

# A Comparison of Acute Mental Health Presentations to Emergency Services Before and During the COVID-19 Pandemic

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## ABSTRACT

**OBJECTIVE/BACKGROUND:** This study aimed to understand how the COVID-19 pandemic affected youth presentations to the Emergency Department's psychiatric service and how many warranted an inpatient and acute residential admission.

**METHODS:** This cross-sectional study examined the patients (youth ages 3 to 18 years) evaluated at Hasbro Children's Hospital's Emergency Department by Lifespan's Pediatric Behavioral Health Emergency Service (LPBHES) over four months, March through June, of years 2019, 2020, and 2021. The sample was categorized into two groups: Children ages 3 to 11 years and adolescents ages 12 to 18 years.

**RESULTS:** Youth evaluated by LPBHES showed an increase in acuity, where 11% more children and 12% more adolescents met criteria for inpatient and acute residential admission from years 2019 to 2020. This increase was observed despite fewer overall LPBHES evaluations.

**CONCLUSION:** Future directions include prospective studies that explore the barriers to youth receiving the appropriate level of outpatient mental health services to prevent acute mental health crises.

**KEYWORDS:** Emergency Department, children, adolescents, COVID-19, mental health

Control and Prevention (CDC) community COVID-19 mitigation "lockdown" measures that spanned March through June 2020 (hereafter, the year 2020 is referred to as the "pandemic lockdown").<sup>8</sup> Understanding how the COVID-19 pandemic has affected youth presenting to the ED is of great importance, as EDs and other mental health services are in an unprecedented state of overburden since the onset of the pandemic that has created a national public health crisis.<sup>9,10</sup>

Mental health disorders frequently emerge before the age of 14.<sup>11,12</sup> Caregivers sharing concerns about their youths' mental health with their primary care provider has been shown to improve access to mental health services.<sup>13,14</sup> However, many youth seen in the ED do not have regular contact with primary care providers and are less likely to receive either intervention or prevention services.<sup>15</sup> As such, EDs are an integral part of the identification, treatment, and coordination of care for youth with mental health concerns. Further, EDs often function as a safety net for youth with mental health conditions seeking care.<sup>15,16</sup> This is important as EDs have also observed a post-pandemic increase in youth mental health acuity.<sup>3</sup>

The objective of this study was first to characterize youth presentations to the ED's psychiatric services during the spring (March through June) prior to and during the pandemic. Second, this study aimed to determine the number of youth presentations warranting an inpatient hospital admission over the same time period due to the acuity of their mental health condition.

## INTRODUCTION

In the United States (US), approximately 20% of youth are diagnosed with a mental health disorder.<sup>1,2</sup> Emergency Departments (EDs) are often the first point of entry for youth into the mental health system, where over 50% of youth seeking psychiatric care use the ED without previously seeking outpatient services.<sup>3,4,5</sup> Over the last decade, EDs have seen an increase in the number of youth presenting with a psychiatric crisis. In the US, ED visits for youth in psychiatric crisis increased 40% between 2009 and 2013 and 28% between 2011 and 2015.<sup>4,6</sup> However, during the 2020 COVID-19 pandemic, youth presentation to EDs nationally saw a decrease.<sup>7</sup> This 2020 decrease coincided with the widespread implementation of the U.S. Centers for Disease

## METHODS

This cross-sectional study examined patients evaluated at Hasbro Children's Hospital's ED by Lifespan's Pediatric Behavioral Health Emergency Service (LPBHES) via an administrative dataset over four months, March through June, of years 2019, 2020, and 2021. The sample consists of youth ages 3 to 18 years who were referred to LPBHES for a psychiatric evaluation after presenting to the ED for an acute, emotional and/or behavioral concern that needed treatment and/or stabilization.

Hasbro Children's Hospital, in Providence, RI, is part of an academic health care system and is the region's only Level 1 pediatric trauma hospital, serving patients ranging in age from birth through young adulthood, and representing a

wide diversity of racial, ethnic, and socioeconomic groups. Hasbro's ED (HED) exceeds 58,000 patients per year and is the only ED in the region dedicated to the emergency needs of children and adolescents. LPBHES is a multisite, multi-agency service that provides urgent and emergent psychiatric evaluations to approximately 3,000 youth presenting in behavioral health crisis annually, with the majority presenting at HED. With a site embedded in the HED, LPBHES evaluates a subset of the HED's highest acuity (i.e., a safety to self and others) youth presenting in behavioral crisis. The total number of youth presenting to the HED for behavioral health concerns during this study's time frame from March through June were 1,610 in 2019, 996 in 2020, and 1,632 in 2021. These youth were first triaged by the HED team, including vital signs, a medical screening exam, and screened for suicide risk in part by the use of the Columbia-Suicide Severity Rating Scale.<sup>17</sup> Then, after determining acuity level, they were referred to LPBHES for further psychiatric evaluation.

