associations with adverse health behaviors

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Keywords: Africa, bullying, children, cross-sectional studies, health behavior, violence

Bullying is a form of youth aggression associated with more serious violent behaviors and with an increased likelihood of physical and psychosomatic health problems. Studies describing the burden of bullying and relationships with adverse health behaviors among youth in Africa are lacking. Using data from the Global School-based Student Health Survey, we estimated the prevalence of exposure to bullying among youth from Kenya, Namibia, Morocco, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe and examined associations with measures of mental health, tobacco use, alcohol and drug use, and sexual behaviors. Exposure to bullying behavior was common among the boys and girls. We observed consistent, strong and graded relationships between exposure to bullying behavior and multiple adverse health-risk behaviors.

Methods

The GSHS is a self-administered, school-based survey that was developed by the WHO in collaboration with the United Nations Children’s Fund (UNICEF), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) and with technical and financial assistance from the US Centers for Disease Control and Prevention (CDC). The survey is conducted primarily among students aged 13–15 years and is carried out during one regular class period. In each country, the questionnaire is comprised of multiple core questionnaire modules, core-expanded questions and country-specific questions, and a standardized scientific sample selection process and common school-based methodology is implemented. Survey questions are translated into the appropriate language of instruction for the students and pilot tested for comprehension. The GSHS is designed to protect student privacy through anonymous and voluntary participation. To further help protect student privacy, no skip patterns are allowed. Permission to carry out the survey is obtained from appropriate government agencies (e.g., Ministries of Health and Education), and informed consent is obtained as appropriate from the students, parents and/or school officials. Further details of the GSHS can be obtained from the WHO and CDC [102,103].

In this analysis, we pooled data from Kenya, Namibia, Morocco, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe, from surveys administered during 2003, 2004 or 2006 (Table 1).

Violence among youth is a global challenge [1,2]. Although often considered a ‘benign’ and ‘normal’ aspect of childhood, bullying – defined as an act of aggression with malicious intent that is characterized by an imbalance of power and carried out repeatedly over time [3] – is one form of youth aggression attracting increasing attention. Bullying has been associated with more serious violent behaviors (e.g., weapon carrying, frequent fighting, verbal and physical abuse, and coercion) [4,5]. A growing body of literature suggests that childhood exposure to violence and traumatic stressors has both short- and long-term consequences for multiple health behavior (e.g., smoking, substance abuse and physical inactivity) and health outcomes (e.g., higher prevalence of heart, lung and liver disease, diabetes and depression) [6,101]. Bullying has also been linked with an increased likelihood of physical and psychosomatic health problems, cigarette smoking, and alcohol and drug use during childhood as well as with increased rates of depression and poor self-esteem among adults who were bullied as youths [7–9].

While awareness of bullying and associated health problems has increased globally, studies describing the burden of bullying and relationships with adverse health behaviors among youth in Africa are lacking, and until recently there have been few data available to inform such questions. With this in mind, we estimated the prevalence of exposure to bullying among students from eight African countries and examined associations between bullying and several adverse health behaviors during childhood using data from the Global School-based Student Health Survey (GSHS).

Methods

The GSHS is a self-administered, school-based survey that was developed by the WHO in collaboration with the United Nations Children’s Fund (UNICEF), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) and with technical and financial assistance from the US Centers for Disease Control and Prevention (CDC). The survey is conducted primarily among students aged 13–15 years and is carried out during one regular class period. In each country, the questionnaire is comprised of multiple core questionnaire modules, core-expanded questions and country-specific questions, and a standardized scientific sample selection process and common school-based methodology is implemented. Survey questions are translated into the appropriate language of instruction for the students and pilot tested for comprehension. The GSHS is designed to protect student privacy through anonymous and voluntary participation. To further help protect student privacy, no skip patterns are allowed. Permission to carry out the survey is obtained from appropriate government agencies (e.g., Ministries of Health and Education), and informed consent is obtained as appropriate from the students, parents and/or school officials. Further details of the GSHS can be obtained from the WHO and CDC [102,103].

In this analysis, we pooled data from Kenya, Namibia, Morocco, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe, from surveys administered during 2003, 2004 or 2006 (Table 1).
## Table 1. The Global School-based Student Health Survey.

