

# Is Inpatient Treatment Effective for Eating Disorders in Adolescents? Retrospective Analysis of a General Inpatient Psychiatric Unit for Children and Adolescents

Burcu Serim Demirgören,<sup>1</sup> Aylin Özbek,<sup>2</sup> Bahar Şen,<sup>1</sup> Oğuzhan Şimşek,<sup>1</sup> Taner Güvenir<sup>2</sup>

<sup>1</sup>M.D., <sup>2</sup>Assoc. Prof., Dokuz Eylül University, Faculty of Medicine, Department of Child and Adolescent Psychiatry, Izmir, Turkey

**Corresponding Author:** Burcu Serim Demirgören, Dokuz Eylül University, Faculty of Medicine, Department of Child and Adolescent Psychiatry, Izmir / Turkey

**Phone:** +090 (232) 4123551; +090 (505) 7689820

**Fax:** +090 (232) 2776686

**E-mail:** burcuserim@hotmail.com

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## ABSTRACT

**Objective:** Our study investigated the improvement of the adolescents with eating disorders who have received inpatient treatment at a general psychiatric inpatient unit for children and adolescents. The unit provides milieu therapy in conjunction with medical and other therapeutic interventions in accordance with patients' needs.

**Method:** All of the adolescents diagnosed with Anorexia Nervosa, Bulimia Nervosa and Binge Eating Disorder according to DSM-IV and received inpatient treatment at the unit between the years 2005-2018 were recruited. Sociodemographic and family variables, individual and familial risks, presence of comorbid psychiatric diagnosis, the duration of treatment, The Children's Global Assessment Scale (CGAS) and Health of the Nation Outcome Scales-Children and Adolescents (HONOSCA-TR) scores at admission and discharge were retrospectively collected.

**Results:** A total of 19 adolescents were included in the study. Results demonstrated that average duration of stay at the unit was 70.31±19.12 (Mean±SD) days. General functionality measured by the CGAS significantly increased from admission to discharge following psychiatric inpatient treatment. Moreover, there were significant improvement in adolescents with eating disorders as indicated with all of the HONOSCA-TR subscales.

**Conclusion:** These results implicate that long enough inpatient milieu therapy applied with multidisciplinary and multidimensional perspectives might have fostered the improvement of severely affected adolescents with eating disorders.

**Key words:** Eating disorders, adolescence, inpatient treatment, improvement

## ÖZ

**Yataklı servis tedavisi ergenlerdeki yeme bozukluklarında etkili midir? Bir çocuk ve ergen psikiyatri servisi verilerinin retrospektif analizi**

**Amaç:** Bu çalışmada, bir çocuk ve ergen psikiyatri servisinde yeme bozukluğu nedeniyle yatarak tedavi gören ergenlerdeki iyileşme düzeyi araştırılmıştır. Serviste yatan hastalara ortam terapisi yanı sıra hastanın gereksinimlerine uygun olarak ek tıbbi ve diğer terapötik müdahaleler uygulanmıştır.

**Yöntem:** Çalışmaya, DSM-IV'e göre Anoreksiya Nervosa, Bulimiyaya Nervosa ve Tıkınırcasına Yeme Bozukluğu tanısı almış ve birimde 2005-2018 yılları arasında yatarak tedavi görmüş tüm ergenler dahil edilmiştir. Sosyodemografik veriler, olguya ait bireysel ve ailesel riskler, psikiyatrik eş tanı varlığı, tedavinin süresi, yatış ve taburculuk sırasında uygulanan Çocuklar için Genel Değerlendirme Ölçeği (CGAS) ve Çocuk ve Ergenler için Klinik Gidiş Değerlendirme Ölçeği (HONOSCA-TR) puanlarına ait veriler geriye dönük olarak toplanmıştır.

**Bulgular:** Toplam 19 ergen çalışmaya dahil edilmiştir. Sonuçlara göre serviste ortalama kalış süresi 70,31±19,12 (Ort±SD) gün olarak saptanmıştır. Taburculuk sırasında CGAS puanları ile ölçülen genel işlevsellik düzeyi, yatış sırasındaki işlevsellik puanlarına göre anlamlı şekilde yükselmiştir. Ayrıca, tüm HONOSCA-TR alt ölçekleri ile birlikte toplam HONOSCA-TR skorları yatışa göre anlamlı düzeyde düşerek yeme bozukluğu olan ergenlerde anlamlı iyileşme düzeyleri saptanmıştır.