## PROCEDURES

This study was approved by the hospital's Institutional Review Board (IRB). Data making up the administrative data set were taken from the electronic health record (EHR; EPIC™ 2010) to characterize and compare youth in March through June, of years 2019, 2020, and 2021. These particular months were selected because they correspond to the March through June 2020 pandemic lockdown, and have been routinely observed as the months with the highest volume of youth referrals to LPBHES each year. Data were collected on youth demographics, including patient age, sex, race, ethnicity, insurance type (private or public, as a proxy of socioeconomic status [SES]), city (urban core: yes/no), primary problem/diagnosis for insurance, Columbia-Suicide Severity Rating Scale score of youth 11-years-old and older in 2020 and 2021, and LPBHES disposition (discharge plan). We categorized youth into two groups: children ages 3 to 11 years and adolescents ages 12 to 18 years. We also included the presentation of a documented (via the administrative report) primary mental health problem, including depression, adjustment, anxiety, attention deficit hyperactivity disorder (ADHD), oppositional/conduct, disruptive mood, schizophrenia, and other psychosis.

Descriptive statistics were employed to characterize findings. Percentages were presented for all categorical variables and continuous variables were presented using means ( $M$ ) and standard deviations ( $SD$ ). Sample sizes are presented. All analyses were performed with SPSS, version 28 (IBM SPSS Software 2021).

## RESULTS

In 2019, there were a total of 732 youth comprised of 215 children ( $M_{age}=8.97$ ,  $SD=2.02$ ) and 517 adolescents

( $M_{age}=14.61$ ,  $SD=1.67$ ) referred to and evaluated by LPBHES pre-pandemic. In 2020, a total of 470 youth were referred to and evaluated by LPBHES during the COVID-19 lockdown: 97 children ( $M_{age}=8.93$ ,  $SD=1.99$ ) and 373 adolescents ( $M_{age}=14.73$ ,  $SD=1.67$ ). Year 2020 had 36% fewer youth evaluated by LPBHES than the prior year. In 2021, during the same four months, a substantial increase upwards of 50% was observed from 2020 to 2021, where 157 children ( $M_{age}=9.13$ ,  $SD=1.84$ ) and 775 adolescents ( $M_{age}=14.56$ ,  $SD=1.64$ ) were referred to and evaluated by LPBHES. Over all three years, children who presented to the ED were primarily males, and the adolescents who presented to the ED were primarily females. On race and ethnicity, medical records indicated that children and adolescents were predominately White and minority representation included Black/African American (8–13%), Asian (1–2%), more than one race (2% to 3%), Hispanic/Latinx (16–26%), and Unknown/Refused/Other (20–25%). These findings are consistent with the Rhode Island state census pattern of race and ethnicity percentages.<sup>18</sup> Moreover, children in this study were documented as using public insurance/lower SES, about 4% to 8% more than private insurance from 2019 to 2021. However, in 2020 the majority of child patients were privately insured (50.5%). The adolescent samples before and during the pandemic were almost evenly split in their use of public and private insurance. Also, 2020 showed an increase in publicly insured/lower SES adolescent patients, with 55% documented publicly insured versus 45% documented privately insured.

Youth referred to LPBHES and living in the RI urban core represented 34% to 46% of this study's sample. Adolescents presenting from the urban core catchment area were particularly high in 2020 compared to the other years. However, for children, 2020 had the lowest number of children from the urban core.

In addition, the prevalence of primary presenting diagnosis that were identified in the administrative database were relatively the same over the three years for both the child and the adolescent samples. That is, LPBHES consistently evaluated children presenting predominantly with adjustment disorders and adolescents predominately with depressive disorders. Adolescents, however, presented with an increase in depressive disorders from 2019 to 2021, whereas children showed an increase in adjustment disorders in 2020 compared to 2019 and 2021.

