

## Original Research

# Patient Characteristics and Emergency Treatment Orders in Three Florida Inpatient Psychiatric Units

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## Abstract

### Background

Florida law defines emergency treatment orders (ETOs) as an immediate administration of psychotropic medications to a person to expeditiously treat symptoms that may present an immediate danger to the safety of the person or others.<sup>1</sup> There is currently little information on who receives ETOs. In this study, we aim to explore correlations between patients' demographics and administering ETOs in order to understand this cohort, which could allow for improved services and alternative interventions.

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### Methods

This retrospective study examined data from 1,460 adult patients who were admitted to an acute inpatient psychiatric unit from January 2015 to December 2017 and who received at least one ETO during their hospital admission.

### Results

Results revealed that younger patients (18–25 years) were at increased risk of receiving more than one ETO ( $p=0.039$ ) than patients who were 26 and older. Patients with an elevated body mass index (BMI) (25 kg/m<sup>2</sup> or more) also had a significantly increased likelihood of being administered more ETOs ( $\geq 4$  ETOs) than patients with a lower BMI (defined as less than 25 kg/m<sup>2</sup> [ $p=0.037$ ]). Moreover, patients with a length of stay (LOS) of more than 14 days were more likely to receive more ETOs compared to patients with LOS less than or equal to 14 days ( $p<0.001$ ). Lastly, patients with a neurocognitive disorder and/or within the schizophrenia spectrum or other psychotic disorders were more likely to receive ETOs ( $p<0.001$ ) than patients with other diagnoses.

### Conclusion

There are some correlations in administering ETOs in that younger patients with an elevated BMI, longer LOS and certain diagnoses receive more ETOs. The reason for these findings is not clear. Therefore, prospective studies should be conducted in order to analyze these correlations.

### Keywords

emergency treatment orders; ETO; emergency psychiatric services; demographic factors; agitation

## Introduction

Emergency treatment orders (ETOs) are commonly used in psychiatric hospitals as well as emergency rooms to calm patients who are endangering themselves or staff. Current literature has established the effectiveness of psychotropic drugs in treating agitation.<sup>2-5</sup> However, studies on the demographics of patients who receive ETOs are still scarce.<sup>6</sup> We

conducted a retrospective study to identify any correlations between patients' demographics and administering ETOs, which could improve patient care and reduce the need for ETOs.

## Methods

This retrospective study was approved by the University of Central Florida Institutional Review Board (IRB ID: SBE-18-13911). The data in

**Table 1.** Demographic and Clinical Characteristics by ETO Group for 1,460 Patients

Variable	ETO amount (1-3)		ETO amount (≥4)		p-value
	Total	n (%)	Total	n (%)	
<b>Gender</b>	1084		365		0.584
Female		487 (44.9%)		170 (46.6%)	
Male		597 (55.1%)		195 (53.4%)	
<b>Age</b>	1092		368		<b>0.002</b>
18-25		179 (16.4%)		75 (20.4%)	
26-40		438 (40.1%)		108 (29.3%)	
41-60		350 (32.1%)		128 (34.8%)	
≥61		125 (11.4%)		57 (15.5%)	
<b>Race</b>	1092		368		0.161
White		790 (72.3%)		247 (67.1%)	
Black		158 (14.5%)		63 (17.1%)	
Other/Unknown		144 (13.2%)		58 (15.8%)	
<b>BMI</b>	524		162		0.022
<18.5		31 (5.9%)		8 (4.9%)	
18.5≤BMI<25		219 (41.8%)		48 (29.6%)	
25≤BMI<30		151 (28.8%)		53 (32.7%)	
BMI≥30		123 (23.5%)		53 (32.7%)	
<b>LOS</b>	1092		368		<b>&lt;0.001</b>
≤14 days		921 (84.3%)		188 (51.1%)	
>14 days		171 (15.7%)		180 (48.9%)	
<b>Diagnosis</b>	1092		368		
Schizophrenia Spectrum & other Psychotic Disorders		444 (40.7%)		213 (57.9%)	<b>&lt;0.001</b>
Bipolar & Related Disorders		364 (33.3%)		122 (33.2%)	0.949
Depressive, Anxiety or Adjustment Disorders		492 (45.1%)		119 (32.3%)	<b>&lt;0.001</b>
Substance-Related and Addictive Disorders		230 (21.1%)		48 (13.0%)	<b>0.001</b>
Disruptive, Impulse-Control and Conduct Disorders		24 (2.2%)		13 (3.5%)	0.159
Personality Disorders		84 (7.7%)		26 (7.1%)	0.693
Neurocognitive Disorders		53 (4.9%)		33 (9.0%)	<b>0.004</b>