**Sonuç:** Bu çalışmadan elde edilen sonuçlar, bir çocuk ve ergen psikiyatri yataklı servisinde yeme bozukluğu nedeniyle yatarak tedavi gören ergenlerin multidisipliner bir ekip ve ortam terapisini de içeren çok boyutlu bir yaklaşımla belirgin iyileşme ve işlevsellik artışı geliştirdiklerini göstermiştir.

**Anahtar sözcükler:** Yeme bozuklukları, ergenlik, yataklı tedavi, iyileşme

## INTRODUCTION

The onset of eating disorders (ED), which are becoming increasingly prevalent nowadays, mostly takes place in adolescence.<sup>1</sup> Anorexia Nervosa (AN), Bulimia Nervosa (BN) and Binge Eating Disorder (BED) are among the eating disorders with various clinical presentations which require multidisciplinary treatment models.<sup>2</sup> The lifetime prevalence is 0.5%-0.6% for AN, 0.5%-1% for BN, and 1.1%-2.3% for BED.<sup>3-5</sup> Significant physical problems such as growth retardation, delayed puberty, peak bone mass reduction and higher mortality rates are reported in adolescents with eating disorders.<sup>6-9</sup> Psychiatric comorbidity is also common. Affective disorders are the most commonly associated disorders in adolescents with a prevalence of 50%, and it has been reported that any anxiety disorder accompanies eating disorders with a prevalence of 35%.<sup>10-12</sup>

Treatment of eating disorders requires multidisciplinary approach including comprehensive psychiatric and medical care.<sup>13</sup> Although most of the young people with eating disorders do not require inpatient treatment, presence of severe physical and psychiatric symptoms such as persistent medical complications related to body weight, hypoglycemic syncope, fluid and electrolyte imbalance, cardiac arrhythmias, severe dehydration accompanied with unresponsivity to outpatient efforts at weight gain and severe psychiatric comorbidity.<sup>13</sup> Search of literature revealed few efforts investigating the effects of the inpatient treatment on eating disorders. In the TouCan trial,<sup>14</sup> a randomised controlled multicentre trial of treatments for adolescent anorexia nervosa, no significant superiority for inpatient over outpatient treatment was reported. On the other hand, Gowers et al.,<sup>15</sup> showed positive treatment response on eating disorders in adolescence following inpatient treatment.

This study aims to investigate the improvement of the adolescents with eating disorders who have received inpatient treatment at a general psychiatric inpatient unit for children and adolescents. Effects of individual and family risk factors as well as treatment duration, presence of co-morbidity, level of general functionality and the severity of the symptoms on the improvement were also assessed.

## METHOD

### Sample and Procedure

The study is descriptive and retrospective in design. The study sample included all children and adolescents who received treatment between the years 2005 and 2018 for eating disorders at the inpatient unit of Child and Adolescent Mental Health Department of Dokuz Eylül University. The clinical diagnosis of the sample included either AN, BN or BED according to fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR).<sup>16</sup> As a routine procedure, the clinical diagnosis of all patients treated in the unit is ascertained and refined by the consensus of the inpatient unit treatment team by clinical assessment, follow-up, by application of relevant psychometric tests and clinical scales.

Data, including sociodemographic features, individual and familial risks, The Children's Global Assessment Scale (CGAS) and the Turkish version of Health of the Nation Outcome Scales-Children and Adolescents (HONOSCA-TR) scores which were routinely calculated at admission and discharge were collected retrospectively from the hospital records. The difference between admission and discharge CGAS and HONOSCA-TR scores constituted the  $\Delta$ CGAS and  $\Delta$ HONOSCA-TR scores, respectively.

### Features of the Inpatient Unit

The inpatient unit has been founded in 2005 with a capacity of fifteen patients in Izmir, Turkey. The unit is a member of the Quality Network for Inpatient CAMHS (QNIC). QNIC is an initiative of the Royal

College of Psychiatrists in the United Kingdom. This unit provides milieu therapy along with medical and other therapeutic interventions according to patients' needs.

