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Psychiatric Emergencies in Minors

The Impact of Sex and Age

Pety So, MD,*† André I. Wierdsma, MSc, PhD,‡
Robert R.J.M. Vermeiren, MD, PhD,§¶ and Cornelis L. Mulder, MD, PhD†‡

Objective: Little information is available on young children (age 4–12 years) with mental health problems who are seen by the psychiatric emergency services. We therefore described this population to identify (1) variables that differentiated children from those aged 13 to 18 years who had been referred for psychiatric emergency consultation; and (2) to describe sex differences.

Method: We extracted data for a 9-year period from the records of the mobile psychiatric emergency services in 2 urban areas in the Netherlands. In this period, 79 children aged 4 to 12 years (37.2% girls) and 1695 children aged 12 to 18 years (62.2% girls) had been referred for psychiatric emergency consultation. Demographic and process factors were recorded. Clinical characteristics included diagnostic and statistical manual of mental disorders, 4th edition classifications and the Severity of Psychiatric Illness scale. Logistic regression analyses were used to examine differences between the girls and boys in the 2 age groups.

Results: Young children aged 4 to 12 years had been involved in 4.5% of all consultations of minors. In contrast with adolescents, a higher percentage of young children seen for emergency consultation were boys, and a lower percentage was admitted to a psychiatric hospital (7.7%). In boys and girls alike, a DSM classification of behavioral disorder was associated with younger age.

Conclusions: The young group of children referred for psychiatric emergency consultation comprised relatively more children with behavioral disorders. Decisions to refer them for urgent psychiatric consultation seemed to be influenced by the suspicion of psychotic symptoms or of danger to themselves or others.

Key Words: child psychiatry, psychiatric emergency consultation, young children, sex differences, emergency mental health service

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Recent studies have reported an increase in psychiatric emergencies in children (those younger than 12 years) and in adolescents (those aged 13–18 years).^{1–4} However, most studies on young people in emergency psychiatry have either included all children 17 years and younger as a single group,^{1,5–7} or have focused only on adolescents (eg,⁸).

From the *Youz, Center for Youth Mental Healthcare; †Parnassia Psychiatric Institute; ‡Department of Psychiatry, Epidemiological and Social Psychiatric Research Institute, Erasmus MC, University Medical Center, Rotterdam; §Youz, Center for Youth Mental Healthcare, The Hague; and ¶Department of Child and Adolescent Psychiatry, Curium-LUMC, Leiden University Medical Center, Leiden, The Netherlands.

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Pety So' ORCID ID: 0000-0003-3672-0029.

Reprints: Pety So, MD, Youz, Center for Youth Mental Healthcare, Rotterdam, Parnassia Psychiatric Institute, Lupinestraat 1 2906 CV Capelle a/d IJssel, Rotterdam, The Netherlands (e-mail: p.so@youz.nl).

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Very few studies have focused particularly on younger children. Pikard et al⁹ described the clinical characteristics and outcomes of 120 children aged 4 to 12 years who had been referred for urgent psychiatric consultation to a Child and Adolescent Mental Health Urgent Consult Clinic in Ontario, Canada. Of these children, 42.5% were boys; the most common reason for urgent psychiatric referral was aggression. Only 5.8% required inpatient psychiatric care. In Arkansas, the United States, Read et al¹⁰ studied the medical records of 222 patients (73% boys) 10 years and younger who had been seen at the emergency department (ED) for mental health-related complaints. The 3 most common reasons for referral were violent behavior, suicidal ideation, and behavioral problems. Of these children, 45% were admitted. Santillanes et al¹¹ studied 265 children (74% boys) younger than 10 years who were on an involuntary psychiatric hold at any point during their ED visit in Los Angeles, CA. Of these children, 32% had a history of prior psychiatric hospitalization; 42% were admitted to a psychiatric hospital, and 1% to the pediatric medical ward.

In summary, much less is known about the characteristics of young children in emergency psychiatry than about those of their adolescent counterparts. The majority of young children seen for psychiatric emergency consultation are boys with externalizing problems. Also, because studies to date have not differentiated between boys and girls, little is known about the characteristics of young girls assessed by psychiatric emergency services. We, therefore, aimed to describe and compare the population of boys and girls aged 4 to 12 years who had been seen for psychiatric emergency consultation with the population of adolescent boys and girls (13–18 years).

