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After studying this article, you should be able to:

- Identify clinical features of LGBTQ people who have a severe or treatment-resistant mood disorder, including risk factors, treatment needs, and predictors of treatment response to make appropriate treatment decisions for these patients.

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# Treatment-Resistant Mood Disorders in LGBTQ People: A Retrospective Study of Clinical Features and Response to Electroconvulsive Therapy

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**ABSTRACT**

**Objective:** Individuals who identify as lesbian, gay, bisexual, transgender, or queer (LGBTQ) experience greater social exclusion and discrimination and higher rates of depression. Little is known about the clinical characteristics or treatment outcomes of LGBTQ people with severe mood disorders. We hypothesized that LGBTQ patients would present with distinct clinical features and that they might respond less favorably to electroconvulsive therapy (ECT).

**Methods:** We performed a retrospective chart review (2018–2020) of 59 LGBTQ patients and 441 non-LGBTQ patients who received an acute ECT series for treatment-resistant illness (in 95%, a depressive episode by *DSM-5* criteria). Clinical response was evaluated with the Clinical Global Impression Improvement (CGI-I) scale, self-rated Quick Inventory of Depressive Symptomatology (QIDS-SR), and QIDS-SR suicide item. Inverse probability of treatment weights were applied to regression models to balance baseline confounders.

**Results:** LGBTQ status was associated with younger age, current suicide ideation, past suicide attempt, self-injurious behavior, posttraumatic stress disorder, personality disorder, tobacco smoking, past substance use disorder, and history of sexual abuse (all  $P < .05$ ). LGBTQ and non-LGBTQ groups showed no significant differences in CGI-I score (odds ratio = 0.82, 95% CI = 0.48–1.40,  $P = .47$ ), change in QIDS-SR total score (least-squares mean =  $-9.2$  vs  $-8.1$ ;  $F_{1,408} = 1.42$ ;  $P = .24$ ), or change in QIDS-SR suicide item (odds ratio = 1.83, 95% CI = 0.91–3.68,  $P = .09$ ).

**Conclusions:** LGBTQ people with treatment-resistant mood disorders presented with distinct clinical features, some of which have been previously linked with less favorable treatment outcomes. Nonetheless, LGBTQ and non-LGBTQ patients experienced similar clinically significant improvement with an acute ECT series. ECT should be considered for treatment-resistant depression regardless of an individual's sexual orientation or gender identity.

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### Clinical Points

- Little is known about the clinical characteristics of LGBTQ people with severe mood disorders.
- LGBTQ patients in this study were more likely to have a history of trauma, self-harm behaviors, and substance abuse relative to non-LGBTQ patients.
- Despite these differences, clinical response to electroconvulsive therapy was equally effective for LGBTQ people with treatment-resistant mood disorders.

According to the 2020 US census, individuals who identify as lesbian, gay, bisexual, transgender, or queer (LGBTQ) represent 5.6% of adults, and the number of LGBTQ people has increased in recent years.<sup>1</sup> For transgender people more specifically, a recent analysis of US population-based surveys estimated a prevalence of 0.39% of adults in 2016 and found that the prevalence is increasing.<sup>2</sup> Mental disorders appear to be more common among LGBTQ individuals than non-LGBTQ individuals. For example, King et al<sup>3</sup> reported that suicide attempt is twice as common and depression, anxiety, and substance abuse are at least 1.5 times more common among lesbian, gay, or bisexual (LGB) people. They also reported that lesbian and bisexual women are at greater risk of substance dependence, and gay and bisexual men are at higher risk of suicide attempt.<sup>3</sup> In transgender and gender nonconforming people, depressive symptoms, suicidality, interpersonal trauma, substance use disorders, anxiety, and general distress are consistently elevated.<sup>4</sup> LGBTQ people are also known to have higher tobacco smoking rates than non-LGBTQ people.<sup>5-7</sup>

The higher rates of mental illness among LGBTQ people may be linked to greater exposure to discrimination, social exclusion, and abuse. For example, compared to heterosexual people, LGB people are more likely to report sexual abuse, parental physical abuse, assault at school, and fear-related school avoidance.<sup>8</sup> The higher rate of abuse experienced by LGB youth may be one of the mechanisms driving higher rates of mental problems, substance use, and risky sexual behavior reported by sexual minority adults.<sup>8</sup> LGB people more frequently report both lifetime and day-to-day experiences with discrimination, which they at least partly attribute to their sexual orientation.<sup>9</sup> More than two-thirds of LGB adults have reported at least 1 type of discrimination, based on sexual orientation, race, or gender in their lifetime, and among those who experienced discrimination, the odds of past-year substance use disorder were elevated nearly 4 times.<sup>10</sup> Meyer<sup>11</sup> explained the excess prevalence of mental disorders among LGB people using a variant of minority stress theory, which posits that internal and external manifestation of prejudice, victimization, and social stigma underlie these disparate health outcomes.

