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Research Report

Journal of INTERNATIONAL MEDICAL RESEARCH

Journal of International Medical Research
2017, Vol. 45(4) 1318–1323
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DOI: 10.1177/0300060517713833
journals.sagepub.com/home/imr
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Factors affecting improvement of children and adolescents who were treated in the child and adolescent psychiatry inpatient unit

Burcu Serim Demirgoren, Aylin Ozbek and Ozlem Gencer

Abstract

Objective: This study aimed to assess the correlates and predictors of improvement in general functioning of children and adolescents who are treated in the child and adolescent psychiatry (CAMHS) inpatient unit.

Methods: Hospital records of 308 children and adolescents who were treated for at least 1 month in the CAMHS inpatient unit from 2005–2016 were included. Associations with individual, familial, and clinical variables and the difference in Children's Global Assessment Scale (ΔCGAS) scores at admission and discharge were evaluated.

Results: Positive predictors of ΔCGAS were older age and lower CGAS scores at admission, whereas high familial risk scores at admission and diagnosis of early-onset schizophrenia negatively predicted ΔCGAS ($B = 0.698$, $p = 0002$; $B = -0.620$, $p < 0.001$; $B = -0.842$, $p = 0.002$; $B = -9.184$, $p = 0.000$, respectively). Familial risk scores were significantly and negatively correlated with ΔCGAS ($p = 0.004$, Spearman's rho $= -0.2$).

Conclusions: This study indicates that improvement in general functioning during inpatient treatment in CAMHS is better at an older age and with lower general functioning at admission. However, high familial risks and diagnosis of early-onset schizophrenia weakens this improvement.

Keywords

Child and adolescent psychiatry, inpatient service, improvement, functionality, CGAS

Date received: 3 April 2017; accepted: 16 May 2017

Introduction

Almost one-third of children and adolescents suffer from a psychiatric disorder and failure to receive appropriate treatment

MD, Department of Child and Adolescent Psychiatry, Faculty of Medicine, Dokuz Eylul University, Izmir, Turkey

Corresponding author:
Burcu Serim Demirgoren, Department of Child and Adolescent Psychiatry, Faculty of Medicine, Dokuz Eylul University, Izmir, Turkey.
Email: burcuserim@hotmail.com

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results in long-lasting difficulties in various functional areas.[1] Most children and adolescents with psychiatric problems do not require inpatient treatment. However, those who are at risk of harming themselves and others and need to be closely monitored in terms of clinical, familial and social issues may require inpatient treatment.[2,3] Many studies from various countries and cultures have indicated that child and adolescent inpatient units are effective for treating individuals with various psychiatric diagnoses and conditions.[4–8] Studies that investigated the factors that play a role in effective psychiatric treatment of children and adolescents defined the individual characteristics of children, their parents and family, severity of psychiatric symptoms, psychiatric diagnosis, presence of comorbidity and treatment method implemented, along with the characteristics of the treatment team as predictors of improvement.[9–13] Although previous studies have investigated the outcomes of inpatient treatment of children and adolescents regarding improvement of general functioning and the continuity of this effect,[8,14] factors affecting this improvement have not been widely studied. Therefore, this study aimed to assess the correlates and predictors of improvement in general functioning of children and adolescents who are treated in the child and adolescent psychiatry (CAMHS) inpatient unit.

Materials and methods

This study was approved by the Dokuz Eylul University Medical Sciences Research Ethics Committee.

Patients and procedure

All children and adolescents who received treatment at Dokuz Eylul University in the CAMHS inpatient unit from 2005–2016 were included in the study. This unit, which is located in Izmir Turkey, was founded in 2005. This unit has the capacity to treat 15 children and adolescents at the same time, with more beds for girls than boys. As a member of the Quality Network for Inpatient CAMHS (QNIC) since 2005, which is an initiative of the Royal College of Psychiatrist in the United Kingdom, this unit provides milieu therapy in conjunction with medical and other therapeutic interventions in accordance with the patients' needs.

The inclusion criteria of the study were at least 1 month of stay in the unit, receiving at least one axis I diagnosis according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR),[15] and being discharged following planned procedures. Additionally, those who had an increase in the CGAS score at discharge compared with admission were included.