METHODS

Setting

The study was conducted in 2 city areas in the Netherlands: Apeldoorn (approximate population 700,000) and the Greater Rotterdam region (approximate population 1.2 million). Outpatient psychiatric emergency services in the Netherlands are responsible 24/7 for assessing any patient referred to them. Their primary tasks are to triage and if necessary refer psychiatric emergency patients to other psychiatric services.

In both regions, the staff of the emergency services comprises community psychiatric nurses, physicians and psychiatrists. Patients of all ages are examined on site by a team consisting of a nurse and a physician or psychiatrist. If no psychiatrist is present, a consulting psychiatrist can be contacted by telephone.

Most patients are referred by general practitioners, mental healthcare workers, police, and the EDs at general hospitals. As the police are not permitted under Dutch law to take psychiatrically disturbed children to a psychiatric hospital, they usually ask psychiatric emergency service staff to assess them at the police station.

When patients (and, if present, their significant others) are assessed, the emergency service tries to resolve the crisis situation, preferably without hospitalization.

Data Extraction

Data for the period from January 1, 2008, to January 1, 2017, were extracted from the records of the mobile psychiatric emergency services in the 2 city areas. We included all emergencies involving children aged 4 to 18 years who had been referred for urgent consultation.

The data were provided anonymously, and the authorized Medical Ethics Committee at Erasmus University Medical Center confirmed that the Medical Research Involving Human Subjects Act (known by its Dutch acronym, WMO) did not apply to this study, and thus that no informed consent was required.

After each emergency consultation, the nurse and the physician or psychiatrist had completed patient record forms and collected information on the patient characteristics, process characteristics, and clinical characteristics. Data were processed in accordance with the General Data Protection Regulation.

Demographic characteristics included age, sex, and living situation (ie, 2-parent family, single-parent family, other, or unknown).

Process characteristics included place of consultation (ie, at home, at the outpatient or inpatient psychiatric services, at a general hospital, at a police station, or other); the main reason for referral (defined as danger to self, danger to others, psychotic symptoms, anxiety/depressive symptoms, or other); referral source (defined as general practitioner, psychiatric services, youth care, general hospital, police, or "other"); time of referral (defined as daytime [8:00 AM to 6:00 PM], evening [6:00 PM to midnight], or night [midnight to 8:00 AM]); whether the family wanted admission (yes or no/unknown); and being in outpatient care (yes or no). Prior emergency consultation was defined as an earlier emergency assessment within the last 12 months. The outcome of the emergency consultation was defined as an admission (yes or no).

Clinical characteristics consisted of DSM-IV classifications; recent drug or alcohol use (yes/no/unknown); and severity of problems. The DSM-IV Axis I classifications were grouped into 9 categories: autism spectrum disorders, attention-deficit disorders, mood disorders, anxiety disorders, psychotic spectrum disorders, impulse-control disorders, behavioral disorders, relational problems and abuse, and other. A disorder was registered as being present if it had been classified on Axis I. In this way, more than 1 diagnostic category could be noted for an individual patient.

Axis II classifications were registered, of which we used only mental retardation (yes or no), which had been registered by psychiatric emergency service staff if sufficient information was available or if patients already had a diagnosis of mental retardation.

The severity of specific problems was assessed using the Global Assessment of Functioning scale and the Severity of Psychiatric Illness Scale (SPI)¹²; Dutch version by Mulder et al¹³). The SPI is a decision support tool for assessing the need for services. It provides a structured description of the severity of psychopathology and of possible complications regarding the disorder and regarding treatment. It has 14 items: suicide risk, danger to others, severity of symptoms, self-care ability, substance abuse or dependence, medical complications, family disruption, vocational impairment, residential instability, lack of motivation for treatment, lack of medical compliance, awareness of illness, lack of family involvement, and persistence of complaints. These items were scored on a 4-point scale from 0 (no problem) to 3 (severe problem). The SPI ratings were dichotomized for the analyses: no/small problem and moderate/severe problem.

Analyses

Descriptive statistics were used to summarize the demographic, process, and clinical characteristics of all children and adolescents who had been seen for emergency consultation and to

summarize the demographic, process, and clinical characteristics separately per age group, ie, for boys and girls aged 4 to 12 years, and for boys and girls aged 13 to 18 years.

Multiple logistic regression analyses were used to explore characteristics associated with different age groups. Because sex showed interaction effects with other relevant variables, we report separate regression analyses for both sex groups to identify variables specific to the profiles of boys and girls.

