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Suicide Risk Screening for Youth with Developmental Disabilities in the Pediatric Emergency Department

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Suicide is the second leading cause of death in children and adolescents and is currently considered a public health crisis (Curtin & Heron, 2019). To address this crisis, it is recommended that suicide risk screening tools, assessments, and clinical pathways be integrated in all pediatric healthcare settings to assist clinicians in identifying and managing youth suicide risk (Gorzkowski Hamilton et al., 2023). Emergency departments (EDs) are a critical setting for suicide risk assessment and management, and recommendations for universal screening in the ED exist (Brahmbhatt et al., 2019). However, these and other guidelines do not offer guidance specific to special populations who may be more vulnerable to suicidal thoughts and behaviors (STBs) and who have been understudied and underrepresented in the development of evidence-based suicide prevention practices, such as youth with developmental disabilities (DDs) (Gorzkowski Hamilton et al., 2023). In fact, it is likely that both assessment tools and management strategies require adaptation to increase efficacy and acceptability for this population (Ludi et al., 2012; Schwartzman et al., 2021). The lack of tailored assessment tools and management strategies is problematic, as youth with DDs present to the ED at elevated rates (Lindgren et al., 2021), including with presenting concerns related to STBs (Cervantes et al., 2023).

In regard to suicide risk in youth with DDs, recent research has been primarily focused on autistic youth. It has been established that autistic youth are at elevated risk for STBs (O’Halloran et al., 2022), but clinicians across settings, including in emergency care settings, report limited confidence and competence addressing suicide risk in autism (Cervantes et al., 2022; Jager-Hyman et al., 2020). A recent study in primary care also found that compared to non-autistic youth, youth with autism diagnoses were significantly less likely to have completed a screen for depression and suicide risk (Hamdan et al., 2023), which may increase vulnerability to underdetection of mental health concerns. Unfortunately, the literature on youth with other DDs is more limited. However, similar barriers to care likely exist for these youth, who have also been identified at increased risk for STBs (Johanning-Gray et al., 2022; Ludi et al., 2012; Rybczynski et al., 2022). For instance, a recent study of primary care and mental health clinicians reported that they were less likely to screen patients exhibiting intellectual differences for suicide risk (Davis et al., 2023). A study evaluating routine depression screening with adolescents with DDs in a multidisciplinary DD clinic also found low implementation rates (58%; Valicenti-McDermott et al., 2021). Therefore, care disparities related to the implementation of recommended suicide prevention practices for youth with DDs likely exist. While understudied, factors contributing to these disparities may include limited clinician knowledge (e.g., inaccurate belief that individuals with DDs are at lower risk for or are protected from STBs) as well as lack of evidence-based screening tools and management strategies specific to the DD population (Ludi et al., 2012).

This study aimed to begin to address the gaps in the literature and highlight areas in need of attention for children and adolescents with DDs broadly. To address the research questions, (1) Are there disparities in the implementation of suicide risk screening in the ED with youth with DDs?, and (2) Are there identifiable factors related to differences in screening rates?, the current study explored rates of standard suicide risk screening in two pediatric EDs across youth with and without DDs. Then, to identify possible factors related to differences in standard screening rates, we compared these data to results from mental health screening conducted concurrently as part of a National Institute of Mental Health (NIMH)-funded initiative.

Method

Participants

Data from participants in the NIMH-funded initiative were analyzed in this study. Youth eligible to participate in the initiative were aged 7-17 years old presenting to one public hospital and one private hospital pediatric ED in a Northeastern city in the US during a screening shift staffed by the research team. Youth were ineligible if they: (1) presented with a severe medical concern (i.e., emergency severity index score of 1); (2) demonstrated behavior incompatible with screening (e.g., severe agitation); (3) had limited-to-no verbal language; (4) were not fluent in English or Spanish; (5) arrived without a caregiver; or, (6) previously participated in this effort. Of the 341 eligible children and adolescents who presented to the EDs during the project period, 241 youth participated (70.7%).