### Measures

#### The Children's Global Assessment Scale (CGAS):

Children's Global Assessment Scale (CGAS) is a scale that is reflecting the level of functioning for a child or adolescent during a specified time period. Clinicians evaluate the child's functionality with values ranging from 1 to 100.<sup>17</sup>

#### Health of the Nation Outcome Scales - Children and Adolescents (HONOSCA-TR):

Health of the Nation Outcome Scales - Children and Adolescents (HONOSCA-TR) is a clinical outcome measurement designed to be used in child and adolescent mental health inpatient services for ages 3-18. It was developed by the University of Manchester, Department of Health and the Royal College of Psychiatrists. It is a routine measurement tool that evaluates behaviors, problem areas, symptoms and social functionality of children and adolescents with mental health problems. HONOSCA-TR is a 5-point Likert-type scale. The HONOSCA-TR total score is calculated as the sum of the first 13 scales. A decrease in the score indicates improvement in the clinical progress during the treatment.<sup>18</sup> The reliability study of the Turkish version was carried out in 2010 and Intraclass Correlation Coefficient was found 0.078.<sup>19</sup>

#### Individual and Familial Risk Assessment:

Special forms designed for individual and familial risk assessment, in accordance with QNIC norms, were routinely applied to all patients at admission. The individual risk assessment includes the history of violent behavior, using sharp objects and/or weapon, threatening behavior, hurting animals, illegal behavior/punishment, self-harm, suicidal thoughts/attempts recently, using alcohol/substances, abuse (emotional, physical, sexual), inappropriate sexual behavior and presence of any physical disability. The total individual risk score is calculated out of 12 and higher scores indicate higher risks.

Family risk assessment includes items inquiring insufficient supervision at home, conflicts in the family, the lack of cooperation with school, unemployment/poverty in the family, history of psychiatric disorder, self-harm/suicide in the family and lack of social support and presence of unemployment/poverty in the environment family is living. Total risk score is calculated out of 8 whereas the higher scores indicate more risks. The total familial risk score was calculated out of 8. Higher scores indicated higher risks.

#### Ethical Considerations

This study was approved by the Ethics Committee of Dokuz Eylül University with decision number 2018/05-04 on 15.02.2018.

#### Statistical Analysis

Statistical Package for the Social Sciences (SPSS) Windows 22.0 software package was used to evaluate the data. In addition to descriptive analyses, comparison of the CGAS and HONOSCA-TR scores at admission and discharge were conducted with the Wilcoxon signed-rank test by considering the data distribution. Spearman's correlation analysis was performed to evaluate the correlation between the age, duration of hospitalization, individual and familial risks, and  $\Delta$ CGAS and  $\Delta$ HONOSCA-TR. In all analyses,  $p < 0.05$  was considered as significant.

## RESULTS

A total of 19 adolescents have received inpatient treatment due to an eating disorder in our inpatient unit between the years 2005-2018. The mean ( $\pm$ standard deviation) duration of hospitalization was 70.31 ( $\pm$ 19.12) days (minimum-maximum: 42-115 days). Sixteen (84.2%)

of the patients were girls, and 3 (15.8%) were boys with mean age of 14.7 ( $\pm$  1.9) years (minimum-maximum: 11-17 years). As the clinical diagnosis, 14 patients (73.7%) had AN, 4 (21.1%) had BN and 1 (5.3%) had BED according to the diagnostic criteria of DSM-IV. Ten of the patients (52.6%) had also met the diagnostic criteria for another Axis I diagnosis. The most common comorbidity was Major Depressive Disorder (n= 6, 31.6%), followed by an Anxiety Disorder in 4 (21%) patients. Total of 5 (26.3%) patients had an additional Axis II diagnosis, including Mental Retardation in 2 (10.5%) patients and the symptoms of Personality Disorder in 3 (15.8%) patients. Furthermore, all of the participants had a parent-child relational problem as an Axis IV diagnosis at DSM-IV.

**Table 1.** CGAS and HONOSCA-TR Scores at Admission and Discharge

	N	Admission Mean (SD)	Discharge Mean (SD)	Wilcoxon Z	p*
CGAS	19	39.73 (7.54)	64.84 (10.65)	-3.82	<0.001
HONOSCA-TR_Total	11	22.72 (7.52)	11.27 (6.63)	-2.93	0.003
HONOSCA-TR_Behavioral	11	4.63 (3.80)	2.45 (2.46)	-2.55	0.011
HONOSCA-TR_Impairment	11	4.00 (1.61)	1.18 (1.07)	-2.95	0.003
HONOSCA-TR_Symptom	11	5.90 (1.75)	3.00 (1.73)	-2.49	0.013
HONOSCA-TR_Social	11	8.36 (3.00)	4.63 (2.80)	-2.81	0.005

CGAS = Childrens Global Assessment Scale; HONOSCA-TR = Health of the Nation Outcome Scales - Children and Adolescents; SD = standard deviation.

