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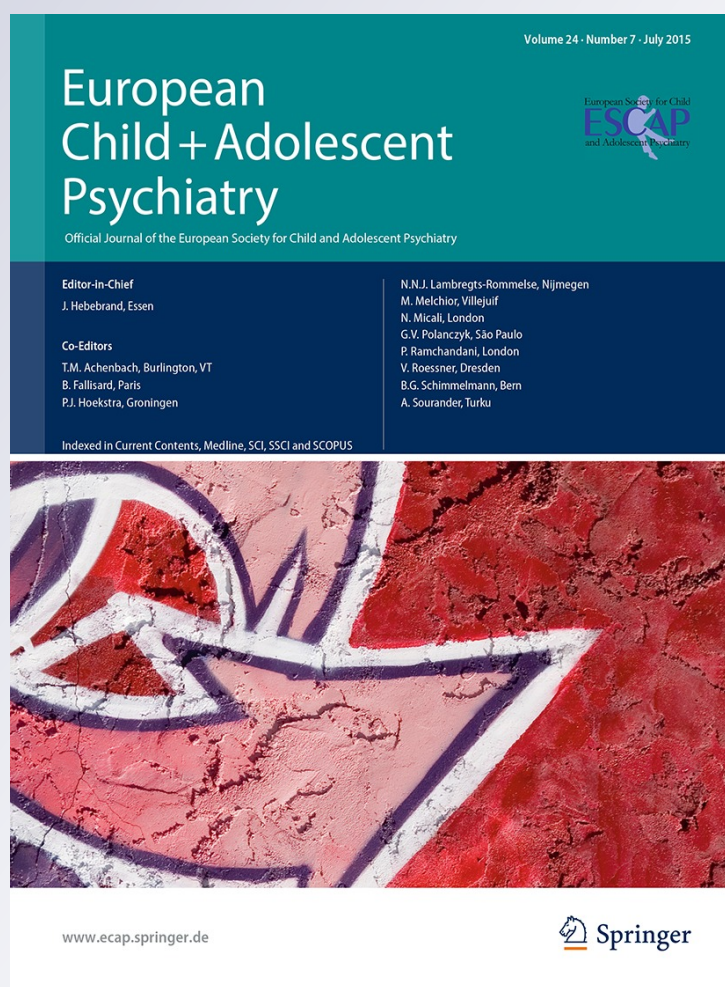
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Characteristics and disposition of youth referred from schools for emergency psychiatric evaluation

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Abstract We aimed to describe the characteristics and disposition of youth referred from schools to the emergency department (ED) for psychiatric evaluations. Consecutive 12-month records of ED psychiatric consultations at a large urban hospital from 07.01.2009 to 06.30.2010 were retrospectively analyzed. School-initiated referrals were deemed inappropriate if youth were discharged from the ED without any recommended mental health follow-up. Of the 551 psychiatric ED evaluations, 243 (44.1 %) were initiated by schools. Of all school referrals, only 19 (7.8 %) children were psychiatrically hospitalized, 108 (44.4 %) were discharged from the ED with a follow-up appointment; and 116 (47.7 %) were discharged without arranged follow-up. Those with a chief complaint of “suicidality” ($n = 109$, 44.9 %) were more likely to be discharged without arranged follow-up than youth with other presenting complaints (56.0 vs. 41.0 %, $p = 0.021$). Altogether, only 37 (18.5 %) of 200 school-referred youth with information were evaluated by a school nurse, social

worker, or other professional before being sent to the ED. Students without in-school screening were significantly more frequently discharged without follow-up than students with in-school evaluations prior to the ED referral (51.5 vs. 27.0 %, $p = 0.0070$; odds ratio = 2.87 (95 % CI 1.30–6.31). Multivariate predictors of inappropriate school referrals of youth discharged without any outpatient follow-up were higher Children’s Global Assessment Scale score ($p < 0.0001$), absent in-school evaluation ($p = 0.0069$), absent prior psychiatric history ($p = 0.011$) and absent current psychotropic medication treatment ($p = 0.012$) ($r^2 = 0.264$ %, $p < 0.0001$). Altogether 44.1 % of ED consultations were school referred, of which 47.7 % were potentially inappropriate for the emergency setting. In-school screening, which occurred infrequently, reduced unnecessary evaluations by 52 %.

Keywords Emergency · Psychiatric evaluation · Children and adolescents · School referral · Appropriateness · Suicidality · Pediatric

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Introduction

The services of pediatric emergency departments (ED) are used with increasing frequency as a place to seek non-urgent primary care for children and adolescents [1–4]. The number of ED psychiatric evaluations is also increasing since the ED frequently serves as a safety net for youth whose mental health needs are insufficiently addressed [5–7]. Many ED visits for mental health concerns lack the level of urgency or severity appropriate for the ED setting and use of its resources [1, 3].

A recent US study that retrospectively characterized the use of pediatric psychiatric ED services found that over

one-third of visits were inappropriate, as they involved youth with low severity of presenting complaint, low harm potential, and absent suicidality or psychosis [3]. This was consistent with earlier estimates of non-urgent visits, ranging from 18 to 40 %, from studies of varying scope and methodology [1, 3, 8]. The increase in utilization of ED services is further complicated by multiple barriers to adequate pediatric mental health care [9], and caregivers' misconceptions about the purpose of mental health services available in the ED [10]. Finally, the ED is not an optimal setting for addressing non-urgent mental health concerns, and its use in such capacity contributes to non-continuity of treatment of chronic illness, poor adherence with follow-up recommendations, and relapse of symptoms for which help was initially sought [11].

Schools play a unique and important role in pediatric mental health care [12–15]. Time spent in school is highly structured, and youth are overseen by professionals familiar with abnormal behaviors and symptoms. Such environment can bring to the forefront a spectrum of psychiatric signs and symptoms, ranging from depression, to abuse, to learning disabilities [5]. Furthermore, school nurses have access, training, and expertise to evaluate, treat, and refer children for further evaluation and care. School nurses provide a variety of healthcare services, including episodic care (illness assessment, first aid), medication administration, procedures (blood glucose monitoring), and screenings (most commonly vision and hearing tests); they are 8 times more likely to interact with children than a primary care provider [16]. In a 2006 national survey, 86 % of schools reported having a full- or part-time nurse, an increase from 77 % in 2000 [17–19]. School nursing care is a well-established and accessible component of pediatric healthcare administration.