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Sample description</th>
<th>Response rates (%)</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Schools</td>
<td>Students</td>
</tr>
<tr>
<td>Kenya</td>
<td>2003</td>
<td>All regular schools in Kenya containing classes 7 or 8 or forms 1 or 2 were</td>
<td>96</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>included in the sampling frame. Schools were selected systematically with a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>probability proportional to enrolment in classes 7 or 8 or forms 1 or 2 using a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>random start. Number of schools sampled: 46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Namibia</td>
<td>2004</td>
<td>All regular schools containing grades 6, 7, 8, 9 and 10 were included in the</td>
<td>95</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sampling frame. Schools were selected systematically with a probability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>proportional to enrolment in grades 6, 7, 8, 9 and 10 using a random start.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of schools sampled: 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>2006</td>
<td>All schools containing 1st, 2nd and 3rd years were included in the sampling frame.</td>
<td>100</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schools were selected systematically with probability proportional to enrolment in</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1st, 2nd and 3rd years using a random start. Number of schools sampled: 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swaziland</td>
<td>2003</td>
<td>All regular schools containing grades 6 or 7 or forms 1, 2, 3 or 4 were included</td>
<td>97</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in the sampling frame. Schools selected systematically with a probability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>proportional to enrolment in grades 6 or 7 or forms 1, 2, 3 or 4 using a random</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>start. Number of schools sampled: 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>2006</td>
<td>All schools containing standards V and VI were included in the sampling frame.</td>
<td>100</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schools were selected systematically with a probability proportional to enrolment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>in standards V and VI using a random start. Number of schools sampled: 25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Observations with complete data for age, sex and the variables for bullied during the 30 days preceding the survey and involvement in a physical fight during the 12 months preceding the survey.
### Table 1. The Global School-based Student Health Survey.

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Sample description</th>
<th>Response rates (%)</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>School level</strong></td>
<td><strong>Class level</strong></td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>2003</td>
<td>All regular schools containing standards 1, 2 and 3 were included in the sampling frame. Schools selected systematically with probability proportional to enrolment in standards 1, 2 and 3 using a random start. Number of schools sampled: 50</td>
<td>All classes with the majority of students in standards 1, 2 and 3 were included in the sampling frame.</td>
<td>90</td>
</tr>
<tr>
<td>Zambia</td>
<td>2004</td>
<td>All regular schools containing grades 6, 7, 8, 9 and 10 were included in the sampling frame. Schools selected systematically with probability proportional to enrolment in grades 6, 7, 8, 9 and 10 using a random start. Number of schools sampled: 50</td>
<td>All classes with the majority of students in grades 6, 7, 8, 9 and 10 were included in the sampling frame. Systematic equal probability sampling with a random start was used to select classes from each school that participated in the survey. Number of students sampled: 4218</td>
<td>94</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>2003</td>
<td>All regular schools containing forms 1, 2 or 3 were included in the sampling frame. Schools selected systematically with probability proportional to enrolment in forms 1, 2 or 3 using a random start.</td>
<td>All classes with the majority of students in forms 1, 2 or 3 were included in the sampling frame. Systematic equal probability sampling with a random start was used to select classes from each school that participated in the survey.</td>
<td>5665</td>
</tr>
<tr>
<td>– Bulawayo</td>
<td></td>
<td>Number of schools sampled: 26</td>
<td>Number of students sampled: 2151</td>
<td>100</td>
</tr>
<tr>
<td>– Harare</td>
<td></td>
<td>Number of schools sampled: 25</td>
<td>Number of students sampled: 2380</td>
<td>100</td>
</tr>
<tr>
<td>– Manicaland</td>
<td></td>
<td>Number of schools sampled: 25</td>
<td>Number of students sampled: 2188</td>
<td>100</td>
</tr>
</tbody>
</table>

*Observations with complete data for age, sex and the variables for bullied during the 30 days preceding the survey and involvement in a physical fight during the 12 months preceding the survey.*
These countries were selected for the analysis from among other African countries who had administered the survey because each of these countries included a question on exposure to bullying behavior. Each of these countries also included questions on mental health, tobacco use, alcohol and other drug use, and sexual behaviors, although not all countries asked all questions from each topic area (Figure 1). The age distribution of students who participated in the survey is shown in Table 2.

