

# Life Course Indicator: Depression Among Youth

## The Life Course Metrics Project

As MCH programs begin to develop new programming guided by a life course framework, measures are needed to determine the success of their approaches. In response to the need for standardized metrics for the life course approach, AMCHP launched a project designed to identify and promote a set of indicators that can be used to measure progress using the life course approach to improve maternal and child health. This project was funded with support from the [W.K. Kellogg Foundation](#).

Using an RFA process, AMCHP selected seven state teams, Florida, Iowa, Louisiana, Massachusetts, Michigan, Nebraska and North Carolina, to propose, screen, select and develop potential life course indicators across four domains: Capacity, Outcomes, Services, and Risk. The first round of indicators, proposed both by the teams and members of the public included 413 indicators for consideration. The teams distilled the 413 proposed indicators down to 104 indicators that were written up according to three data and five life course criteria for final selection.

In June of 2013, state teams selected 59 indicators for the final set. The indicators were put out for public comment in July 2013, and the final set was released in the Fall of 2013.

### Basic Indicator Information

**Name of indicator:** Depression Among Youth (LC-42)

**Brief description:** Percent ninth through 12th graders who felt sad or hopeless almost every day for more than two weeks during the previous 12 months

**Indicator category:** Mental Health

**Indicator domain:** Risk/Outcome

**Numerator:** Number of ninth through 12th graders who felt sad or hopeless almost every day for more than two weeks during the previous 12 months

**Denominator:** Number of ninth through 12th graders

**Potential modifiers:** sex, race/ethnicity, grade level, sexual orientation, geography (including rural vs. urban school districts), reported substance abuse, reported victim of bullying, socioeconomic status, family structure

**Data source:** Youth Risk Behavior Surveillance System (YRBSS)

**Notes on calculation:** The numerator is derived from students who answered “Yes” to the question “During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?” Analysts who use the raw datasets should apply the appropriate survey weights to generate the final estimates.

**Similar measures in other indicator sets:** HP 2020 Focus area MHMD-4.1 (Leading Health Indicator)

## Life Course Criteria

### **Introduction**

Depression among youth is a costly and complex problem characterized by deep disparities across groups defined by gender, racial/ethnic, socioeconomic status (SES), and sexual orientation. This presents a substantial challenge for the U.S. health care system due to the economic cost of mental illness reaching the billions annually. The etiology of youth depression is a combination of genetic, biological, environmental, and psychosocial factors. When compared to healthy peer counterparts, adolescents who experience depression during childhood are more likely to experience severe mental illness during adulthood and suffer from comorbidities, resulting in increased risk for school drop-outs, pregnancy, substance abuse, adult depression, and suicide. Research indicates that risk for childhood and adolescent depression increases two to three times among children of depressed parents, further indicating that adolescent depression is a family-based, life course issue. A variety of traditional and non-traditional partnerships offer opportunities to reduce the proportion of adolescents experiencing depressive symptoms, including those hard to reach, and intervene in this sensitive period to reduce risks to lifelong well-being.

### **Implications for equity**

When examining prevalence rates of adolescent depression, key disparities emerge. Research suggests gender, race/ethnicity, socioeconomic status, and sexual orientation all play a role in reported depression disparities among adolescent and young adults.

According to the 2011 national Youth Risk Behavior Surveillance System (YRBSS), female students have a higher prevalence of feeling sad or hopeless almost every day for two or more weeks in a row (35.9 percent for females vs. 21.5 percent for males).<sup>4</sup> This gender disparity remained constant in every category of race/ethnicity and every grade level. The survey also indicates that state and large urban school district surveys reveal the same gender gap.<sup>4</sup> Maughan et al. concluded that rates of depression rise in the teenage years, especially among females. Researchers have proposed a variety of hypotheses as to why this gender gap exists, including: ability to process stressful events and related coping styles, greater exposure/sensitivity to psychosocial stress, hormonal changes, and changes in underlying brain development.<sup>5</sup>

Racial and ethnic disparities also have been linked to depression in youth. Healthy People 2010 data indicated racial and ethnic disparities among adolescents who reported experiencing major depressive episodes. Black non-Hispanic adolescents reported having the lowest proportion of major depressive episodes in the past 12 months. Non-Hispanic white, American Indian, and Alaska Native adolescents reported rates that were 23 percent to 36 percent higher when compared to Black non-Hispanic adolescents.<sup>6</sup>