Given the importance of schools in screening and identification of mental health problems in youth [20] and evidence of inappropriate school referrals to the ED [3], we sought to describe the demographic, visit, and clinical characteristics, as well as outcomes, of youth referred by the schools to our ED for psychiatric reasons. Moreover, we sought to assess if an evaluation by a school professional prior to referral to the ED would be associated with a disposition that reflected the urgency of the ED level of care.

Methods

Design and procedures

We reviewed psychiatric consultations requested by the ED pediatricians in a 1-year period from July 2009 through June 2010 at the University Hospital of the University of

Medicine and Dentistry of New Jersey (UMDNJ). The study was approved by the UMDNJ Institutional Review Board. Consecutive records of consultations for patients <18 years old were retrospectively analyzed, focusing on the subgroup of school-initiated referrals. As done previously [3], consultations requested for youth returning to the ED after having been evaluated previously were considered separate data points, as they represented a unique constellation of events and circumstances. Consultations requested by the pediatricians from the medical and intensive care units were excluded from the analyses.

Setting

The Newark Public School (NPS) District, from which the hospital ED draws its patients nearly exclusively, included 71 schools, serving 38,150 students. The majority of students were African-American (19,440, 51 %), followed by Hispanic (15,315, 40 %), and White (2,955, 8 %), the remainder representing Asian, Pacific Islander, and Native American. The US Census Bureau reports (<http://quickfacts.census.gov/qfd/states/34/3451000.html>) Newark's population to be 277,140 in 2010, of which 52 % were Black or African-American, 34 % Hispanic or Latino, and 12 % White. By comparison, New Jersey is 14.7 % Black or African-American, 18.9 % Hispanic, and 57.6 % White. Compared to New Jersey as a whole, Newark's Income per capita was lower (\$17,161 vs. \$35,928), as was median household income (\$34,387 vs. \$71,637). Most significantly, 28 % of Newark's residents were below poverty level, compared to 9.9 % statewide.

While NPS provides academic assessment of children for Special Education through designated Child Study Teams, the vast majority of direct mental health services are provided by University Behavioral Healthcare (UBHC, <http://ubhc.rutgers.edu>) and several smaller community mental health clinics and agencies. The Child Study Team members, usually guidance counselors or social workers, are not consistently accessed prior to referral to our ED, among other reasons, because they are not always on site. Each school has a nurse on duty, whose efforts may not always be documented.

The University Hospital is the principal teaching facility of New Jersey Medical School and an urban tertiary-care hospital, located in Newark, NJ. The pediatric ED evaluates over 19,000 patients per year. Requests for psychiatric consultations from the ED are completed by child and adolescent psychiatry (CAP) fellows and attending physicians during regular business hours. During nights and weekends, general psychiatry residents complete consultations with mandatory over-the-phone supervision from CAP attending on-call. At all times, social workers, mental health workers, and other team members of the ED service,

assist in obtaining collateral information from the school, previous providers, and the family, as well as facilitate disposition.

Following a consultation, dispositions include inpatient hospitalization, referral to a detoxification program, partial hospitalization, or outpatient services intake or follow-up, as well as on-site psychoeducation without any specific follow-up referral. Urgent referral to the regional safety-net behavioral health system was available to all youth for whom other options were not realizable. Psychoeducation is tailored to the needs of the patient and the circumstances of the referral, but routinely involves providing the family with a 24 h hotline number and information about accessing psychiatric services in the future as needed. When child neglect or abuse was suspected, or when the custody or parental rights were in question, the clinicians contacted the Division of Youth and Family Services (DYFS), since renamed Division of Child Protection and Permanency, (DCP&P), an NJ state child welfare agency that functions to ensure the safety, permanency, and well-being of children and to support families.

Data collection

Data were extracted from standard consultation reports. Extracted data included age, sex, race, dates and times of referral and arrival to the ED, arrival mode/accompanying persons, presenting problem, record of in-school evaluation, current and past psychiatric history and treatment, involvement of child protective services, Children's Global Assessment Scale (CGAS) score, discharge diagnosis and disposition recommendations.

Data analysis

The reasons for referral were grouped into the following five "chief complaints" after the data was compiled: (1) "suicidality", i.e., thoughts, statements, and acts of self-directed violence with actual or suspected suicidal features; (2) "self-injurious behaviors", i.e., statements and acts that were believed to be represent non-suicidal self-injury; (3) "aggression/homicidality", i.e., dangerous or homicidal statements and acts, including threatening or causing injuries to others; (4) "disruptive behaviors", i.e., temper tantrums, running away, inappropriate physical contact, drug use, cutting class, etc.; and (5) "other" reasons, i.e., panic/anxiety, psychotic symptoms, and mood symptoms/disorders, as well as medical complaints, for which psychiatric evaluation was requested by the ED pediatricians. In the instances when more than one presenting problem was reported, the most clinically significant chief complaint was used.

Disposition recommendations were categorized into three groups: (group 1) discharge without a specific

psychiatric referral/follow-up recommendation, while providing the patient/family with psychoeducation and information about local mental health services; (group 2) discharge with follow-up referral, which included outpatient appointment with a psychiatrist, an intake appointment at a clinic or a partial hospitalization program; and group 3, inpatient admission, which included psychiatric or medical admission.

We defined "likely inappropriate" ED referrals a priori, as those where the disposition plan was discharge from the ED without pre-arranged further mental health follow-up. We considered this to be a conservative definition, as it is likely that at least some youth who were discharged from the ED with a follow-up referral could have been assessed and managed in outpatient settings, even with a delayed evaluation.

To categorize the severity and potential dangerousness of "suicidality" related reasons for ED referral (i.e., suicidal thoughts, behaviors, non-suicidal self-injury, etc.) the circumstances of each incident that lead to an ER referral were evaluated by a single rater (EG), using the Columbia Classification Algorithm of Suicide Assessment (C-CASA) [21]. We further used C-CASA categories to evaluate the consistency of the ED disposition decisions.