To add, symptom acuity for both the child and the adolescent samples were determined by the LPBHES team and presented in this data as the Disposition Determination. For those youth presenting with acute and emergent symptoms, and unable to ensure and plan for safety to self and others, inpatient hospitalization or acute residential admission was determined. All others were discharged home and referred to a lower level of outpatient services including, but not limited to, partial hospitalization, in-home family services, and

outpatient therapy services. Children and adolescents evaluated by LPBHES during the lockdown showed an increase in acuity, where 11% more children and 12% more adolescents met criteria for an inpatient and residential admission compared to years 2019 to 2021. This increase was observed despite fewer overall LPBHES evaluations. This upward trend in acuity did not cease, because from 2019 pre-pandemic to 2021 post-pandemic lockdown, percentages went up 6% in the child sample and 3% in the adolescent sample. As

presented in **Table 1**, the total number of youth evaluations completed by the LPBHES was greater for adolescents than children. Likewise, adolescent inpatient hospitalizations and acute residential placements were substantially greater for adolescents than children over all three years. See **Table 1** for a complete list of child and adolescent characteristics.

The CSSR-S scores were collected during the HED triage process for the youth evaluated by LPBHES. As mentioned, these scores were used by HED as a screener to gauge youth

**Table 1.** Child & Adolescent Characteristics 2019 (N =732), 2020 (N =470), 2021 (N =932)

	Child 2019 Ages 3-11 n = 215	Child 2020 Ages 4 -11 n = 97	Child 2021 Ages 3-11 n = 157	Adolescent 2019 Ages 12-18 n = 517	Adolescent 2020 Ages 12-18 n = 373	Adolescent 2021 Ages 12-18 n = 775
<b>Youth Sex n(%)</b>						
Female	68 (31.6)	31 (32.0)	59 (37.6)	322 (62.3)	207 (55.5)	528 (68.1)
<b>Youth Age M(SD)</b>	8.97 (2.02)	8.93 (1.99)	9.13 (1.84)	14.61 (1.67)	14.73 (1.68)	14.56 (1.64)
<b>Youth Race n(%)</b>						
White	135 (62.8)	63 (64.9)	101 (64.3)	334 (64.6)	239 (64.1)	502 (64.8)
Black/African American	28 (13.0)	9 (9.3)	13 (8.3)	53 (10.3)	42 (11.3)	64 (8.3)
Asian/Alaskan Native/ Other Pacific Islander	—	2 (2.1)	—	8 (1.5)	1 (0.3)	7 (0.9)
More than one race	2 (0.9)	3 (3.1)	3 (1.9)	5 (1.0)	3 (0.8)	15 (1.9)
Unknown/Other	50 (23.3)	20 (20.6)	39 (24.8)	117 (22.6)	83 (22.3)	187 (24.1)
<b>Youth Ethnicity n(%)</b>						
Hispanic	49 (22.8)	15 (15.5)	38 (24.2)	124 (24.0)	92 (24.7)	199 (25.7)
<b>Insurance Type n(%)</b>						
Public	112 (52.1)	47 (48.5)	82 (52.2)	252 (48.7)	195 (52.3)	372 (48.0)
Private	103 (47.9)	49 (50.5)	72 (45.9)	256 (49.5)	169 (45.3)	395 (51.0)
Missing/None	—	1 (1.0)	3 (1.9)	9 (1.7)	9 (2.4)	8 (1.0)
<b>Presenting Problem*n(%)</b>						
Adjustment	105 (48.9)	55 (56.7)	70 (44.6)	130 (25.1)	108 (29.0)	161 (20.6)
Anxiety	34 (15.9)	11 (11.3)	22 (14.0)	63 (12.2)	37 (9.9)	70 (9.1)
Depression	24 (11.2)	9 (9.3)	30 (19.1)	223 (43.1)	141 (37.8)	419 (54.1)
Disruptive Mood	23 (10.7)	12 (12.4)	17 (10.8)	37 (7.2)	28 (7.5)	40 (5.2)
Traumatic Stress/PTSD	22 (10.3)	9 (9.3)	18 (11.5)	46 (8.9)	41 (11)	60 (7.7)
OCD	1 (0.4)	—	—	3 (0.6)	1 (0.3)	3 (0.4)
Bipolar	2 (0.9)	—	—	9 (1.7)	13 (3.5)	10 (1.3)
Oppositional/Conduct	1 (0.4)	—	—	3 (0.6)	2 (0.5)	6 (0.8)
ADHD	3 (1.3)	1 (1.0)	—	—	—	2 (0.3)
Schizophrenia/ Other Psychosis	—	—	—	3 (0.6)	2 (0.5)	3 (0.4)
Conversion	—	—	—	—	—	1 (0.1)
<b>RI Urban Core n(%)</b>						
Yes	83 (38.8)	33 (34.4)	63 (40.1)	196 (38.0)	169 (45.6)	286 (36.9)
<b>Disposition Determination n(%)</b>						
Inpatient/Resident.	81 (37.7)	47 (48.5)	68 (43.3)	240 (46.4)	217 (57.9)	382 (49.3)
Home/Outpatient	134 (62.3)	50 (51.5)	89 (56.7)	277 (53.6)	156 (41.8)	393 (50.7)