Unipolar and bipolar disorders that have not responded to multiple evidence-based treatments of adequate intensity and duration are commonly referred to as treatment-resistant mood disorders.<sup>12</sup> Electroconvulsive therapy (ECT)

is often considered for individuals with treatment-resistant depressive, mixed, or manic episodes—especially for patients with extreme symptom severity, functional impairment, or suicide risk—because ECT produces high response rates, rapid improvement, and resolution of suicidal ideation.<sup>13</sup> Better acute response to ECT is associated with certain clinical features such as shorter episode duration, fewer medication failures, greater age, and psychotic features.<sup>14-16</sup> Other clinical features are thought to predict less favorable ECT outcomes, including comorbid alcohol or drug abuse, personality disorder, or posttraumatic stress disorder (PTSD).<sup>17-20</sup>

Little is known about LGBTQ people who have severe or treatment-resistant mood disorders. Two case reports including a total of 8 transgender patients have suggested that depression responds well to ECT in many patients, despite multiple psychiatric comorbidities.<sup>21-24</sup> In the current study, we examined a relatively large cohort of patients through a retrospective chart review. This study allowed us to estimate the prevalence of LGBTQ status among a cohort of pharmacotherapy-resistant patients, to determine whether the clinical profile of LGBTQ patients differed from that of non-LGBTQ patients, and to evaluate whether ECT outcomes differed by LGBTQ status. We hypothesized that LGBTQ patients would present with distinct clinical features including PTSD, substance use disorders, personality disorders, and self-injurious behaviors and that they might not respond as well to ECT.

## METHODS

### Subjects and Data Sources

Data were extracted from electronic medical records of all patients who received an acute ECT series between October 2018 and April 2020 at the University of Utah. This time frame was chosen because our institution began routinely collecting information on sexual orientation and gender identity in late 2018. Five hundred forty-two patients who received ECT for a mood or psychotic episode were included; 8 patients treated for catatonia were excluded because they did not also carry a diagnosis of a major mood or psychotic disorder. Diagnosis was based on the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5). LGBTQ status was determined from a consultation report from a psychiatrist with specialized training in ECT that was completed at baseline (before the initiation of ECT) and from patient responses to a Sexual Orientation Gender Identity smartform questionnaire (Figure 1). The LGBTQ group was defined by people who identified as neither “male” nor “female,” or identified their sexual orientation as something other than “straight,” or both. A clinical psychiatrist investigator (F.O.) extracted baseline sociodemographic and clinical information, as well as data on ECT response. When unclear or ambiguous information was encountered, a second clinical psychiatrist investigator (K.W.) independently evaluated the medical record in order to reach a consensus. When a patient had received

## Figure 1. Sexual Orientation and Gender Identity Smartform

What is your sexual orientation?

Sexual orientation is how a person characterizes their emotional and sexual attraction to others.  
Select all that apply.

Straight (not lesbian or gay)    Bisexual    Something else    Don't know    Choose not to disclose    Gay    Lesbian

What is your gender identity?

Gender identity is a personal reflection of cultural representation of sex categories, ie how one wishes to be perceived in society.

Female    Male    Transgender Female/Male-to-Female    Transgender Male/Female-to-Male    Other    Choose not to disclose    Non-Binary

**Table 1. Gender Identity and Sexual Orientation for the Lesbian, Gay, Bisexual, Transgender, or Queer (LGBTQ) Group**

Gender identity	Sexual orientation						Gay	Lesbian	Total
	Straight (not lesbian or gay)	Bisexual	Something else	Don't know	Choose not to disclose				
Female	0	17	1	0	3	0	6	27	
Male	0	2	0	0	1	13	0	16	
Transgender female	0	2	0	1	0	0	2	5	
Transgender male	0	1	1	0	1	0	0	3	
Other	0	1	4	0	0	0	0	5	
Choose not to disclose	0	1	0	0	1	1	0	3	
Nonbinary	0	0	0	0	0	0	0	0	
Total	0	24	6	1	6	14	8	59	

multiple ECT courses, we only analyzed the first acute ECT series available in the medical record. Patients who received fewer than 6 treatments and had not responded clinically were considered to have dropped out of treatment but were included in the analysis. This research was approved by the University of Utah Institutional Review Board.

