

# Prevalence of and Risk Factors for Depressive Symptoms Among Young Adolescents

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**Objective:** To determine the prevalence, risk factors, and risk behaviors associated with depressive symptoms in a nationally representative, cross-sectional sample of young adolescents.

**Design:** A school-based survey collected through self-administered questionnaires in grades 6, 8, and 10 in 1996.

**Setting:** Schools in the United States.

**Participants:** 9863 students in grades 6, 8, and 10 (average ages, 11, 13, and 15).

**Main Outcome Measures:** Depressive symptoms, substance use, somatic symptoms, scholastic behaviors, and involvement in bullying.

**Results:** Eighteen percent of youths reported symptoms of depression. A higher proportion of females (25%) reported depressive symptoms than males (10%). Prevalence of depressive symptoms increased by age for both males and females. Among American Indian youths, 29%

reported depressive symptoms, as compared with 22% of Hispanic, 18% of white, 17% of Asian American, and 15% of African American youths. Youths who were frequently involved in bullying, either as perpetrators or as victims, were more than twice as likely to report depressive symptoms than those who were not involved in bullying. A significantly higher percentage of youths who reported using substances reported depressive symptoms as compared with other youths. Similarly, youths who reported experiencing somatic symptoms also reported significantly higher proportions of depressive symptoms than other youths.

**Conclusions:** Depression is a substantial and largely unrecognized problem among young adolescents that warrants an increased need and opportunity for identification and intervention at the middle school level. Understanding differences in prevalence between males and females and among racial/ethnic groups may be important to the recognition and treatment of depression among youths.

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MAJOR DEPRESSIVE DISORDER (MDD) accounts for greater mortality, morbidity, and financial costs than any other psychiatric disorder.<sup>1</sup> A standardized scale assessing the extent of disability caused by all major medical disorders, including stroke and heart disease, ranked MDD fourth overall in terms of worldwide disability impact.<sup>1</sup> Because depression is highly responsive to treatment, it is unnecessarily exacerbated by the low rates of recognition and diagnosis.<sup>2</sup>

As underrecognized and undertreated as depression is among adults, it is even more so among children and adolescents. Studies have estimated that depression affects up to 8.3% of older adolescents in the United States.<sup>3</sup> Depressive symptoms among youths are often attributed to the normal stress of adolescence;

misdiagnosed as primarily conduct, attentional, or substance abuse disorders; or seen as a stage the youths are going through. Overlooking MDD among youths can have tragic consequences. Depression is associated with an increased risk of suicide,<sup>3</sup> and teen suicide rates have nearly tripled in the last 50 years.<sup>4</sup> Those who experience depression at an early age often struggle with depression throughout their lives,<sup>5</sup> and in many cases, early onset of depression predicts more severe depression during adulthood.<sup>6</sup> Even subclinical depression during adolescence increases the risk of MDD as an adult 2- to 3-fold.<sup>7</sup>

Studies of high school students<sup>5,8,9</sup> have shown that, similar to depression among adults, the incidence of depression among adolescents is greater for females than males. These sex differences have been reported to emerge between the ages of 13 and 15 years, and prior to this

age, rates of depression appear to be similar for young boys and girls.<sup>10-13</sup>

Depression is associated with poor health behaviors and social challenges. In addition to an increased risk of suicide, youths who are depressed are at a higher risk for mental disorders such as anxiety, conduct disorders, and substance abuse. They are also more likely than other youths to engage in unsafe sexual practices and other risk behaviors.<sup>6,8,14-16</sup> Further, youths who are depressed tend to experience difficulty relating to peers and are more likely than others to be involved in physical fights with peers.<sup>8,14,15</sup> The difficulties they face in their peer relationships and their tendency toward violent behavior are not well understood; however, there is some overlap between the issues faced by youths who are depressed and those faced by youths involved in aggressive behaviors such as bullying.