To be included in the current analyses, caregivers must have participated in the study and must have responded about the presence of educational accommodations on the demographic form. Data regarding the completion of suicide risk screening in standard care must have also been captured. Because standard suicide risk screening in the private hospital ED is recommended for youth 10 years of age and older, participants recruited in this setting who were younger than 10 years old were excluded in the current study. We also excluded participants seeking ED services with a primary psychiatric concern, as these patients would have been seen in the separate psychiatric ED service in the public hosptial (total N=101).

Procedures

This study was conducted as part of a NIMH-funded initiative to examine use of the Kiddie-Computerized Adaptive Tests (K-CAT) with an accompanying disposition protocol for improving youth mental health care in the ED. While the NIMH-funded initiative occurred within both PEDs and included physician involvement, it was not integrated into usual care. Therefore, PED personnel were expected to continue implementation of recommended mental health screening guidelines, including administration of the C-SSRS, throughout the duration of the study. As described, data from standard care and the NIMH-funded initative were used in this study.

Standard Care. Within the private hospital ED, administration of the C-SSRS is recommended for all youth ages 10 and older, regardless of presenting concern. In the public hospital, administration of the C-SSRS is recommended for all youth presumed to have the capacity to respond. In both hospitals, suicide risk screening is completed at triage by the nursing staff. While neither ED has mental health providers directly within their setting, mental health specialists are available when psychiatric concerns are identified within a consultation model in the private hospital ED and in a separate pediatric psychiatric ED in the public hospital. Of note, while universal screening is recommended in several clinical care settings, implementation can be inconsistent (Hamdan et al., 2023). There are often cases where screening is not completed (e.g., clinicians decides that screening is not appropriate; youth and/or caregiver decline screening). Within the current study, rationale for failure to complete the C-SSRS was not systematically documented.

NIMH-funded Initiative. Trained research associates (RAs) staffed up to four 6-hour shifts per week across the two EDs for approximately 10 months (from August 2021 to June 2022). The RAs approached all eligible youth and caregivers to participate after they had been triaged while they were waiting to be seen. Because the BLINDED IRB classified this study as a quality improvement effort, formal consent was not required. Instead, all youth and caregivers were presented with an information sheet on a tablet summarizing the project activities, risks, and benefits. Caregivers first agreed to participation for themselves and/or for their child by checking a box following the caregiver information sheet. Youth agreed to participation by checking a box following the youth information sheet. If the youth declined, caregivers could participate in the effort alone. If the caregiver declined to participate, youth could participate alone if their caregiver first gave permission. The screening battery was approximately 15-20 minutes in duration and included the K-CAT Anxiety (both), Depression (both), and Suicide (youth only) scales as well as several research measures, all completed electronically and independently on the tablet. RAs were available if the youth or caregiver had questions during completion of the assessment battery. The project coordinator then accessed the visit note for each participating dyad to collect additional information about their care in the ED (e.g., visit diagnosis, disposition, standard suicide risk screening results) (Horwitz et al., 2025).

Measures

K-CAT. The K-CAT is a novel computerized adaptive measure that includes scales assessing depression, mania, anxiety, attention-deficit/hyperactivity disorder, conduct disorder, and oppositional defiant disorder through both youth and caregiver report and suicide through youth report only. The K-CAT scales can be administered together as a full battery or independently. The items are written at a fourth grade reading level, and children and caregivers are provided an option to have the items presented auditorily. Results include a severity level, severity score, precision score, and when both parent and child versions are completed, an estimate of probability of diagnosis. The K-CAT battery was validated for 7-17 year old youth in the general population against structured clinical interviews administered by trained clinicians (i.e., *Kiddie Schedule for Affective Disorders and Schizophrenia* [K-SADS] and *Columbia-Suicide Severity Rating Scale* [C-SSRS]). Psychometrics are strong (Gibbons et al., 2020). Importantly, the K-CAT has not yet been validated for use with the DD population. Though, findings from a pilot study evaluating its use for assessing autistic youth suggested it holds promise in addressing this need (Cervantes et al., 2024).

