

COMMENT



Imperative to accelerate research aligning real-time clinical demand with mental health supply

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INTRODUCTION

In this edition, four studies are broadly related to child mental health. Two studies are dedicated to risk reduction of neurodevelopmental delays,^{1,2} one identifies an association between maternal emotionality 2 years post-partum and poor working memory among her first-born child at age 6 years,³ and one explores an association between omega-3 fatty acid supplements and heart rate variability pre- and post-meals among adolescent females with eating disorders.⁴ Together, publication of these studies in *Pediatric Research* is consistent with long-standing recommendations that prevention, early intervention, and treatment of child mental health disorders is a national priority area.^{5–7}

During the coronavirus disease 2019 (COVID-19) pandemic, the importance for pediatric research to accelerate the alignment between child need for mental health care and supply of services intensified. The pandemic created an unprecedented burden on children and families by increasing the need for mental health care,^{8–12} while escalating existing institutional strain^{13–19} and worsening health care disparities.^{20–28} On October 19, 2021, the American Academy of Pediatrics, the American Academy of Child and Adolescent Psychiatry, and the Children's Hospital Association together representing >77,000 physician members and >200 children's hospitals, declared a national state of emergency in child and adolescent mental health.²⁹ The U.S. Surgeon General's Advisory in 2021 recommended a multi-prong approach to "ensure that every child has access to high-quality, affordable, and culturally competent mental health care".³⁰ Within the national action plan are recommendations for an integrated, real-time data infrastructure to improve the timeliness of pediatric research, strengthen the capacity to examine trends in child mental health care need and service use across the age continuum, stratify data beyond race to identify disparities, and scale up evidence-based interventions in community settings.³⁰ How do we leverage the early lessons learned from prior research to effectively advocate for the development, maintenance, and sustainability of this visionary data infrastructure?

DETECTING CLINICAL DEMAND FOR CHILD MENTAL HEALTH SERVICES

A common approach to examine the impact of the COVID-19 pandemic on child mental health is to use relatively brief screening tools. Advantages include low respondent burden,

minimal training, and reduced cost. Hypothesis testing is supported by the argument that risk factors have increased during the pandemic, such as social isolation, decreased physical activity, reduced access to school-based resources, child abuse and neglect, parental distress, and familial COVID-19-related morbidity and mortality, as well as worsening of social determinants of health.^{25,31–46} However, evidence supporting the reliability and validity child mental health screening measures by sex, race or ethnicity, or socioeconomic class is uneven, potentially adding unmeasurable bias.⁴⁷

Some of the earliest studies reported descriptive data using standardized child report screening measures of depressive and anxiety symptoms. Among 2330 primary school students in the Hubei province of China who were abruptly restricted to home confinement, 23 and 19% screened positive for depressive and anxiety symptoms, respectively.¹⁰ Survey data from 185 predominantly Latinx middle school students found that almost one quarter reported feeling stress at least a lot of the time 1 month after school closure.¹¹ A meta-analysis of 29 studies that included youth or parent report of depressive and anxiety symptoms yielded pooled prevalence estimates of clinically elevated depression and anxiety symptoms of 25.2 and 20.5%, respectively.⁸ In addition, six waves of COVID-19 rapid response surveys between May 16, 2020 and April 24, 2021 across 21 sites (in 17 states) were added to the Adolescent Brain Cognitive Development (ABCD) study, the largest long-term study of brain development and child health in the United States.⁴⁸ Mental health symptoms were assessed using the mean perceived stress scores using a modified Perceived Stress Scale (4 of the 10 items),⁴⁹ 1 question about COVID-19-related worry, and 8 questions rating sadness, a component of the negative affect domain in the NIH Toolbox emotion battery.^{50,51} Findings from these screeners were tracked over time and the associations between pre-existing and time-varying social determinants of health (SDoH) were examined.⁵² Mean scores were conceptualized as "psychopathology" and reported by time point.⁵² Nevertheless, the ABCD study cohort is not nationally representative and child or parent report of symptoms signals probable need for further evaluation—no need for specialty mental health services.

Fortunately, data collection was not disrupted by the pandemic for the National Survey of Children's Health, which uses a nationally representative sample of children from birth to 17 years.⁵³ Weighted prevalence of depression, anxiety, behavior or

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conduct problems, autism and attention deficit hyperactivity disorder in 2016, 2019, and 2020 were tracked as well as relative differences before COVID-19 (2016–2019) and during the COVID era (2020 vs. 2019).⁵⁴ These target symptoms and conditions were based on one parent-reported stem question, “Has a doctor or other health care provider EVER told you that this child has (target symptom or condition),” followed by probes for currently and if so, ranking it as mild, moderate, or severe.⁵⁵ This approach selects for parents who have had access to a health care provider and recalls communication about detection of a symptom or disorder.

Further, some studies have leveraged data from screening tools for depression and/or suicide in electronic health care records (EHR), which are embedded to support health care system compliance with accreditation standards.⁵⁶ Among youth aged 11–21 years from one large pediatric emergency department (ED), rates of suicide attempt within prior 3 months of visit were significantly higher between February and July 2020, with the exception of June, compared to the matching month in 2019, using one item from the Columbia-Suicide Severity Rating Scale.⁵⁷ Using the Patient Health Questionnaire Modified for Teens⁵⁸ in EHRs among youth aged 12–21 years within a large pediatric primary care network, the relative prevalence of moderate-to-severe depressive symptoms rose 24% and endorsement of at least one of three suicide risk items increased by 16% in June–December 2020 compared to matched time period in 2019.⁵⁹ While extracted EHR data can often produce large sample sizes, some of the challenges include missing data if not regularly documented (e.g., ethnicity) and difficulty linking to other databases to track follow-up mental health care in the community if a child screens positive for depressive symptoms or suicide risk.