Bullying has recently been recognized as a common behavior among young adolescents.<sup>16</sup> Like youths who are depressed, those adolescents who are involved in bullying, both as victims and as perpetrators, experience poor psychosocial and emotional adjustment, difficulty making friends, and increased loneliness.<sup>16</sup> Given the high prevalence of bullying behaviors and the risks that both the victims and the perpetrators of bullying encounter, the relationship between bullying and depression merits examination.

Recognizing depression as early as possible could be a critical step to reducing the prevalence of depression among older individuals, managing depression more effectively, and preventing negative outcomes. A number of important issues need further investigation to aid early diagnosis. Because most studies on adolescent depression have focused on high school students, the prevalence of depressive symptoms in younger adolescents (ie, middle school children) is not well established. Few studies have included middle school youths, and each has had methodological limitations, ranging from small sample size and the inability to study certain ethnic groups to varied indicators of depression.<sup>17-19</sup> Thus, to recognize depression among youths as early as possible, further research is needed.

In the present study, we use data from a school-based national survey to explore the prevalence of depressive symptoms in young adolescents. We sought to answer the following questions<sup>1</sup>: What is the prevalence of depressive symptoms in US youths aged 11 to 15 years?<sup>2</sup> And to what extent are substance use, involvement in bullying, and somatic symptoms associated with depressive symptoms in this age range?

## METHODS

The Health Behavior in School Children Study is a multinational, cross-sectional, school-based survey of adolescents in grades 6, 8, and 10; the survey was first conducted in 1983-1984, and since 1985-1986 it has been performed every 4 years in collaboration with the World Health Organization Regional Office for Europe (Copenhagen, Denmark). Data are collected through a cluster sample design in which schools and classrooms are selected so that nationally representative samples are obtained. The anonymous survey includes questions on family structure, diet, exercise, self-image, injuries, safety behav-

iors, academic performance and pressures, attitudes about school, fighting and bullying, and substance use.

In 1996, the Substance Abuse and Mental Health Services Administration (Rockville, Md) and the National Institute of Child Health and Human Development (Rockville) supported a survey, conducted by Macro International Inc (Calverton, Md), of young adolescents that was based on the Health Behavior in School Children Study. Compared with previous and subsequent Health Behavior in School Children surveys, the 1996 US survey included more detailed information than the international quadrennial surveys about mental health and behavior, including depressive symptoms and risk behaviors. Thus, data from this survey are used to report and characterize depressive symptoms among US youths. Parents/guardians of students were sent a letter describing the survey and were given the opportunity to decline their child's participation. Eighty-seven percent of the students responded. The survey was conducted with the approval and oversight of the institutional review boards of the Substance Abuse and Mental Health Services Administration and Macro International Inc.

This study applied a 3-stage cluster design in which the school district was the primary sampling unit or first stage, the school was the second stage, and the classroom was the third stage. The universe for the study consisted of public and private schools in the 50 states and the District of Columbia. Data were collected from 9963 students at 358 schools through a self-administered questionnaire containing 114 questions. Excluded from the study sample were students with substantial missing data ( $n=25$ ), multiple responses on or missing grade information ( $n=65$ ), and multiple responses on or missing sex information ( $n=10$ ). The final analytic sample consisted of 9863 students in grades 6, 8, and 10, representing a total of 11 184 117 US students. African American, Hispanic, and Asian American youths were oversampled to provide national estimates for underrepresented racial and ethnic groups.

The weighted sample of 9863 students was split almost equally between males (47.8%) and females (52.2%) and among students in grades 6 (32.1%), 8 (33.7%), and 10 (34.2%). The majority of students were classified as non-Hispanic white youths (48%), followed by those classified as Hispanic (28.2%), non-Hispanic African American (13.6%), non-Hispanic Asian American (8.7%), and non-Hispanic American Indian/Pacific Islander (1.5%).

## VARIABLES

The questionnaire included items on health-related behaviors in the context of students' families, schools, and peers. The following variables were examined in the present study.

