

Possible Predictors of Hospitalization for Adolescents with Conduct Disorder Seen in Psychiatric Emergency Service

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ABSTRACT

Possible predictors of hospitalization for adolescents with conduct disorder seen in psychiatric emergency service

Objective: The aim was to investigate predictors of hospitalization of adolescents with conduct disorder (CD) seen in emergency service of a mental health hospital.

Method: Patients were evaluated retrospectively by age, gender, school status, family structure, presenting symptoms and their duration, comorbid psychiatric diagnoses, prior emergency service or outpatient clinic use, prior psychiatric hospitalization and family history of any mental disorder, according to first presentation during a 6-month period.

Results: Mean age was 15.69±1.26 (12-17) years. Of the total of 144 patients, 61.8% (n=89) were female and 50 (34.7%) were hospitalized. Adolescents admitted to the inpatient unit presented significantly more often with suicidal ideation, had longer symptom duration, and were more likely to have a comorbid psychiatric disorder and a family history of a psychiatric disorder compared to those not admitted. In multivariate logistic regression analysis, suicidal ideation, having a comorbid psychiatric disorder, and having family history of a mental disorder predicted admission to the psychiatric inpatient unit.

Conclusion: Clinicians in emergency settings should be aware of the prediction of hospitalization in adolescents with CD who have suicidal ideation, a comorbid psychiatric disorder and family history of a mental disorder. Suicide attempt seems to have an indirect effect, rather than a direct effect, on the prediction of hospitalization in youths with CD.

Keywords: Adolescent, conduct disorder, emergency, hospitalization, predictor

ÖZET

Psikiyatrik acil serviste görülen davranım bozukluğu olan ergenler için hastaneye yatma olası öngörücüleri

Amaç: Amaç, bir ruh sağlığı hastanesi acil servisinde görülen davranım bozukluğu (DB) olan ergenlerin hastaneye yatış öngörücülerini araştırmak idi.

Yöntem: Hastalar, 6 aylık dönem içerisinde ilk başvurulana göre, yaş, cinsiyet, okul durumu, aile yapısı, geliş belirtileri ve bunların süresi, eşlik eden psikiyatrik tanımlar, daha önce acil servis ya da poliklinik kullanımı, önceden psikiyatrik yatış ve ailesinde ruhsal bozukluk öyküsü açısından geriye dönük değerlendirildi.

Bulgular: Ortalama yaş 15.69±1.26 (12-17) yılı idi. Toplam 144 hastanın, %61.8'i (n=89) kız idi ve 50'si (%34.7) hastaneye yatırıldı. Yatırılmadan tedavi edilen hastalara göre, yatarak tedavi edilen hastalarda anlamlı olarak daha fazla suicidal düşüncesi, daha uzun belirti süresi, daha fazla eşlik eden bir ruhsal bozukluk ve ailede psikiyatrik bozukluk öyküsü vardı. Çok değişkenli lojistik regresyon analizinde, intihar düşüncesi, eşlik eden bir psikiyatrik bozukluğa sahip olma ve ailede ruhsal bir bozukluk öyküsüne sahip olma, psikiyatrik yataklı üniteye yatışı öngördü.

Sonuç: Acil birimlerindeki klinisyenler, intihar düşüncesi, eşlik eden ruhsal bir bozukluğu ve ailede ruhsal bir bozukluk öyküsü olan DB'li ergenlerde hastaneye yatışı öngörmenin farkında olmalıdır. İntihar girişimi, DB'li ergenlerde yatışı öngörmeye, direkt etkiden ziyade, indirekt etkiye sahip görünmektedir.

Anahtar kelimeler: Ergen, davranım bozukluğu, acil, hastaneye yatış, öngörücü



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INTRODUCTION

Conduct disorder (CD) consists of a repetitive and persistent pattern of behaviors in which the basic rights of others and major age-appropriate societal norms or rules are violated (1). It is one of the most common child mental disorders found in community and clinical settings (1,2).

