Ongoing Federal Child Mental Health Surveillance Systems
Triangulating Prevalence through Multiple Methods

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Workshop on Integrating New Measures of Serious Emotional Disturbance in Children into SAMHSA’s Data Collection Programs
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National Surveillance of Children’s Mental Health

- Document the impact of children’s mental health and mental disorders
- Document mental health needs of children
- Build effective programs and services for children and families
- Inform research on factors that increase risk and promote prevention
- Inform policy and resource allocation
Children’s Mental Health MMWR Overview

- Describes federal efforts on monitoring mental disorders in children
- First report to compile information on the prevalence of specific mental disorders and other indicators of mental health among children
- Developed in collaboration with key federal partners
  - Centers for Disease Control and Prevention (CDC)
  - Substance Abuse and Mental Health Services Administration (SAMHSA)
  - National Institute of Mental Health (NIMH)
  - Health Resources and Services Administration (HRSA)
- Important first step towards better understanding these disorders and the impact they have on children

Surveillance of Child Mental Disorders

- Autism and Developmental Disabilities Monitoring Network (ADDM; CDC)
- National Health and Nutrition Examination Survey (NHANES; CDC)
- National Health Interview Survey (NHIS; CDC)
- National Survey of Children’s Health (NSCH; HRSA/CDC)
- National Survey on Drug Use and Health (NSDUH; SAMHSA)
- National Violent Death Reporting System (NVDRS; CDC)
- National Vital Statistics System (NVSS; CDC)
- National Youth Risk Behavior Survey (YRBS; CDC)
- School-Associated Violent Death Surveillance Study (SAVD; CDC)
- National Comorbidity Survey Replication Adolescent Supplement (NCS-A; NIMH)
**Surveillance of Child Mental Disorders - Methods**

**WHO?**
- Age
- Sample size
- Over-sample

**WHY?**
- Condition-specific
- General Health
- Child-focused

**WHERE?**
- All US State estimates?
- Limited sites

**WHAT?**
- Symptoms
- Diagnoses
- Self-report
- Parent-report

**WHEN?**
- Current/ever
- Past month/Yr
- Periodicity
- Year(s)

**HOW?**
- Phone
- In-Person
- Record Review
- Vital Records
<table>
<thead>
<tr>
<th>Name, website, and sponsor</th>
<th>Description</th>
<th>Method of data collection</th>
<th>Survey topics related to children</th>
<th>Mental health topics and questions related to children</th>
<th>Populations and periodicity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National Survey of Children’s Health (NSCH)</strong></td>
<td>NSCH examines the physical and emotional health of children aged 0–17 years, emphasizing factors that might relate to the well-being of children.</td>
<td>Telephone interviews, with National Immunization Survey sampling frame</td>
<td>Physical, emotional, and dental health&lt;br&gt;Medical home&lt;br&gt;Child, family, and neighborhood well-being&lt;br&gt;Children with special health-care needs&lt;br&gt;Health-care access, use, and barriers&lt;br&gt;Satisfaction with health-care services&lt;br&gt;Neighborhood and community characteristics, including perceived safety, violence, and social capital&lt;br&gt;Health insurance</td>
<td>Activity, social, or learning limitation resulting from mental, emotional, or behavior problems&lt;br&gt;Common acute and chronic conditions (including learning disability, ADHD, depression, anxiety, behavior and conduct disorders, ASD, Tourette syndrome, and epilepsy)&lt;br&gt;Sleep and exercise difficulties&lt;br&gt;Social behavior, emotional difficulties, and school engagement&lt;br&gt;Mental health-care treatment and services used&lt;br&gt;Diagnosed mental disorders (including ADHD, autism, intellectual disability, learning disabilities, and developmental delay)&lt;br&gt;Emotional and behavioral difficulties&lt;br&gt;Use of special education services for emotional or behavior problems&lt;br&gt;Use of mental health-care services</td>
<td>Representative sample nationally and within each state of households with children&lt;br&gt;Approximately 95,000 children aged ≤17 years&lt;br&gt;Periodic: data collected approximately every 4 years and currently available for 2003, 2007, and 2011–2012</td>
</tr>
<tr>
<td><strong>National Health Interview Survey (NHIS)</strong></td>
<td>NHIS is a national survey of the health of the civilian noninstitutionalized U.S. population. The main objective of NHIS is to monitor the health of the U.S. population through the collection and analysis of data on a broad range of health topics.</td>
<td>In-person household interviews</td>
<td>Child and family demographic characteristics, including family income and parental education&lt;br&gt;Health insurance coverage&lt;br&gt;Injuries&lt;br&gt;Vaccinations&lt;br&gt;Health status and behaviors&lt;br&gt;Diagnosed health conditions&lt;br&gt;Other health problems&lt;br&gt;Use of educational and health-care services</td>
<td></td>
<td>Nationally and regionally representative sample&lt;br&gt;Approximately 12,000 households with children aged ≤17 years&lt;br&gt; Oversample of Hispanics, non-Hispanic blacks, Asians&lt;br&gt;Ongoing; data files released annually since 1963</td>
</tr>
</tbody>
</table>
Mental Disorders and Indicators of Mental Health