### ECT Procedure

Treatments were administered under general anesthesia (intravenous methohexital or etomidate) with muscle relaxation (succinylcholine). Propofol or midazolam were often used immediately postictally to help prevent post-ECT agitation. Patients were monitored in accordance with American Society of Anesthesiology guidelines. Stimulation was delivered using a MECTA Spectrum ECT device (Tualatin, Oregon). Based on prior clinical experience, bifrontal electrode placement was adopted as the first-line approach at our center in 2001; evidence from randomized trials has supported the favorable profile of therapeutic versus adverse effects of this configuration.<sup>25-32</sup> For 486 of 500 patients (97%), the electrode configuration remained the same throughout the acute series (485 bifrontal, 1 right unilateral); 13 were switched from bifrontal to bitemporal; 1 was switched from bitemporal to bifrontal. The typical bifrontal dosing approach was to start with a charge of 189 mC (pulse-train duration 4 s, frequency 80 Hz, pulse width 0.37 ms, amplitude 800 mA). The electrical dose was adjusted as needed to maintain peripheral seizure duration > 30 seconds (assessed using a cuff on the wrist). Central seizure activity was confirmed by electroencephalography. During the index series, the charge delivered was typically stepped incrementally by 25%–40% by increasing the duration and frequency; pulse width and amplitude were kept constant.

The maximum charge deliverable by the machine was 568 mC. The mean charge delivered at the initial and final treatment session was 257 mC (SD = 104, median = 266) and 475 mC (SD = 126, median = 568), respectively. The acute series of ECT was typically scheduled 3 times per week and was discontinued when the patient's condition was judged to be maximally improved or when ECT was deemed ineffective.

### Outcome Measures

As part of routine clinical care, a psychiatrist assessed each patient before each ECT treatment and rated clinical progress using the Clinical Global Impression-Improvement (CGI-I) scale, which reflects the overall clinical change observed during treatment.<sup>33,34</sup> CGI-I scores range from 1 (very much improved) to 7 (very much worsened). Patients also completed the 16-item self-rated Quick Inventory of Depressive Symptomatology (QIDS-SR) before each treatment. The QIDS-SR measures depressive symptom severity over the past 7 days. It consists of 16 items, across 9 domains, and the total score ranges 0 to 27, with higher scores indicating more severe depressive symptoms. It is psychometrically sound and sensitive to symptom change, and thus useful in both clinical and research settings.<sup>35</sup> It is a suitable measure of depressive symptoms in patients with bipolar disorder<sup>24,36</sup> and those with psychotic features.<sup>37</sup> We evaluated 3 main outcome measures for each patient: CGI-I at the final ECT treatment in the acute series, change in QIDS-SR total score (from initial to final treatment), and change in the suicide item (question 12) of the QIDS-SR (from initial to final treatment).

Adverse effects were evaluated in exploratory analyses. Subjective adverse effects were recorded by clinicians in 6

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**Table 2. Baseline Characteristics, Treatment Characteristics, and Outcomes of Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ) Patients Versus Non-LGBTQ Patients<sup>a</sup>**