### Depressive Symptoms

The questionnaire included 2 items on depression. The first item asked students to indicate if they ever felt sad, blue, down, or depressed almost every day for 2 or more consecutive weeks during the past 12 months. The second item asked students to respond yes or no to 10 statements describing what they might have experienced when they were feeling depressed during the past 12 months. These statements were taken from the *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (DSM-III-R)* criteria for depression.<sup>20</sup> Using these criteria, we created a dichotomous indicator of depressive symptoms. According to the *DSM-III-R*, an individual is depressed if at least 5 of 9 criteria are met (ie, present during the past 2 weeks). Two of the 9 criteria were excluded from this questionnaire (psychomotor agitation or retardation and fatigue or loss of energy almost every day) because the authors of the questionnaire believed that these criteria would be difficult to ac-

When you felt sad, blue, down, or depressed for 2 weeks or more, which of the following was true about you? Mark yes or no for each statement.

- I was irritable or grouchy most of the time.
- I wasn't interested in doing much of anything.
- I gained weight.
- I lost weight.
- I couldn't concentrate as well as usual.
- I couldn't sleep and was awake all night.
- I slept nearly every minute I could.
- I felt I was a really rotten person.
- I thought about hurting myself.
- I thought about death a lot.

Criteria used to determine depressive symptoms among young adolescents.

curately assess without a clinical examination. The remaining 7 criteria were translated into the 10 response items (**Figure**).

### Bullying

Students were asked to report the number of times per week that they had been bullied or had bullied others at school during the past 12 months.

### Risk Behaviors

With regard to substance use, students were asked if they ever smoked tobacco, drank alcohol, or took other drugs (such as marijuana, cocaine, inhalants, and hallucinogens). If they answered yes to the questions on alcohol and smoking, they were asked to indicate how often they used these substances in the past month.

With regard to somatic symptoms, students were provided with a list of physical ailments (eg, headache, stomachache, and backache) and asked to indicate whether or not they experienced each ailment once a week.

### STATISTICAL ANALYSIS

For purposes of analysis, 2 sets of depression response items were collapsed: the 2 dealing with lack of sleep and excess sleep (sleep disturbance) and the 2 dealing with weight loss and weight gain (weight disturbance). Individuals were classified as reporting depressive symptoms if at least 5 of the 8 statements in the Figure were true. After depressive symptom status was determined, we calculated the prevalence of depressive symptoms for all grade, sex, and racial/ethnic subgroups. Next, we calculated the prevalence of depressive symptoms according to the status of bullying behaviors. Finally, we calculated the prevalence of depressive symptoms for substance abuse and somatic symptoms and compared these by status of substance abuse and somatic symptoms. We stratified all analyses by sex. We calculated 95% confidence intervals for the estimated prevalence ratio to compare prevalence of depressive symptoms across bullying behaviors, substance use, and somatic ailments.

All analyses were conducted using SAS software (version 8.0; SAS Institute, Cary, NC). Analyses are weighted by the probability of the selection to produce national estimates. SUDAAN (Research Triangle Institute, Research Triangle Park, NC) was used for variance estimates to account for sample design.

### RESULTS

About 1 in 6 US youths reported depressive symptoms (**Table 1**). Prevalence of depressive symptoms was higher among females than males; however, prevalence in both

sexes increased with grade level. For boys, prevalence almost doubled between 6th and 10th grades. For girls, prevalence nearly tripled between 6th and 10th grades (**Table 1**). Prevalence of depressive symptoms varied by racial/ethnic group, and prevalence among females in all racial/ethnic groups was consistently higher than among males. Among males and females, those classified as American Indian/Alaskan Native and Hispanic had the highest prevalence of depressive symptoms, followed by those classified as white. Those classified as African American had the lowest prevalence, followed by Asian American youths (**Table 1**).

With regard to bullying and depression, the proportion of youths reporting depressive symptoms increased with increased involvement in bullying, both as the bullies and as the victims (**Table 2**). This was true for males and females. Thirty-seven percent of females who were bullied more than twice in the preceding year reported depressive symptoms, compared with nearly 18% of similar males. Nearly 46% of females involved in bullying others more than twice in the preceding year reported depressive symptoms, compared with 15% of similar males (**Table 2**).