this study is from an electronic data warehouse and was pulled from a cohort of adult patients who were admitted to one of three psychiatric units in Florida (North Florida Regional Medical Center, Osceola Regional Medical Center and Fort Walton Beach Medical Center Twin Cities Hospital) over a period of three years. Patients who had received at least one ETO during their inpatient psychiatric hospitalization(s) were

selected for analysis. These orders were defined as intramuscular injections of haloperidol, chlorpromazine, ziprasidone, olanzapine and lorazepam ordered to calm an agitated patient. These medications were chosen due to being the most prevalent psychotropic drugs used as ETOs in these three psychiatric hospitals. Patients were classified into two groups based on the number of ETOs. A low ETO group

**Table 2.** Univariate Logistic Regression Analysis for High ETOs ( $\geq 4$ ) Based on BMI

BMI	Odds Ratio	95% CI	p-value
BMI <18.5	1.18	0.51–2.72	0.702
18.5 $\leq$ BMI <25 (Ref.)	1		
25 $\leq$ BMI <30	1.60	1.03–2.49	0.037
BMI $\geq 30$	1.97	1.26–3.08	<b>0.003</b>

was defined as one to three ETOs, and a high ETO group was defined as four or more ETOs. Patients' final diagnoses at discharge, their demographic factors (age, race, gender and body mass index [BMI]) and lengths of stay (LOS) were then compared within the total group and between the low and high ETO groups.

### Statistical Analysis

Univariate analysis was performed to evaluate potential risk factors of being in the high ETO group ( $\geq 4$  ETOs). A multivariate logistic regression model was conducted to determine the most critical risk factors of a high amount of ETOs where the model included only the significant factors with a missing value rate of less than 20% in the univariate analysis. A p-value of less than 0.05 was considered statistically significant. All data analyses were conducted using IBM SPSS Statistics 24.

### Results

The study's final analytic file included data for 1,460 patients who received at least one ETO. For the total cohort, the mean age was 41.2 years (SD 15.5) with 657 females (45.3%) and 792 males (54.7%). 71% of patients identified themselves as white while 15.1% identified themselves as black. Other patients' races (13.83%) were entered in the electronic medical records as "other" or "unknown". The prevalence of receiving at least one ETO for the three hospitals from January 1, 2015 to December 31, 2017 was 10.07% (1,460/14,493) with a 95% CI range from 9.59% to 10.58%. The low ETO group (one to three ETOs) consisted of 1,092 patients (74.8%) while 368 (25.2%) patients were in the high ETO group ( $\geq 4$  ETOs). The most common diagnosis was schizophrenia spectrum or other psychotic disorder. Demographics, clinical characteristics, and univariate analyses by ETO group are presented in **Table 1**.

The univariate analyses reveals that age ( $p=0.002$ ), BMI ( $p=0.022$ ), LOS ( $p<0.001$ ) and a diagnosis of schizophrenia or another psy-

chotic disorder were significantly associated with a higher administration of ETOs. There were no significant differences by race. Looking at diagnoses, patients who received more ETOs ( $\geq 4$  ETOs) were those diagnosed on the schizophrenia spectrum, as well as those with psychotic ( $p<0.001$ ) or neurocognitive disorders ( $p=0.004$ ). Patients who received the least amount of ETOs (one to three ETOs) were those diagnosed with depression or anxiety ( $p<0.001$ ) as well as substance-related and addictive disorders ( $p=0.001$ ). There was no difference in the number of ETOs in patients with personality ( $p=0.693$ ), disruptive, impulse-control and conduct or bipolar disorders ( $p=0.949$ ). However, these categories of diagnoses were not entirely exclusive to one patient.

