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US National and State-Level Prevalence of Mental Health Disorders and Disparities of Mental Health Care Use in Children

In children, mental health disorders have deleterious consequences on individual and socioeconomic factors¹ and can impede healthful transitioning into adulthood,² and the incidence of mental health disorders has been increasing over the decades.³ Recent initiatives led by global and national agencies were created to identify priority focus areas regarding the mental health-related burden. Some of the emerging priorities included developing child mental health policies, implementing prevention and early intervention strategies for transition-age youth, and reducing disparities for mental health care use.⁴ This study sought to inform these initiatives by providing recent national and state-level estimates of the prevalence of treatable mental health disorders and mental health care use in children.

Methods | Data were from the 2016 National Survey of Children's Health, a nationally representative, parent-proxy survey of US children younger than 18 years.⁵ The completion rate for those who initiated the web-based and mail-based survey instruments was 69.7%, with an overall response rate of 40.7%. A total of 50 212 surveys representing US children aged 0 to 17 years were completed.

Parents responded to the prompt, "Has a doctor or other health care provider EVER told you that this child has" a mental health disorder? If yes, parents responded to the prompt, "If yes, does this child CURRENTLY have the condition?" A mental health disorder was considered if the respondent reported yes to the second prompt for depression, anxiety problems, or attention-deficit/hyperactivity disorder compared with no from the first or second prompt for these conditions. Mental health care use in the last year

in children with at least 1 mental health disorder was determined by the prompt, "DURING THE PAST 12 MONTHS, has this child received any treatment or counseling from a mental health professional? Mental health professionals include psychiatrists, psychologists, psychiatric nurses, and clinical social workers."

Weighted prevalence estimates were calculated using SAS version 9.4 (SAS Institute) to account and adjust for the complex survey design. Logistic regression determined the association between mental health disorders and covariates. Covariates were selected based on their relevance to children and outcomes, availability in National Survey of Children's Health, and the extent of missingness to avoid data truncation (<2%). The prevalence of the 2 outcome measures were transformed into quartiles to determine state-specific disparities. Children without current health insurance and younger than 6 years were excluded. Prevalence estimates were compared between those with and without mental health disorders using χ^2 test. All *P* values were 2-tailed, and significance was set at a *P* value less than .05.

Results | An estimated 46.6 million children were included for analysis. The national prevalence of at least 1 mental health disorder was 16.5% (weighted estimate, 7.7 million). After adjustments, all covariates were associated with mental health disorders except for continuous insurance (Table). The state-level prevalence of at least 1 mental health disorder ranged from 7.6% (Hawaii) to 27.2% (Maine).

The national prevalence of children with a mental health disorder who did not receive needed treatment or counseling from a mental health professional was 49.4%, which ranged from 29.5% (Washington, DC) to 72.2% (North Carolina). After transforming state-level data into quartiles, Figure, A shows the prevalence of mental health disorders in children and Figure, B shows the prevalence of children with at least 1 mental health disorder who did not receive needed treatment or counseling from a mental health professional.

Discussion | The principal finding was that half of the estimated 7.7 million US children with a treatable mental health disorder did not receive needed treatment from a mental health professional. This estimate varied considerably by state. Of the 13 states that were in the top quartile for mental health disorder prevalence (Figure, A), Alabama, Mississippi, Oklahoma, and Utah were also in the top quartile for the prevalence of children with a mental health disorder who did not receive needed treatment (Figure, B).

State-level practices and policies play a role in health care needs and use,⁶ which may help to explain the state variability observed in this study. Nevertheless, initiatives that assist systems of care coordination have demonstrated a reduction of mental health-related burdens across multiple domains.¹ Policy efforts aimed at reducing burden and improving treatment across states are needed.