Females and males who reported using substances had significantly higher proportions of depressive symptoms than those who did not report using substances (**Table 3**). This pattern was true for all measured substances. Prevalence of depressive symptoms was much higher among female substance users than male substance users. With regard to somatic symptoms, females and males who reported having somatic symptoms 1 or more times a week had a significantly greater prevalence of depressive symptoms than those who did not report having these symptoms as often (**Table 4**).

### COMMENT

This study indicates that the prevalence of depression among young adolescents, particularly female adolescents, may be higher than previous estimates. Although previous research has shown a high rate of depression among adolescents, most studies have been conducted on older adolescents, particularly high school and college students. We found that the prevalence of depressive symptoms among females in this age range was approximately double that among males. Previous research on sex differences and depression has also shown that depression is more prevalent among females than males; however, this study suggests that sex differences among adolescents who are depressed may emerge earlier than previous research has suggested.

As expected, the prevalence of depressive symptoms among adolescents increased with age. The increase was far more severe for females than males, as was evidenced by the doubled prevalence from sixth to eighth grade. The increase among males, though less striking, was also notable, indicating a rapid emergence of depressive symptoms among youths in middle school.

Although Native American, Hispanic, and white students, especially girls, reported more depressive symptoms as compared with Asian American and African American students, findings from previous studies on de-

**Table 1. Weighted Percentages of Depressive Symptoms by Grade, Sex, and Race/Ethnicity\***

	Male (n = 4712)	Female (n = 5151)	Total (N = 9863)
Grade			
6th (n = 3167)	7.1 (4.7-9.5)	12.6 (9.2-16.0)	10.0 (7.4-12.6)
8th (n = 3328)	10.2 (7.0-13.4)	29.9 (25.9-33.9)	20.4 (18.0-22.8)
10th (n = 3368)	13.6 (10.6-16.6)	34.3 (29.3-39.3)	24.5 (20.7-28.3)
Race/ethnicity			
Non-Hispanic white (n = 4434)	10.3 (7.9-12.7)	25.7 (21.3-30.1)	18.4 (15.4-21.4)
Non-Hispanic African American (n = 1252)	8.7 (3.7-13.7)	19.5 (13.1-25.9)	14.6 (9.8-19.4)
Non-Hispanic Asian American (n = 803)	11.5 (4.3-18.7)	20.0 (11.2-28.8)	16.6 (9.4-23.8)
Hispanic (n = 2603)	11.5 (7.1-15.9)	32.2 (26.6-37.8)	21.7 (18.5-24.9)
Non-Hispanic American Indian/Alaskan Native (n = 141)	16.1 (6.7-25.5)	42.8 (23.2-62.4)	29.0 (18.8-39.2)
Total	10.2 (8.4-12.0)	25.3 (22.5-28.1)	18.2 (16.4-20.0)

\*Data are given as percentage (95% confidence interval).

**Table 2. Prevalence of Depressive Symptoms by Bullying Status\***

	Females		Males	
	Percent Depressed	Relative Risk	Percent Depressed	Relative Risk
Bullied at school in the past year				
0 times	21.3 (18.3-24.3)	...	7.4 (5.0-9.8)	...
1 or 2 times	27.7 (22.1-33.3)	1.3 (1.1-1.6)	10.2 (5.0-15.4)	1.4 (0.9-2.1)
More than 2 times	36.8 (30.6-43.0)	1.7 (1.4-2.1)	17.7 (15.5-19.9)	2.4 (1.7-3.4)
Involved in bullying others at school in the past year				
0 times	19.1 (16.1-22.1)	...	7.6 (4.6-10.6)	...
1 or 2 times	30.3 (25.5-35.1)	1.6 (1.3-2.0)	10.8 (7.0-14.6)	1.4 (1.0-2.0)
More than 2 times	45.7 (38.5-52.9)	2.4 (2.0-2.9)	15.0 (12.2-17.8)	2.0 (1.2-3.3)

\*Data are given as weighted estimate (95% confidence interval).