Where appropriate, scores were centered before analysis. Following Hosmer and Lemeshow,¹⁴ we based variable selection on a stepwise procedure with $P < 0.25$ as entry level and $P > 0.05$ as removal level. Model fit was assessed using area-under-the-curve statistics and the Hosmer-Lemeshow goodness-of-fit test. For the final model, we calculated odds-ratio estimates and their corresponding 95% confidence intervals. SPSS version 24 was used for all statistical analyses.

RESULTS

Patient and Process Characteristics

In the period under study, 79 children aged 4 to 12 years (4.5%) and 1695 children aged 12 to 18 years were referred for psychiatric emergency consultation.

Table 1 column 1 shows the patient and process characteristics for all patients aged 4 to 12 years. A majority (62.8%) in this age group were boys, and 7.7% had been admitted to a psychiatric hospital.

Column 2 shows the patient and process characteristics for all patients aged 13 to 18 years, a majority of whom (62.2%) were girls. Overall, 18.8% of all patients aged 13 to 18 years had been admitted to a psychiatric hospital. Relative to the younger children, a higher percentage of the older children had a living situation that was outside the family or was unknown. However, a higher percentage of the younger children lived in a single-parent family.

Table 1 column 3 shows the patient and process characteristics for boys aged 4 to 12 years; column 4 shows these characteristics for boys aged 13 to 18 years. Although the most registered reason for referral in both age groups was risk of suicide or self-harm, the percentage of younger boys who were referred because they were a danger to others was more than twice that of adolescent boys.

Table 1 column 5 shows the patient and process characteristics for girls aged 4 to 12 years; column 6 shows these characteristics for girls aged 13 to 18 years. Although the most registered reason for referral in both age groups was risk of suicide or self-harm, the percentage of younger girls with psychotic symptoms as a reason for referral was more than twice that of adolescent girls.

Clinical Characteristics

In Table 2, column 1 shows the clinical characteristics of all patients aged 4 to 12 years, and column 2 shows the clinical characteristics of all those aged 13 to 18 years. DSM-IV classifications showed that more patients in the younger age group had behavioral problems and ADHD, and that more adolescents had mood disorders. Drugs or alcohol had been used recently by 17.8% of the adolescents.

Table 2 columns 3 and 4 show the respective clinical characteristics of boys aged 4 to 12 years and boys aged 13 to 18 years. The DSM-IV classifications showed that the younger boys had higher percentages of behavioral problems, relational problems and abuse, and ADHD; and that the adolescent boys had higher percentages of mood disorders and psychotic disorders. The SPI ratings showed that younger boys rated higher for danger to others, severity of symptoms and medical complications, whereas adolescent boys rated higher for suicide risk and substance abuse or dependence.

TABLE 1. Patient and Process Characteristics: Means, Frequencies and SDs Separately for All Patients Aged 4–12 Years and 13–18 Years, and Separately for Boys and Girls Aged 4–12 Years and 13–18 Years Who Had Been Seen for Psychiatric Emergency Consultation

	All 4–12 y N = 78	All 13–18 y N = 1695	Boys 4–12 y n = 49	Boys 13–18 y n = 640	Girls 4–12 y n = 29	Girls 13–18 y n = 1055
% Girls	37.2	62.2				
Mean age (SD)	9.4 (1.8)	15.5 (1.4)	9.4 (1.8)	15.5 (1.5)	9.3 (1.8)	15.4 (1.4)
Living situation						
With 2 parents	51.3	51.1	51.0	51.6	51.7	50.8
With single parent	41.0	24.6	38.8	23.8	44.8	25.1
Other/unknown	7.7	24.3	10.2	24.7	3.4	24.1
In outpatient care	60.3	61.4	63.3	61.1	55.2	61.6
Prior emergency consultation	10.3	18.7	12.2	17.1	6.9	19.3
Referral source						
General practitioner	56.4	37.9	59.2	35.2	51.7	39.6
Psychiatric services	11.5	17.6	12.2	19.2	10.3	16.7
Youth care	9.0	4.0	10.2	2.8	6.9	4.6
General hospital	6.4	12.4	4.1	7.0	10.3	15.6
Police	1.3	12.5	2.0	16.3	0	10.2
Other	15.4	15.6	12.2	19.5	20.7	13.2
Time of referral						
Daytime (8:00 AM–6:00 PM)	73.1	69.1	69.4	69.7	79.3	68.7
Evening (6:00 PM–2 PM)	25.6	21.5	30.6	22.5	17.2	20.9
Night (12:00 PM–8:00 AM)	1.3	9.4	0	7.8	3.4	10.3
Main reason for referral						
Risk of suicide/self-harm	35.9	65.0	36.7	52.8	34.5	72.4
Danger to others	24.4	9.0	34.7	16.1	6.9	4.7
Psychotic symptoms	11.5	8.9	10.2	13.6	13.8	6.1
Anxiety/depressive symptoms	5.1	4.0	2.0	3.9	10.3	4.1
Other	23.1	13.0	16.3	13.6	34.5	12.7
Location of consultation						
At home	53.8	32.7	63.3	37.8	37.9	29.7
Psychiatric services	28.2	28.0	26.5	26.7	31.0	28.7
General hospital	3.8	13.3	2.0	6.7	6.9	17.3
Police station	1.3	12.2	0	16.4	3.4	9.6
Other	12.8	13.8	8.2	12.3	20.7	14.7
Family wanted admission	24.4	32.4	32.7	36.1	10.3	30.2
Percentage admitted to a psychiatric hospital	7.7	18.8	8.2	20.6	6.9	17.7