Data were collected retrospectively from the hospital records. Sociodemographic and family variables, clinical diagnosis based on DSM-IV-TR criteria and refined with the consensus of the team members, the presence of comorbid psychiatric diagnosis and the duration of treatment were noted on the data collection sheet that was developed for the purposes of this study. Additionally, individual and familial risk scores, which were routinely calculated at admission and CGAS scores at admission and discharge were recorded. The difference between admission and discharge CGAS scores constituted the ΔCGAS score.

Materials

Children's Global Assessment Scale (CGAS). The CGAS is an adaptation of the Global Assessment Scale and was designed to reflect the level of functioning for a child or adolescent during a specified time period.[16] Clinicians evaluated the child's functionality under 10 sections with values ranging from 1 to 100. Increasing scores indicate a better

general functionality.[16] Shaffer et al.[16] adopted the Global Assessment Scale for adults to be used for children and adolescents and demonstrated that the CGAS is a useful measure of overall severity of disturbance. This scale was found to be reliable between raters and across time with discriminant and concurrent validity. The CGAS is widely used in research from Turkey.[7,8,14]

Individual and familial risk assessment. Risk assessment was performed by risk evaluation forms that were developed by the inpatient unit in accordance with the QNIC norms. They were routinely applied to all patients at admission. The individual risk assessment included a history of violent behaviour, using sharp objects and/or a weapon, threatening behaviour, destroying/harming property, hurting animals, illegal behaviour/punishment, self-harm, suicidal thoughts/attempts recently, using alcohol/substances, abuse (emotional, physical, sexual), inappropriate sexual behaviour, and the presence of any physical disability. The total risk score was calculated out of 12 and higher scores indicated higher risks.

Family risk assessment included items inquiring about insufficient supervision at home, conflicts in the family, a lack of cooperation with school, unemployment/poverty in the family, a history of psychiatric disorder, self-harm/suicide in the family, a lack of social support and the presence of unemployment/poverty in the environment of the family. The total risk score was calculated out of 8 and higher scores indicated higher risks.

Statistical analysis

SPSS Windows 22.0 packaged software was used for analysis.[17] In addition to descriptive analysis of data, Spearman's correlation was used to investigate the correlation of descriptive variables with the ΔCGAS. A multivariate linear regression model was used with the ΔCGAS as the dependent variable to further clarify the predictive effects of various factors. A p value ≤ 0.05 was considered to be significant in all analyses.

Results

During 10 years, a total of 308 patients met the inclusion criteria of duration of hospitalization and process of planned discharge. Eighty-one patients were excluded from the study because of a shorter stay less than a month and/or unplanned discharge. CGAS values of 17 of the included patients could not be found in the hospital records. Three patients were excluded from the study because they lacked any axis I diagnosis according to DSM-IV-TR. Only one patient had a negative ΔCGAS score at discharge and he was excluded from the study.

Among the remaining 287 patients, 189 (65.9%) were girls and 98 (34.1%) were boys. The mean ± standard deviation (SD) ages of children and adolescents was 175.95 ± 28.39 months (range, 77–215 months). The mean duration of hospitalization was 85.5 ± 31.3 days. DSM-IV-TR axis I diagnoses of the patients are shown in Table 1. We found that 181 (63.1%) of these patients only had one axis I diagnosis and 106 (36.9%) of the patients had a comorbid psychiatric diagnosis.

The mean CGAS score of the patients was 37.8 ± 10.18 at admission and 61.2 ± 10.47 at discharge. Therefore, the mean ΔCGAS score was 23.4 ± 10.96. The individual mean risk score at admission was 4.83 ± 2.5 and the mean familial risk assessment score was 3.80 ± 1.96.

Correlation analysis

The ΔCGAS scores were significantly, negatively and mildly correlated with familial risk scores ($p = 0.004$, $r = -0.2$). No significant correlation was found between the other variables and the ΔCGAS score.

Table 1. Characteristics of patients who were treated in the child and adolescent psychiatry inpatient unit (N = 287).

	Mean or N	SD or %
Age at admission (months)	175.95	28.39
Sex		
Girls	189	65.9%
Boys	98	34.1%
Duration of hospitalization (days)	85.5	31.3
Diagnosis		
Mood disorders	149	51.9%
Schizophrenia	44	15.3%
Anxiety disorders	34	11.8%
Attention-deficit and disruptive behaviour disorders	27	9.4%
Eating disorders	9	3.1%
Other disorders	24	8.5%
Psychiatric comorbidity		
Yes	106	36.9%
No	181	63.1%
CGAS scores at admission	37.8	10.18
CGAS scores at discharge	61.2	10.47
ΔCGAS	23.4	10.96
Individual risk score	4.83	2.5
Familial risk score	3.80	1.96

CGAS: Children's Global Assessment Scale,
ΔCGAS: CGAS (discharge) − CGAS (admission).