Socioeconomic status also contributes to inequities associated with youth depression. Although SES is not measured in the YRBSS, data measuring similar factors – lower household income and lower parental education – are both associated with higher prevalence rates of adolescent depression in the 2011 YRBSS national sample.<sup>7</sup> In a study that examined SES and population attributable risk (PAR) for adolescent depression, research indicated that the adjusted PAR for lower income was 26 percent and the adjusted PAR for lower parental education was 40 percent, indicating that lower SES, most notably low parental education, is associated with an increased risk for youth depression.<sup>3</sup>

A large body of research suggests depression among adolescents and young adults occurs disproportionately among youth who identify as lesbian, gay, bisexual, or transgender (LGBT), indicating a significant inequity associated with sexual orientation. Almeida et al. assessed emotional distress by analyzing data from a school-based survey (n=1,032). Results indicated that when compared to heterosexual peer counterparts, LGBT youth scored significantly higher on the scale of depressive symptomatology. Mediation analysis also revealed that this disparity could be attributable to perceived discrimination.<sup>8</sup>

Moving forward, public health professionals must take gender, racial/ethnic, socioeconomic, and sexual orientation inequities into consideration when planning adolescent depression programs and policies. If programs can specifically target at-risk youth populations and determine the underlying reasons for the existence of these disparities, adolescent health and well-being could be successfully promoted by public health entities.

## **Public health impact**

Depression among adolescents and young adults has a significant impact on the larger U.S. public health system. Although prevalence data is highly variable, most researchers suggest the lifetime prevalence rate of major depression in adolescence is 15 percent-20 percent.<sup>9</sup> This translates to nearly one in five adolescents, indicating that depression is an emerging and compelling health issue for adolescents and young adults. Despite multiple efforts to identify and reduce youth depression and suicide, the prevalence of adolescents who report feeling sad or hopeless almost every day for two or more weeks in a row did not change significantly between 1999 and 2011 (28.3 percent-28.5 percent). In fact, the rate increased from 2009 to 2011 (26.1 percent and 28.5 percent respectively) according to the 2011 national YRBSS.<sup>4</sup>

Extant research suggests that depression during childhood and adolescence is associated with adverse adult health outcomes, including mental illness during adulthood. This presents a substantial challenge for the U.S. health care system because the economic cost of mental illness in the United States was estimated to be approximately \$300 billion in 2002 dollars.<sup>10</sup> If depression during adolescence can be prevented or treated early, there is a cost-savings opportunity for public health systems. Additionally, reducing depression in adolescents is a national health priority. Healthy People 2020 includes an objective which specifically focuses on reducing the proportion of adolescents aged 12 to 17 years who experience major depressive episodes.<sup>11</sup>

Recent incidences of gun violence and mass shooting such as the Aurora shooting and the Sandy Hook Elementary school shooting have forced the public health community to further examine the relationship between mental health and violence, particularly among young adults and adolescents.<sup>12</sup> Although research on this topic is scant, some studies suggest a significant relationship between violence and self-rated mental health. A longitudinal study of adolescents in the United States suggests that youth who are exposed to violence (e.g., witness gun violence) experience increased risk for poor health, including symptoms associated with depression. Policy analysis also reveals a significant relationship between gun violence and suicide with some researchers even suggesting potential policy strategies to reduce gun-related suicides.<sup>13</sup> Moving forward, public professionals must seek to further define the long-term consequences associated with gun violence, mental health, depression, and suicide among adolescents.<sup>14</sup>

The adolescent depression indicator provides a point of intervention and reference for public health systems and programs. Research suggests that prevention programs decrease the occurrence and reoccurrence of depressive symptoms in youth.<sup>5</sup> School-based selective prevention programs using cognitive behavioral therapy have shown to be beneficial to adolescents with depressive symptoms.<sup>5</sup>

## **Leverage or realign resources**

There is substantial potential to leverage and realign system resources to impact adolescent depression. Multiple entities within the system of care serving adolescents have the opportunity to intervene and address depression in adolescents. These entities include, but are not limited to: school systems, the department of labor, community employers, public and private health care systems, research institutions and federal agencies such as the National Institute for Mental Health (NIMH) and the Substance Abuse and Mental Health Services Administration (SAMHSA), social services, and non-profit organizations such as the National Alliance on Mental Illness (NAMI).

Potentially the single most important resource for preventing adolescent depression is the school system. Children and adolescents spend a large portion of their time in school, presenting school officials and teachers with an opportunity to intervene and impact adolescents' lives. Adolescent depression is often associated with negative long-term outcomes including impairment in school and school drop-out.<sup>5,9</sup> Many education systems are currently involved in various prevention efforts with programs in place for youth identified as at-risk for or living with depression.<sup>5</sup> Such school-based programs have the potential to positively address this emerging health issue for adolescents. Maughan et al. suggests that peer conflict and bullying are risk factors highly associated with adolescent depression; therefore, schools and overlapping program entities could focus on these factors.<sup>5</sup> Many non-profit organizations work in conjunction with schools to provide after-school programs such as tutoring, physical activity programs, and nutrition workshops. Such organizations could be approached for partnership possibilities regarding the prevention of adolescent depression. Sports programs within school systems also provide a visible platform for partnership, since many adolescents actively participate in school sports programs.

