Psychiatric Epidemiology of Transgender and Nonbinary Adult Patients at an Urban Health Center

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Abstract

Purpose: Transgender and nonbinary people have an increased burden of psychiatric problems compared with the general population. Data are needed to understand factors associated with psychiatric diagnoses, acuity in terms of suicide attempts and level-of-care escalation, and outpatient engagement among transgender and nonbinary adults.

Methods: We conducted a retrospective review of records from 201 transgender and nonbinary adults who presented for primary care at a health center. Regression models were fit to examine factors associated with psychiatric diagnoses, substance use disorders (SUDs), acuity, and outpatient behavioral health engagement.

Results: Male sex assignment at birth was associated with decreased odds of a psychiatric diagnosis (odds ratio [OR] 0.40, 95% confidence interval [CI]: 0.20–0.81). Increased odds of SUDs were associated with later hormone initiation (OR 1.04, 95% CI: 1.01–1.08) and suicide attempt (OR 5.79, 95% CI: 2.08–16.15). Increased odds of higher acuity were associated with alcohol use disorder (OR 31.54, 95% CI: 5.73–173.51), post-traumatic stress disorder (OR 18.14, 95% CI: 2.62–125.71), major depressive disorder (MDD) (OR 6.62, 95% CI: 1.72–25.44), and absence of psychiatrist integration into primary medical care (OR 4.52, 95% CI: 1.26–16.22). Increased odds of outpatient behavioral health engagement were associated with case management utilization (OR 10.73, 95% CI: 1.32–87.53), anxiety disorders (OR 15.84, 95% CI: 2.00–125.72), and MDD (OR 10.45, 95% CI: 2.28–47.98).

Conclusion: Psychiatric disorders were highly prevalent among transgender and nonbinary adult patients. Novel findings include associations of lack of psychiatrist integration into primary care with acuity and of case management utilization with outpatient behavioral health engagement.

Keywords: mental health, minority stress, nonbinary, substance use disorders, suicide, transgender

Introduction

A TRANSGENDER PERSON has a gender identity that differs from the gender traditionally associated with their sex assigned at birth; a cisgender person has a gender identity that does not differ from the gender typically associated with their sex assigned at birth.^{1,2} Approximately 1.4 million adults in the United States identify as transgender.³ Gender identity can be binary—that is, anchored to a conventional girl/woman-boy/man binary paradigm—or nonbinary—that

is, outside girl/woman or boy/man categorization. Nonbinary people identify as neither girl/woman nor boy/man.^{1,4} Among gender minority people, lived experiences and health needs differ substantially across the continuum of nonbinary and binary gender identities, as well as based on being assigned female sex at birth (AFAB) versus assigned male sex at birth (AMAB).^{5,6}

Although studies elucidating mental health outcomes among transgender and nonbinary people are beginning to emerge, further research is needed to characterize many

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aspects of psychiatric epidemiology among gender minority people.^{7–16} Prior findings suggest that transgender people have increased psychiatric problems compared with the general population.^{7,13–17} A 2013 analysis of cross-sectional data from both trans masculine and trans feminine people in a large, diverse online sample found that respondents had a high prevalence of clinical depression (44.1%) and anxiety (33.2%).¹³ Secondary data analysis of a 2013 community-based survey in Massachusetts exploring substance use disorders (SUDs) among transgender adults found that 10% reported lifetime SUD treatment,⁷ compared with 8.4% of the general population.¹⁸ A 2017 systematic review of studies investigating suicidality in transgender people found prevalences of suicidal ideation ranging from 37% to 83%.¹⁹ Moreover, the 2015 U.S. Transgender Survey documented a 40% lifetime prevalence of suicide attempts among transgender and nonbinary people compared with 4.6% in the general population.²⁰

One possible explanation for these disparities is the potential role of gender minority stress in precipitating psychopathology. Chronic stress associated with stigma regarding minority status can be internalized and embodied, potentially increasing the likelihood of psychiatric disorders.²¹ It is known that transgender and nonbinary people experience higher levels of stigmatization than cisgender people,⁶ and these experiences are believed to be associated with higher likelihood of onset of some psychiatric disorders in particular, such as major depressive disorder (MDD), anxiety disorders,⁵ post-traumatic stress disorder (PTSD),^{22,23} and SUDs. This is in contrast to diagnoses for which there is less evidence of onset secondary to chronic gender minority stress, such as bipolar affective disorder (BPAD) and personality disorders.^{24–27}

Studies of psychiatric treatment utilization among transgender people are sparse.^{28–32} In one San Francisco-based study, despite higher prevalence of physical and mental health problems and psychopharmacology use among transgender people compared with cisgender people, there was no difference between transgender and cisgender people in emergency room visits, outpatient emergency behavioral health care utilization, or psychiatric hospitalizations.²⁸ Although this finding could reflect more appropriate utilization of nonemergent care, a plausible and concerning alternate conclusion is that transgender patients are not accessing care when they need it, perhaps due to fears of misgendering and mistreatment. A consistent finding is that culturally affirming behavioral health services for transgender people are lacking.²⁹ Further study of psychiatric care utilization is critical to improve mental health outcomes among gender minority people.