	LGBTQ (n=59)	Non-LGBTQ (n=441)	<i>p</i> <sup>b</sup>
<b>Baseline characteristics</b>			
Age, mean [SD], y	31.5 [13.7]	47.2 [17.3]	<.001
Female sex at birth	35 (59)	284 (64)	.45
Main diagnosis			.77
Major depressive disorder	41 (69)	326 (74)	
Bipolar disorder	15 (25)	95 (22)	
Schizophrenia or schizoaffective disorder	3 (5)	20 (5)	
Psychotic features	9 (15)	75 (17)	.74
Mood episode			.39
Depressed	56 (95)	418 (95)	
Manic	3 (5)	14 (3)	
Mixed	0 (0)	10 (2)	
Anxiety disorder	19 (32)	99 (22)	.10
Posttraumatic stress disorder	9 (15)	33 (7)	.04
Personality disorder <sup>c</sup>	8 (14)	27 (6)	.04
Past suicide attempt	40 (69) <sup>d</sup>	202 (50) <sup>e</sup>	.006
Self-harm behavior	37 (66) <sup>d</sup>	127 (36) <sup>e</sup>	<.001
Sexual abuse	27 (50) <sup>d</sup>	103 (31) <sup>e</sup>	.007
Physical abuse	14 (26) <sup>d</sup>	90 (29) <sup>e</sup>	.75
Emotional abuse	26 (48) <sup>d</sup>	144 (48) <sup>e</sup>	.93
Current substance use disorder	5 (8)	25 (6) <sup>d</sup>	.41
Past substance use disorder	13 (22)	55 (14) <sup>d</sup>	.05
Current tobacco smoking	16 (27)	45 (10)	<.001
Baseline QIDS-SR total, mean [SD]	18.9 [4.2] <sup>d</sup>	18.1 [5.0] <sup>e</sup>	.26
Baseline QIDS-SR suicide item, mean [SD]	2.0 [1.0] <sup>d</sup>	1.6 [1.1] <sup>e</sup>	.02
Inpatient at first ECT treatment	30 (51)	244 (55)	.52
Previous ECT treatment	12 (20)	122 (28)	.23
<b>Treatment characteristics</b>			
Dropout during ECT index series	2 (3)	24 (5)	.50
ECT treatments in index series, mean [SD]	10.7 [2.8]	10.0 [3.0]	.13
Adequate seizures during index series, mean [SD]	10.5 [4.2]	9.7 [4.2]	.17
Initial electrode configuration, bifrontal	59 (100)	439 (99.5)	1.0 <sup>f</sup>
Final electrode configuration, bifrontal	58 (98)	428 (97)	1.0 <sup>f</sup>
Initial charge delivered, mean [SD]	254 [99]	257 [105]	.25 <sup>g</sup>
Final charge delivered, mean [SD]	442 [138]	479 [124]	.85 <sup>g</sup>
<b>Therapeutic outcomes</b>			
Clinical Global Impression-Improvement			.17 <sup>f</sup>
(1) Very much improved	33 (56)	189 (43)	
(2) Much improved	17 (29)	177 (40)	
(3) Minimally improved	6 (10)	46 (10)	
(4) No change	3 (5.1)	12 (2.7)	
Missing	0 (0)	17 (3.9)	
Final QIDS-SR total, mean [SD]	10.1 [5.8] <sup>c</sup>	10.1 [5.7] <sup>d</sup>	.99
Final QIDS-SR suicide item, mean [SD]	0.68 [0.93] <sup>c</sup>	0.55 [0.83] <sup>d</sup>	.28
<b>Adverse effects</b>			
Headache	27 (46)	155 (35) <sup>c</sup>	.15 <sup>f</sup>
Nausea	9 (15)	81 (18) <sup>c</sup>	.72 <sup>f</sup>
Vomiting	0 (0)	8 (1.8) <sup>c</sup>	.60 <sup>f</sup>
Memory problems	32 (54)	219 (50) <sup>c</sup>	.58 <sup>f</sup>
Confusion	3 (5.1)	44 (10) <sup>c</sup>	.34 <sup>f</sup>
Muscle pain	1 (1.7)	17 (3.9) <sup>c</sup>	.71 <sup>f</sup>

<sup>a</sup>Values represent number (%) of patients except as indicated.

<sup>b</sup> $\chi^2$  goodness-of-fit test was used for categorical variables and *t* test assuming unequal variances was used for continuous variables, except where indicated.

<sup>c</sup>Personality disorders were borderline (*n* = 32), schizoid (*n* = 1), and other or unspecified (*n* = 2).

<sup>d</sup>Missing 1–6 values.

<sup>e</sup>Missing 18–138 values.

<sup>f</sup>Fisher exact test.

<sup>g</sup>General linear model, controlling for age.

Abbreviations: ECT = electroconvulsive therapy, QIDS-SR = self-rated Quick Inventory of Depressive Symptomatology.

standard categories: headache, nausea, vomiting, memory problems, confusion, and muscle pain. For the purpose of analysis, these side effects were coded as present whenever they were recorded as mild or worse at the final treatment.