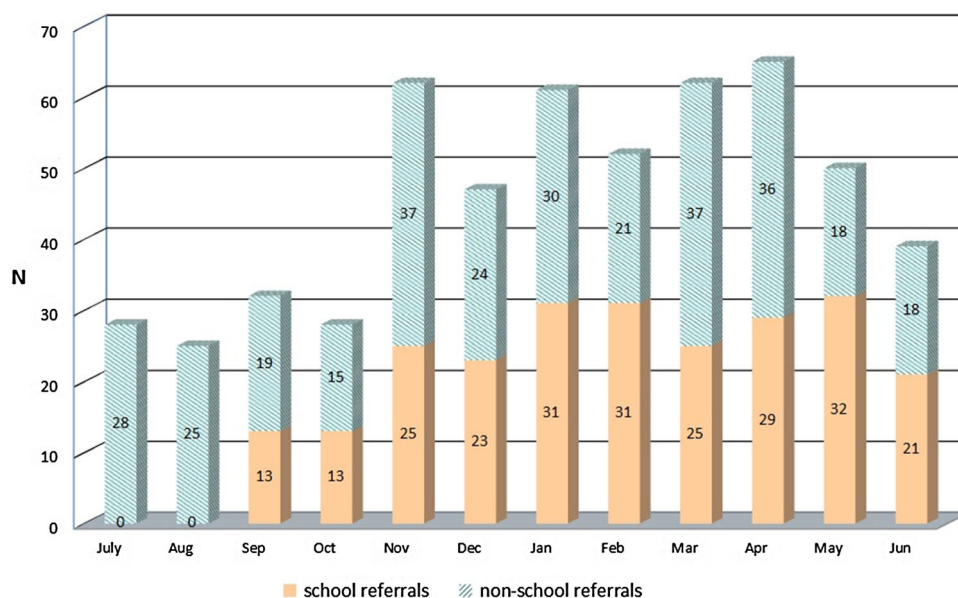
Data were analyzed with ANOVA test and χ^2 test for continuous and categorical variables, respectively. Two-way ANOVA was used for analysis of continuous data with more than two categories. Finally, we conducted a backward elimination logistic regression analysis to identify variables associated with discharge without further follow-up entering variables into the model that were different between patients discharged without further follow-up compared to patients who were either discharged with follow-up or hospitalized (i.e., using these proxies for "inappropriate" vs. "appropriate" ER visits). Variables entered into the initial model included: past psychiatric history, history of prior psychiatric hospitalization, current psychiatric medication treatment, history of DYFS involvement, history of foster care placement, person who brought in the patient, chief complaint of suicidality, "other" chief complaint, and in-school evaluation prior to ED referral. All analyses were two-sided, with alpha set at 0.05 and conducted in JMP, version 5, a statistical software package for data analysis and visualization.

Results

Sample demographics

Over a 1-year period (July 1, 2009–June 30, 2010), 551 consultations were performed in the pediatric ED by the CAP service. Analyses were restricted to the 243 (44.1 %)

Fig. 1 Number of school-referred vs. non-school referred consultations per month of the year



consultations of youth who were referred for emergency evaluation by schools. All school-initiated referrals took place between September 10th and June 24th, greatly increasing the total number of ED visits during the academic year (Fig. 1). Of the 243 ED visits, 89.7 % were visits by patients not previously evaluated by the psychiatric service in our ED, while 10.3 % were repeat visits.

Patients were on average 11.3 ± 3.3 years old, and 60.9 % were male (Table 1). Using a median split for age (11.1 years), a male predominance was observed in the younger age group (76.9 % males vs. 23.1 % females), while there was a slight female predominance in the older age group (55.4 % females vs. 44.6 % males), $p < 0.0001$). This pattern persisted using a pre- vs. post-pubertal split at 13.0 years of age ($p = 0.0001$) (Fig. 2).

Ethnicity was documented in only 65.4 % of school-initiated consultations. Most patients with known ethnicity were African-American (68.2 %), followed by Latino/Caribbean (28.9 %), Caucasian (2.5 %), and other (1.3 %).

Involvement by the Division of Youth and Family Services (DYFS) was documented in 13.2 % of evaluations, and of those children, 43.8 % were living in foster care ($n = 14$, 6.1 % of the total). Altogether, 8.0 % of youth had documented history of physical or sexual abuse and 1.7 % had history of neglect. In 21.8 % of visits with information, the child had a special education classification.

Psychiatric illness characteristics

Altogether, 109 (45.8 %) of school-referred youth had prior history of mental illness. Among them, the most common primary psychiatric diagnoses were attention-deficit/hyperactivity disorder (ADHD) (42.2 %) (19.3 % of total), other disruptive behavior disorders [16.5 % (7.6 %

of total), including disruptive behavior disorder not otherwise specified (DBD NOS) = 12, oppositional defiant disorder (ODD) = 5, and conduct disorder $n = 1$], bipolar disorder or mood disorder NOS [7.3 % (3.4 % of total)], autism spectrum disorders [5.5 % (2.5 %)], and depressive disorders [4.6 % (2.1 %)]. Prior history of suicidal ideation or plan was documented in 21 visits [17.9 % (9.2 % of total)]; six [5.1 % (2.6 %)] consultations documented a history of self-injury, and three [2.6 % (1.4 %)] described at least one past suicide attempt.

In 22.6 % of evaluations, the youth had history of psychopharmacologic treatment; 16.2 % of evaluations documented current psychopharmacological treatment, and 6.2 % had history of psychiatric hospitalization.

Primary diagnoses on disposition were disruptive behavior disorders (41.9 %), adjustment disorder (17.8 %), mood disorders (16.6 %), anxiety spectrum disorders (3.3 %), and psychotic spectrum disorders (1.2 %). A V-code or “No diagnosis on Axis I” was documented for 37 (15.3 %) of patients; the remaining 9 youth (3.7 %) had other primary diagnosis, including substance abuse disorders, autism spectrum disorders, learning disorder, and mood disorder due to medical condition. Of the 101 youth with a DBD spectrum diagnoses, 48 [47.5 % (19.8 % of total)] had primary diagnosis of ADHD, 35 [34.7 % (14.4 % of total)] had DBD NOS, 13 [12.9 % (5.3 % of total)] had ODD, and 5 [5 % (2.1 % of total)] were diagnosed with conduct disorder.

