Trend in Emergency Department Visits Among Children and Youth With Autism Spectrum Disorder:

A Cross-Sectional Analysis of the National Hospital Ambulatory Medical Care Survey, 2016–2021

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Individuals with autism spectrum disorder (ASD) face challenges in social interaction, have restricted interests and repetitive behaviors, are predisposed to higher health risks, and are more prone to injuries leading to more emergency department (ED) visits.[1,2] They also have a heightened risk for other comorbid psychiatric illnesses.[3] As ASD diagnoses rise, ED visits from this demographic are expected to increase. This increase has been seen in adults; however, it is unknown if the same is mirrored by the child/youth population aged 2–24 years.[4] Analysis of ED visit data for children and youth with ASD is vital for optimal resource distribution and training of ED teams. Furthermore, studying the trend of ED visits in patients before and during the COVID-19 pandemic can provide valuable insights into the effect of external factors on patients with ASD and other developmental disorders.

Methods

We conducted a secondary analysis of National Hospital Ambulatory Medical Care Survey (NHAMCS) data from 2016 to 2021, a nationally representative sample of ambulatory visits to nonfederal hospitals in the United States. The ED component involves a 3-stage sample design. Data include patient demographics, visit reasons, vital signs, diagnoses, procedures, medications, providers, and disposition. Around 474 hospitals were sampled yearly, with 338 eligible and a 79% response rate.[5]

Our study examined ED visits of patients aged 2–24 diagnosed with autism (*International Classification of Diseases, Tenth Revision [ICD-10]* code F84.x) between 2016 and 2021. All visits with autism among the recorded diagnoses were included. To investigate changes in presentation rates, we compared data from 2016–2018 with that of 2019–2021 and performed a χ^2 test with Rao and Scott adjustment.

For the 2016–2021 period, we segregated autism visits by the presence of any comorbid psychiatric comorbidities (*ICD-10-CM* code F01–F99 except F84.x), mood disorders (F30–F39), ADHD (F90.x), conduct disorder/oppositional defiant disorder (ODD) (F91.x), impulse control disorder (F63.x), schizophrenia spectrum disorder (F20.x–F29.x), and substance abuse/dependence (F10.x–F19.x). "Aggression" visits were defined by reason for visit for behavioral disturbance (1130.0) and hostility (11302), while self-harm visits were identified by reason for visit "intentional self-mutilation" (58180), "suicide attempt" (58200), and "overdose, intentional" (58201).

The survey data were analyzed using sampling weights provided in the data file to obtain unbiased national estimates. We accounted for the complex sample design by determining sampling errors and CIs using IBM SPSS version 28 software with a complex sampling module, considering the clustered nature of the sample. Population estimates were calculated based on specific criteria: at least 30 unweighted samples, relative standard error less than 30%, and item nonresponse rate less than 30%. To align with the National Center for Health Statistics recommendations for NHAMCS data analysis, all estimates were rounded to the nearest 1,000.

Results

Between 2016 and 2018, 39 million annual ED visits occurred among children and youth aged 2–24. This number decreased to 36 million annual visits in 2019–2021 ($P = .02$). While the number of ED visits documenting psychiatric illness remained consistent between these 2 timeframes, visits specifically diagnosing autism saw an upward trend, increasing from an annual count of 105,000 during 2016–2018 to 146,000 in 2019–2021 (Table 1). Although this increase was not statistically significant, probably due to a decline in the total number of child/youth visits during the COVID-19 pandemic ($P = .11$), the proportion of autism-related visits relative to total

Table 1.

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	2016–2018		2019–2021		
Variable	N	Average annual weighted visits in thousands (95% CI)	N	Average annual weighted visits in thousands (95% CI)	*P*
Total visits (aged 2–24, y)	15,539	39,042 (34,062–44,022)	13,115	35,805 (31,374–40,237)	.02
Total psychiatric illness visits	1,235	2,803 (2,388–3,217)	1,197	2,759 (2,339–3,179)	.40
Autism spectrum disorder	55	105 (71–138)	63	146 (105–187)	.11

child/youth ED visits surged by 51.3%, from 269.1 to 407.5 per 100,000 youth visits.

Diving deeper into the data from 2016–2021, of all ED visits by patients with autism, 38.7% had an associated psychiatric illness. Breaking down the unweighted total of 118 autism-related visits, 22 were due to aggression and 4 for self-harm, 15 had a mood disorder diagnosis, 14 had ADHD, 10 had anxiety, 7 had conduct disorder/ODD, 7 had impulse control disorder, 2 had psychosis, and 2 had substance use disorders.

During the 2019–2021 period, an overall decrease in ED visits for children and youth aged 2–24 years was likely attributed to the COVID-19 pandemic.[6] However, this group's constancy in psychiatric illness–related visits revealed a rising proportion of ED admissions with mental illness. Although autism-related visits did not significantly differ from 2016–2018 to 2019–2021, their proportion in total youth ED visits increased by 51.3% in the latter period. Prior research has demonstrated that individuals with autism possess multiple physical and behavioral risk factors that make them more susceptible to complications from COVID-19.[6] The question arises as to whether the uptick in autism-related ED visits stems from the pandemic or if other underlying factors necessitate exploration.

Discussion

Our study findings revealed that roughly 38.7% of autism patients presented with a concurrent psychiatric diagnosis. This highlights the importance of a holistic psychiatric care approach for autistic children and youth attending the ED, irrespective of the primary reason for their visit. Furthermore, with aggression being evident in 22 of the 118 autistic patients, the role of the ED environment as a potential stressor cannot be overlooked. The immediate surroundings, often chaotic and overstimulating, might precipitate sensory overloads in these individuals. Considering the nationwide escalation in ED staff injuries, providing sensory-friendly spaces becomes crucial for these patients.

Moreover, to effectively cater to this population, health care practitioners should undergo training to recognize and manage the often unique and nuanced symptom presentation in autistic youth, particularly those relating to mood disorders, anxiety, and ADHD. Creating sensory-attuned ED spaces could significantly streamline accurate diagnoses, facilitating tailored treatment plans and ultimately bolstering patient outcomes. With an upward trajectory in ASD diagnoses, our health care infrastructure demands rapid adaptation to effectively address the multifaceted needs of this group.[7] The importance of early intervention and all-encompassing support becomes even more salient given the evidence of aggressive behaviors and potential self-harm in ED-visiting individuals with ASD.

Our study has several limitations. The results apply to youth attending nonfederal general and short-stay US hospitals, potentially narrowing its broader applicability. The NHAMCS's visit-centric approach could inadvertently amplify the representation of frequent visitors, particularly those with severe autism. The narrowed focus on 5 diagnoses in NHAMCS might also overshadow the true prevalence of autism and associated disorders if they were not explicitly documented during the ED visit.

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