**Exposure to bullying**

To ascertain exposure to bullying behavior, students were prompted with the following: ‘The next question asks about bullying. Bullying occurs when a student or group of students say or do bad and unpleasant things to another student. It is also bullying when a student is teased a lot in an unpleasant way or when a student is left out of things on purpose. It is not bullying when two students of about the same strength or power argue or fight or when teasing is done in a friendly and fun way.’ Students were then asked the question; ‘During the past 30 days, on how many days were you bullied?’ Response options to the question were 0, 1–2, 3–5, 6–9, 10–19, 20–29 and all 30 days. Those reporting 1 or more days were considered to have been bullied. A categorical variable (0, 1–2, 3–5, 6–9 and ≥10 days) was created to examine dose–response relationships with increasing number of days bullied during the 30 days preceding the survey. Those reporting exposure to bullying for 10 days or more represent the upper decile of the distribution.

**Exposure to physical violence**

For exposure to physical violence, students were prompted with the following: ‘The next question asks about physical fights. A physical fight occurs when two or more students of about the same strength or power choose to fight each other.’ Students were then asked; ‘During the past 12 months, how many times were you involved in a physical fight?’ Those who responded one or more times were considered exposed to physical violence. A categorical variable (0, 1, 2–5 and ≥6 times) was created based on the original response groups (e.g., 0, 1, 2 or 3, 4 or 5, 6 or 7, 8 or 9, 10 or 11 or 12 or more times) to allow examination of associations by increasing number of exposures to physical violence. Those reporting involvement in a physical fight six times or more represent the upper decile of the distribution.

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**Figure 1. Survey domains included in the Global School-based Student Health Survey.**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Kenya</th>
<th>Morocco</th>
<th>Namibia</th>
<th>Swaziland</th>
<th>Tanzania</th>
<th>Uganda</th>
<th>Zambia</th>
<th>Zimbabwe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullying</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Persistant loneliness</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Anxiety-related sleep loss</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Consider suicide</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Planned suicide</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Current cigarette</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Current alcohol use</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Lifetime drug use</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Multiple partners</td>
<td>☑</td>
<td>☑</td>
<td>☐</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>History of STI</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
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<td>☑</td>
</tr>
</tbody>
</table>

STI: Sexually transmitted infection.
Adverse health behaviors or outcomes

As noted earlier, one objective of this analysis was to compare the relative frequency and likelihood of several adverse health behaviors or outcomes between youth who have and have not been exposed to bullying behavior. The adverse health behaviors included mental health and suicide ideation, substance use and risky sexual behavior.

**Mental health & suicide ideation**

Feelings of persistent loneliness were assessed by asking students; ‘During the past 12 months, how often have you felt lonely?’ with a response set of ‘never’, ‘rarely’, ‘sometimes’, ‘most of the time’ or ‘always’. Similarly, anxiety-related sleep loss was assessed by asking students; ‘During the past 12 months, how often have you been so worried about something that you could not sleep at night?’ This also had a possible response set of ‘never’, ‘rarely’, ‘sometimes’, ‘most of the time’ or ‘always’. We defined persistent feelings of loneliness or sleep loss, respectively, based on a response of ‘most of the time’ or ‘always’.

Students were also asked two suicide ideation questions; ‘During the past 12 months, did you ever seriously consider attempting suicide?’ and ‘During the past 12 months, did you make a plan about how you would attempt suicide?’ Those who responded affirmatively were defined as having considered and planned attempting suicide, respectively. We alert the reader that the question on planned suicide was asked to all students and not only of those who reported that they had considered suicide.

**Substance use**

We assessed current cigarette use based on response to the question; ‘During the past 30 days, on how many days did you smoke cigarettes?’ Those who smoked within the past 30 days were considered current cigarette smokers. Current alcohol use was based on the response to the question; ‘During the past 30 days, on how many days did you have at least one drink containing alcohol?’ Persons who reported 1 or more days were considered current alcohol users. We created a second alcohol use variable, current frequent alcohol use, which was defined as use on 20 or more days during the past 30 days or approximately the upper 5% of the distribution for this variable.