\*Wilcoxon signed-rank test

The mean individual risk scores of the patients were found to be 3.0 ( $\pm$ 2.30) over 12 points, and their mean familial risk scores were calculated as 2.31 ( $\pm$ 0.88) over 8 points.

The CGAS scores used in the evaluation of general functionality were obtained from the records for all patients. Accordingly, mean CGAS scores were 39.73 ( $\pm$ 7.54) and 64.84 ( $\pm$ 10.65) at the admission and discharge, respectively. There was a significant increase at CGAS scores at discharge compared to admission ( $p$ <0.001).

HONOSCA-TR has been used as a routine evaluation tool since 2010 in order to evaluate the level of improvement in children and adolescents treated in the inpatient unit. Since 8 of the patents had admitted prior to the availability of the instrument, the scores for HONOSCA-TR could be obtained for the remaining 11 adolescents. The mean HONOSCA-TR total scores for admission and discharge were calculated as 22.72 ( $\pm$ 7.52) and 11.27 ( $\pm$ 6.63), respectively. The HONOSCA-TR scores of all patients showed a significant decrease at discharge indicating a significant level of improvement ( $p$ =0.003). These data are summarized in Table 1.

**Table 3.** Body Weight and Body Mass Index Change of Patients with Anorexia Nervosa at Admission and Discharge

	N	Admission Mean (SD)	Discharge Mean (SD)	Wilcoxon Z	p*
Body Weight (kg)	14	42.23 (12.73)	48.75 (12.55)	-3.29	0.001
Body Mass Index (kg/m <sup>2</sup> )	14	15.79 (2.28)	18.37 (2.80)	-3.29	0.001

\*Wilcoxon signed-rank test

Results of correlation analysis revealed that there is a significant and positive correlation between  $\Delta$ HONOSCA total scores and the duration of hospitalization ( $p$ =0.008,  $r$ =0.752). Furthermore, duration of hospitalization was also positively and significantly correlated with HONOSCA-TR social subscale scores ( $p$ <0.001,  $r$ =0.894). Another significant and positive correlation was observed between the individual risk score and  $\Delta$ HONOSCA behavioral sub-score, indicating that the inpatient treatment helps reducing behavioral problems besides improving the eating disorder ( $p$ =0.022,  $r$ =0.679). The results are summarized in Table 2.

Additionally, body weight and body mass index change between admission and discharge were analyzed for the patients with AN. Both of them showed a significant increase at discharge ( $p$ =0.001,  $p$ =0.001, respectively). The results are summarized in Table 3.

**DISCUSSION**

This study aimed to investigate the improvement of the adolescents with eating disorders who have been treated in a child and adolescent psychiatry inpatient unit, where young people with various psychiatric disorders receive inpatient treatment for the last 13 years. Effects of individual and family risk factors as well as duration of hospitalization, presence of co-morbidity, level of general function-

ality and the severity of the symptoms on the improvement were also assessed.

It is accepted that demonstrating the efficacy of inpatient care is

**Table 2.** Correlation Analysis of  $\Delta$ CGAS and  $\Delta$ HONOSCA-TR Scores

	Age		Duration of Hospitalization		Individual Risk Score		Familial Risk Score	
	r	*p	r	*p	r	*p	r	*p
$\Delta$ CGAS	-0.32	0.894	0.298	0.216	0.043	0.862	-0.082	0.738
$\Delta$ HONOSCA-TR_Total	0.151	0.658	<b>0.752</b>	<b>0.008</b>	0.291	0.385	0.488	0.128
$\Delta$ HONOSCA-TR_Behavioral	-0.047	0.891	0.245	0.467	<b>0.679</b>	<b>0.022</b>	0.122	0.721
$\Delta$ HONOSCA-TR_Symptom	0.238	0.481	0.382	0.247	-0.193	0.570	0.497	0.120
$\Delta$ HONOSCA-TR_Impairment	0.540	0.087	0.042	0.902	-0.017	0.961	-0.069	0.840
$\Delta$ HONOSCA-TR_Social	0.041	0.904	<b>0.894</b>	<b>&lt;0.001</b>	0.348	0.294	0.361	0.276

$\Delta$ CGAS = The difference between admission and discharge CGAS scores;  $\Delta$ HONOSCA-TR = The difference between admission and discharge HONOSCA-TR scores.