- **Disorders:**
  - Attention-deficit/hyperactivity disorder
  - Disruptive behavioral disorders
  - Autism spectrum disorders
  - Anxiety
  - Depression
  - Substance use disorders
  - Tourette Syndrome

- **Indicators:**
  - Suicide
  - Mentally unhealthy days
### Table 4. Prevalence of children aged 3–17 years who ever received a diagnosis of ADHD or with current ADHD, by sociodemographic characteristics and year — National Health Interview Survey and National Survey of Children’s Health, United States, 2007–2011

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Ever received a diagnosis of ADHD (parent report)</th>
<th>Current ADHD (parent report)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% (95% CI)</td>
<td>% (95% CI)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10.6</td>
<td>11.5</td>
</tr>
<tr>
<td>Female</td>
<td>4.6</td>
<td>5.4</td>
</tr>
<tr>
<td><strong>Age group (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3–5</td>
<td>2.1</td>
<td>2.5</td>
</tr>
<tr>
<td>6–11</td>
<td>7.4</td>
<td>8.2</td>
</tr>
<tr>
<td>12–17</td>
<td>10.8</td>
<td>11.9</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>4.1</td>
<td>4.6</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>8.1</td>
<td>10.3</td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>9.1</td>
<td>10.1</td>
</tr>
<tr>
<td>Multirace, non-Hispanic</td>
<td>10.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Other, non-Hispanic</td>
<td>3.1</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Highest education in household</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>6.5</td>
<td>7.9</td>
</tr>
<tr>
<td>High school graduate</td>
<td>8.9</td>
<td>10.5</td>
</tr>
<tr>
<td>More than high school</td>
<td>7.4</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.9</td>
<td>8.7</td>
</tr>
<tr>
<td>No</td>
<td>5.4</td>
<td>5.9</td>
</tr>
<tr>
<td><strong>Region</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>6.8</td>
<td>8.6</td>
</tr>
<tr>
<td>Midwest</td>
<td>8.8</td>
<td>9.4</td>
</tr>
<tr>
<td>South</td>
<td>8.9</td>
<td>10.1</td>
</tr>
<tr>
<td>West</td>
<td>5.1</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>Poverty-income ratio</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤100% FPL</td>
<td>8.9</td>
<td>11.4</td>
</tr>
<tr>
<td>&gt;100% to ≤200% FPL</td>
<td>8.6</td>
<td>9.2</td>
</tr>
<tr>
<td>&gt;200% FPL</td>
<td>6.9</td>
<td>7.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7.6</td>
<td>8.5</td>
</tr>
</tbody>
</table>

**Abbreviations:** ADHD = attention-deficit/hyperactivity disorder; CI = confidence interval; FPL = federal poverty level; NHIS = National Health Interview Survey; NSCH = National Survey of Children’s Health.

* Other, non-Hispanic, includes American Indian/Alaska Native, Hawaiian/other Pacific Islander, and Asian. Persons categorized as multiracial selected more than one race.
† The highest education in the household is based on the highest educational attainment of adults in the sample child’s family for NHIS and on the education of parents or respondents (adults) for NSCH.
§ FPL is based on family income and family size and composition using federal poverty thresholds that are updated annually by the U.S. Census Bureau using the change in the average annual consumer price index for all urban consumers. (Additional information available at http://www.census.gov/hhes/www/poverty/index.html.)
All demographic groups were affected.
The number of children with a mental disorder increased with age, with the exception of autism spectrum disorders.
Boys were more likely than girls to have most of the conditions (ADHD, behavioral or conduct problems, autism spectrum disorders, anxiety, Tourette syndrome, and cigarette dependence).
Key Findings: Adolescents Aged 12-17 Years

National Survey of Drug Use and Health, 2010-2011:

- **8.1%** - Major depressive episode, past year
- **4.7%** - Illicit drug use disorder in the past year
- **4.2%** - Alcohol use disorder in the past year
- **2.8%** - Cigarette dependence in the past month

National Vital Statistics System, 2010:

- Suicide was the second leading cause of death among adolescents aged 12–17
- Suicide rate: 4.5/100,000 children

National Health and Nutrition Examination Survey, 2005-2010

- **8.3%** reported ≥ 14 mentally unhealthy days in the past month
ESTIMATES OF U.S. CHILDREN with Mental Disorders

- Attention-deficit/hyperactivity disorder¹: 4.2 Million
- Behavioral or conduct problems³: 2.2 Million
- Anxiety¹: 1.8 Million
- Depression¹: 1.3 Million
- Illicit drug use disorder (past year)²: 1.2 Million
- Alcohol use disorder (past year)³: 1 Million
- Cigarette dependence (past month)²: 691,000
- Autism spectrum disorders¹: 678,000
- Tourette syndrome²: 99,000

¹ 3-17 years
² 6-17 years
³ 12-17 years
Data Gaps and Challenges

- Many systems exclude undiagnosed cases
- Limited data are available on many conditions (e.g., specific anxiety disorders, bipolar disorder)
- Available data do not allow for an overall estimate of the prevalence of all childhood mental disorders
  - No single dedicated system
- Consistent case definitions are needed for comparability and reliability of estimates across surveillance systems
- Subjective criteria for mental disorders
- Little validation on case ascertainment methods for surveillance
Epidemiological Considerations for Assessing ADHD Prevalence

- Parent-reported surveys, community-based studies, and administrative analyses are **complimentary** methods for assessing ADHD prevalence.
- Each with their own strengths and limitations.
# Strengths and Limitations of Various Data for ADHD Prevalence Estimation

<table>
<thead>
<tr>
<th></th>
<th>Major Strengths</th>
<th>Major Limitations</th>
</tr>
</thead>
</table>
| **National Parent Surveys** | • National and state-based generalizability  
• Allows for monitoring trends over time  
• Larger sample size | • Lower response rates  
• Non-coverage bias  
• Recall or reporting bias |
| **Community-Based Studies** | • Allows for depth and breadth  
• Allows for hypothesis generation and testing | • Non-coverage bias  
• Lower response rates  
• Lack of generalizability |
| **Administrative Records** | • Medicaid data are available in every state  
• Allows for monitoring trends over time  
• Larger sample size | • Data are submitted for the purpose of payment  
• Limited clinical information  
• Non-coverage bias |
Diagnosed ADHD Prevalence Estimates: National Parent Survey Data

Year

Prevalence estimate (%)


Visser et al., 2014

Akinbami et al., 2011

Visser et al., 2011

Akinbami et al., 2011

Visser et al., 2010

Akinbami et al., 2011

Visser et al., 2005

National Health Interview Survey

National Survey of Children's Health
Weighted Prevalence Estimates (%) of Attention-Deficit/Hyperactivity Disorder (ADHD) Diagnosis by a Health Care Provider among U.S. Children, by Age and Medication Status

Parent-Reported Data from the National Survey of Children’s Health

Current ADHD Diagnosis: NSCH, 2011-12

National Average: 8.8%

http://www.cdc.gov/ncbddd/adhd/prevalence.html
Prevalence of ADHD among children, by insurance status, geography, age, and data source

Parent-reported history of ADHD diagnosis, all children
Parent-reported history of ADHD diagnosis, insured children only
Physician-diagnosed ADHD among 5-11 year olds in Southern California, 2001-2010

* NSCH = National Survey of Children’s Health

Depreciation in the Percent of the Baseline PLAY Sample who Met Each Level of ADHD Diagnostic Criteria

- 30% for 6+ symptoms
- 29% for Onset <12 years old*
- 22% for ≥2 moderate or ≥1 severe impairment rating
- 11% for 4+ teacher reported symptoms

*This age of onset used to reflect DSM-5 criteria

Treatment of GA Children in Medicaid with 1+ ADHD Diagnosis Codes and 1+ Treatment Claim (2013)

Data Source: GA Medicaid Files

Unpublished data; released in collaboration with Georgia Inter-Agency Directors Team
Conclusions

- **Mental disorders in children are a significant public health issue**
- **More comprehensive surveillance is needed**
  - Consistent case definitions
  - Validation of methodology
  - Mixed and multiple methods can help triangulate prevalence
- **Partnerships are key to improving a coordinated approach**
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