**Table 3. Prevalence of Depressive Symptoms for Youths Who Use and Do Not Use Substances\***

	Females		Males	
	Percent Depressed	Relative Risk	Percent Depressed	Relative Risk
Smoked tobacco				
Yes	42.6 (38.6-46.6)	2.8 (2.3-3.3)	15.6 (12.6-18.6)	2.3 (1.8-3.0)
No	15.4 (12.6-18.2)	...	6.8 (5.4-8.2)	...
Drank alcohol				
Yes	39.6 (34.6-44.6)	3.0 (2.5-3.6)	14.8 (12.6-17.0)	2.5 (1.6-3.9)
No	13.4 (11.2-15.6)	...	6.0 (3.4-8.6)	...
Used marijuana				
Yes	49.9 (44.7-55.1)	2.6 (2.2-3.0)	17.6 (14.2-21.0)	2.2 (1.7-3.0)
No	19.5 (16.3-22.7)	...	7.9 (6.1-9.7)	...
Used cocaine				
Yes	60.6 (48.8-72.4)	2.5 (2.1-3.0)	36.1 (26.1-46.1)	3.8 (2.5-5.8)
No	24.2 (21.4-27.0)	...	9.4 (7.4-11.4)	...
Used inhalants				
Yes	62.5 (56.3-68.7)	3.0 (2.5-3.5)	31.2 (25.2-37.2)	4.0 (2.9-5.6)
No	21.0 (18.0-24.0)	...	7.8 (6.0-9.6)	...
Used hallucinogens				
Yes	70.3 (59.1-81.5)	3.1 (2.5-3.7)	27.8 (19.8-35.8)	3.0 (2.0-4.5)
No	22.9 (19.7-26.1)	...	9.3 (7.3-11.3)	...

\*Data are given as weighted estimate (95% confidence interval).

pression and ethnicity have not been as clear. Some studies have shown minimal differences among ethnic groups with regard to depression,<sup>21</sup> whereas other studies have found depression to be more prevalent among African American adolescents than other adolescents,<sup>8</sup> and still

others have found it to be less prevalent among African American youths.<sup>22</sup> Data on depression among Hispanic youths have been mixed,<sup>23,24</sup> and previous research on Asian American adolescents has shown that Asian American adolescents are at a high risk for depression.<sup>25</sup>



**Table 4. Prevalence of Depressive Symptoms for Youths With and Without Somatic Symptoms\***

	Females		Males	
	Percent Depressed	Relative Risk	Percent Depressed	Relative Risk
Headache once a week				
Yes	30.2 (26.6-33.8)	2.5 (1.7-3.7)	13.4 (11.0-15.8)	2.8 (2.0-4.0)
No	12.2 (7.8-16.6)	...	4.8 (3.0-6.6)	...
Stomachache once a week				
Yes	32.6 (29.0-36.2)	2.5 (2.0-3.1)	15.4 (12.6-18.2)	2.9 (2.1-3.8)
No	13.2 (10.4-16.0)	...	5.4 (3.8-7.0)	...
Backache once a week				
Yes	38.3 (34.5-42.1)	2.7 (2.3-3.1)	17.0 (13.8-20.2)	3.1 (2.3-4.2)
No	14.4 (12.2-16.6)	...	5.5 (4.1-6.9)	...
Nervous once a week				
Yes	34.1 (30.7-37.5)	2.9 (2.1-3.9)	16.7 (14.1-19.3)	4.2 (2.9-6.1)
No	11.9 (8.3-15.5)	...	4.0 (2.4-5.6)	...
Feel dizzy once a week				
Yes	41.8 (38.2-45.4)	2.8 (2.4-3.1)	20.3 (16.7-23.9)	3.9 (2.8-5.3)
No	15.2 (12.8-17.6)	...	5.3 (3.9-6.7)	...

\*Data are given as weighted estimate (95% confidence interval).

Given the variability in results, these questions warrant further research.