Table. Characteristics of Participants and Adjusted Associations With Mental Health Disorders

Variable	Mental Health Disorder		No Mental Health Disorder		P Value ^a	OR (95% CI) ^b
	No.	% (95% CI)	No.	% (95% CI)		
Age, y						
6-11	2199	41.0 (38.3-43.7)	12 287	52.0 (50.6-53.3)	<.001	1 [Reference]
12-17	4220	59.0 (56.3-61.7)	15 665	48.0 (46.7-49.4)		1.65 (1.44-1.89)
Male	3670	59.7 (57.2-62.3)	13 886	49.5 (48.2-50.9)	<.001	1.31 (1.14-1.49)
Race/ethnicity						
Hispanic	633	17.9 (15.3-20.6)	3025	25.5 (24.0-27.1)	<.001	1 [Reference]
Non-Hispanic white	4836	61.2 (58.4-64.0)	19 574	50.9 (49.5-52.3)		1.90 (1.51-2.39)
Non-Hispanic black	353	13.0 (11.0-14.9)	1665	13.1 (12.1-14.1)		0.98 (0.74-1.31)
Other	597	7.9 (6.5-9.3)	3688	10.5 (9.8-11.2)		1.19 (0.88-1.60)
Poverty status, %						
0-199	1880	45.6 (43.0-48.3)	6635	42.4 (41.0-43.9)	.07	1 [Reference]
200-399	1913	25.1 (22.9-27.2)	8520	26.4 (25.3-27.5)		1.19 (0.98-1.44)
≥400	2626	29.3 (27.2-31.3)	12 797	31.1 (30.1-32.2)		1.40 (1.16-1.70)
Family						
2 Parents, married	4062	56.4 (53.8-59.0)	20 665	67.8 (66.5-69.1)	<.001	1 [Reference]
2 Parents, unmarried	435	8.7 (6.8-10.6)	1582	7.5 (6.7-8.3)		1.23 (0.91-1.65)
Single mother or other	1820	34.9 (32.5-37.4)	5234	24.7 (23.5-25.9)		1.40 (1.19-1.65)
Insurance type						
Any public	2106	48.0 (45.3-50.6)	5489	35.6 (34.1-37.1)	<.001	1 [Reference]
Private only	4224	50.6 (47.9-53.2)	21 981	62.4 (60.9-63.9)		0.62 (0.51-0.75)
Unspecified	66	1.4 (0.9-2.0)	366	2.0 (1.5-2.6)		0.60 (0.37-0.99)
No continuous insurance in the past 12 mo	132	2.0 (1.4-2.5)	458	2.6 (2.1-3.1)	.12	0.62 (0.38-1.00)
No medical home ^c	3344	58.3 (55.9-60.8)	11 850	49.9 (48.6-51.3)	<.001	1.31 (1.15-1.49)
Special health care needs	4489	72.2 (69.8-74.6)	5638	20.3 (19.2-21.3)	<.001	9.59 (8.37-10.99)

Abbreviation: OR, odds ratio.

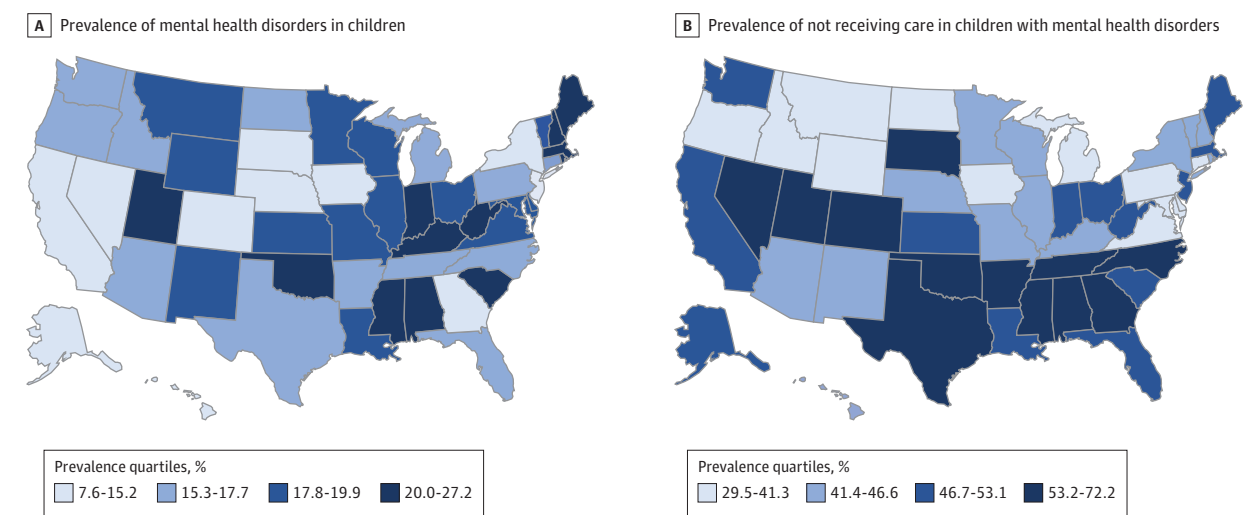
^a Estimates were compared using χ^2 test.