Data for BMI as a variable was more limited. There were a total of 524 of the 1,084 patients in the low ETO group who had recorded BMI values and 162 of 365 patients with a BMI recorded in the high ETO group. **Table 2** shows that compared to the patients with a healthy BMI (18.5 $\leq$  BMI <25), patients with a BMI less than 18.5 kg/m<sup>2</sup> did not have an increased risk of receiving more ETOs (OR=1.18,  $p=0.702$ ). Patients with an elevated BMI had an increased risk of receiving more ETOs (OR=1.60,  $p=0.037$  for patients in the 25 $\leq$  BMI <30 group, and OR=1.97,  $p=0.003$  for patients in the BMI  $\geq 30$  group).

The multivariate analysis (**Table 3**) shows that compared to patients in the aged 26–40 group, the younger patients within the 18–25 year group had an increased risk of receiving more ETOs (OR=1.47,  $p=0.039$ ). However, the older patient groups did not have a significantly increased risk of receiving more ETOs (OR=1.20,  $p=0.225$  for patients within age 40–60 and OR=1.19,  $p=0.419$  for patients aged  $\geq 61$ ). Finally, compared to patients with LOS $\leq 14$  days, patients with LOS >14 days had a significantly increased risk of receiving more ETOs (OR=4.68,  $p<0.001$ ).

**Table 3.** Multivariate Logistic Regression Analysis for High ETO Group ( $\geq 4$ )

Effect	Odds Ratio	95% CI	p-value
<b>Age</b>			
18-25	1.47	1.02–2.11	0.039
26-40	1		
41-60	1.20	0.88–1.64	0.248
$\geq 61$	1.19	0.78–1.80	0.419
<b>LOS</b>			
$\leq 14$ days (Ref.)	1		
$> 14$ days	4.69	3.57–6.16	<b>&lt;0.001</b>
<b>Schizophrenia Spectrum &amp; other Psychotic Disorders</b>			
Yes	1.67	1.29–2.16	<b>&lt;0.001</b>
No (Ref.)	1		
<b>Neurocognitive Disorder</b>			
Yes	1.93	1.23–3.03	<b>0.0043</b>
No (Ref.)	1		

### Limitations

This study was limited to Florida. Subsequent studies should look at the differences in ETO administration in different states and regions, as there may be practice and management differences as well as regulatory differences by state. Another limitation of the study was missing data. There were undocumented patient weights, which resulted in limited BMI data. This missing data may be explained by the level of acuity in inpatient psychiatric units as patients may not be stable enough to be weighed during their admission process. Additionally, we were not able to differentiate between other races such as Asian or Hispanic due to the lack of documented races other than white and black.

Due to the retrospective aspect of the study, some other data points were not able to be studied. For instance, the behaviors that were exhibited when these patients were receiving ETOs were not documented. We therefore, do not know the severity of the behaviors or if any measures were taken to avoid the use of psychotropic drugs.

### Discussion

This study suggests that younger patients on the schizophrenia spectrum or those who have other psychotic or neurocognitive disor-

ders with elevated BMI values were more likely to receive a greater number of ETOs during their psychiatric admission. The increase in ETOs may be explained as due to this cohort of patients being perceived as more threatening than other patients. For example, an older patient with low BMI may be less threatening than a younger patient with an elevated BMI. Furthermore, this study demonstrated that the administration of ETOs was an indicator of instability for discharge, which explains the increase in LOS. These results might be explained as more acute patients have a longer hospital stay and are less cooperative, thereby resulting in more ETOs. Future work should be done prospectively to include reasons for ETOs and other management alternatives as well as to obtain more complete BMI, race and ethnicity data. Lastly, it would be important to know the type of ETOs in order to compare their side effects and perceived effectiveness.

### Conflicts of Interest

The authors declare they have no conflicts of interest.

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