The association between bullying and depression is notable. Although the prevalence of involvement in bullying both as victims and as perpetrators was high, those who reported being involved more frequently had higher proportions of depression. Regarding those youths who are bullied, one might expect that an individual who is bullied frequently could develop feelings of social isolation, leading to depression. Further, those youths who are depressed might lack social skills, making them an easy target for bullying. The association between bullies and depression is less obvious. Previous research has found that those who bullied do not appear to be socially isolated,<sup>16</sup> nor do they appear to suffer from psychosomatic or depressive symptoms<sup>26</sup>; however, another study reported that those who bully are at an increased risk for depression and suicide.<sup>27</sup> One possible explanation as to why those who bully may be at an increased risk for depression and suicide is that they may have had more exposure to familial violence or abuse. Clearly, this topic requires further investigation.

The association between risk behaviors and depressive symptoms in this study are consistent with previous research on older adolescents. Youths who reported using substances were more likely to report depressive symptoms than other youths, suggesting that those who use substances might be self-medicating, even at this young age. We should also consider the possibility that substance use may actually precede the onset of depressive symptoms, as suggested by previous research.<sup>28</sup> Furthermore, youths who reported suffering from frequent somatic symptoms were more likely to report depressive symptoms than other youths. Previous research has found that girls are more likely than boys to admit to internalizing symptoms such as depression and anxiety. In contrast, boys have a greater tendency to externalize symptoms through "acting out."<sup>29</sup> Thus, the higher proportion of females reporting somatic symptoms is not surprising.

Several strengths of this study should be noted. First, the large sample size of this study places it among the largest nationally representative studies on youths and depression. Also, the sampling strategy was designed so that reliable estimates could be made for ethnic minorities, including African American, Asian American, and Hispanic individuals. Unlike several past studies, depression was assessed using criteria outlined by the American Psychological Association. Although the data were collected in 1996, we do not believe that the age of the data has a bearing on the interpretation of the results. The criteria used to diagnose depression have not changed in recent years. We do not suspect that any secular trends would have affected the rates of reporting depressive symptoms during the past 8 years; however, even if the prevalence of depressive symptoms has changed, the relationship between depression and associated risk factors is unlikely to have been affected.

Readers should note, however, that a *DSM-III-R* diagnosis of MDD includes the stipulation that the depressed mood was present "most of the day, nearly every day" during a 2-week period and that the depression caused significant distress or impairment in daily functioning. Additionally, the *DSM-III-R* was designed to assess depression among adults. Although the *Diagnostic and Statistical Manual of Mental Disorders* has undergone rigorous psychometric testing, this particular questionnaire did not undergo such testing. Because of these factors, combined with the fact that the present study did not include a clinical examination of each respondent, readers should note that the results of this study reflect the prevalence of *depressive symptoms*, not clinical depression. Given the self-report method of data collection and the fact that only 7 of 9 depression criteria were included in the survey, it is possible that the data presented in this study actually underreport the prevalence of depressive symptoms.

Results from this study suggest that depression is a substantial problem facing young adolescents. The study highlights the need for more intervention at the middle

### What This Study Adds

Major depressive disorder accounts for greater mortality, morbidity, and financial costs than any other psychiatric disorder. In the United States, studies estimate the prevalence of depression among older adolescents to be as high as 8.3%. Much less is known about prevalence of and risk factors for depression among young adolescents. Results of this study show that nearly 20% of young adolescents in the United States report symptoms consistent with depression. Furthermore, youths involved in behaviors such as bullying and substance use and youths who report frequent somatic complaints have higher rates of depressive symptoms than other youths.

Results of this study suggest that depression manifests itself in many ways that might not appear obvious in young adolescents. Thus, practitioners who work with youths who have such symptoms/behaviors should consider screening for depression. Depression is a substantial and largely unrecognized problem facing young adolescents, and more intervention is needed at the middle school level.

school level. Because depressive symptoms are likely to coexist with other adolescent problem behaviors, such as bullying and substance use, young adolescents who are involved in such behaviors might be depressed as well. Youths who suffer from frequent somatic symptoms (eg, frequent absenteeism and/or complaints of headaches and other physical symptoms) are more likely to be depressed. Practitioners who work with youths who have such symptoms/behaviors should consider screening them for depression; successful treatment of depression could lead to many other positive health and behavioral outcomes for these youths. Increased awareness of depression among this age group is the first step toward implementing effective intervention.

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