BRIEF REPORT

The impact of COVID-19 on adolescents with eating disorders: Increased need for medical stabilization and decreased access to care

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Abstract

Objective: We aimed to identify trends of patients with eating disorders (EDs) requiring hospitalization before and during the pandemic at a children's hospital in the southeastern United States.

Method: A retrospective chart review was completed for 71 adolescents and young adults (ages 10-21 years; M = 14.61, SD = 2.121).

Results: Results indicated a 188% increase in ED hospital admissions since the pandemic, with patients presenting with increased rates of comorbid mental health diagnoses (p = .009). During COVID-19, the development of temporary outpatient multidisciplinary discharge plans (i.e., "bridge plans") were utilized more often due to difficulties accessing the appropriate level of care (p = .039).

Discussion: Results suggest a significant increase in youth requiring medical stabilization for EDs since the start of the COVID-19 pandemic (2.9 times more than prepandemic), as well as a need for greater advocacy to increase specialized mental health services along the full continuum of care.

Public Significance Statement: This study brings awareness to the significant increase in patients needing medical stabilization secondary to restrictive EDs and increased rates of comorbid mental health diagnoses in this patient population since the onset of the COVID-19 pandemic. Patients during COVID-19 were less likely to directly transition to treatment likely secondary to the strain COVID-19 placed on mental health systems/ treatment centers. Increased advocacy for specialized care for eating disorder patients.

KEYWORDS

adolescents, anorexia nervosa, inpatient, mental health crisis, stabilization

1 | INTRODUCTION

A pandemic was declared by the World Health Organization (WHO) in March 2020 after a novel coronavirus (COVID-19) rapidly spread around the globe (World Health Organization, 2020). This was the start of unprecedented times. While COVID-19 impacted the daily lives of all, one population that appeared particularly vulnerable to the unexpected changes, was patients with eating disorders (EDs) and those at-risk for EDs.

Research is still emerging regarding the impact of the pandemic on EDs in children and adolescents. Youth may be particularly vulnerable to the effects of COVID-19 given the potentially significant 2____WILEY-EATING DISORDERS

effects of school closures and disruptions in social interactions on social-emotional development and well-being (Holmes et al., 2020). Spettigue et al. (2021) found that 40% of adolescents admitted for an intensive ED program reported the pandemic and quarantine were precipitating factors to the development of their ED. They also were more medically unstable than those who did not identify the pandemic as a trigger (Spettigue et al., 2021). Youth also reported worsening ED symptomology, an increase in ED thoughts, and increases in anxiety, depression, and isolation with the pandemic, as well as decreased motivation for recovery (Vitagliano et al., 2021). Unfortunately, at the start of the pandemic, there was a significant decline in rates of youth seeking mental health services (Stewart et al., 2021). When patients initiated eating disorder treatment, they reported greater psychiatric comorbidity and suicide risk compared to patients admitted the previous year (Graell et al., 2020). These results suggest the possible cumulative effects of the pandemic on mental health for vouth with FDs

The American Academy of Pediatrics (AAP, 2021), American Academy of Child and Adolescent Psychiatry (AACAP), and Children's Hospital Association (CHA) declared a national emergency in children's mental health. As such, there is growing concern that an already strained mental health system may not be able to keep pace with the increasing demand for services among our youth with EDs. Similar to trends reported, we have experienced an influx in patients requiring medical stabilization secondary to EDs since the start of the pandemic and have been faced with increasing placement challenges due to limited resources locally and state-wide.

By completing a retrospective chart review, we aimed to (1) guantify the increase in adolescents and young adults requiring medical stabilization secondary to restrictive EDs (anorexia nervosa, restricting type, anorexia nervosa, binge-eating/purging type, atypical anorexia nervosa, avoidant restrictive food intake disorder [ARFID], unspecified eating disorder), (2) examine differences in comorbid psychiatric diagnoses between the ED cohort presenting for inpatient medical stabilization during the COVID-19 pandemic compared to those presenting prior to the COVID-19 outbreak, (3) assess differences in discharge recommendations/plans between the two cohorts, (4) and examine differences in patient characteristics (demographics, insurance status, hospital length of stay, and body composition) across the two cohorts.