SD indicates standard deviation.

Table 2 columns 5 and 6 show the respective clinical characteristics for girls aged 4 to 12 years and 13 to 18 years. The DSM-IV classifications showed that the younger girls had higher percentages of behavioral problems, ADHD, anxiety disorders and psychotic spectrum disorders; and that the adolescent girls had higher percentages of mood disorders. The SPI ratings showed that the younger girls rated higher for danger to others, whereas adolescent girls rated higher for suicide risk.

Differences Between Boys Aged 4 to 12 Years and Boys Aged 12 to 18 Years

The left hand side of Table 3 shows the results of logistic regression analyses for the patient, process and clinical characteristics associated with younger age in boys who had been seen for emergency consultations. Younger age was positively associated

(1) with a DSM classification of a behavioral disorder, and (2) with severe or moderate SPI scores for danger to others and medical complications. Adolescence was positively associated with severe or moderate SPI scores for vocational impairment (ie, impaired school attendance).

Differences Between Girls Aged 4 to 12 Years and Girls Aged 12 to 18 Years

The right hand side of Table 3 shows the results of logistic regression analyses for patient, process, and clinical characteristics associated with younger age in girls who have been seen for emergency consultations. A DSM classification of a behavioral disorder was positively associated with younger age. Severe or moderate SPI scores on suicide risk and vocational impairment were positively associated with adolescence.

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TABLE 2. Clinical Characteristics: Means, Frequencies and SDs Separately for All Patients Aged 4–12 Years and 13–18 Years, and Separately for Boys and Girls Aged 4–12 Years and 13–18 Years Who Had Been Seen for Psychiatric Emergency Consultation

	All	All	Boys	Boys	Girls	Girls
	4–12 y N = 78	13–18 y N = 1695	4–12 y n = 49	13–18 y n = 640	4–12 y n = 29	13–18 y n = 1055
DSM-IV Axis 1 disorder (%)						
Behavioral disorder	38.5	18.0	42.9	21.1	31.0	16.1
Relational problems and abuse	25.6	20.2	26.5	16.1	24.1	22.7
ADHD	16.7	8.0	18.4	12.8	13.8	5.1
ASD	15.4	15.0	22.4	25.3	3.4	8.7
Anxiety disorders	12.8	12.4	6.1	8.6	24.1	14.7
Psychotic spectrum disorders	9.0	8.1	6.1	13.0	13.8	5.1
Mood disorders	5.1	24.7	6.1	20.9	3.4	27.0
Impulse-control disorders	5.1	5.4	8.2	6.3	0	4.9
Other Axis 1 disorder	32.1	31.9	32.7	27.2	31.0	34.7
Axis II: mental retardation	3.8	4.1	4.1	3.8	3.4	4.4
mean GAF score (SD)	44.8 (13.1)	45.8 (11.1)	43.0 (13.3)	45.5 (11.1)	47.8 (12.4)	46.1 (11.0)
recent drug and/or alcohol use	0	17.8	0	23.3	0	14.4
Moderate or severe ratings on the SPI (%)						
Suicide risk	12.8	35.3	16.3	27.3	6.9	59.9
Danger to others	29.5	10.3	38.8	16.6	13.8	6.5
Severity of symptoms	74.4	67.3	77.6	70.3	69.0	65.5
Disturbance of self-care ability	10.3	9.9	8.2	13.0	13.8	8.0
Substance abuse or dependence	0	8.3	0	11.6	0	6.4
Medical complications	10.3	5.7	16.3	4.2	0	6.5
Family disruption	51.3	52.1	51.0	53.8	51.7	51.1
Vocational impairment	19.2	35.6	26.5	38.4	6.9	33.9
Residential instability	14.1	17.0	12.2	19.2	17.2	15.6
Lack of motivation for treatment	26.9	31.5	32.7	35.0	17.2	29.4
Lack of medical compliance	15.4	22.7	18.4	26.7	10.3	20.3
Lack of awareness of illness	65.4	54.7	67.3	58.0	62.1	52.7
Lack of family involvement	0	8.1	0	9.1	0	7.6
Persistence of complaints	60.3	54.2	63.3	56.6	55.2	52.7