### Statistical Analysis

Chi-square tests and *t* tests assuming unequal variances were used to evaluate differences in demographic and clinical characteristics between LGBTQ and non-LGBTQ groups. Linear regression and ordinal logistic regression models were formulated to examine the relationship between LGBTQ status and measures of response to ECT: CGI-I, change in QIDS-SR total score, and change in QIDS-SR suicide item. CGI-I scores were treated as an ordinal variable with 4 levels (only 4 out of 7 possible responses on the CGI-I were encountered in the sample), change in QIDS-SR suicide item was treated as an ordinal variable with 6 levels, and change in QIDS-SR total score was modeled as a continuously distributed variable as it met assumptions of normality. First, unadjusted models were formulated. Next, inverse probability of treatment weights (IPTWs) were applied to the linear regression and ordinal regression models to balance baseline confounders between LGBTQ and non-LGBTQ subjects. The IPTWs were created based on a propensity score that included age, primary diagnosis, presence of psychosis, previous ECT exposure, history of sexual abuse, and history of suicide attempt. The distribution of the weights were stabilized and truncated prior to their use to improve precision.<sup>38</sup> To further investigate the specific role of gender identity on ECT outcomes, we conducted an exploratory analysis in which the unadjusted analysis was repeated considering gender identity subgroups (cisgender vs non-cisgender) within the LGBTQ group.

## RESULTS

### Baseline Characteristics

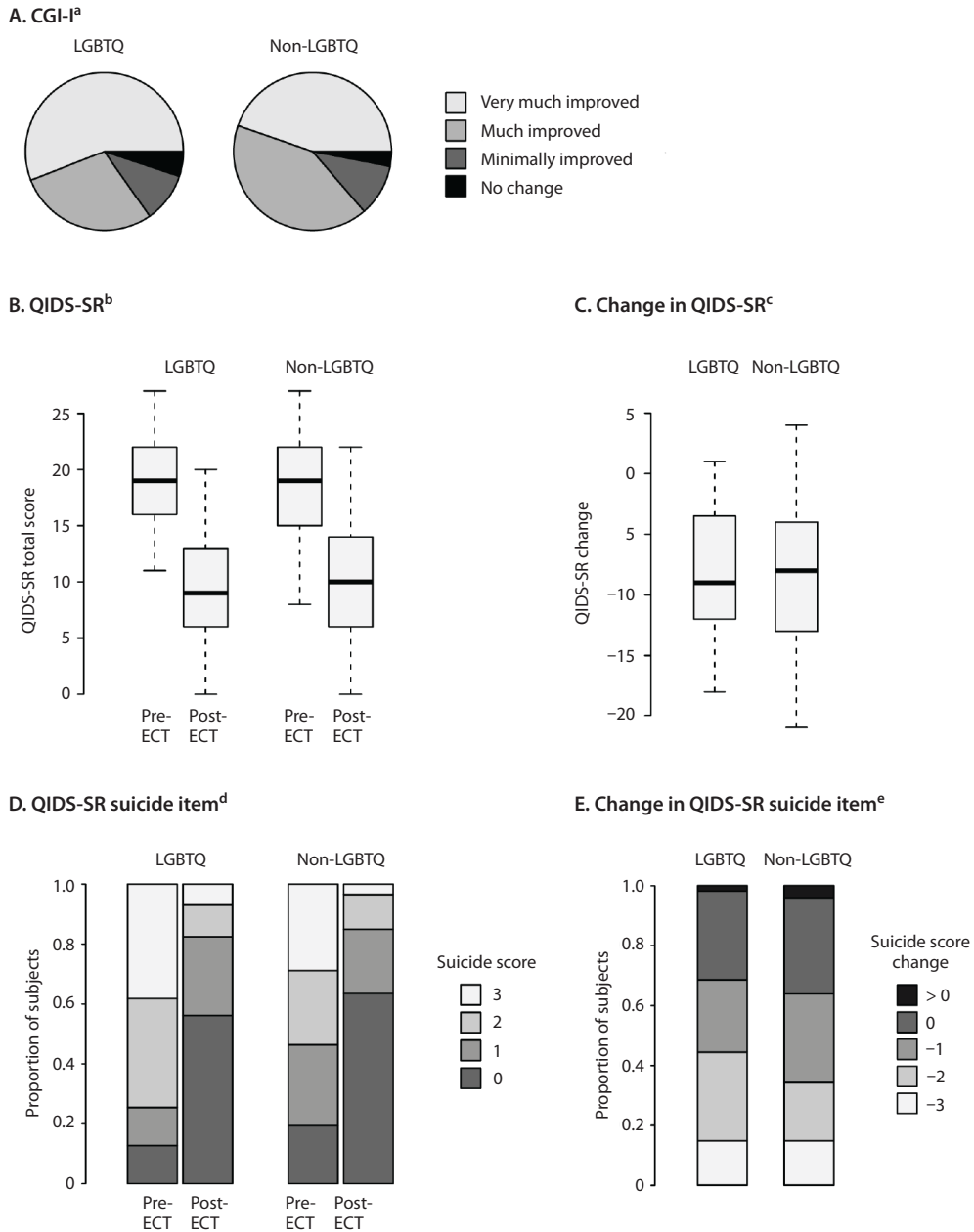
Among 534 patients included in the analysis, 441 (82.6%) were non-LGBTQ (284 female, 157 male). Fifty-nine (11.0%) identified as LGBTQ, and 34 (6.4%) were of unknown status. Table 1 shows gender identity and sexual orientation for the LGBTQ group.