Visit characteristics

Prior to school referral to the ED, only 18.5 % of youth were evaluated by a school nurse, counselor, or social worker (Table 2). In 92.6 % of cases, schools referred

Table 1 Demographic, illness and treatment characteristics of 243 Children and adolescents sent from schools for emergency psychiatric evaluation

Baseline characteristic ^a	Total (243 visits)	Disposition		Group 2 discharged, with referral (108 visits, 44.4 %)	Group 3 hospitalized (19 visits, 7.8 %)	Overall <i>P</i> value	Post-hoc group comparison (if omnibus <i>p</i> < 0.05)		
		Group 1 discharged, without referral (116 visits, 47.7 %)	Group 2 discharged, with referral (108 visits, 44.4 %)				Group 1 vs. group 2	Group 1 vs. group 3	Group 2 vs. group 3
Age, mean ± SD	11.3 ± 3.3	11.4 ± 3.4	10.9 ± 3.3	12.6 ± 2.8	0.089				
Gender, males (%)	148 (60.9)	66 (56.9)	69 (63.9)	13 (68.4)	0.45				
Ethnicity, <i>n</i> (%) [159] ^b					0.827				
African-American	107 (68.2)	51 (64.6)	48 (70.6)	8 (66.7)					
Caucasian	4 (2.5)	2 (2.60)	2 (2.9)	0 (0)					
Latino/Caribbean	46 (28.9)	23 (29.9)	19 (28.8)	4 (33.3)					
Past psychiatric history, <i>n</i> (%) [238]	109 (45.8)	36 (31.0)	72 (69.2)	15 (78.9)	0.0001	0.0001	0.0005	0.85	0.0001
ADHD	46 (19.3)	16 (13.8)	23 (22.1)	7 (38.9)	0.11				
Other DBD	18 (7.6)	4 (3.5)	12 (11.5)	2 (11.1)	0.85				
Bipolar and mood disorder NOS	8 (3.4)	1 (0.9)	6 (5.8)	1 (5.6)	0.61				
Autism spectrum disorders	6 (2.5)	1 (0.9)	4 (3.9)	1 (5.6)	0.78				
Depressive disorders	5 (2.1)	0 (0)	5 (5.6)	0 (0)	0.19				
Other axis I diagnosis	26 (10.9)	8 (6.9)	17 (16.4)	1 (5.6)	0.41				
History of psychiatric hospitalization	15 (6.20)	2 (1.7)	10 (9.3)	3 (15.8)	0.013	0.013	0.028	0.39	0.0062
Current psychopharmacol. treatment	38 (16.2)	5 (4.4)	25 (24.3)	8 (47.1)	0.0001	0.0001	0.0001	0.051	0.0001
Current/past DYFS involvement, <i>n</i> (%)	32 (13.2)	4 (3.6)	21 (20.8)	7 (36.4)	0.0001	0.0002	0.0001	0.123	0.0001
Living in foster care, <i>n</i> (%)	14 (6.1)	2 (1.8)	11 (10.8)	1 (5.3)	0.024	0.008	0.38	0.69	0.0117

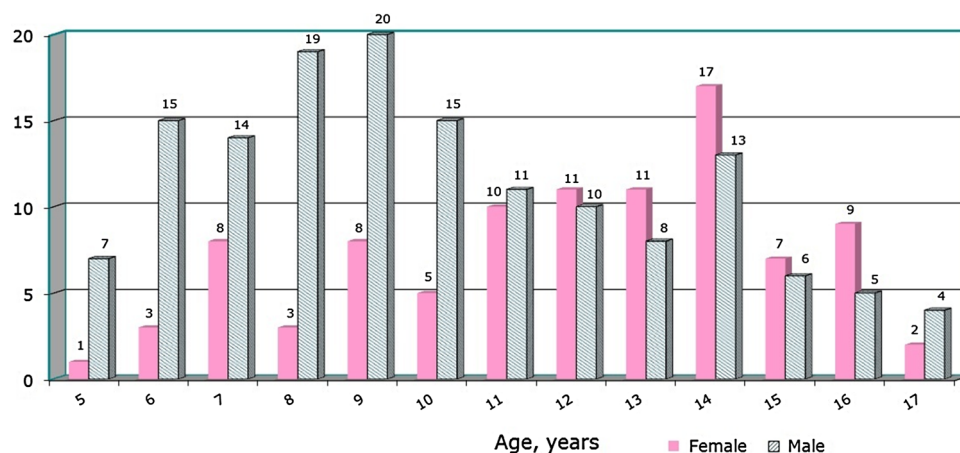
ADHD attention-deficit/hyperactivity disorder, C-CASA Columbia Classification Algorithm of Suicide Assessment, DBD disruptive behavior disorders, DYFS Department of Youth and Family Services, NOS not otherwise specified, SD standard deviation

^a Bolded values indicate statistical significance

^b Number in brackets denotes number of patients with available data

^c Non-suicidal events comprise self-injury with no suicidal intent and events lacking any deliberate self-harm

Fig. 2 Distribution of school-initiated referrals by age and gender



youth to the ED on the day of the actual event. The remaining 7.4 % were referred on average 10.9 ± 11.7 (range 1–30) days after the precipitating event. Conversely, only 124 (67.4 % of those for whom data was available) of youth presented for ED evaluation on the day they were referred from the schools; the remaining 60 (32.6 %) youth presented an average of 4.5 ± 4.0 (range 1–15) days after the school referral. Qualitatively, the actual circumstances of the event leading to ED referral varied considerably by setting and individuals involved; examples include: kicking the security guard; rough play on the playground; threatening the teacher or principal; being caught in the bathroom with cannabis; bullying/being bullied by a peer in after-school setting; casually stating in the cafeteria: “I am so hungry, I could die!”; sharing traumatic experiences or depressing feelings with counselor; and submitting a poem with suicidal content to the teacher, among many others.

Most children arrived at the ED in the late afternoon (35.9 %) or early evening (21.4 %) (Fig. 3). Since face-to-face evaluation by a CAP fellow or attending takes place only between 0900 and 1630 hours on weekdays, 41.3 % of youth were evaluated by general psychiatry resident. In youth with documented mode of arrival, 90.7 % were brought to the ED by their caregivers; 9.3 % arrived accompanied by the emergency medical service (EMS) personnel, police, or a school employee.