\*Spearman correlation analysis

particularly difficult due to comparatively small number of patients, their clinical diversity, unique complexity and the severity of the clinical presentation, especially in general units where children and adolescents with a variety of psychiatric problems admit.<sup>20</sup> The CGAS and HONOSCA are both well validated routine outcome measures with acceptable reliability and applicability to be used for the evaluation of the effectiveness of the inpatient psychiatric treatment of children and adolescents.<sup>21</sup> In their study Garralda et al.,<sup>20</sup> examined the clinical outcomes of patients with different diagnosis in a child psychiatry inpatient unit by using HONOSCA with a number of 167 cases. They found significant improvement for almost all of the psychiatric diagnosis, but particularly for eating and mood disorders. Our study demonstrated that general functionality measured by the CGAS significantly

increased from admission to discharge following psychiatric inpatient treatment of adolescents with eating disorders. Moreover, there were significant improvements in the HONOSCA scales such as the psychiatric symptoms, level of impairment, social and behavioral domains. Our findings support the reports of, Garralda et al.,<sup>20</sup> indicating that inpatient psychiatric treatment of adolescents resulted in significant improvements in scores of HONOSCA scales for eating disorders. Another finding of our study displayed that improvement levels were associated with the duration of hospitalization indicating that long enough inpatient treatment necessitates for the treatment of eating disorders. Especially the recovery in the social area that we evaluated with HONOSCA was found to be closely related to the longer duration of stay in the unit. Search of relevant literature showed limited number of studies focusing on the effects of the duration of hospitalization on the improvement of eating disorders. In their study Gowers et al.,<sup>15</sup> reported that the mean duration of hospitalization is six weeks for four different inpatient units for adolescents with eating disorders. They have stated that this period could be extended by considering clinical requirements. In a randomized controlled multicenter trial of treatments for 167 adolescent with anorexia nervosa, the TouCan trial,<sup>14</sup> mean length of stay at the inpatient unit was reported as 15.2 weeks. The researchers have pointed out that length of stay varied markedly due to the lack of agreed on specific treatment goals as some units do not only focus on weight gain but also targeted behavioral and interpersonal issues.<sup>14</sup> In our study, the mean duration of hospitalization was found to be ten weeks. As stated in the TouCan study,<sup>14</sup> our inpatient unit focuses on both on weight gain and other psychosocial vulnerabilities as treatment goals leading to slightly longer duration of hospitalization of adolescents with eating disorders. Another factor related to extended stays in the unit might be associated with the presence of severe medical complications, high individual and familial risks as displayed in low general functionality of our patients.

Another finding from our study indicates that behavioral problems accompanying the symptoms of eating disorders have also benefited from inpatient treatment. Long enough inpatient milieu therapy applied with multidimensional perspectives, including social, educational, medical and psychological interventions can be effective in reducing behavioral problems along with the symptoms of eating disorders.

This study had some limitations. The most important limitation of the study is the low number of patients. Despite data on CGAS and other sociodemographic and clinical data is present for all of the cases, HONOSCA-TR scores lack for those who had admitted to the unit prior to the completion of validity and reliability studies of the instrument. An additional limitation is that CGAS has not been validated for Turkish population. But it is commonly used for evaluating general functionality of patients in Turkey. Another limitation of the study is the lack of a control group, as only hospitalized patients were included retrospectively. In spite of these limitations, this is the first study from our country that demonstrates the improvement of eating disorders of adolescents during inpatient treatment with HONOSCA-TR which is a new, valid and reliable clinical instrument. According to our results the application of milieu therapy in a general psychiatry inpatient service for adolescents, which is not specialized in the treatment of eating disorders, is effective in reducing the symptoms of eating disorders as well as problem behavior along with benefits for general functionality. Future research should focus on follow-up studies that will demonstrate the continuity of this improvement.

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