Lifetime drug use was based on the response to the question; ‘During your life, how many times have you used drugs, such as country specific examples including marijuana njaga, bangi, opium, njaye, cocaine, crack, ecstasy, dagga and glue?’ Those who reported one or more times were considered to have used drugs during their lifetime.

**Risky sexual behavior & history of sexually transmitted infection**

Students were considered to have had sex with multiple partners if they reported two or more people in response to the question; ‘During your life, with how many people have you had sexual intercourse?’ We defined a history of a sexually transmitted infection by an affirmative response to the question; ‘Have you ever been told by a doctor or nurse that you had a sexually transmitted infection, such as HIV, AIDS, syphilis or gonorrhea?’

**Statistical analysis**

We considered the appropriateness of combining GSHS data across countries including sampling design, sampling error and nonsampling error. Prior research from the USA has shown that pooling state-based survey data to obtain national estimates is feasible depending on sampling and nonsampling error [104]. In the GSHS, sampling designs were similar across countries

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**Table 2. Age distribution of students surveyed in the Global School-based Student Health Survey.**

<table>
<thead>
<tr>
<th>Country</th>
<th>≤13 years</th>
<th>14 years</th>
<th>15 years</th>
<th>≥16 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>28.2 (22.7–34.4)</td>
<td>28.4 (25.0–32.1)</td>
<td>27.4 (23.7–31.4)</td>
<td>16.1 (11.8–21.4)</td>
</tr>
<tr>
<td>Morocco</td>
<td>26.2 (22.5–30.3)</td>
<td>24.8 (21.7–28.1)</td>
<td>26.6 (24.4–28.9)</td>
<td>22.4 (18.1–27.5)</td>
</tr>
<tr>
<td>Namibia</td>
<td>20.1 (17.5–23.1)</td>
<td>25.7 (23.0–28.5)</td>
<td>23.9 (21.7–26.2)</td>
<td>30.3 (25.7–35.3)</td>
</tr>
<tr>
<td>Swaziland</td>
<td>21.0 (19.2–23.0)</td>
<td>37.2 (35.3–39.2)</td>
<td>38.7 (36.3–41.3)</td>
<td>3.0 (2.0–4.4)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>74.3 (65.4–81.5)</td>
<td>13.7 (9.6–19.1)</td>
<td>8.6 (6.1–12.2)</td>
<td>3.4 (2.3–5.0)</td>
</tr>
<tr>
<td>Uganda</td>
<td>11.5 (8.0–16.3)</td>
<td>22.4 (18.7–26.6)</td>
<td>28.8 (25.8–31.9)</td>
<td>37.3 (31.7–43.3)</td>
</tr>
<tr>
<td>Zambia</td>
<td>22.9 (17.9–28.8)</td>
<td>20.0 (17.4–22.9)</td>
<td>24.6 (21.5–28.1)</td>
<td>32.5 (27.8–37.5)</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>13.7 (11.2–16.6)</td>
<td>25.5 (23.4–27.7)</td>
<td>32.0 (29.3–34.7)</td>
<td>28.9 (25.6–32.3)</td>
</tr>
</tbody>
</table>

Data are reported as weighted percentage (95% CI).
The sampling of students within each country was conducted at two levels; the school and the class. We examined country level sampling errors (large sampling errors imply imprecise survey estimates) using the coefficient of variation of survey weights and the design effect averaged across all survey items for each country. Averaged design effects ranged from 1.5 for Zimbabwe (Harare) to 2.2 for Namibia; coefficients of variation ranged from 0.3307 for Uganda to 0.7677 for Namibia. We examined nonsampling errors using survey response rates. Response rates ranged from 69% (Uganda) to 96% (Swaziland) (Table 1). After consideration of these preliminary analyses, we pooled the data from the eight countries.

Of the 33,382 observations available for analysis after pooling country data sets, 79.4% (n = 26,510) had complete data for age, sex and the variables for bullied during the past 30 days and involvement in a physical fight during the past 12 months. This is discussed below. To make the GSHS data representative of each country included in the analysis, sample weights were used in all analyses.