The LGBTQ group resembled the non-LGBTQ group with respect to most demographic and clinical variables, but the groups differed on some key features (Table 2). LGBTQ patients were younger and were more likely to have documented PTSD, personality disorder, current tobacco smoking, past substance use disorder, suicide attempt, self-harm behavior, and history of sexual

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**Figure 2. Electroconvulsive Therapy (ECT) Treatment Outcomes for Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ) Patients vs non-LGBTQ Patients**



<sup>a</sup>Posttreatment CGI-I rating for LGBTQ vs non-LGBTQ patients (n = 59 vs n = 432). For Figure 2A–2E, subject numbers vary among outcomes because some data were missing from the medical record.

<sup>b</sup>QIDS-SR total score for LGBTQ patients before and after ECT (n = 56 and n = 57) vs non-LGBTQ patients before and after ECT (n = 390 and n = 394). Boxplots indicate first quartile, median, and third quartile; whisker length represents interquartile range.

<sup>c</sup>Change in QIDS-SR total score for LGBTQ vs non-LGBTQ patients (n = 55 vs n = 389). Boxplots indicate first quartile, median, and third quartile; whisker length represents interquartile range.

<sup>d</sup>QIDS-SR suicide item score for LGBTQ patients before and after ECT (n = 55 and n = 57) vs non-LGBTQ patients before and after ECT (n = 377 and n = 378).

<sup>e</sup>Change in QIDS-SR suicide item for LGBTQ vs non-LGBTQ patients (n = 54 vs n = 365).

Abbreviations: CGI-I = Clinical Global Impression-Improvement, QIDS-SR = self-rated Quick Inventory of Depressive Symptomatology.

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**Table 3. Balancing of Potential Baseline Confounders Using Inverse Probability of Treatment Weights (IPTW)**

Characteristic	Overall cohort by LGBTQ status			IPTW analysis by LGBTQ status		
	LGBTQ (N=59)	Non-LGBTQ (N=441)	Standardized difference	LGBTQ (N=55)	Non-LGBTQ (N=406)	Standardized difference
Primary diagnosis, n (%)			0.1			0.08
Unipolar	41 (70)	326 (74)		43 (78)	300 (74)	
Bipolar	15 (25)	95 (21.5)		10 (19)	90 (22)	
Schizoaffective/schizophrenia	3 (5)	20 (4.5)		2 (4)	17 (4)	
Psychosis, n (%)			0.05			0.07
Yes	9 (15)	75 (17)		7 (13)	63 (16)	
No	50 (85)	366 (83)		48 (87)	343 (84)	
Previous ECT, n (%)			0.17			0.28
Yes	12 (20)	122 (28)		8 (15)	104 (26)	
No	47 (80)	319 (72)		47 (85)	302 (74)	
History of sexual abuse, n (%)			0.39			0.16
Yes	27 (50)	103 (31)		18 (39)	101 (31)	
No	27 (50)	227 (69)		29 (61)	225 (69)	
History of suicide attempt, n (%)			0.4			0.07
Yes	40 (69)	202 (50)		30 (55)	210 (52)	
No	18 (31)	205 (50)		25 (45)	196 (48)	
Age, mean (SD), y	31.5 (13.7)	47.2 (17.3)	1.0	44.5 (16.5)	44.4 (17.3)	0.004

Abbreviations: ECT = electroconvulsive therapy, LGBTQ = lesbian, gay, bisexual, transgender, or queer.

abuse (all  $P < .05$ , unadjusted, Table 2). At baseline (before ECT), the mean QIDS-SR total score was similar for LGBTQ and non-LGBTQ groups. The mean score on the QIDS-SR suicide item was higher for LGBTQ compared to non-LGBTQ patients (2.0 vs 1.6,  $P = .02$ ,  $t$  test).

### Clinical Outcomes

LGBTQ and non-LGBTQ patients did not differ by number of ECT treatments, number of adequate seizures, electrode configuration, or rate of dropout during the index series ( $P > .05$ , Table 2). After accounting for age, charge delivered did not differ by LGBTQ status at the initial or final treatment sessions ( $P > .05$ , Table 2).