^b Adjusted for all covariates.

^c Children were considered to not have a medical home if at least 1 of the

following was true: did not have a personal doctor or nurse; did not have a usual place of care; received family-centered care; obtained specialty care referrals if needed; and obtained health care coordination if needed.

Figure. Prevalence of Mental Health Disorders and Mental Health Care Use Among US Youth



A, State-level prevalence presented as quartiles of at least 1 mental health disorder (ie, depression, anxiety problems, and attention-deficit/hyperactivity disorder) in the total sample of children (weighted estimate, 46.6 million).

B, State-level prevalence presented as quartiles of children with a mental health disorder not receiving needed treatment or counseling from a mental health professional (weighted estimate, 7.7 million).

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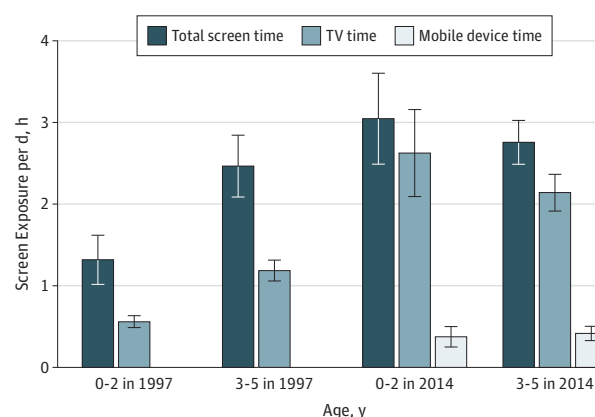
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Assessment of Screen Exposure in Young Children, 1997 to 2014

There is widespread concern that children are exposed to too much screen time^{1,2} via increasingly prevalent and accessible mobile devices.^{3,4} This study assesses young children's screen time before and after commonly used mobile devices were widely available.

Methods | We estimated young children's screen time using time diary data from the 1997 and 2014 Child Development Supplement of the Panel Study of Income Dynamics, which collects information of a population-based representative sample of

Figure. Screen Time by Age Group Among 1997 and 2014 Panel Study of Income Dynamics Cohorts



The error bars indicate the 95% confidence intervals of the estimated hours per day. Total screen time in 1997 included time spent on any activity while watching television programs or videotapes plus time spent on electronic video games and home-computer-related activities. Total screen time in 2014 included time spent on any activity while using television, videotapes, digital video disc, game devices, computer, cell phone, smartphone, tablet, electronic reader, and child's learning devices. Television time refers to time spent on any activity while watching television programs using a television set (rather than using videotapes, digital video disc, or other devices). Mobile device time refers to time spent on any activity while using cell phone, smartphone, tablet, electronic reader, and child's learning devices.

American children. There were 1327 and 443 children younger than 6 years who completed the time diary in 1997 and 2014, respectively. In each survey, the cohort was divided into 2 age groups: 0 to 2 years and 3 to 5 years. Based on the institutional review board policy, this study did not require approval because the data used are publicly available from the Panel Study of Income Dynamics and completely deidentified. For this reason, informed consent was not obtained.

In 1997, screen time was defined as time spent on any activity while watching television programs or videotapes, plus time spent on electronic video games and home computer-related activities. By 2014, screen time activities included the use of television, videotapes, digital video disc, game devices, computer, cell phone, smartphone, tablet, electronic reader, and children's learning devices.

We calculated children's mean daily screen time (in hours) during a typical week. We present the time spent on dominant device type in both 1997 and 2014 and the time spent on mobile devices (including cell phones, smartphones, tablets, electronic readers, and children's learning devices) in 2014.

Lastly, we classified children into high-user and low-user groups based on median screen time within age group and examined differences in individual and family characteristics. All analyses were adjusted for child-level sample weights. The *P* value level of significance was .05, and all *P* values were 2-sided.

Results | In 1997, daily screen time averaged 1.32 hours for children aged 0 to 2 years and 2.47 hours for children aged 3 to 5 years (Figure). In comparison with other devices, screen time