We compared the relative frequency of each of the adverse health behaviors noted above between youth who reported exposure to bullying and those who did not report such exposure. We used unconditional logistic regression to obtain adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for associations between bullying and physical violence and each of the adverse health behaviors adjusting for age and sex. Ordinal trend tests used logistic regression with the dependent variable of interest and an ordinal independent variable. To account for the complex sampling design and to obtain accurate variance estimates, we used the *svy* estimation commands for complex survey data in Stata v9 (College Station, TX, USA) to complete all analyses. All statistical inferences were based on a significance level of $p \leq 0.05$ (two-sided).

**Results**

The prevalence of being bullied on least 1 day during the 30 days preceding the survey differed across countries ($p < 0.001$) and ranged from 25% (95% CI: 21–29%; Tanzania) to 63% (95% CI: 58–68%; Zambia) (Figure 2). Nearly 20% (95% CI: 16–23%) of youth in Zambia reported being bullied for 10 days or more during the 30 days preceding the survey while 75% (95% CI: 71–78%) of youth in Tanzania reported no bullying (Figure 2).
Overall, the distribution of exposure to bullying did not differ by student age (p = 0.264) with approximately 6–7% of youth reporting being bullied for 10 days or more during the 30 days preceding the survey across age groups (≤13, 14, 15 and ≥16 years). Boys were slightly more likely than girls to report exposure to bullying across age groups (data not shown).

**Physical fighting**
A strong graded relationship was observed between bullying during the 30 days preceding the survey and involvement in a physical fight during the 12 months preceding the survey (p < 0.001). Compared with youth not involved in a physical fight, the aOR of being bullied were 2.2 (95% CI: 1.9–2.5) for those in one fight, 3.9 (95% CI: 3.3–4.7) for two to three fights, 5.6 (95% CI: 4.2–7.6) for four to five fights and 6.5 (95% CI: 5.2–8.0) for six fights or more (p < 0.001).

**Mental health & suicide ideation**
Approximately 16% (95% CI: 15–17%) of youth reported feelings of loneliness most of the time or always during the 12 months preceding the survey, and being bullied was significantly associated with feelings of persistent loneliness (Figure 3). The relative relationship, although statistically different (p for interaction < 0.001), was not meaningfully different (i.e., was similar) for girls (≥10 vs 0 days: aOR, 4.1; 95% CI: 3.0–5.7) and boys (≥10 vs 0 days: aOR, 5.2; 95% CI: 3.6–7.5).

Persistent sleep problems as a result of worry were reported by 15% (95% CI: 14–16%) of youth. The adjusted relative odds of persistent sleep problems caused by worry were five-times greater among youth bullied for 10 or more days compared with unexposed youth (Figure 3). Relative relationships were similar for girls and boys (p ≥ 0.05).

One in five (95% CI: 20–22%) youth considered suicide and 22% (95% CI: 20–24%) of youth planned suicide during the 12 months preceding the survey. Relationships between the number of days bullied and both measures of suicide ideation were strong and graded (p < 0.001) (Figure 4), and relative relationships were similar for boys and girls (p > 0.05).

**Substance use**
The prevalence of current cigarette use (8%; 95% CI: 6–10%) was similar across age groups but was slightly greater among boys

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**Figure 3.** Relative frequency* and adjusted relative odds‡ of persistent feelings of loneliness or anxiety-related sleep loss associated with being bullied during the 30 days preceding the Global School-based Student Health Survey among African youth.

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(A) The logistic regression models for feelings of loneliness 12 months preceding the survey were fit to the data of 20,526 respondents. (B) The logistic regression models for sleep problems resulting from worry 12 months preceding the survey were fit to the data of 20,636 respondents.

*Data are reported as age-adjusted, weighted percentage.
‡Odds ratios and 95% CIs adjusted for age and sex.
aOR: Adjusted odds ratio.
future science group

(10%; 95% CI: 8–12%) than girls (6%; 95% CI: 4–8%; p < 0.001). Relationships between bullying and current cigarette use were strong and graded (Table 3). Similarly strong associations were observed between bullying among youth and current alcohol use (age-adjusted prevalence, 14%; 95% CI: 12–16%), current frequent alcohol use (age-adjusted prevalence, 2%; 95% CI: 1–3%) and lifetime drug use (age-adjusted prevalence, 13%; 95% CI: 12–14%).