Unadjusted analyses of the clinician-rated CGI-I showed no significant differences between LGBTQ and non-LGBTQ groups at the end of the ECT series (odds ratio = 0.70, 95% CI = 0.42–1.18,  $P = .18$ ) (Figure 2). The change in QIDS-SR total score from pre- to post-treatment did not differ between groups (−9.6 vs −8.1;  $P = .17$ ), and, similarly, the mean QIDS-SR total score at the end of the acute ECT series did not differ between the two groups (10.1 vs 10.1,  $P = .99$ ) (Figure 2). On the QIDS-SR suicide item, the pre- to posttreatment change was similar for the LGBTQ group and the non-LGBTQ group (odds ratio = 1.25, 95% CI = 0.68–2.30;  $P = .48$ ), as was the mean posttreatment score (0.7 vs 0.6,  $P = .28$ ) (Figure 2).

Because the two groups differed on a number of baseline variables, we addressed potential confounding by balancing the two groups using IPTWs. Table 3 shows that, upon application of IPTWs, balance in baseline covariates was improved overall (decrease in standardized difference), especially age. After inverse probability of treatment weighting, CGI-I score remained similar between the two groups (odds ratio = 0.82, 95% CI = 0.48–1.40,  $P = .47$ ). In the IPTW model, change in QIDS-SR total score was similar in LGBTQ and non-LGBTQ groups ( $F_{1,408} = 1.42$ , least-squares mean = −9.2 vs −8.1;  $P = .24$ ). Change in the QIDS-SR suicide

item showed a nonsignificant trend favoring the LGBTQ group (odds ratio = 1.83, 95% CI = 0.91–3.68,  $P = .09$ ).

In exploratory subgroup analyses, we compared cisgender LGBTQ patients ( $n = 43$ ) to non-cisgender LGBTQ patients ( $n = 16$ ). We found no significant difference in baseline characteristics ( $P > .05$ ). Based on unadjusted models, improvement in the QIDS-SR total score was significantly greater for the non-cisgender subgroup relative to the cisgender subgroup (−11.5 vs −7.5;  $P = .02$ ). The CGI-I score and the change in the QIDS-SR suicide item were similar in the two subgroups ( $P > .05$ ).

Finally, we performed exploratory analyses of subjectively reported adverse effects at the final treatment session. Patients reported memory side effects (51%), headache (37%), nausea (18%), confusion (9.5%), muscle pain (3.6%), and vomiting (1.6%). Nausea was more frequently recorded for bitemporal treatment than for bifrontal treatment (7 of 13 vs 83 of 483), which was statistically significant ( $P = .006$ , Fisher exact test); other side effects did not differ by electrode configuration (all  $P > .05$ ). The prevalence of adverse effects did not differ between LGBTQ and non-LGBTQ patients ( $P > .05$ ; Table 2).

### DISCUSSION

In this retrospective study, we found that 11% of patients who received an acute ECT series for treatment-resistant mental disorders at our center were LGBTQ. Approximately 3% of patients identified as something other than “female” or “male.” LGBTQ status was associated with younger age and higher prevalence of PTSD, personality disorder, suicide attempt, self-harm behavior, sexual abuse, past substance abuse, and current smoking. Although some of these clinical features are thought to predict less favorable ECT response, analyses of clinician- and patient-rated outcomes indicated that LGBTQ and non-LGBTQ patients experienced similar clinically significant improvement with an acute ECT series.

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To our knowledge, this study includes the largest sample of LGBTQ people with treatment-resistant mood disorders yet reported. The frequencies of both LGBTQ status and non-cisgender status in our sample were higher than expected based on national survey data. This suggests that LGBTQ people are at elevated risk of treatment-resistant depression. Future studies could address this question by including nondepressed and non-treatment-resistant depressed cohorts for comparison. Consistent with studies of other populations,<sup>3-7</sup> LGBTQ patients in our sample had higher rates of trauma and related conditions, personality disorder, self-injurious behaviors, and substance use disorders. We also found that the LGBTQ group had stronger suicidal ideation at baseline (before ECT) compared to the non-LGBTQ group.