Multivariate linear regression analysis

Multivariate linear regression analysis was conducted to assess variables that predict the ΔCGAS (Table 2). Older age and lower CGAS scores at admission predicted higher ΔCGAS scores ($B = 0.698$, $p = 0002$; $B = -0.620$, $p < 0.001$, respectively). However, a high familial risk score and having the diagnosis of early-onset schizophrenia were negative predictors of the ΔCGAS ($B = -0.842$, $p = 0.002$; $B = -9.184$, $p < 0.001$, respectively).

Discussion

This study assessed factors that were associated with improvement in general functioning of children and adolescents who were treated in the CAMHS inpatient unit. We found that older age and lower general functioning at admission were predictors of better improvement in terms of general functionality. However, high familial risk factors and the diagnosis of early-onset schizophrenia were associated with lower gains in general functioning during inpatient treatment of children and adolescents.

Table 2. Multivariate linear regression analysis of factors affecting the ΔCGAS.

	B	p
Age at admission	0.698	**0.002**
CGAS scores at admission	−0.620	<0.001
Schizophrenia	−9.184	<0.001
Familial risk score	−0.842	**0.002**

$R^2 = 0.361$, $p < 0.05$, bold values show statistical significance.
ΔCGAS = CGAS (discharge) − CGAS (admission).

Our finding that older age was associated with better improvement in general functioning during inpatient treatment of the youth is in accordance with limited literature on the outcomes of inpatient treatment at this age.[18] Setoya et al.[18] showed that response to treatment can be hampered because of associated developmental issues in younger children. Additionally, early-onset psychopathologies in the child and adolescent age group generally have a worse outcome, whereas later onset is associated with a better course. Therefore, older age and a higher positive change in general functioning in our sample is consistent with the existing data.[18–21]

An interesting finding of this study is that low-functioning individuals benefited more in terms of their general functioning during inpatient treatment. Although this initially appears contradictory, it is consistent with studies from various cultures, which showed that children and adolescents with a higher loss of functionality benefit more from

hospitalization.[18,22] Multidisciplinary and multidimensional therapeutic interventions, including educational, social, and medical, as well as psychological support at the unit, may aid severely affected children and adolescents in improvement during inpatient treatment.

Familial risk factors, not the individual risks of the child and adolescent, predict a worse improvement in general functioning during inpatient treatment at this age. Additionally, children of poorly functioning families benefit less from psychiatric treatment.[23] Parental psychopathology and/or high stress levels in the family are associated with poor outcomes.[24,25] Moreover, Blader et al.[26] showed that inappropriate attitudes of parents, such as using strict disciplinary methods, are among the factors predicting rehospitalization in children and adolescents after discharge from the inpatient service. Our results and compatible data from the literature emphasize the importance of working with the family in child and adolescent inpatient units and outpatient follow-ups.

Similar to the study by Setoya et al.[18], our results showed that diagnosis of early-onset schizophrenia was associated with less improvement in general functioning during inpatient psychiatric treatment of children and adolescents. Early-onset schizophrenia is a more severe variant of the adult-onset form, which might be associated with poor quality of life and long-term general functioning. Although patients show improvement with effective psychiatric treatment, the rate of progress may not be more than that of other psychopathologies in this age group.[21,27]

Our study has some limitations. Changes in general functioning were assessed with the CGAS, which is based on clinicians' evaluations. Inclusion of instruments that determine the patients' and their parents' opinions may provide more comprehensive data. The single centre and retrospective design may be other limitations of this study. Interpretation of our data requires caution in this respect.

Despite the limitations of this study, this study shows that age, level of functioning at admission, familial risk factors and the diagnosis of early onset-schizophrenia are significant factors affecting the improvement of general functionality during psychiatric inpatient treatment of children and adolescents. Further studies on additional factors may help to enhance inpatient psychiatric treatment of youth because failure to provide appropriate treatment results in long-lasting difficulties in various functional areas.

Acknowledgements

The Authors would like to thank all the participants of this study.

Declaration of conflicting interest

The Authors declare that there is no conflict of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not for-profit sectors.

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