As indicated, the K-CAT Anxiety, Depression, and Suicide scales were used in the NIMH-funded initiative. Of note, in addition to the results provided by all scales, the K-CAT-Suicide Scale (K-CAT-SS) results in a binary suicide warning. A suicide warning indicates the presence of increased suicide risk and is generated in cases when (1) the K-CAT-SS severity score is greater than 60, (2) the child endorses one or more of the five suicide-related “trigger” items, and/or (3) when the full batteries of the K-CAT Child and Parent Versions are completed, the K-CAT-SS probability score is greater than 0.5. Because we administered only select modules of the K-CAT for this study, suicide warnings by probability score were not available.

Electronic Health Record Review. Data abstracted from the visit note for each participant included whether mental health assessments were conducted as part of standard care. The outcome of interest for this study was notation in the visit note of completion of the standard suicide risk screening measure, the C-SSRS, or failure to complete the scale, defined as either failure to report results of the C-SSRS in the visit note or reporting that the screen was not completed or not applicable.

Additional Variables of Interest. Youth demographic data were gathered through youth and caregiver sociodemographic forms. Presence of an individualized education program (IEP) and youth IEP classification were also collected in the caregiver sociodemographic form. Youth with an IEP for intellectual disability, learning disability, speech or language impairment, or autism were categorized as having a DD and assigned to the DD group. Youth without an IEP for these classifications and youth with no IEP were assigned to the No DD group.

Statistical Analysis

We first compared the rates of suicide risk screen completion using the C-SSRS in standard care between the DD and No DD groups. We also compared completion of the K-CAT-SS within the quality improvement project across youth participants with and without DDs. Results of the K-CAT Anxiety, Depression, and Suicide scales were compared between the DD and No DD groups. Finally, results across K-CAT scales were compared between youth with DDs who did and did not complete the C-SSRS in standard care to identify potential clinical differences. Given the small sample size and because several expected cell counts were less than 5, we used Fisher's exact tests and Chi-square tests using a Monte Carlo simulation with 10,000 replicates to analyze categorical data. Non-parametric Mann-Whitney *U* tests were used to analyze continuous data.

Results

Fifteen of the 101 participants (14.9%) were reported to have at least one IEP classification indicating the presence of DDs (i.e., the DD group). Ten (66.7%) were reported to have a learning disability classification, seven (46.7%) had a speech or language impairment classification, and one (6.7%) had an intellectual disability classification. Eighty-four of the 86 participants in the No DD group were not reported to have an IEP (97.7%). The remaining two had an IEP classification of other health impairment. There were largely no differences found between DD and No DD groups in sociodemographic characteristics or hospital visited. Participants in the DD group (*M*=14.2; *SD*=2.7) were statistically significantly older than participants in the No DD group (*M*=12.6; *SD*=2.5), *U*=412.5; *p*=0.032 (Table 1).

While youth participants with and without DDs completed the K-CAT-SS at similar rates in the NIMH-funded initative (100% v. 95.3%, respectively), participants in the DD group were statistically significantly less often screened for suicide risk using the C-SSRS in standard care

(33.3% v. 66.3%), *p*=0.022. No participant in either group screened positive for suicide risk on the C-SSRS. Five received suicide warnings on the K-CAT-SS, and all were in the No DD group (5.8%). K-CAT-SS continuous scores did not differ across DD and No DD groups, nor did scores on the K-CAT child and parent Anxiety and Depression scales (all *p*>0.05; Table 1). Across participants with DDs who were and were not screened for suicide risk with the C-SSRS in standard care, no differences were found across K-CAT scores (*p*>0.05; Table 2).

Discussion

As expected, participants with DDs were screened for suicide risk in standard care statistically significantly less often than participants without DDs, suggesting that disparities exist in the implementation of suicide prevention practices for this group. The fact that differences were found despite the DD group being significantly older than the no DD group is notable. Given that younger children are not always included in screening recommendations (The Joint Commission, 2019; US Preventive Services Task Force et al., 2022) and are therefore less often screened (Horwitz et al., 2025), it could be expected that older youth would be more likely to be screened, contrary to these findings. Further, these data showed that groups had similar levels of psychopathology on the K-CAT and no differences in C-SSRS results. Five participants in the No DD group received a suicide warning on the K-CAT-SS (5.8%) compared to no participants in the DD group. This difference is difficult to interpret given the small sample size (i.e., one in 17 participants in the No DD group received a suicide warning while the DD group consisted of only 15 participants). Therefore, particularly in the context of no differences in C-SSRS results, it may or may not be clinically significant. Youth with DDs who were and were not screened in standard care also had similar levels of anxiety, depression, and suicide symptoms on the K-CAT. Taken together, there did not appear to be a markedly higher clinical need for suicide risk screening in the No DD group or in youth with DDs who were screened in standard care compared to youth with DDs who were not screened.