2 **METHODS**

A retrospective chart review was completed for 71 adolescents and young adults (ages 10-21 years; M = 14.6, SD = 2.12) admitted to a children's hospital in a southeastern metropolitan area. Additional demographic information is reported in Table 2. Thirty-one patients were admitted prior to the onset of COVID-19 and 40 patients were admitted after the onset of COVID-19. Electronic medical records (EMRs) were reviewed for patients who were hospitalized for medical stabilization secondary to restrictive EDs between January 1, 2017 and July 31, 2021. All youth included in this study demonstrated restrictive eating behaviors, and were predominately diagnosed with

anorexia nervosa (see Table 2). Hospital admission criteria are guided by the Society for Adolescent Health and Medicine (SAHM; see Table 1). Per the hospital's eating disorder pathway (i.e., inpatient clinical protocol), a clinical psychologist conducted a clinical interview following inpatient pediatric consultation-liaison guidelines (Carter, 2005) to assess presence of DSM-5 diagnosis. Patients were included in the present study if an ED was diagnosed and our organization's eating disorder pathway was initiated for standardized evidence-based care. Repeat admissions were excluded from analyses. Patients were grouped into those who were treated prior to COVID-19 versus those that were treated following WHO announcement of a global pandemic on March 11, 2020. Researchers extracted demographics, DSM-5 psychiatric diagnoses, body composition (e.g., percent median BMI [% mBMI], BMI z-score), heart rate, and discharge plans (direct admission to treatment vs bridge plan) from EMRs. Bridge plans were defined as temporary plans that allow patients to transition home with multidisciplinary (e.g., pediatrician, therapist) support following medical stabilization while awaiting programming at the appropriate level of care (intensive outpatient program (IOP), partial hospitalization (PHP), or residential) if outpatient evidence-based treatment (e.g., family-based treatment) was not feasible due to family limitations, availability of providers, and/or financial constraints.

2.1 Statistical analysis

Descriptive analyses were conducted to explore socio-demographic variables, individual characteristics (e.g., psychiatric diagnoses, body composition), and treatment factors (e.g., length of stay, type of

TABLE 1 Admission criteria for ED-related medical stabilization

Can include any one of the following criteria:
Weight <75% of median BMI
Emergency room physicians may use clinical calculator in the electronic medical record as a screening tool to determine if patient meets inpatient criteria
Registered Dietitian (RD) and Hospitalists should use the following formula during their assessment, as supported by medical literature:
Median $BMI = 50\%$ BMI for exact age and height at presentation on the CDC BMI-for-age percentiles chart
Continued weight loss despite "intensive" outpatient therapy
Acute weight decline and refusal of food
Hypothermia (<96 F)
Hypotension (SBP <90)
Bradycardia (resting HR <50 bpm while awake and <45 bpm while asleep)
Orthostatic changes in BP >10 mm Hg
Orthostatic changes in HR >20 bpm
Electrolyte abnormalities
Arrhythmia

Note: Adapted from Golden et al. (2015).

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insurance, discharge plan) during COVID-19 and in the 3 years preceding COVID (Table 2). Percent increase was calculated as follows: percent increase = (patients per month during COVID - patients per month pre-COVID)/(patients per month pre-COVID) \times 100. Percent of median BMI (% mBMI) was calculated using the following formula: (current BMI)/(50% BMI for age and sex assigned at birth) \times 100. We also examined discharge plans for our two patient cohorts to examine

pandemic-associated differences as we observed increased wait times for residential, PHP, and IOP during the pandemic. Between group differences were analyzed using chi-square and independent samples *t* tests. Descriptive statistics are reported in Table 2. This study was approved by the Institutional Review Board, who waived the requirement for informed consent, as this was a retrospective study conducted via EMR review.