One of our major findings was that LGBTQ patients responded as well to ECT as non-LGBTQ patients despite younger average age and higher rates of PTSD, personality disorder, and substance use disorder. Previous studies have suggested that these factors may be associated with inferior ECT outcomes.<sup>17-20,39</sup> Contrary to our hypothesis that these features might worsen ECT outcomes among the LGBTQ group, we found that clinical response to ECT was equivalent between the two groups on both the clinician-rated CGI-I scale and the patient-rated QIDS-SR scale. Suicide ideation improved in both groups, and this improvement was actually greater among the LGBTQ group at a trend level (odds ratio = 1.83, adjusted analysis). It is also notable that dropout rates during ECT were not different between groups, suggesting that tolerability and acceptability were similar for the two groups. Furthermore, exploratory analyses suggested a slightly greater benefit on the QIDS-SR for the non-cisgender subgroup relative to cisgender subgroup. These findings clearly refute our original hypothesis.

Curiously, among non-cisgender LGBTQ patients (those who selected a gender identity that was neither “female” nor “male”), half reported their sexual orientation as “bisexual,” “lesbian,” or “gay,” but no one described themselves as heterosexual. We speculate that this finding may be an artifact of the way the question was phrased. A heterosexual person who does not identify as cisgender may be unlikely to select “straight (not lesbian or gay)” to describe themselves and may instead select one of the other choices

(“something else,” “don’t know,” “choose not to disclose”). This finding could also be related to the observation that, while transitioning, some transgender people change sexual orientation or may be uncertain about their sexual orientation.<sup>40,41</sup> It is increasingly clear that lived experiences do not fit neatly into traditional categories, and work is still needed to find the most appropriate ways to characterize gender and sexual orientation.<sup>42</sup>

Several limitations of this study are notable. Because of the retrospective design, only clinical data documented in the medical record were available, so we were limited in the types of clinical features available, and some data were missing. Clinicians who documented clinical data were presumably aware of LGBTQ status, so it is possible that bias was introduced into assessments or documentation (eg, clinicians might be more likely to document history of abuse for an LGBTQ patient). This bias could be reduced in the future by performing prospective studies with standardized data collection. Another limitation is that this study focused on a single center in the US that used predominantly bifrontal electrode placement, so the degree to which these findings generalize to other centers, other electrode configurations, or other parts of the world remains unclear. For example, the lack of group differences may not hold for right unilateral ECT. The outcomes examined in this study were limited to short-term therapeutic response to ECT. Future studies should attempt to evaluate response to other treatment modalities as well as longer-term outcomes and adverse effects. Strengths of this study include the use of both clinician- and patient-rated outcome measures, the relatively large sample size, and the use of inverse probability of treatment weights to adjust for confounders.

LGBTQ patients are known to experience discrimination during health care encounters and greater barriers to health care access.<sup>43,44</sup> Whether such disparities exist specifically for ECT is unknown. We found that patients experienced clinically significant improvement with ECT regardless of sexual orientation or gender identity, suggesting that this vulnerable population should be offered timely access to ECT. In addition to pharmacotherapy, affirming psychotherapy, and cognitive behavioral therapy,<sup>45-47</sup> ECT should be considered for LGBTQ people suffering with treatment-resistant mood disorders.

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## POSTTEST

To obtain credit, go to [CMEInstitute.com](https://www.cmeinstitute.com) to take this Posttest and complete the Evaluation.

1. Compared to depressed non-LGBTQ patients, LGBTQ individuals with treatment-resistant depression:
  - a. Are more likely to report a history of physical abuse.
  - b. Tend to be older.
  - c. More often report self-harm behavior.
  - d. Are less likely to carry a diagnosis of posttraumatic stress disorder.
2. Your 35-year-old transgender male patient has well-diagnosed recurrent major depressive disorder that has not responded to weekly psychotherapy and 2 antidepressant medication trials. Over the past 3 months, depression and suicidal ideation have worsened, and he has missed weeks of work due to depression. This patient should:
  - a. Avoid ECT because LGBTQ individuals experience more cognitive adverse effects.
  - b. Be considered for ECT because acute response is similar to that in non-LGBTQ patients.
  - c. Not be considered for ECT unless he has a history of serious suicide attempt.
  - d. Be considered for ECT using a higher electrical dose in order to match non-LGBTQ response rates.
3. Which of the following was true with respect to suicidal ideation (QIDS-SR suicide item score) in this cohort?
  - a. There was no significant difference in pretreatment suicidal ideation between the LGBTQ group and non-LGBTQ group.
  - b. Suicidal ideation improved more with treatment for the LGBTQ group than for the non-LGBTQ group.
  - c. Most non-LGBTQ patients reported some suicidal ideation (score > 0) after treatment with ECT.
  - d. About two-thirds of LGBTQ patients reported a decrease in suicidal ideation following treatment with ECT.

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