Because youth with no-to-minimal verbal language and behavior problems were excluded from the NIMH-funded initiative, it can also be assumed that the participants in this study had the language ability necessary to complete suicide risk screening in standard care and did not have significant behavioral concerns that would have interfered with screening. Further, participants in the DD and No DD groups completed the K-CAT-SS at similar rates, indicating that their caregivers agreed to youth participation in suicide risk screening within the study. Therefore, while previous research has found high rates of caregiver refusal of suicide risk screening in the DD population (Rybczynski et al., 2022), it is likely that failure to complete the C-SSRS in standard care within the DD group was not due to caregiver refusal in the current study. Particularly in light of previous research on provider confidence in treating youth on the autism spectrum (Cervantes et al., 2022; Jager-Hyman et al., 2020), barriers to suicide risk screening in standard care for youth with DDs may have been clinician-related, highlighting the importance of understanding and addressing implementation factors related to suicide prevention practices for the DD population.

It is important to note that while studying patients presenting with non-psychiatric primary concerns exclusively allowed for comparative data across EDs and holds important implications for universal screening recommendations, results are not generalizable to the full population of youth seeking ED care. Comprehensive mental health assessment is essential for youth presenting with psychiatric concerns. Disparities in the evaluation and disposition of these psychiatric ED visits across youth with and without DDs requires further research. The prevalence of DDs in our sample was also somewhat lower than expected given that data suggest that youth with DDs present to the ED at high rates for both medical and psychiatric concerns (Lindgren et al., 2021). There was also a lack of representation of youth on the autism spectrum, since over 12% of students with IEPs receive services under an autism classification in the state where this study took place (New York State Education Department, 2021). Our sample may not be fully representative of the population because our data do not capture youth who presented to the ED and declined participation in the NIMH-funded initiative. Given previous research indicating high rates of caregiver refusal of suicide risk screening for children with DDs (Rybczynski et al., 2022), it is possible that caregivers of youth with DDs, including autism, may have been more likely to decline participation. This limits the generalizability of our findings. We also used caregiver-reported IEP classification to indicate the presence of a DD. While a useful proxy when comprehensive evaluation of DD status is not feasible, such as in the ED, this classification method may have underestimated the true prevalence of DDs in our sample. It is also important to reiterate that youth with significant behavioral concerns or minimal verbal language were excluded from the current study, restricting the representation of the complete DD population in our sample. However, it is notable that statistically significant differences in screen completion rates were identified despite excluding youth with more significant difficulties. Further, as mentioned, the assessment tools used in this study have not yet been validated for use with youth with DDs, which may have implications for the accuracy of results. Finally, we have previously analyzed clinician training and confidence assessing and managing suicide risk in autistic patients in these settings. In that study, we found clinicians were supportive of suicide prevention practices for youth broadly and autistic youth, but they had low levels of training and confidence with this subgroup of the DD population (Cervantes et al., 2025). However, we have not analyzed their attitudes and competence providing suicide-related care to those with DDs broadly. Particularly in light of the potential disparities in suicide-related care experienced by the DD population, this should be a focus of future research.