TABLE 2 Characteristics of participants

Category	Pre-COVID		COVID				Total	
	n	%	n	%	n	%	X ² statistic	p value
Sex assigned at birth							.063	.801
Female	27	87.1	34	85.0	61	85.9		
Male	4	12.9	6	15.0	10	14.1		
Race							3.429	.330
White	28	90.3	38	95.0	66	93.0		
Black/African American	1	3.2	1	2.5	2	2.8		
Asian	0	0	1	2.5	1	1.4		
Other	2	6.5	0	0	2	2.8		
Ethnicity							1.421	.491
Not Hispanic/Latino	23	74.2	32	80.0	55	77.5		
Hispanic/Latino	6	19.4	4	10.0	10	14.1		
Unknown	2	6.5	4	10.0	6	8.5		
Primary language							.069	0.792
English	29	93.5	38	95.0	67	94.4		
Spanish	2	6.5	2	5.0	4	5.6		
Other	0	0	0	0	0	0		
Insurance							4.009	.045
Private	19	61.3	33	82.5	52	73.2		
Medicaid	12	38.7	7	17.5	19	26.8		
Primary ED diagnosis							2.853	.583
Anorexia nervosa								
Restricting type								
Binge/purge type	25	80.6	28	70.0	53	74.6		
Atypical	1	3.2	2	5.0	3	4.2		
ARFID	4	12.9	5	12.5	9	12.7		
Unspecified feeding or	1	3.2	2	5.0	3	4.2		
Eating disorder	0	0	3	7.5	3	4.2		
Comorbid MH diagnoses							8.404	.004
Anxiety	8	25.8	21	52.5	29	40.8		
Depression	11	35.5	18	45.0	29	40.8		
							F value	p value
Study variables	М	SD	М	SD	М	SD		
Length of stay (LoS)							2.485	.341
Admit % mBMI	12.58	7.43	14.77	10.94	13.82	9.56	.331	.574
Admit BMI z-score	81.74	11.82	83.45	13.23	82.70	12.57	.093	.628
Heart rate (HR; beats/minute)	-1.99	1.68	-1.81	1.53	-1.89	1.58	3.789	.365
	57.23	19.45	53.70	13.04	55.24	16.12		

Note: N = 71. Participants were on average 14.61 years old (SD = 2.121). The data that support the findings of this study are not publicly available due to privacy or ethical restrictions but may available from the corresponding author upon reasonable request.

3 | RESULTS

3.1 | Rate of inpatient admissions

Results indicate a 188% increase in eating disorder related hospital admissions since the onset of the pandemic (pre-COVID: 0.816 patients per month; during COVID: 2.35 patients per month). During COVID, the hospital had 2.9 times more admissions related to medical stabilization of patients with EDs than in the 3 years prior.

3.2 | Comorbid psychiatric conditions

Patients hospitalized for primary ED concerns were found to have significantly higher rates of comorbid anxiety and/or depression during COVID than pre-COVID (X²[1] = 8.404, p = .004) with a 97% increase. Specifically, comorbid anxiety disorders increased 103%, (X²[1] = 5.15, p = .023). Comorbid depressive disorders also increased by 27% from pre-COVID to during COVID, although this change was not found to be statistically significant (X²[1] = .655, p = .418) (see Table 2).

3.3 | Discharge plans

Direct transfers to the recommended higher level of care after medical stabilization significantly decreased ($X^2[1] = 6.06$, p = .014). Outpatient bridge plans significantly increased ($X^2[1] = 4.27$, p = .039) during COVID, with 42.5% of patients needing bridge plans during COVID compared to 19.3% of patients pre-COVID. Average length of hospital stay was found to slightly increase during COVID (M = 14.8, SD = 10.9) as opposed to pre-COVID (M = 12.6, SD = 7.43), although this change was found to be non-significant (F[69] = 2.49, p = .341). There was also a significant increase in private insurance patients and a decrease in Medicaid patients during COVID when compared to prepandemic ($X^2[1] = 4.01$, p = .045). No statistical differences between prepandemic and post-onset pandemic were found for sex assigned at birth, race, ethnicity, primary language, admit % mBMI, admit BMI z-score, and heart rate (see Table 2).

4 | DISCUSSION

The current study shows an exponential increase in pediatric hospitalizations at our institution for youth with restrictive EDs since the onset of the COVID-19 pandemic. The three-fold increase in hospitalizations from before COVID-19 to during the COVID-19 pandemic parallels recent research demonstrating similar trends (Lin et al., 2021; Otto et al., 2021). To build on the current literature, our study results indicate a significant increase in comorbid mental health diagnoses among patients from pre-COVID to during the pandemic. The increase in rates of anxiety and depression among patients with EDs reflects overall increased rates of anxiety and depression among adolescents during the COVID-19 pandemic (Magson et al., 2021). The increased rates of comorbidities among patients with restrictive EDs is concerning given adolescent EDs are often more severe when anxiety and depression are present (Hughes et al., 2013). Specifically, those with comorbid anxiety have shown lower body mass index (BMI) percentiles and lower mean percent of expected body weight while patients with comorbid depression show significantly higher severity on the Eating Disorder Examination compared to those without comorbidities (Hughes et al., 2013).