Adolescent depression also is associated with impairment in the workplace setting. Since many older adolescents and young adults hold part-time employment, creative partnerships are possible. The Department of Labor and local community employers known for hiring large amounts of youth could potentially provide invaluable, creative partnership opportunities.

Youth depression is associated with high medical costs. Medicaid has several vehicles to support effective community mental health services, including state plan services, managed care, waivers, and the Early Period Screening, Diagnosis and Testing Benefit.<sup>15</sup> Private insurers also provide support for mental health services. Additionally, medical home and care coordination entities are potential partners as many public and private health plans move children with ongoing special health care needs, including mental health issues such as depression, into managed care programs. Given the high cost of medical expenses associated with adolescent depression and the need for clinical care, private and public health care entities are natural partners for addressing adolescent depression in states and communities.

Federal agencies also are dedicated to preventing adolescent depression and could serve as potential partners. The NIMH provides information on its website specific to depression in children and adolescents, including fact sheets and links to other organizations and information.<sup>16</sup> SAMHSA has a National Registry of Evidence-based Programs and Practices for the public to view available interventions.<sup>17</sup>

Lastly, it is important to note that not all adolescents and young adults can be reached via traditional mechanisms. Adolescents in the foster care system, runaway and homeless youth, and adolescents who are not connected to schools can be difficult to reach. Therefore, public health systems must creatively approach these populations by leveraging community-based partners such as homeless shelters, free counseling centers, and even law enforcement. Established partnerships with social service organizations also would allow for public systems to identify and bring in adolescents outside of the traditional system of care.

### ***Predict an individual's health and wellness and/or that of their offspring***

Youth depression is an important indicator on the life course trajectory. The etiology of youth depression is a combination of genetic, biological, environmental, and psychosocial factors. When compared to healthy peer counterparts, adolescents who experience depression during childhood are more likely to experience severe mental illness during adulthood.<sup>9</sup> Researchers also suggest disruptive disorders including Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD) are co-morbidities often associated with youth depression. Research indicates that risk for childhood and adolescent depression increases two to three times among children of depressed parents, further indicating that adolescent depression is a family-based, life course issue.<sup>18</sup>

As mentioned previously, depression during adolescence is significantly associated with adverse health outcomes. Untreated depression in youth is associated with increased school drop-outs, pregnancy, substance abuse, adult depression, and suicide.<sup>9</sup> Given the individual negative adverse health outcomes associated with adolescent depression, public health professionals must actively seek to prevent and treat depression among youth.

## **Data Criteria**

### ***Data availability***

The YRBSS monitors priority health-risk behaviors and the prevalence of obesity and asthma among youth and young adults. The YRBSS includes a national school-based survey conducted by the Centers for Disease Control and Protection (CDC), state, territorial, and local education and health agencies and tribal governments.

YRBSS monitors six categories of priority health-risk behaviors among youth and young adults, including behaviors that contribute to unintentional injuries and violence; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; alcohol and other drug use; tobacco use; unhealthy dietary behaviors; and inadequate physical activity. In addition, YRBSS monitors the prevalence of obesity, asthma and symptoms of depression.

The YRBSS is administered every other year (odd years), generally in the spring semester in schools via a pencil and paper mode. The YRBSS survey contains no skip patterns. In the even-numbered years, CDC leads a process of examining and revising the questionnaire, using both expert opinion and votes from the YRBSS coordinators in states. The final result is a standard questionnaire that can be modified by states to meet their needs, but modifications must be within certain parameters.: 1) the modified questionnaire must contain at least two-thirds of the original standard questionnaire, 2) questions that are added are limited to eight mutually exclusive response options, 3) the questionnaire may not have skip patterns or fill in the blanks, and 4) the questionnaire may not exceed 99 questions, and the state must retain the height and weight questions. The 2011 YRBSS included a national school-based survey conducted by CDC and 47 state surveys, six territory surveys, two tribal government surveys, and 22 local surveys conducted among students in grades nine through 12 during October 2010-February 2012. Data collected by CDC represent both public and private schools with students in grades nine through 12; data collected by states, territories, tribes, and localities represents primarily public school students.