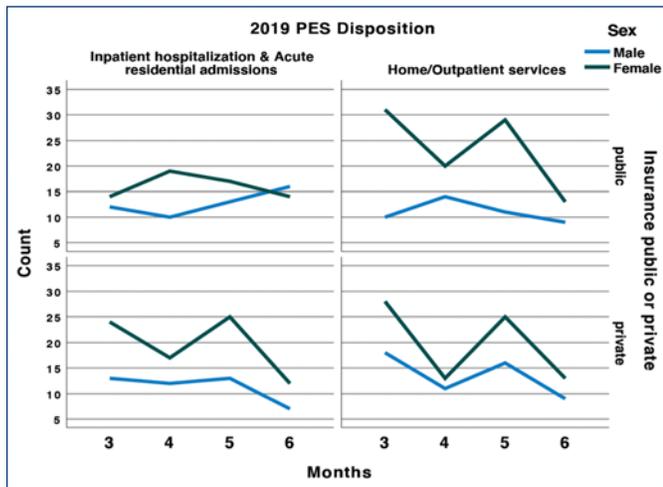
\*Presenting problem diagnosis represent a single problem noted in the administrative dataset; therefore, each patient encounter only has one problem identified.

**Table 2.** C-SSRS: Using new definitions of HIGH Score ranges for youth 11- to 18-years-old

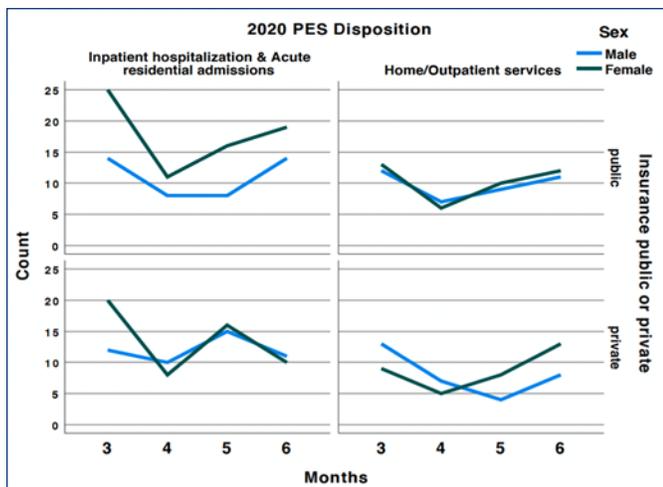
	2020		2021	
	11yrs	12 to 18yrs	11yrs	12 to 18yrs
<b>Number of C-SSRS Scores N</b>	23	325	40	726
0: Score=0	7 (30.4)	82 (25.2)	10 (25.0)	134 (18.5)
1: Low Risk (0.5–1.5)	5 (21.7)	37 (11.4)	6 (15.0)	78 (10.7)
2: Moderate Risk (2.0–4.5)	3 (13.1)	33 (10.2)	3 (7.5)	78 (10.7)
<b>High Risk Stratified (5+)</b>	8 (34.8)	173 (53.2)	21 (52.5)	436 (60.1)
4: High Score1 (5.0–8.0)	0 (0.0)	43 (13.2)	12 (30.0)	117 (16.2)
5: High Score2 (8.5–12.0)	3 (13.1)	51 (15.7)	6 (15.0)	143 (19.7)
6: High Score3 (12.5–15.5)	5 (21.7)	79 (24.3)	3 (7.5)	176 (24.2)

Note: C-SSRS = Columbia-Suicide Severity Rating Scale; Year 2019 C-SSRS scores were not available, as that was the year when the screener was implemented into the HER.