The current study also contributes to the literature by presenting the challenges associated with discharge planning given barriers to accessing appropriate levels of care during the pandemic. Results revealed that patients during COVID-19 were less likely to directly transition to treatment compared to patients before COVID-19. While the strain COVID-19 placed on medical systems is well known (Kaye et al., 2021), the strain COVID-19 placed on mental health systems/ treatment centers is not as well documented. Our results demonstrate that ED treatment centers were not able to meet the demand caused by increased rates of patients with severe EDs. In the southeast region of the United States, limited availability and longer waitlists at ED treatment centers were significant barriers to direct transitions from hospitalization to ED treatment programs during the COVID-19 pandemic. Our study presents bridge plans as one potential option to assist with overcoming these barriers. Bridge plans allow for patients and families to be discharged home in a safe manner while waiting for higher level of care rather than prolonging the hospitalization beyond medical stabilization.

Among adolescents with EDs, the pandemic may have also exacerbated barriers to receiving critical care, especially for patients with Medicaid. Our results showed a significant decline in patients with Medicaid and a significant increase in patients with private insurance presenting for medical stabilization during the pandemic. While research has demonstrated a decline in hospital admissions during the early phase of the pandemic across payer groups, there was a disproportionate decline in healthcare utilization for pediatric patients with Medicaid (Symum et al., 2022). COVID-19 likely caused additional financial strain and transportation barriers on patients with Medicaid, which negatively impacted attendance at doctor's appointments or Emergency Department visits. This is particularly concerning for adolescents with restrictive EDs, as access to trained medical and psychological providers is crucial to minimize health complications (Golden et al., 2015). These barriers should be considered as the healthcare field strives to improve access to care for all patients, regardless of socioeconomic or insurance status.

This study brings awareness to the significant increase in severe EDs (patients needing medical stabilization) and increased rates of comorbid mental health diagnoses since the onset of the pandemic. There are several important clinical implications to consider. First, there appears to be increased demand for inpatient ED medical stabilization and post-discharge higher level of care. Given this demand is occurring across the country and globe (Linardon et al., 2021), hospitals should consider having specific ED treatment units and hiring medical staff (physicians, dietitians, psychologists, social workers, nurses/techs) who are specifically trained in treating pediatric EDs. Additionally, greater access to multidisciplinary care at the outpatient level would allow patients to receive diagnoses and treatment recommendations prior to the need for medical stabilization. Second, hospitals should ensure they have proper clinical pathways to treat patients with EDs. Furthermore, primary care providers and specialists should be familiar with guidelines for hospital admission (e.g., heart rate < 50 beats per minute while awake; systolic blood pressure < 90; Golden et al., 2015) to ensure medical stabilization is not delayed.

While our research is intended to serve as a snapshot to capture characteristics of adolescent patients presenting to a pediatric hospital for medical stabilization during COVID-19 as compared to during the 3 years prepandemic, our findings are limited by our small sample size and the available data that could be extracted from the electronic medical record. The lack of reliability and validity statistics on DSM-5 diagnoses are also a limitation; however, all diagnoses were based on DSM-5 criteria and final diagnoses were determined by a Ph.D. level psychologist. Additionally, while mental health shortages appear to plague the country, our findings relevant to access to care may not be representative of all regions of the United States. Finally, while our patient demographics are largely consistent with previous reports from a children's hospital in the northeast (Peebles et al., 2017), some youth may be underrepresented in our findings. Therefore, more research is needed to provide a more expansive view of children and adolescents requiring medical stabilization due to ED pathology, especially during a pandemic, to better inform clinical programming and support advocacy efforts for this at-risk population.

AUTHOR CONTRIBUTIONS

Marissa Alexis Feldman: Conceptualization; data curation; investigation; methodology; project administration; supervision; writing – original draft; writing – review and editing. Callie King: Data curation; formal analysis; investigation; writing – original draft; writing – review and editing. Sarah Vitale: Conceptualization; data curation; investigation; writing – original draft; writing – review and editing. Brenna Denhardt: Conceptualization; data curation; investigation; writing – review and editing. Susan Stroup: Conceptualization; data curation; investigation; writing – review and editing. Jasmine Reese: Writing – review and editing. Sarah E Stromberg: Conceptualization; formal analysis; methodology; supervision; writing – original draft; writing – review and editing.

CONFLICT OF INTEREST

We have no known conflict of interest to disclose.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are not publicly available due to privacy or ethical restrictions but may available from the corresponding author upon reasonable request.

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