The National YRBSS questionnaire and datasets from each survey cycle are readily available on the CDC website via two mechanisms. Individuals can download raw YRBSS datasets in ASCII, SAS, SPSS, or Access formats. Additionally, the CDC also offers an interactive online portal entitled “Youth Online” which allows users to view results from the 2011 National YRBSS survey and filter by race/ethnicity, sex, and grade. YRBSS summaries published in the Morbidity and Mortality Weekly Report (MMWR) also are viewable and downloadable on the CDC website.

In 2011, a total of 43 states and 21 large urban school districts collected YRBSS data representative of high school students in their jurisdiction.

Sources:

About YRBSS: [cdc.gov/HealthyYouth/yrbs/index.htm](http://cdc.gov/HealthyYouth/yrbs/index.htm)

Raw Data File Access: [cdc.gov/healthyouth/yrbs/data/index.htm](http://cdc.gov/healthyouth/yrbs/data/index.htm)

CDC “Youth Online”: [apps.nccd.cdc.gov/youthonline/App/Default.aspx?SID=HS](http://apps.nccd.cdc.gov/youthonline/App/Default.aspx?SID=HS)

### **Data quality**

From the available YRBSS documentation, the 2011 national YRBSS school response rate was 81 percent; the student response rate was 87 percent; and the overall response rate was 71 percent. Comparisons between estimates for states and districts from the national data collection effort and the surveys collected by states, territories, tribes, and localities can be found on the CDC YRBSS website. Each jurisdiction reached a minimum site response rate of 60 percent and therefore had weighted data for that year. Weighted data allows a jurisdiction to make statements from the data that generalize to all high school students in that jurisdiction.

Studies by CDC and others indicate that data about risk behaviors can be gathered as credibly from adolescents as from adults. YRBSS performs internal reliability checks to help identify the small percentage of students who falsify their answers. To obtain truthful answers, students must perceive the survey as important and know procedures have been developed to protect their privacy and allow for anonymous participation.

A test-retest study of the 1999 version of the questionnaire found that 47 percent of items had at least “substantial” reliability, with kappa statistics of agreement of 61 percent or greater, and 93 percent of items had at least “moderate” reliability, with kappas of 41 percent or greater. The study found no differences in reliability by gender, grade, or race/ethnicity. The study found that items related to tobacco use, alcohol and other drug use, and sexual behavior had the highest reliability. By comparison, items asking about dietary behaviors, physical activity, and other health-related topics were less reliable. A study of mode and setting using the YRBSS questions determined that students were more likely to report risk behaviors when they took the survey at school compared with taking the survey at home. The question which captured whether the ninth through 12<sup>th</sup> grader felt sad and hopeless in the past 12 months received a kappa score of 56.4 percent with a time-one prevalence of 28.2 and a time-two prevalence of 24, yielding the conclusion that the reliability of the survey question was questionable.<sup>1-2</sup> The study reported that the question was revised in later questionnaires, but there is no documentation to determine the reliability of recent questionnaires.

YRBSS data captures the prevalence of depressive symptoms but does not truly capture the prevalence of clinical or diagnosed depression. Therefore, much of the information presented in subsequent sections on clinical depression may not be fully applicable to students who respond affirmatively to the YRBSS question of interest. Research suggests that early symptoms of mental health disorders, including depression, emerge several years before full diagnostic criteria are met.<sup>3</sup>

In 2003, the CDC conducted an empirical literature review to examine the validity of adolescent self-reporting of risk-behaviors measured on the YRBSS and determined that neither cognitive nor situational factors impede the validity of the YRBSS self-reporting method. Lastly, it is important to note two key limitations for this data: (1) the data only applies to ninth through 12<sup>th</sup> grade-aged youth attending school and (2) under- and over-reporting of behaviors cannot be determined.<sup>1</sup>

### ***Simplicity of indicator***

The level of complexity in calculating and explaining the adolescent depression indicator is moderate. The YRBSS determines the prevalence rate of ninth through 12<sup>th</sup> graders who felt sad or hopeless almost every day for more than two weeks by weighting the results. Weighting means that a numeric adjustment was applied to each survey record in the data set to account for the sampling design and known differences between responders and non-responders so that the results are representative of all ninth through 12<sup>th</sup> graders in the United States attending public and private school. While the statistical analysis and weighting methodology used is detailed and complex, the CDC website offers information regarding weighting procedures which is simple to read and interpret. Lastly, the survey question itself may be complex for high school students to answer. Interpretation of the terms “sad”, “hopeless” and “almost every day” is subjective and could be difficult for youth to answer accurately and consistently. The indicator is, however, easy to explain to public health professionals.

Source: [cdc.gov/HealthyYouth/yrbs/faq.htm](http://cdc.gov/HealthyYouth/yrbs/faq.htm)

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