Suspected or actual suicidality was the most common presenting complaint, comprising 44.9 % of the visits. Additionally, 6.6 % of all visits were for non-suicidal self-directed violence. Other requests for emergency evaluation included disruptive behaviors (21.0 %), and homicidal/aggressive threats and behaviors (20.6 %) as the primary reason for ED referral. Psychosis was identified as the chief complaint in 4.1 % referrals, anxiety in 0.8 %, and depression in 0.8 %. The remaining reasons for ED referrals included medical reasons (0.8 %); and suspected abuse (0.4 %). Incidents that triggered school referrals were

additionally categorized using the C-CASA scale into those involving suicidal events (37.5 %), intermediate/potentially suicidal events (9.1 %), and non-suicidal events (53.5 %). Within the category of suicidal events, 87 [95.6 % (35.8 % of the total sample)] involved suicidal thoughts, passive suicidal wishes, or impulsive statements with suicidal content, whereas only 2 involved preparatory acts [2.3 % (0.8 %)], while another 2 were suicide attempts [2.3 % (0.8 %)].

Disposition and its correlates

After the ED evaluation, the outcomes were: providing psychoeducation and discharge without a specific follow-up recommendation in 47.7 % (group 1); discharge with recommended or facilitated psychiatric follow-up in 44.4 % (group 2); and psychiatric inpatient admission in 7.8 % (group 3). Mean CGAS scores for the three disposition categories were 62.6 ± 8.2 , 57.0 ± 6.7 , and 35.0 ± 9.8 , respectively, with significant differences ($p < 0.0001$) between the patients in all groups.

Age, sex, and ethnicity were not significantly associated with disposition of youth after the ED evaluation. However, school-referred youth who had past psychiatric history ($p < 0.0001$), history of psychiatric hospitalization ($p = 0.0062$) or psychopharmacologic treatments ($p < 0.0001$), youth with history of involvement of child protective services ($p < 0.001$) or in foster care ($p = 0.012$), and youth who were brought to ED on the day they were referred ($p = 0.0028$), were more likely to be in the disposition groups 2 + 3 (“appropriate” referral), rather than in group 1 (“likely inappropriate” referral). Youth accompanied to ED by EMS, police, or school employees were similarly more likely to require follow-up or hospitalization compared to youth brought in by family or legal guardians ($p = 0.0073$). Time of arrival to the ED, and relatedly, the level of training of the evaluating physician, was not associated with disposition.

Table 2 Visit characteristics of 243 School referrals of children and adolescents for emergency psychiatric evaluation

Baseline characteristic ^a	Total (243 visits)	Disposition		Overall <i>P</i> value	Post-hoc group comparison (if omnibus <i>p</i> < 0.05)		
		Group 1 discharged, without referral (116 visits, 47.7 %)	Group 2 discharged, with referral (108 visits, 44.4 %)		Group 1 vs. group 2	Group 1 vs. group 3	Group 2 vs. group 3 2+3
Chief complaint, <i>n</i> (%)							
Suicidality (ideation, attempt)	109 (44.9)	61 (52.6)	39 (36.1)	0.045	0.013	0.67	0.021
Self-injurious behavior	16 (6.6)	9 (7.8)	6 (5.6)	0.78			
Aggression/homicidality	50 (20.6)	20 (17.3)	25 (23.2)	0.44			
Disruptive behaviors	51 (21.0)	23 (19.8)	28 (25.9)	0.035	0.28	0.033	0.67
Other ^c	17 (7.0)	3 (2.6)	10 (9.3)	0.0065	0.044	0.0008	0.011
Brought in by, <i>n</i> (%) [193]							
Family/guardian only	175 (90.7)	91 (96.8)	74 (90.2)	0.0001	0.073	0.0001	0.0073
Non-family present (EMS, police, school personnel)	17 (9.3)	3 (3.2)	8 (9.8)				
Evaluation same day as referral, <i>n</i> (%) [184]	124 (67.4)	50 (58.8)	61 (71.8)	0.021	0.11	0.016	0.028
Time between referral and evaluation, days, mean ± SD [184]	1.5 ± 3.1	1.6 ± 2.9	1.5 ± 3.5	0.30			
Arrival: weekday shift <i>n</i> (%) ^b [235]	138 (58.7)	62 (55.4)	65 (62.5)	0.57			
Arrival: time of day, <i>n</i> (%) [234]							
0801–1600 (hours)	122 (52.1)	56 (50.5)	57 (54.8)	0.90			
1601–0000 (hours)	108 (46.2)	53 (47.8)	45 (43.3)				
0001–0800 (hours)	4 (1.7)	2 (1.8)	2 (1.9)				
In-school evaluation, <i>n</i> (%) [200]	37 (18.5)	10 (10.6)	22 (24.4)	0.021	0.014	0.042	0.0070
C-CASA precipitating event category							
1. Suicidal statement or event	91 (37.5)	48 (41.4)	34 (31.5)	0.20			
1a,b Suicidal preparation or attempt	4 (1.7)	0 (0)	3 (2.8)	0.11			
1c Suicidal ideation	87 (35.8)	48 (41.4)	31 (28.7)	0.12			
2. Intermediate/potentially suicidal events	22 (9.1)	14 (12.1)	6 (5.6)	0.23			
3. Non-suicidal events ^d	130 (53.5)	54 (46.6)	68 (63.0)	0.028	0.016	0.71	0.038
Disposition axis I diagnosis, <i>n</i> (%) [241]							
Disruptive behavior disorders	101 (41.9)	38 (33.0)	56 (52.3)	0.013	0.0036	0.75	0.0077
Adjustment disorder	43 (17.8)	25 (21.7)	18 (16.8)	0.067			
Mood disorders	40 (16.6)	12 (10.4)	19 (17.8)	0.0003	0.12	<0.0001	0.014
No diagnosis on axis I	37 (15.3)	34 (29.6)	3 (2.8)	<0.0001	<0.0001	0.0035	<0.0001
Other axis I diagnosis	9 (3.7)	4 (3.5)	4 (3.7)	0.93			
Anxiety spectrum disorders	8 (3.3)	2 (1.7)	5 (4.7)	0.42			
Psychotic spectrum disorders	3 (1.2)	0 (0)	2 (1.9)	0.12			