Youth with CD generally present to emergency departments with serious mental problems with an expectation of behavior management interventions (3); 6 to 14% of youths admitted to pediatric emergency departments (PEDs) present CD (4-8). The total proportion of youths admitted to inpatient units from PEDs for mental health problems is increasing (9). On the other hand, the long-term follow-up of adolescent inpatients with CD indicates generally poor outcomes in young adulthood (10). Treated children with CD showed the worst problem and impairment scores when compared with 11 common diagnoses (11). Conduct disorder, particularly severe CD, is thought to be highly resistant to treatment (12). Inpatient treatment for youths with CD has superior outcomes compared to outpatient treatment (13), including evidence-based treatments, such as multi-systemic therapy for delinquent youth, which effectively divert patients from committing crimes (14).

In the light of the knowledge given above, many child and adolescent psychiatrists may become confused about the decision to hospitalize adolescents with CD. Therefore, we aimed to identify characteristics and predictors of hospitalization for adolescents with CD seen in the emergency room of a mental health hospital.

METHOD

The sample was defined as young people aged less than 18 years who presented to the psychiatric emergency service (PES) of Bakirkoy Training and Research Hospital for Psychiatry, Neurology and Neurosurgery between July 1, 2012 and December 31, 2012 and were assessed within 24 h of referral. This is a secondary and tertiary-care facility and one of the

region's psychiatric specialty public hospitals. PES, which is located in a special part of the hospital, responds to mental health emergencies of all people within the Marmara Region (one of the seven big regions, each containing regional, urban, and rural areas) and sometimes for other regions in Turkey. The people presenting to this PES do not need to be referred by their physicians, other EDs, or other hospitals, and thus generally present by themselves. In Turkey, all people under the age of 18 have government health insurance. Ours is one of two hospitals in Turkey where the department of child and adolescent psychiatry works 24 hours per day. The inpatient unit generally serves youths aged 12-17 years. Unless necessary, youths under the age of 12 are not admitted to our inpatient unit. The variables of this study were registered by residents in training for child and adolescent psychiatry, supervised by their specialist supervisor (a child and adolescent psychiatrist). In the hospital, there is also a center for child and adolescent substance users, which includes an outpatient unit for daytime applications needing no appointments and an inpatient unit for youths for voluntary treatment and rehabilitation for two months.

To avoid affecting the decisions of clinicians on hospitalization, the study was designed retrospectively.

Measures

The name, age, gender, and CD diagnosis of each patient were collected by querying the hospital database. Within the study period, 536 patients had been evaluated in the emergency room. All records (n=151, 28.2%) with an International Classification of Diseases-Tenth Revision (ICD-10) code for CD (F91.0 'conduct disorder confined to the family context', F91.1 'unsocialized conduct disorder', F91.2 'socialized conduct disorder', F91.8 'conduct disorder, other', or F91.9 'conduct disorder, unspecified') were retrieved and diagnoses in the files were checked. Three patients' file diagnoses were oppositional defiant disorder and 4 patients' information was limited; therefore, these patients were excluded. The patients whose file diagnosis was CD (n=144, 95.4%) were included in the

study. Diagnoses of all patients were based on the Diagnostic and Statistical Manual of Mental Disorders-4th edition (DSM-IV) in the files. Conduct disorder in DSM-IV represents F91.0, F91.1, F91.2, F91.8, and F91.9 in ICD-10 (15). This study included 144 adolescents aged between 12 and 17 years, diagnosed clinically with CD and comorbid disorders according to the DSM-IV criteria (16). Files of patients were reviewed retrospectively for age at initial evaluation in psychiatric emergency service, gender, school status, family structure, presenting symptoms (homicide/violence, suicidal ideation, suicide attempt, self-harm behavior, substance use), duration of presenting symptoms (years), comorbid psychiatric diagnoses, prior emergency service and outpatient clinic use for mental problems, prior psychiatric hospitalization, and family history of mental illness. Data reflected only the first psychiatric emergency visit of patients in the study period. Information was obtained from standardized emergency forms. The age of first CD symptoms was also recorded. School status was categorized as 'currently enrolled' or 'other', and family structure was categorized as 'intact' or 'other'.