**Risky sexual behavior**

Nearly 20% (95% CI: 18–22%) of boys and 10% (95% CI: 9–11%) of girls reported multiple sex partners. One in five (95% CI: 18–22%) youth reported a history of a sexually transmitted infection. After adjustment for age and sex, youth exposed to bullying were significantly more likely to report multiple sex partners or a history of sexually transmitted infection (Figure 5). For instance, compared with those who were not bullied, youth exposed to bullying behavior for 10 days or more during the 30 days preceding the survey were five-times more likely to have multiple sex partners (girls: aOR, 10.0; 95% CI: 5.7–17.5; boys: aOR, 3.3; 95% CI: 2.3–4.8; p = 0.0003).

**Comment**

The current study observed that the prevalence of exposure to bullying behavior was common among boys and girls in eight African countries and is strongly associated with an increased likelihood of involvement in physical fighting. The country-specific prevalences of bullying observed in this study are similar to those reported in other countries although direct comparisons are difficult owing to differences in definition. For example, estimated prevalences of bullying ranged from 5% among girls in Sweden to 41% among boys in Lithuania [10] and were 40% among middle-school students in Korea [4]. Estimates from South Africa suggest that over a third of school children from urban government schools are involved in bullying behavior [11].

We also observed consistent, strong and graded relationships between childhood exposure to bullying behavior and multiple adverse health risk behaviors. Our findings lend further support to the research findings from developed countries that identify potential links between exposure to violence during childhood and adverse health behaviors [101]. While these relationships remain complex and possible pathways explaining the linkages remain unclear, the
potential negative impacts of bullying suggest the need for effective bullying prevention programs and continued research that focuses on the short- and long-term implications of childhood exposure to bullying.

Our results should be interpreted with consideration of the following limitations. The GSHS is a school-based survey; therefore, these data do not include youth who do not attend school or who were absent from school on the day the survey was administered – groups that may have higher prevalences of adverse risk behaviors [12]. Owing to the cross-sectional nature of the data, determinations and statements of cause and effect are impossible. Also, time frames of reference differed for questions with health behaviors or outcomes referring to either 30 days preceding the survey, 12 months preceding the survey or during one’s lifetime.

### Table 3. Relative frequency* and adjusted relative odds‡ of current cigarette use, current alcohol use, or lifetime drug use associated with being bullied during the 30 days preceding the Global School-based Student Health Survey among African youth.

<table>
<thead>
<tr>
<th>Number of days bullied during the 30 days preceding the survey</th>
<th>Current cigarette use</th>
<th>Current alcohol use</th>
<th>Lifetime drug use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%*</td>
<td>Odds ratio (95% CI)³</td>
<td>%*</td>
</tr>
<tr>
<td>0</td>
<td>3.0 (0.27)</td>
<td>1.00 (referent)</td>
<td>6.7 (0.48)</td>
</tr>
<tr>
<td>1–2</td>
<td>8.5 (0.91)</td>
<td>2.9 (2.3–3.8)</td>
<td>16.6 (1.17)</td>
</tr>
<tr>
<td>3–5</td>
<td>17.1 (2.17)</td>
<td>6.5 (4.6–9.2)</td>
<td>24.5 (2.29)</td>
</tr>
<tr>
<td>6–9</td>
<td>21.0 (3.54)</td>
<td>9.0 (5.2–15.5)</td>
<td>31.4 (3.80)</td>
</tr>
<tr>
<td>≥10</td>
<td>22.3 (3.44)</td>
<td>9.2 (5.7–14.8)</td>
<td>44.1 (2.76)</td>
</tr>
</tbody>
</table>

The logistic regression model for current cigarette use was fit to the data of 26,510 respondents, for current alcohol use was fit to the data of 23,434 respondents, and for lifetime drug use was fit to the data of 25,693 respondents.

*Data are reported as age-adjusted, weighted percentage. Standard errors are reported in parentheses.

‡Odds ratios and 95% CIs adjusted for age and sex.

### Figure 5. Relative frequency* and adjusted relative odds‡ of having multiple sex partners or a history of sexually transmitted infection associated with being bullied during the 30 days preceding the Global School-based Student Health Study among African youth.

(A) The logistic regression model for multiple partners was fit to the data of 15,032 respondents. (B) The model for history of a sexually transmitted infection was fit to the data of 11,192 respondents.