**Figure 1.** 2019 Adolescent inpatient hospitalization & Acute residential admission status versus Outpatient service referrals from March through June by sex and by public/private insurance type.



**Figure 2.** 2020 Adolescent inpatient hospitalization & Acute residential admission status versus Outpatient service referrals from March through June by sex and by public/private insurance type.

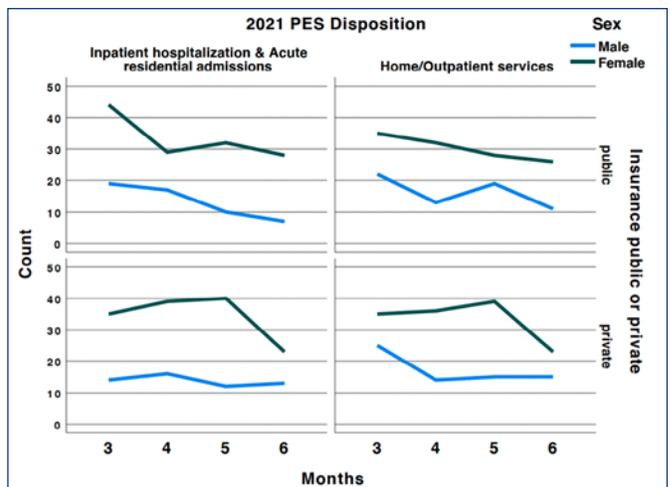


suicide risk. The CSSR-S for both children and adolescents indicated higher percentages of Low to Moderate suicide risk but not High Risk during the 2020 pandemic lockdown compared to 2021. However, when the High Risk scores were stratified into three ranges, the High Score3 scores (the highest range of acuity; 12.5–15.5) revealed higher suicide risk and acuity for both children and adolescents during the 2020 pandemic lockdown compared to the following year, 2021. (See **Table 2.**)

Lastly, to better understand the distribution of adolescents' inpatient and acute residential services, three figures were constructed to illustrate adolescent inpatient and acute residential admission status versus adolescent outpatient service referrals from March through June by sex and by public/private insurance type (i.e., SES). **Figure 1** depicts adolescent data from 2019 and shows a prevalence of female adolescents' inpatient and acute residential admission status across all four months, no matter the insurance type. However, in June of 2019, males utilizing public insurance/low SES demonstrated an increase in inpatient and acute residential admissions while females had a decrease in admissions.

In 2020, during the pandemic lockdown, **Figure 2** presents a pattern of female public insurance/low SES with higher inpatient and residential admissions than males across all four months. Privately insured female users in March appeared to experience greater inpatient and acute residential admissions but then decreased and followed a similar pattern as the adolescent male admissions. Interestingly, publicly insured/lower SES females and males admitted to

**Figure 3.** 2021 Adolescent inpatient hospitalization & Acute residential admission status versus Outpatient service referrals from March through June by sex and by public/private insurance type.



inpatient and acute residential services increased from April to June 2020, while privately insured adolescents admitted to inpatient and acute residential services were variable as they increased from April to May but decreased in June.

Finally, **Figure 3** depicts year 2021, with prevalence rates from March through June about equally distributed between inpatient and acute residential admissions and outpatient programming. Females, however, made up the majority of inpatient and acute residential admissions and outpatient service referrals across insurance types. More specifically, females with public insurance/low SES maintained a higher usage of services compared to those with private insurance.

## DISCUSSION

With EDs often utilized as the first point of entry for youth into the mental health system, this study aimed to understand how the COVID-19 pandemic affected youth presentations to HED's psychiatric service. It also looked to determine during that same time frame how many youth warranted an inpatient and acute residential admission.