Data Analysis

The data was analyzed using the Statistical Package for the Social Sciences 15.0 program for Windows. Prior to analyses, the Kolmogorov-Smirnov test was performed to assess the normal distribution of data. The Mann-Whitney U test was used to compare non-normally distributed continuous variables. The chi-square test or Fisher's exact test were used to compare categorical variables. To assess the association between each of the variables (age, gender, school status, family structure, duration of illness, homicide/violence, suicidal ideation, suicidal attempt, self-harm behavior, substance use, comorbid mental disorder, prior ED use, prior outpatient clinic use, prior psychiatric admission, and family history of mental illness) and hospitalization, univariate analysis was performed. Variables (suicidal ideation, comorbid mental disorder, and family history of mental illness) with a significant ($p < 0.05$) association in univariate analysis were then

used in a multivariate logistic regression model. Significance was defined as a p value < 0.05 .

RESULTS

Mean age was 15.69 ± 1.26 (12-17) years and 61.8% ($n=89$) were female. Of the total of 144 patients, 138 (95.8%) were late onset (age 11 or older) and 50 (34.7%) were hospitalized. Females had significantly more past ED use than males, while males presented more often with symptoms of homicide/violence and substance use than females ($p < 0.05$ for all). There was no significant difference in age for gender, admission, and in mean duration of symptoms between genders ($p > 0.05$ for both). Most frequent comorbid diagnoses were mood disorders ($n=18$, 12.5% mood disorders; $n=4$, 2.8% bipolar, $n=14$, 9.7% depressive disorder), mental retardation ($n=13$, 9.0%), and substance use disorders ($n=7$, 4.9%). Suicide attempts were mainly impulsive/unplanned ($n=8$, 80.0%), non-violent ($n=7$, 70.0%) and a first attempt ($n=8$, 80.0%).

Adolescents admitted to the inpatient unit presented significantly more with suicidal ideation, had significantly longer symptom duration (admitted versus not admitted, 2.04 ± 1.40 [$n=50$] versus 1.68 ± 1.48 years [$n=94$], $z=-2.660$, $p=0.008$), were more likely to have a comorbid psychiatric disorder, and were more likely to have a family history of a psychiatric disorder compared to those not admitted ($p < 0.05$) (Table 1). Variables with a significant association were compared according to other variables (Table 2). Variables were not significantly different in youths with comorbidity compared to those without comorbidity ($p > 0.05$).

On performing univariate analysis, presence of suicidal ideation/thought (odds ratio [OR] 5.15; 95% confidence interval [CI], 2.16-14.28, $p < 0.001$), comorbid mental disorder (OR 2.59; 95.0% CI, 1.28-5.83, $p=0.008$) and family history of mental illness (OR 2.85; 95.0% CI, 1.40-5.80, $p=0.004$) were predictive of hospitalization. In multivariate logistic regression analysis, suicidal ideation, having a comorbid psychiatric disorder and having a family history of any mental disorder predicted psychiatric

Table 1: Comparison of patients' demographic and clinical characteristics based on admission status (n=144)

	Admitted		Not admitted		χ^2	p
	n	%	n	%		
Demographic						
Gender (Female)	33	66.0	56	59.6	0.331	0.565
School status (Currently enrolled)	19	38.0	47	50.0	1.441	0.230
Family structure (Intact)	27	54.0	65	69.1	2.623	0.105
Clinical						
Presenting symptoms						
Homicide/violence	19	38.0	32	34.0	0.084	0.772
Suicidal ideation	19	38.0	10	10.6	13.540	<0.001
Suicidal attempt	5	10.0	5	5.3	0.501	0.317*
Self-harm behavior	12	24.0	12	12.8	2.212	0.137
Substance use	10	20.0	10	10.6	1.673	0.196
Comorbid mental disorder	28	56.0	31	33.0	6.232	0.013
Prior emergency department use	6	12.0	10	10.6	0.000	0.787*
Prior outpatient clinic use	34	68.0	54	57.4	1.118	0.290
Current mental health provider (n=88)	9	26.5	16	29.6	0.006	0.938
Prior psychiatric admission	6	12.0	9	9.6	0.028	0.867
Family history of mental illness	28	56.0	29	30.8	7.612	0.006

χ^2 : Chi-square test, *Fisher's exact test

Table 2: Comparison of patients' demographic and clinical characteristics based on suicidal ideation and family history of mental illness