Table 2 continued

Baseline characteristic ^a	Total (243 visits)	Disposition		Overall <i>P</i> value	Post-hoc group comparison (if omnibus $p < 0.05$)			
		Group 1 discharged, without referral (116 visits, 47.7 %)	Group 2 discharged, with referral (108 visits, 44.4)	Group 3 hospitalized (19 visits, 7.8 %)	Group 1 vs. group 2	Group 1 vs. group 3	Group 2 vs. group 3	Group 1 vs. groups 2+3
CGAS, mean \pm SD	57.9 \pm 10.6	62.6 \pm 8.2	57.0 \pm 6.7	35.0 \pm 9.8	0.0001	0.0001	0.0001	0.0001

Number in brackets denotes number of patients with available data

CAP child and adolescent psychiatry, CGAS Children's Global Assessment of Functioning Scale, SD standard deviation

^a Bolded values indicate statistical significance

^b Weekday shift is Monday through Friday 8 AM through 4:30 PM, excluding holidays; these evaluations were performed by child and adolescent fellows or attending

^c "Other" includes school referrals for symptoms of anxiety, psychosis, and medical illness for which a psychiatric consult was requested by emergency department pediatricians

^d Non-suicidal events include self-injury that lacked any suicidal intent, unintentional self-injury, as well as aggression and all other events that lacked suicidality

Among 109 youth presenting with suicidality, 56.0 % were discharged without arranged follow-up, 35.8 % received a specific referral, and 8.3 % were hospitalized. Youth referred for evaluation of suicidality were more likely to be discharged without arranged follow-up ($p = 0.013$); this correlation primarily concerned males ($p = 0.0082$), but not female youth ($p = 0.55$). Among the 51 youth presenting with disruptive behaviors, 45.1 % were discharged without arranged follow-up or discharged with a specific referral (54.9 %). They were less likely to be admitted to inpatient unit (0 %) compared to youth referred with other chief complaints (9.9 % were hospitalized) ($p = 0.017$). Comparison of the referrals designated as inappropriate (group 1) to "appropriate" (groups 2 + 3) revealed that youth referred for a chief complaint of suicidality were more likely to be inappropriately referred, compared to youth referred for other chief complaints (56.0 vs. 41.0 %, $p = 0.021$). Conversely, youth referred with "other" chief complaint were more likely to be appropriate for the ED level of care ($p = 0.011$). Referrals of youth presenting with aggressive/homicidal behaviors or self-injurious behaviors were not associated with a particular level of disposition.

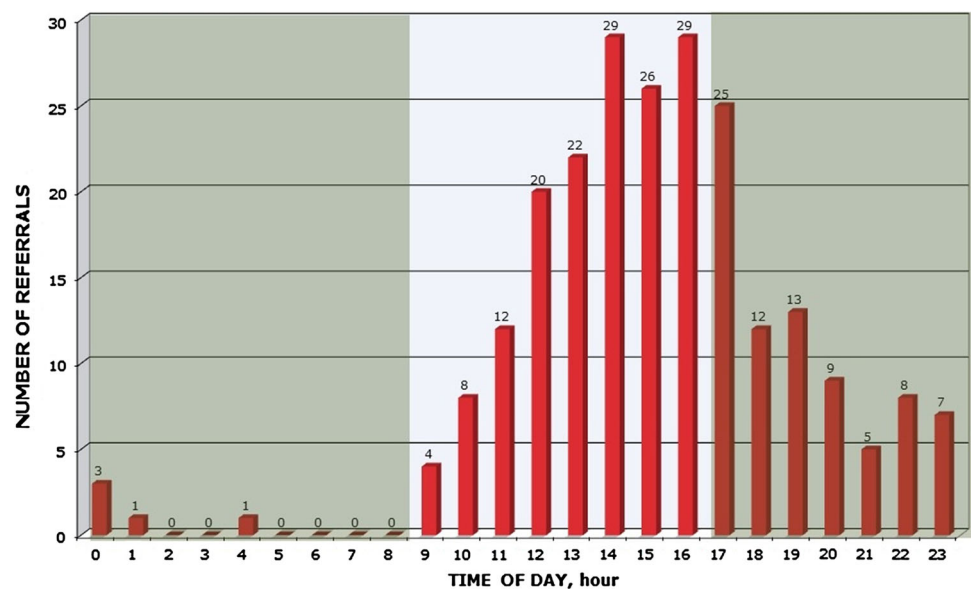
Youth referred for a non-suicidal event, based on C-CASA, were more likely to receive some follow-up, i.e., referred "appropriately" ($p = 0.038$), compared to youth with suicidal or potentially suicidal events. All of the pediatric patients referred for a C-CASA event that involved suicidal preparation or attempt ($n = 4$, 1.7 %) received follow-up or were hospitalized, but the correlation was not statistically significant ($p = 0.11$). By contrast, 47.3 % of the less serious suicidal events (thoughts, passive suicidal wishes, impulsive statements with suicidal content) received referral or were hospitalized, i.e., considered "appropriate" for the ED level of evaluation/care ($p = 0.20$) (Table 2).

Correlates of in-school evaluation prior to referral

Altogether, only 200 evaluation records contained adequate information to conclude whether some in-school assessment had taken place (Table 3). Youth who were evaluated by the school nurse, counselor or social worker prior to requesting psychiatric evaluation were older (12.5 vs. 11.0 years, $p = 0.013$), but did not differ regarding sex, ethnicity, presence of psychiatric history, C-CASA category, or their CGAS scores from youth who were not evaluated prior to referral. In-school screened youth were more likely to arrive accompanied by police, EMS, or school personnel (19.4 vs. 6.3 % $p = 0.032$); they were not more likely to arrive to the ED on the same day as being referred (69.0 vs. 60.9 % $p = 0.32$).

Youth without an in-school screening prior to referral to ED were significantly more likely to be discharged without

Fig. 3 Cumulative number of referrals per each hour of the day. *Shaded area* represents times on weekdays when CAP service is not available to evaluate the child directly (phone consultation only). Altogether, 42.3 % of evaluations took place during that time or on weekends



referral for specific follow-up than with such a referral [51.5 vs. 27.0 % ($p = 0.0070$), OR 2.87 (95 %CI 1.30–6.31)].