Several barriers to implementation of routine suicide risk screening and management for children with DDs exist and need to be further studied and addressed. It is essential that specific attention be paid to the DD population in the development of suicide risk screening protocols, particularly in EDs. Clinicians likely require explicit training and guidelines to improve confidence and care for youth with DDs. This training should be co-developed with the disability community and informed by future research examining clinician identified rationale for implementing and not implementing recommended screening procedures with this population. Further, differences in implementation across vulnerable subgroups of youth, including youth with DDs, should be monitored over time to promptly address potential care inequities. While work is underway to validate a suicide risk screening instrument for youth with DDs and develop evidence-based strategies for managing identified risk in the DD population, increased supports are needed to ensure prompt detection and intervention for youth at risk. Without such supports, disparities in the implementation of suicide prevention practices will continue and could result in serious consequences for youth with DDs.

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Table 1. Differences among participants with and without DDs

	No DD Group (*N*=86)	**DD Group** (*N*=15)	***p***
Sociodemographic and Visit Characteristics			
Sex *N*(%)			1.00
Male	42 (48.9)	7 (46.7)	
Female	42 (48.9)	8 (53.3)	
Not reported	2 (2.3)	0 (0.0)	
Gender *N*(%)			0.926
Male	41 (47.7)	7 (46.7)	
Female	38 (44.2)	6 (40.0)	
Transgender male	1 (1.2)	0 (0.0)	
Transgender female	1 (1.2)	0 (0.0)	
Non-binary	2 (2.3)	1 (6.7)	
Not reported	3 (3.5)	1 (6.7)	
Race *N*(%)			0.166
American Indian/Alaska Native	6 (7.0)	0 (0.0)	
Asian	4 (4.7)	0 (0.0)	
Black/African American	8 (9.3)	3 (20.0)	
White	27 (31.4)	1 (6.7)	
More than one race	17 (19.8)	4 (26.7)	
Not reported	24 (27.9)	7 (46.7)	
Ethnicity *N*(%)			0.094
Hispanic/Latino	54 (62.8)	12 (80.0)	
Not Hispanic/Latino	28 (32.5)	1 (6.7)	
Not reported	4 (4.7)	2 (13.3)	
Age *M(SD)*	12.6 (2.5)	14.2 (2.7)	**0.032**
Not reported *N*(%)	2 (4.5)	0 (0.0)	
IEP Classification *N*(%)			-
Learning Disability	-	10 (66.7)	
Speech and Language Impairment	-	7 (44.4)	
Intellectual Disability	-	1 (5.5)	
Autism	-	0 (0.0)	
ED Visited			0.053
Public hospital ED	45 (52.3)	12 (80.0)	
Private hospital ED	41 (47.7)	3 (20.0)	
Screen Implementation			
C-SSRS Completed *N*(%)			**0.022**
Yes	57 (66.3)	5 (33.3)	
No	29 (33.7)	10 (66.7)	
K-CAT-SS Completed *N*(%)			1.00
Yes	82 (95.3)	15 (100)	
No	4 (4.7)	0 (0.0)	
Screen Results			
C-SSRS *N*(%)			-
Positive screen	0 (0.0)	0 (0.0)	
Negative screen	86 (100)	15 (100)	
K-CAT-SS			1.00
Suicide warning *N*(%)	5 (5.8)	0 (0.0)	

No suicide warning *N*(%)	81 (94.2)	15 (100)	
K-CAT-SS score *M(SD)*	30.2 (20.2)	32.6 (12.9)	0.719
Child K-CAT scores *M(SD)*			
Anxiety	36.6 (13.0)	41.2 (7.3)	0.162
Depression	37.3 (16.9)	39.8 (7.9)	0.583
Parent K-CAT scores *M(SD)*			
Anxiety	28.9 (16.6)	36.8 (19.1)	0.135
Depression	26.6 (15.9)	31.2 (20.0)	0.528

Table 2. K-CAT scores across participants in the DD group who did and did not complete the C-SSRS

	C-SSRS Completed	**C-SRSS Not Completed**	***p***
Child K-CAT scores *M(SD)*			
Suicide	31.7 (15.3)	33.1 (12.4)	0.903
Anxiety	42.3 (5.5)	40.6 (8.2)	0.540
Depression	40.1 (7.2)	39.7 (8.6)	0.903
Parent K-CAT scores *M(SD)*			
Anxiety	27.6 (17.6)	41.4 (18.9)	0.221
Depression	32.3 (14.5)	30.7 (22.9)	0.624