Consistent with the literature and other EDs, findings revealed that HED and LPBHES observed a noticeable decline in ED admissions and LPBHES evaluation during the 2020 pandemic lockdown compared to other years. However, while there were fewer youth who presented to the ED and referred to LPBHES, the acuity of those who presented to HED during March to June 2020 had an increased percentage of inpatient and acute residential admissions compared to youth evaluated pre-pandemic 2019 and post-lockdown 2021. Similar findings were observed in other studies and may be due to the increased stressors many youth experienced during the national stay-at-home measures put into place for the onset of COVID-19 in the US, including school closures, limited peer interactions, and the isolation created by having to stay home.<sup>7,8</sup> Interestingly, the 2020 increase in acuity was seen prior to the 2021 post-lockdown increase in referrals to LPBHES of approximately 21% youth from 2019 ( $N=732$ ) to 2021 ( $N=932$ ). This increase of LPBHES referrals indicates that more youth have been presenting to HED and that these youth have been experiencing greater mental health symptomatology and increases in acuity. Yet the cause for this increase is unknown. It is likely, however, that youth mental health symptoms, overall, were exacerbated by what we might consider a disaster in the US, where some youth may have experienced traumatic-like stressors after extended isolation and possible limited degrees of support (e.g., friends, family, therapist, etc.).<sup>7</sup> Our findings suggest that the distress from the pandemic may have translated into increased acute service use (i.e., inpatient and acute residential admissions) for youth mental health. However, the children and adolescents in this study may represent a high-risk group that has been particularly affected by the 2020 COVID-19 mitigation measures, including physical

distancing (including a lack of connectedness to schools, teachers, and peers), barriers to mental health treatment, and anxiety about family health and economic problems, which are all risk factors for acute psychiatric crises, e.g., suicide thoughts and/or behaviors (STB). Similar to this study's findings, past research, prior to the COVID-19 pandemic, has been compiling information on adolescent females showing this subset of youth as having both higher and increased rates of ED visits for acute mental health concerns (i.e., STB) compared to males.<sup>19,20</sup> This reinforces a general need for increased attention to, and prevention for, this female population, particularly during acute stressors that may exacerbate symptoms. In addition, recent research has shown that suspected child abuse and neglect also increased in 2020 compared to 2019, thus potentially contributing to increases in youth acuity.<sup>21</sup> Nonetheless, by having more time at home during the 2020 lockdown, caregivers may also have had more attention toward youth mental health symptoms and needs and been able to better intervene to seek services.<sup>22</sup>

## LIMITATIONS

While this study assists in our understanding of youth presenting to the ED in psychiatric crisis, it is not without limitations. 1) This study utilized an administrative dataset; therefore, chart review variable options were limited as it was a predetermined set of variables. Further, variation in provider reporting and coding practices can influence the procedures of data collection. However, data were taken from patient electronic health records and representative of the clinical samples seen by LPBHES. 2) This study was unable to confirm whether the data on race, ethnicity, and sex identified in this sample was provided by the patient or if it was collected during the patient triage process without patient consultation. The inability to validate and confirm clinical data is a limitation. Future directions should include a prospective study gathering data that support sensitive measures inquiring about youth identity and asserted gender. 3) This study's sample of adolescents included few 18-year-old youth and is not representative of the 18-year-old population of youth who may have sought ED services during the same time frame, because youth this age often transition to adult services. Thus, some 18-year-old youth may have sought similar services within the adult ED. 4) These data are not representative of the national sample and thus are not generalizable to a broader population of youth. 5) The CSSR-S is a well-documented screening tool utilized by EDs (and elsewhere) to assess youth suicide risk in the 11- to 18-year-old age group and were not collected as a part of the psychiatric evaluation. As such, its purpose is to identify youth at risk so that they can be receive further evaluation. This screener was presented to provide information about the presentation of the HED sample.

## CONCLUSION

This study looked to understand how the COVID-19 pandemic affected youth presentations to HED's psychiatric service, including how many youth warranted an inpatient and acute residential admission. Results revealed that while fewer youth sought ED services during the pandemic lockdown compared to other years, the youth who presented to HED and were referred to LPBHES were observed to have increased acuity and needed higher levels of care. While unprecedented times, these findings suggest the need for youth mental health services to be available and accessible to intervene and decrease the acuity of youth mental health symptoms before higher levels of care are warranted. As such, more information and education on youth mental health literacy and mental health services are needed so that families and youth are able to identify and utilize appropriate levels of mental health care. Future directions include prospective studies that explore mental health literacy and the barriers to youth receiving the appropriate level of mental health services to prevent acute mental health crises.

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### Conflict of Interest Disclosures

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