	Suicidal ideation				χ^2	p
	Yes		No			
	n	%	n	%		
Homicide/violence	5	17.2	46	40.0	4.297	0.038
Suicide attempt	6	20.7	4	3.5	8.120	0.005*
Family history of mental illness						
Suicide attempt	9	15.8	1	1.1	9.269	0.001*
Substance use	13	22.8	7	8.0	5.100	0.024

χ^2 : Chi-square test, *Fisher's exact test

Table 3: Multivariate logistic regression for hospitalization in adolescents with conduct disorder presenting to emergency department

	OR	95% CI	p
Suicidal ideation	6.27	2.69-25.31	<0.001
Comorbid mental disorder	4.10	1.97-12.94	0.001
Family history of mental illness	3.76	1.43-9.67	0.007

OR: odds ratio, CI: confidence interval, Hosmer-Lemeshow test of goodness of fit of the model, $\chi^2=0.209$, df=4, p=0.995

admission to the inpatient unit for adolescents with CD seen in the emergency room (p<0.05) (Table 3).

DISCUSSION

The present study showed that adolescents with CD admitted to the inpatient unit from ED presented significantly more suicidal ideation, had significantly longer symptom duration, and were more likely to

have a comorbid psychiatric disorder and a family history of psychiatric disorders. In multivariate logistic regression analysis, suicidal ideation, having a comorbid psychiatric disorder, and having a family history of a mental disorder were found to predict psychiatric admission to the inpatient unit. To our knowledge, this is the first study investigating the predictors of hospitalization in adolescents with CD presenting to ED in Turkey.

Suicidality, from suicidal ideation to a single attempt and to multiple attempts, is thought to be a severity marker of psychopathology (17,18). Suicidal ideation is a strong predictor of suicide attempt (19), and suicidal ideation and attempts are the most important predictors for future suicide (20,21). The risk factors of suicide attempts in adolescents are psychopathology, prior suicide attempt, cognitive functions, sexual orientation, biological factors, familial factors, stress, socio-economic level, and school problems (22-27); cultural factors also play a role (28-30). Among youth with behavioral disorders, those with suicidality were more likely to be hospitalized compared to those without (31). Similarly, hospitalization from an ED in an inner-city municipal hospital were predicted by the severity of schizophrenic symptoms and active suicidal and/or homicidal ideation (32). Goldberg et al. (33) found that presence of psychosis, a suicide plan, and a history of past suicide attempts predicted hospitalization of adults presenting with suicidal ideation for emergency care. As found in the present study, suicidality was the strongest predictor of admission from ED (34).

In youths with suicidality, the major point is the evaluation of 'intent to die'. While approximately half of the individuals with a suicide attempt had no intent to die (35), some intent to die was reported by most of youth with suicide attempt presenting to ED (18). Berk and Asarnow (18) also found no clinical difference between youths with suicidal ideation and suicide attempt. Among suicidal parameters, suicidal ideation seemed to be more important than suicidal attempt in the decision for hospitalization of youths with CD, suggesting uncertainty of the progress from ideation to attempt and possible differences of patterns of ideation and attempts in youths with CD. Association of the level of suicidality at the time of the ED visit (ideation vs. attempt) with hospitalization in CD should be clarified in future studies.

CD with comorbidity worsens the outcomes of behavioral disorders (2,36). Dalsgaard et al. (37) reported that girls with ADHD with conduct problems had a very high risk of a psychiatric admission in adulthood. Disposition in CD is generally thought to

be based on the severity of the symptoms (38). In a large retrospective study of 5 to 17 years old youths with psychiatric diagnoses presenting to PEDs between 2005–2009 in California, the major determinant of hospitalization was the severity of all psychiatric diagnostic categories, as indicated by rank order and comorbidity (7). While the odds ratio was 1.98 for disruptive disorders, it was 4.31 for disruptive disorders with comorbidity. Among youths presenting with suicide attempt, the odds ratios were 0.67 and 1.11, respectively. Psychiatric hospitalization was mainly predicted by clinical need (7). In a cohort study, the combination of conduct and emotional problems by the age of 8 was the strongest predictor for admission between ages 13 and 24 (10). Adolescents with CD with comorbidity presenting to ED were 4.1 times more likely to be hospitalized than those without a comorbidity. No demographic and clinical differences between youths with and without comorbidity suggested a direct effect of comorbidity on hospitalization decisions.