The aims of this study were to assess psychiatric diagnoses (with SUDs examined separately), acuity in terms of suicide attempts and level-of-care escalation, and outpatient behavioral health engagement among transgender and nonbinary adults, and to investigate associations with demographics, gender identity-related characteristics, sexual history, and other mental health factors. We hypothesized that (1) factors specifically linked with minority stress would be associated with higher odds of psychiatric diagnoses and (2) these factors, as well as psychiatric diagnoses, which are more likely to develop from internalizing minority stress-related stigma, would be associated with higher odds of psychiatric acuity among transgender and nonbinary adults.^{7–16,33,34}

Methods

Study participants and procedures

We undertook a retrospective chart review of electronic health record (EHR) data from a random sample of 201 transgender and nonbinary patients 18–64 years of age, who sought at least one primary medical care visit between July 1, 2010, and June 30, 2015, at a U.S. federally qualified health center (FQHC) specializing in lesbian, gay, bisexual, transgender, and queer (LGBTQ) care.^{35,36} Patients were identified as transgender or nonbinary based on a standardized two-step EHR designation system, where sex assigned at birth (coded as binary) and current gender identity (“male,” “female,” “trans masculine,” “trans feminine,” or “neither exclusively male nor female”) are recorded sequentially. Based on this two-step system, a patient would be identified as transgender, for example, if they indicated they were AMAB and currently identified as female. The study sample ($N=201$) was selected using an automated simple random sampling algorithm from all transgender and nonbinary patients 18 years or older ($N=1683$).³⁷

Demographic variables, sex assigned at birth, gender identity, sexual history, and mental health factors were extracted from the EHR, using both automated query and manual chart audit, and included as statistical predictor variables. To minimize recall error, missing data, and other biases, variables were operationally defined by specific parameters and collected by prespecified systematic protocols.^{38,39} The study was approved by the Institutional Review Board at Fenway Health. All patients had been informed, in keeping with the FQHC’s privacy policy, that their EHR information may be used for research purposes.

Binary outcome variables

We constructed four outcome variables. We defined the first outcome variable based on the presence of ≥ 1 of the following: PTSD, any anxiety disorder, MDD, BPAD, and/or any personality disorder. These disorders were grouped to include a diversity of psychiatric diagnoses that are commonly seen and treated in outpatient community psychiatry settings, and because they can relatively consistently be extracted from the FQHC’s EHR data. To explore factors specifically associated with addictions, SUDs were separated out as a second outcome variable (any current or past alcohol, cannabis, cocaine, opioid, benzodiazepine, amphetamine, or intravenous drug use disorder). Diagnoses were initially obtained by automated query of EHR problem lists that feature the diagnoses entered by the patients’ psychiatrists, primary care physicians, or psychotherapists at the FQHC. Thereafter, one author who is a practicing psychiatrist at the FQHC conducted manual EHR audit of documentation from diagnostic clinical encounters to confirm the validity of these diagnoses using Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) diagnostic criteria.⁴⁰

The third outcome variable was psychiatric acuity, defined as a history of ≥ 1 of the following: any past suicide attempt, inpatient hospitalization, partial hospitalization program, or residential treatment program. We grouped these acuity-related outcomes in light of the clinical significance inherent in any escalation of care beyond the outpatient level. The fourth outcome variable was outpatient behavioral health

engagement, defined as engagement with ≥ 1 of the following: any psychopharmacology, psychotherapy, and/or SUD visits.