ASD indicates autism spectrum disorder; ADHD, attention deficit hyperactivity disorder; GAF, global assessment of functioning; SPI, Severity of Psychiatric Illness scale.

Differences Between Boys and Girls Aged 4 to 12 Years

Table 4 shows the results of logistic regression analyses for sex-associated patient, process and clinical characteristics in children aged 4 to 12 years who had been seen for emergency consultations. A DSM classification of autism spectrum disorder was associated with male sex, whereas a DSM classification of an anxiety disorder was associated with female sex.

DISCUSSION

In this study, we found that, relative to adolescents, a much smaller number of boys and girls aged 4 to 12 years—less than 5% of the total—had a psychiatric emergency consultation. A majority (62.8%) of these younger children were boys.

Sex differences in this age group were found for the following clinical characteristics: a DSM classification of autism spectrum disorder was associated with male sex, whereas a DSM classification of an anxiety disorder was associated with female sex. A DSM classification of a behavioral disorder was associated with younger age but affected boys and girls alike. Even though they

presented with serious problems, boys and girls aged 4 to 12 years had admission rates under 10%.

As stated above, we found that less than 5% of all pediatric psychiatric emergency consultations had involved children 12 years and younger. This contrasts with the finding in most studies that children 10 to 12 years and younger represented about 20% of all children seen in the ED for mental health-related complaints.^{10,15–17} However, comparison of study results could be compromised by the differences between countries with regard to the organization of mental health care, resulting in differences in the populations studied. The lower percentage of younger patients found in this study may be due to an actual smaller percentage of younger children in need of psychiatric emergency services, or to selection procedures in mental health care. In the Netherlands, young children are referred for psychiatric emergency consultation only if they represent a danger to themselves or others, or if a serious psychiatric disorder, such as a psychosis, is suspected.

Two of our findings would fit the hypothesis that differences with other studies could be explained by differences in selection. First, a higher percentage of young boys than of adolescent boys were considered to be a danger to others. This may be explained

TABLE 3. Differences in Patient, Process, and Clinical Variables (Logistic Regression) Separately Per Sex Between Patients Aged 4–12 Years and 13–18 Years Who Had Been Seen for Psychiatric Emergency Consultation

	Boys Aged 4–12 y (n = 49) and Boys Aged 13–18 y (n = 640). Adolescent Boys Are the Reference Group		Girls Aged 4–12 y (n = 29) and Girls Aged 13–18 y (n = 1055). Adolescent Girls Are the Reference Group	
	Beta (SE)	Exp (B)	Beta (SE)	Exp (B)
Constant	-3.04 (0.24)*		-3.04 (.24)*	
DSM-IV-classification				
Behavioral disorder	0.91 (0.32)*	2.49	0.89 (0.42)†	2.43
Moderate or severe ratings on the SPI				
Suicide risk			-2.08 (0.74)*	0.13
Danger to others	1.12 (0.34)*	3.07		
Medical complications	1.44 (0.45)*	4.23		
Vocational impairment	-0.77 (0.36)†	0.46	-1.98 (0.74)*	0.14
$R^2 = 0.119$ (Nagelkerke); AUC = 0.73; 95% CI, 0.65–0.81; $P < 0.0001$.		$R^2 = 0.130$ (Nagelkerke); AUC = 0.77; 95% CI, 0.70–0.85; $P < 0.0001$.		
Hosmer & Lemeshow goodness of fit = 4.219, $P = 0.377$.		Hosmer & Lemeshow goodness of fit = 2.907, $P = 0.714$.		
* $P < 0.01$.				
† $P < 0.05$.				
95% CI, 95% confidence interval.				

by the higher risk in families with children younger than 12 years, where other younger children who live in the same house may suffer from their siblings' aggression. Second, more young girls than expected were referred due to psychotic symptoms and were diagnosed with a psychotic disorder. This ran counter to the fact that psychotic disorders are rare among young children (and even more so among young girls¹⁸). Although hallucinations in children and adolescents are known to occur on a continuum from healthy to psychopathological,¹⁹ the presence of psychotic symptoms in a crisis situation influences the decision to refer a child for urgent psychiatric consultation instead of to the youth service's crisis intervention team.