EXAMINING CHANGE IN CHILD MENTAL HEALTH SERVICE USE OVER TIME

Data from the Centers of Disease Control and Prevention’s (CDC) National Syndromic Surveillance Program (NSSP) and the relatively quick publication of studies through CDC’s *Morbidity and Mortality Weekly Reports* made it possible to disseminate findings on the disproportionate rise in mental health-related ED visits among U.S. children during the early pandemic (January 1–October 17, 2020),⁶⁰ and in ED visits for suspected suicide attempts among persons aged 12–25 years, especially among adolescent females.⁶¹ Although the data source is not nationally representative and race and ethnicity data are not available,⁶⁰ these findings supported a national call to monitor indicators of child mental health, promote coping and resilience, and expand access to child mental health services during the pandemic.⁶⁰

Using data from the Pediatric Health Information System (PHIS), which includes hospital and ED discharge data from 49 tertiary care children’s hospitals, a series of studies examined trends in utilization during the pandemic compared to before the pandemic. In examining seasonal trends in the number of hospital admissions for each month, those for mental health conditions plummeted between January and June 2020.⁶² During the first 3 months following the national emergency declaration, there was a 45.7% decline in ED visits across 27 pediatric hospitals but the decline for those with mental health disorders was only 29%.⁶³ However, in both studies all mental health conditions were included in one disease category but trends for physical illness were stratified by disease type.^{62,63}

To address this limitation, the percent change in ED and hospital discharges among 44 U.S. children’s hospitals during the 36 weeks following national school closure orders compared to matched time periods in 2019 were examined by type of mental health disorder using the Child and Adolescent Mental Health Disorders Classification System.⁶⁴ In addition, a study variable was created to identify children who were likely eligible for special

education resources based on diagnosis that met eligibility criteria specified in the Individuals With Disabilities Education Act⁶⁵ to assess change in acute mental health use among children more vulnerable to loss of special education resources. By building in this level of granularity, this study identified a more than 10% increase in hospitalizations for suicide or self-injury, psychotic disorders, and eating disorders following national school closure orders, that suicide or self-injury and depressive disorders drove acute mental health care use, and by fall 2020 hospitalizations for suicide or self-injury rose almost 43.8 and 49.2% among adolescents and females, respectively.⁶⁶ However, across these studies using the PHIS database, inpatient stays related to mental health disorders on medical units (e.g., substance ingestion, metabolic abnormalities related to eating disorders) were not captured and relevant individual-level SDoH were not linked to examine disparities. There is also little capacity to track outpatient follow-up mental health care in the community among children following a mental health ED or hospital discharge.

DELIVERING CARE USING INNOVATIVE MODELS

Improving timely access to mental health care across the clinical need continuum (i.e., prevention, early detection, treatment) has also driven the development and testing of innovative care models in pediatric primary care settings, such as consultation, colocation, and collaborative or integrated care. A systematic review identified six intervention studies that compared collaborative or integrated care to treatment as usual among children and youth.⁶⁷ Together the findings support increased access to mental health care and outcomes, but limitations include lack of generalizability to urban populations, minority youth, and young children.⁶⁷ In addition, action items of the recent national emergency declaration in child mental health include delivering mental health care in schools and addressing the pediatric mental health workforce shortage.²⁹ Comprehensive school mental health systems are conceptualized as tiers to promote mental health for all students (tier 1), prevent and intervene early for at-risk students (tier 2), and clinically evaluate and treat students with mental health diagnosis and functional impairment (tier 3).⁶⁸ To stimulate large-scale implementation, there is a national call for state policy makers to create local school mental health plans, support a social emotional learning curriculum, standardize school–community memoranda of understanding, and invest in educator training and incentives to retain school-based clinicians.⁶⁹ Greater attention is warranted to the coinciding need to proactively invest in the data infrastructure to generate robust scientific evidence as well as provide feedback using real-time, high-quality data that is meaningful to youth, parents, teachers, care providers across disciplines and medical specialties, administrators, and agency leaders to transform care. How do we set up a data system that can meet both needs?

CHALLENGES WE MUST FACE

Clearly, there is much work to be done to develop, maintain, and sustain an integrated data infrastructure that has the capacity to track children’s need for mental health care, access to timely and appropriate care, and meaningful clinical outcomes across their development in real time. The data source should also link, ideally at the individual level, to publicly available databases that capture the extent of exposure to SDoH to “authentically frame health status and outcomes”.⁷⁰ The COVID-19 pandemic has further intensified the national need to invest in improving our data infrastructure for child mental health. More robust scientific evidence is required to transform political will into action to invest in the prevention, early intervention, and treatment of child mental health disorders.

DATA AVAILABILITY

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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AUTHOR CONTRIBUTIONS

B.T.Z. developed the conceptual framework, conducted a systematic literature review, drafted the first full draft, completed multiple revisions, and approved final version. S.U.D. provided guidance on the concept for the commentary, provided comments on earlier manuscript drafts to critically revise important intellectual content, coordinated gathering feedback from the Pediatric Policy Council, and approved final version.

COMPETING INTERESTS

The authors declare no competing interests.

ADDITIONAL INFORMATION

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