*Data are reported as age-adjusted, weighted percentage.

‡Odds ratios and 95% CIs adjusted for age and sex.

aOR: Adjusted odds ratio.
These data are self-reported. Conceivably, some respondents misreported their exposure to bullying behavior or similarly their participation in adverse health behaviors either out of embarrassment or to provide a socially desirable response. In addition, the measure of sexually transmitted infection is intended to capture only doctor or nurse diagnosed infections; thus, we may underestimate the true prevalence of sexually transmitted infections. Despite the potential problems of self-reported data, there is no reason to believe that youth would systematically misreport in a manner that would reflect the associations observed herein, particularly across eight countries. We expect any misreporting to have been nondifferential, thus biasing our results towards the rejecting the null hypothesis.

Finally, there are invariably definition-related discussions about bullying [13] that may affect observed prevalences. This analysis is no different. The definition for bullying used in the GSHS is similar to that used in other cross-national research surveys, such as the Health Behavior in School-aged Children (HBSC). As Nansel and Overpeck note [13], adequately capturing all aspects of bullying is a challenge; the question used here (as in the HBSC) aims to be ‘understandable and relevant across countries while remaining concise’ to provide a general measure of bullying behavior.

**Conclusion**

Bullying behavior is common among boys and girls in eight African countries and is associated with physical fighting and multiple adverse health risk behaviors. Bullying should not be thought of as a ‘normal’ part of childhood development [5]. Further research and training are needed to help health professionals and program managers recognize and understand the linkages between youth exposure to violence and adverse health behaviors. Increased awareness of the frequency of exposure to bullying among youth and potential health consequences may lead to improvements in health promotion and disease prevention programs in developing countries such as those included in this analysis.

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**Executive summary**

**Introduction**

- Bullying is an act of aggression with malicious intent that is characterized by an imbalance of power and carried out repeatedly over time.
- Bullying is associated with an increased likelihood of physical and psychosomatic health problems.
- Data depicting the burden of bullying and its relationship with adverse health behaviors among youth in Africa are scarce.

**Methods**

- Data from the Global School-based Student Health Survey (GSHS) were pooled from eight African countries – Kenya, Namibia, Morocco, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.
- The age-adjusted prevalence of bullying was estimated.
- The relative frequency and likelihood of several adverse health behaviors (persistent loneliness, anxiety-related sleep loss, considered suicide, planned suicide, current cigarette smoking, current alcohol use, lifetime drug use, multiple sexual partners and history of a sexually transmitted infection) were compared between youth who have and have not been exposed to bullying behavior.

**Results**

- Nearly half (47%; 95% CI: 45–49%) of youth reported being bullied for at least 1 day during the 30 days preceding the survey, and 7% (95% CI: 6–8%) reported being bullied for 10 days or more.
- The prevalence of exposure to bullying behavior differed across countries.
- Consistent, strong and graded relationships were observed between exposure to bullying behavior and each of the adverse health behaviors.

**Comment**

- Exposure to bullying is common in these eight African countries.
- A continued and expanded commitment to routine survey data collection on exposure to bullying, violence and health risk behaviors is needed in Africa.
- These data support the notion that bullying is not part of a ‘normal’ childhood.

**Future perspective**

- Understanding the burden of bullying and other forms of violence in Africa is a challenge owing to inadequate data.
- Further investment is needed in information and surveillance systems using uniform standards for defining and measuring violence that incorporate information from other sectors.
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Future perspective
There have been enormous and increasingly successful efforts to address the global burden of infectious disease, maternal and child health, and nutritional deficiencies in Africa. The same cannot be said with regards to violence prevention. Understanding the burden of bullying and other forms of violence among children in Africa and potential linkages with health problems is a challenge owing to inadequate data that allow these linkages to be made. Further investment is needed in information systems for routine monitoring of trends in violent behavior, in injuries and in deaths. The development of surveillance systems using uniform standards for defining and measuring violence should also incorporate information available from other sources, including health services (e.g., emergency departments), law enforcement, education and other authorities [1]. In addition, a continued and expanded commitment to routine survey data collection on exposure to bullying, violence and health risk behaviors will be required to provide the data needed to further understand the complex inter-relationships between bullying and health behaviors and outcomes throughout the lifespan.

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