We found both in boys and in girls that a DSM classification of a behavioral disorder was associated with younger age. This is in line with the study of Ghandoer et al²⁰: they found that behavioral problems are more common among children aged 6 to 11 years than among older (or younger) children.

The sex differences we identified in young children's DSM classifications are in line with those known in the prevalence of autism and anxiety disorders.^{21,22}

Our finding that more young boys than young girls had been seen in emergency consultations is consistent with the studies by Read et al¹⁰ and Santillanes et al.¹¹ An important difference, however, is the high proportion of children who had been hospitalized in these authors' studies: over 40%. This is a double contrast with the study by Pikard et al,⁹ in which a majority (57.5%) of children were girls, and in which only 5.8% of the children required inpatient

psychiatric care. In our study, only 8.2% of the young boys and 6.9% of the young girls had been admitted. A possible explanation for our finding of these relatively low admission rates is that in the Netherlands, most clinicians agree that psychiatric crisis situations involving young children are best dealt within the child's home. As a result, the number of inpatient beds for this group has been considerably reduced. Despite the serious problems in question, most families—provided they receive intensive help with treatment—are deemed to be able to cope with their young children in the home situation.

Our finding that not going to school is positively associated with adolescence in both boys and girls is not surprising. Unlike young children, most adolescents are responsible for getting up in the morning and going to school. If, because of psychiatric problems, they do not want to or are unable to, most parents find it impossible to make them do so.

Clinical Implications

We found that a relatively low percentage of children aged 4 to 12 years had been seen in an emergency consultation. This may have been because there were fewer psychiatric crisis situations among young children or the result of selection in which children who were not suspected of psychotic symptoms or being a danger to others were preferably referred to regular child psychiatric care or a youth service crisis intervention team. In our view, emergency

TABLE 4. Factors Associated With Sex in Children Aged 4–12 Years Seen for Psychiatric Emergency Consultation (N = 78)

	Beta (SE)	Lower	95% CI for Exp (B)	Exp (B)	Upper
Constant	-0.53 (0.27)				
DSM-IV Axis I					
ASD	-2.47 (1.17)*	0.01	0.08		0.83
Anxiety disorder	1.97 (0.86)*	1.32	7.19		39.06
$R^2 = 0.20$ (Nagelkerke); AUC = 0.68; 95% CI, 0.56–0.80; $P = 0.009$; Hosmer & Lemeshow goodness of fit = 1.574, $P = 0.455$.					
Boys are the reference group.					
* $P < 0.05$.					

care for young children should be provided by specialized professionals who are trained both in psychiatric assessment and in behavioral interventions in this age group.

Strengths and Limitations

To the best of our knowledge, our study is the first to compare the characteristics of girls aged 4 to 12 years who had been seen for psychiatric emergency consultation with those of boys aged 4 to 12 years, and then to compare these characteristics with those of male and female adolescents. Our findings may improve our understanding of psychiatric emergencies in young boys and girls and help develop ways of preventing and handling crisis situations in young children.

However, our study also had 2 main limitations. First, the patient record forms from which we collected information on patient, process, and clinical parameters had not been specifically designed for this young population. These contained no detailed information on school functioning and family composition. Second, all diagnoses were based on psychiatric history or a non-standardized clinical interview during psychiatric emergency consultation. Few of the nurses, physicians or psychiatrists had been specifically trained to generate psychiatric diagnosis in young children. To establish whether and how it is possible to differentiate between those referred to the psychiatric emergency services and those referred to youth-service crisis intervention teams, further research should compare children aged 4 to 12 years from these 2 groups.

CONCLUSIONS

The psychiatric crisis services see far fewer young boys and girls than they see adolescents. This younger group comprises relatively more boys and children with behavioral disorders. It is not known whether the lower frequency of younger patients is due to selection or to a smaller need for these services among young children. Despite the serious problems with which these children present, only 8.2% of the young boys and 6.9% of the young girls in our study had to be admitted.

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