Multivariate model of predictors for “likely inappropriate” vs. “likely appropriate” ED referrals

In a logistic regression analysis, the following four variables were independently associated with an inappropriate ER visit, judged by not requiring any follow-up at discharge home: higher CGAS score ($p < 0.0001$), absent in-school evaluation ($p = 0.0069$), absent prior psychiatric history ($p = 0.011$) and absent current psychotropic medication treatment ($p = 0.012$). The overall model predicted 26.4 % of the variance ($p < 0.0001$).

Discussion

The main findings of this largest retrospective study of school-initiated referrals for emergency psychiatric evaluation of youth were: (1) as many as 44 % of ED referrals occurring in 1 year were initiated by schools, occurring mainly during the school year; (2) in-school evaluation by a nurse, a social worker, or a counselor was rare (19 %); (3) nearly half (48 %) of referred youth did not require any mental health follow-up after discharge, i.e., the ED referrals were likely inappropriate; (4) in-school evaluation by a school professional was associated with a significantly reduced proportion of ED referrals that were deemed inappropriate (52 % reduced annual rate); and (5) higher CGAS score, absent in-school evaluation, absent prior psychiatric history and absent current psychotropic

medication treatment independently predicted 26.4 % of the variance of inappropriate ER referrals.

Consistent with previous studies, we observed a high rate of school referrals to the ED and a clustering of psychiatric emergencies in the afternoons and evenings during the school year [22, 23]. Presenting after the end of average school and work day is may be least disruptive to families and further suggests lower level of acuity. While the finding of clustering of referrals in November–April was consistent with Goldstein et al.’s [23], the reason for this distribution is not clear. Structure of the school environment, separation from primary caregivers, and diversity of peer and authority influences likely contribute to emergence of mental health symptoms in youth. Zero-tolerance policies [24], teachers’ inability to adequately manage disruptive behaviors, and low threshold in defining an emergency likely contribute to the referral of children for psychiatric evaluation who did not require follow-up after the evaluation. Shortage of child and adolescent psychiatrists and the urgency to return to school with a “clearance” necessitate that parents seek psychiatric evaluation in the ED.

An apparent predominance of males among the pre-teen youth was observed in our sample. This is likely due to greater prevalence of externalizing behaviors and disruptive behavior disorders among boys. More research is needed to investigate the effect on this phenomenon on school, community, and ED mental health services utilization.

While school nurses routinely evaluate medical symptoms and physical injuries, very few students were screened following a behavioral incident or discovery of a mental health concern. This is consistent with a prior study

Table 3 Youth who were and were not evaluated at school prior to referral to emergency room

Variable	In-school evaluation (<i>n</i> = 37, 18.5 %)	No in-school evaluation (<i>n</i> = 163, 81.5 %)	<i>P</i> value ^a
Males, <i>n</i> (%)	22 (59.5)	101 (62.0)	0.78
Age, mean ± SD	12.5 ± 3.5	11.0 ± 3.3	0.013
African-American	18 (72.0)	68 (63.0)	0.38
Caucasian	1 (4.0)	3 (2.8)	0.57
Latino/Caribbean	6 (24.0)	35 (32.4)	0.40
CGAS, mean ± SD	56.6 ± 14.3	58.5 ± 9.6	0.31
Any psychiatric history, <i>n</i> (%)	17 (48.6)	79 (48.8)	0.98
Past or present DYFS involvement [188]	7 (20.0)	23 (15.0)	0.48
C-CASA precipitating event category			
1. Suicidal statement or event	15 (40.5)	66 (40.5)	1.0
1a,b Suicidal preparation or attempt	2 (5.4)	2 (1.2)	0.15
1c Suicidal ideation	13 (35.1)	64 (39.3)	0.64
2. Intermediate/potentially suicidal events	4 (10.8)	14 (8.6)	0.75
3. Non-suicidal events	18 (48.7)	83 (50.9)	0.86
Brought in by EMS, police or school official, <i>n</i> (%) [159]	6 (19.4)	8 (6.3)	0.032
Clearance requested by the school [190]			
Same day as the incident, <i>n</i> (%)	20 (69.0)	70 (60.9)	0.42
Youth evaluated			
Same day as clearance requested, <i>n</i> (%) [144]	24 (82.8)	84 (73.0)	0.32
Days after clearance requested, mean ± SD	1.3 ± 2.7	1.7 ± 3.2	0.54
Chief complaint			
Suicidality	17 (46.0)	79 (48.5)	0.78
Self-injurious behavior	4 (10.8)	10 (6.1)	0.30
Aggression/homicidality	7 (18.9)	35 (21.5)	0.73
Disruptive behavior	6 (16.2)	29 (17.8)	0.82
Other	3 (8.1)	10 (6.1)	0.71
Appropriateness of referral, <i>n</i> (%)			
Discharge without referral (group 1 vs. 2 + 3)	10 (27.0)	84 (51.5)	0.0070
Child required hospitalization or follow-up	27 (73.0)	79 (48.5)	

Number in brackets denotes number of patients with information

CGAS Children's Global Assessment Scale, DYFS Department of Youth and Family Services, EMS Emergency Medical Service, SD standard deviation

^a Bolded values indicate statistical significance

[3], in which only 22 % of youth seen in the ED sought and just half of them received an outpatient psychiatric evaluation prior to ED visit. However, no study specifically evaluated the effect of in-school assessments prior to a psychiatric ED visit on disposition status and appropriateness of the ED visit. We identified many potential reasons for underutilization of available school resources. Requiring psychiatric clearance from a provider outside of school, educators ensure that the child's caregiver is fully engaged and will not take the school incident lightly. Furthermore, the potential liability that invariably accompanies any decision made regarding health and safety of a child is avoided by deferring the assessment to the ED. Finally, schools do not experience the financial cost and logistical

burden plaguing the emergency healthcare system; thus, schools have no incentive to reduce the number of unnecessary referrals.

While other studies found that that 18–40 % of pediatric psychiatric ED visits were inappropriate [1, 3, 8], our conservative estimate yielded an even higher rate of 48 %. Our focus on the cohort of school-initiated referrals likely contributed to higher frequency of finding children who were deemed to be psychiatrically well at the time of the ED evaluation. This would be consistent with findings from the only prior study assessing school-referred youth, where the annual rate of youth who were deemed somewhat/very inappropriate for ED level of care was 34 % for all youth visiting ED and 43 % for school-referred youth [3].