Despite the increase in ED presentation rates of suicide-related events, post-attempt hospitalization has decreased reciprocally (39). Similarly, suicide attempt in youths with CD did not predict hospitalization, indicating an engrossing point in the context of our ED's operation. This may be associated with the assumption that indications for hospitalization in mental health hospitals are stringent and that the psychiatric diagnosis and the nature of the suicide attempt affect the likelihood of hospitalization. Suicide attempts in the present study were mainly impulsive/unplanned (80.0%), non-violent (70.0%), and a first attempt (80.0%). Hillard et al. (40) reported that, in the order of importance, suicidal tendencies, physical abuse, a primary diagnosis of schizophrenia, age, and number of suicide attempts best predicted emergency hospitalization for adolescents. Despite this, half of youths with suicide attempts were admitted to inpatient units, as previously reported (5,7,41). Coskun et al. (42) reported that suicidal ideation or suicide attempts were the most frequent symptoms to cause hospitalization among inpatient adolescents.

Differences in predictive factors for hospitalization among studies may be due to differences in the design of studies and, in practice, patterns of PEDs among countries.

An interesting finding was the significant impact of a family history of mental illness on the hospitalization decision in EDs. In a study of 226 children and adolescents who received emergency mental health services during 6 months, suicidal behavior with violence, the child's substance use, a family member's substance use, and the initial emergency screening site predicted acute hospitalization (43). A family history of mental illness increases the risk of mental problems including suicidality in youths (44); it is also one of the most important risk factors for suicidal attempt (45). Turhan et al. (46) reported that psychiatric disease history in the family or patient and suicide attempt in the family were risk factors associated with repeated suicide attempts in adolescents and adults. The impact of a family history of mental illness on hospitalization decisions may be associated with the clinicians' need of further evaluation in the presence of a mental illness in a family member and parents' expectation of immediate treatment. Moreover, suicide attempts were more frequent in youths with suicidal ideation or a family history of mental illness, suggesting its indirect effect in the prediction of hospitalization of youths with CD.

It was striking that demographic findings in youths with CD such as age, gender, school status, and family structure did not affect hospitalization decisions. On the contrary, older age (5,40), white race (5), ambulance arrival (5), female gender (5,6), rural residence (6), and public insurance (5,6) were independently associated with admission to the inpatient units from the ED. Also, admission from the ED to public hospitals, compared to private hospitals, was associated with no insurance, a past history of major public hospitalization, current or past history of

assaultiveness, a presenting problem of aggression, and lack of any discharge site (47). In addition, Huffman et al. (7) reported that nonclinical factors, including demographic (younger age, lack of insurance, rural residence) and resource (private hospital ownership, lack of psychiatric consultation in the emergency department, lack of pediatric psychiatric beds) characteristics decreased the likelihood of hospitalization in youths with psychiatric disorders, even though the cases were presumably more life-threatening.

Despite these findings, the following limitations of this study should be mentioned: small sample, single center, retrospective design, clinical diagnoses without any semi-structured interviews, lack of clinical information (such as severity of symptoms, previous history of suicide attempts and degree of impairment), and visit-level analytic strategy. Some serious cases presenting to an ED may have not been admitted to a hospital because of the parents' refusal of hospitalization. Also, psychiatric inpatient units for youths generally serve adolescents above age 12, indicating that the lack of patients under the age of 12 years may have affected our conclusions. Moreover, the low reliability of CD diagnosis in PEDs should be considered while interpreting the results (3).

In conclusion, the findings of the present study suggest that suicidal ideation, a comorbid psychiatric disorder, and family history of a mental disorder may be important in determining whether an adolescent with CD presenting to a PED will be admitted to the inpatient unit. Suicide attempt seems to have an indirect effect, rather than a direct effect, in the prediction of hospitalization of youths with CD. Further studies with large, prospective, long-term and well-identified data and trained clinicians and outpatient clinical services are needed to investigate the impact of all non-clinical and clinical variables better.

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