Fewer school-referred children were psychiatrically hospitalized (7.8 %) in our study than in a large survey of youth referred from various sources (19.4 %) [2]. Similarly, recent American and Canadian studies found higher rates of inpatient admission, ranging from 18 to 43 % [3, 7, 25–27]. Again, the lower rates found in our study are likely related to our exclusive focus on school referrals, supporting the general finding that schools have a lower threshold for categorizing behaviors that require urgent ED evaluation.

Preventive interventions may include targeted screening of youth at risk, e.g., those who seek help, miss school, use substances, or have history of depression, which is justified and recommended in schools [28] and healthcare settings [28–30]. Likewise, integration of screening with appropriate referrals is effective [16], but was rarely observed in our cohort. More generally, in the US, school mental health services play a dominant role in administration of pediatric mental health care, as the most likely setting where youth with mental illness receive care [31]; such services are not available in our school district.

As in prior studies [3, 8, 32], suicidal statements or ideation were the most common reasons for school-initiated referrals. However, the term “suicidality” is relatively non-specific and includes very heterogeneous situations, such as thoughts and statements expressing a wish of death or self-harm, statements or actions misperceived as such (“para-suicidality”), as well as self-directed violence, which may include non-suicidal self-injury, and actual suicide attempts [33]. Many factors modify danger for self-harm in youth presenting with suicidality. For example, in ED-evaluated teenagers, a positive response to the Risk of Suicide Questionnaire correlated with psychiatric hospitalization, while in younger children it did not [34]. In our study, surprisingly few of the children referred for suicidality were evaluated at schools. Further, compared to children sent to the ED for other reasons, youth expressing suicidality were significantly less likely to be appropriate for ED setting. This finding contrasts with some studies of outcomes of suicidal youth [7, 35], and there are at least two possible interpretations of our results. First, frequent discharges of “suicidal” youth without follow-up may be due to relatively low severity/dangerousness of suicidal events in our cohort, which were largely limited to isolated suicidal ideation and impulsive statements with suicidal content that lacked true suicidal intent or plan. Second, frequent discharge of “suicidal” youth without arranged follow-up may be due to differences in thresholds for admission and outpatient follow-up, which, in turn, may be related to constraints and inadequacies of the pediatric psychiatric system of care. Thus, it is possible that further evaluation of suicidal thoughts and associated symptoms in youth beyond the ED visit could be useful and/or indicated

and prospective studies are needed to evaluate outcomes of these youth and interventions.

Nevertheless, our findings suggest that school officials have a low threshold for acting on situations that involve the broad term “suicidality”, but are reluctant to utilize available in-school resources. Prevalence of suicidal ideations or verbal threats at time of acute or situational agitation, confrontation or (dis)stress are not uncommon in youth and range from 12 % in 6–12 year olds [36] to as high as 24 % in older teens [37]. However, since, fortunately, suicides are rare, ideation by itself is not a good predictor of level of suicide risk [33]. At the same time, first presentation of suicidality may also be serious in at-risk children [38, 39], and targeted suicide screening and prevention in schools is feasible and effective [28]. School nurses and mental health professionals, utilizing their professional training and established relationship and trust with students, are well-suited for initial screening of the seriousness of suicidality in youth discovered at school.

Disruptive students constituted nearly a third of referrals in our study. Such disruptions may include, drug use, skipping class, bullying, tantrums, etc., and while these may be manifestations of psychiatric or medical illness, they rarely constitute an actual emergency. As observed by other investigators, in these instances the term “emergency” does not refer to the condition of the child that requires an intervention, but rather refers to the overwhelmed capacity of the educator to manage a behavior [23]. Many schools have adopted various forms of zero-tolerance policies in an attempt to address school discipline [40], but these measures have yet to prove being effective [24]. Referring a disruptive youth to ED restores order and conserves the school’s resources, but the downsides of such referrals are often overlooked: the child misses school, the out-of-school suspension may serve as positive reinforcement for youth looking to miss school; caregivers leave work early to pick up the child. Finally, attending school is a protective factor against delinquent conduct [41], and therefore out-of-school suspensions may contribute to disruptive behaviors long-term.

The results of this study need to be interpreted within its limitations. These include the restriction to single ED setting, moderate sample size, retrospective design, and lack of prospective follow-up data on the outcome of youth discharged from the ED. Moreover, we did not include youth who were admitted from the ED to a pediatric medical service or intensive care unit before the CAP consultation was requested. This design limitation excluded a small number of very ill children who were referred from schools following a serious suicide attempt or other serious condition. It is reasonable to assume that those referrals were appropriate for ED level of care. Additionally, we used the presence or absence of arranged

psychiatric follow-up as a proxy for the appropriateness of the ED referral. The relationship is not a direct one and may contain confounding factors, such as stability of the core symptoms over time (i.e., youth may have been more severely ill at the time of the school referral), the competence of the ED clinician and completeness of evaluation. We used the terms “likely appropriate”, and “likely inappropriate” in the study to emphasize this limitation.

Finally, since knowledge of schools’ resources is limited, it is not known how many in-school assessments would have been possible, but were not conducted. Furthermore, ED recommendations were the primary indicator of appropriateness of the referral. Since severity of psychiatric symptoms may fluctuate, youth may have been more severely ill at the time of the school referral.

In conclusion, as many as 44 % of pediatric psychiatric ED evaluations were school-initiated and that nearly half of the school-referred youth did not receive a pre-arranged mental health follow-up. While schools may have limited resources to adequately respond to disruptive and dangerous behaviors, available resources may be underutilized. Only one of eight youth sent from school to our ED for and “clearance” was seen by a school’s health professional prior to requiring a psychiatrist’s evaluation in the ED setting. Youth who did not have the benefit of such in-school screening, were significantly more likely to be discharged without specific follow-up, strongly suggesting that these were inappropriate ED referrals. More research is needed to evaluate the extent to which in-school screening services can serve a preventive role, improve youth mental health and increase the appropriateness of ED referrals. Further, more research is needed on the outcomes of youth presenting to pediatric EDs with the complaint of “suicidality” in order to facilitate appropriate level of referral and care.

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