Statistical predictors

We assessed four categories of statistical predictors of each outcome variable. The statistical predictor variable categories included demographics (age, race/ethnicity, employment, and income), gender identity-related characteristics (nonbinary vs. binary identity [given known differences in minority stress and psychiatric epidemiology],⁶ gender-affirming hormone therapy, gender-affirming surgery, and age at hormone therapy initiation), sexual history [sexual orientation, presence vs. absence of casual sex partner(s), presence vs. absence of primary sex partner(s), and any past sexually transmitted infection(s)], and other mental health factors. This last category included psychiatric diagnoses, substance use and SUDs, indicators of higher psychiatric acuity, outpatient behavioral health engagement, and case management utilization. Many of these variables are included in outcome variables defined in the previous section; a variable was only included as a predictor if it was not part of the outcome for the particular analysis being conducted. We included these statistical predictor variables because we hypothesized, based on clinical experience and previous data, that they may be associated with psychiatric health outcomes.^{41–43} These characteristics were ascertained from the EHR as described in the previous section.

Statistical analysis

Univariate statistics were used to examine the variable distributions overall and stratified by assigned sex at birth. Bivariate analyses were conducted to compare AFAB and AMAB patients. Mann–Whitney *U* tests were used to assess median differences for non-normally distributed continuous variables (i.e., “current age” and “age at hormone therapy initiation”). Pearson’s chi-square tests with Yates’ correction were used to examine any difference in expected and observed proportions by gender identity (binary vs. nonbinary). Where sparse data caused expected counts to be < 5 , Fisher’s exact tests were utilized to obtain *p*-values. Some of these univariate and bivariate statistics were previously published in a study with the same patient sample that instead investigated factors associated with gender-affirming surgery and age at hormone therapy initiation.⁴⁴

Multivariable logistic regression analyses were conducted with variables that had $> 85\%$ completeness. Fifty-six patients (27.9%) who did not have complete data for all variables were excluded from multivariable regression procedures; analyses were thus restricted to 145 patients (72.1% of the original 201-person sample; 73 AFAB and 72 AMAB). Chi-square analyses demonstrated no statistically significant differences in the distributions of assigned sex or gender identity between the included and excluded groups. Rather than conducting analyses with data obtained by automated EHR query about the health center’s overall pool of transgender and nonbinary adults, we prioritized conducting rigorous manual EHR audit of clinical notes for confirmation of variables assessed from a smaller random sample of patients, a labor-intensive process to increase the validity of patient-related information obtained in the EHR

review. We therefore conducted subsequent chi-square analyses comparing the analytic group ($N = 145$) with the health center’s overall pool of 1638 transgender and nonbinary patients across each race/ethnicity category and found no statistically significant differences. A dummy variable coding patients excluded from the analytic sample in multivariable analyses was created and analyzed as a bivariate against each regression outcome using the full study sample ($N = 201$) to assess whether patient exclusion introduced bias.

To increase statistical power, the sample was analyzed in aggregate and not stratified by gender identity or sex assigned at birth; these variables were included as predictor variables. Model building initially focused on bivariate models for variables with statistical significance. Factors significant at the $p < 0.05$ level were included in a multivariable model. Backward elimination was utilized to select for independent associations such that variables were sequentially eliminated from the model using the smallest chi-square-to-remove at a threshold for inclusion of $p < 0.05$.⁴⁵ Data analyses were conducted using SAS Studio Release 3.5, 2016 (SAS Institute Inc., Cary, NC), and Microsoft Excel 2010 (Microsoft Corporation, Redmond, WA).

Results

Descriptive and bivariate analyses

Analytic sample demographics, gender identity-related characteristics, sexual history, and other mental health factors are presented in Tables 1–4 for AFAB and AMAB participants separately and in aggregate. By chance, half of the sample was AFAB and the other half was AMAB, reflecting the overall composition of the transgender and nonbinary populations at the FQHC. Table 5 provides descriptive statistics about co-occurrence of psychiatric diagnoses and SUDs in the sample.

Multivariable regression models

Tables 6–9 present multivariable logistic regression models that examine factors associated with psychiatric diagnoses, SUDs, psychiatric acuity, and outpatient behavioral health engagement. Factors associated with a statistically significant increase in the probability of a non-SUD psychiatric diagnosis were AFAB and not working (Table 6). For this analysis alone, the dummy variable for excluded individuals was a significant bivariate statistical predictor of the outcome variable ($p = 0.015$). Inclusion in the analysis (based on having complete data for all desired variables) was significantly associated with lower odds of having a psychiatric diagnosis. Factors associated with increased odds of SUD were past suicide attempt and older age at hormone therapy initiation (Table 7).⁴⁴

Factors associated with a statistically significant increase in the odds of psychiatric acuity included current alcohol use disorder, PTSD, and MDD (Table 8). Personality disorders and BPAD were not associated with increased acuity in this patient population. An absence of integration of one’s psychiatrist into primary medical care was significantly associated with increased odds of acuity, whereas having a psychiatrist integrated with primary medical care was not associated with acuity. There was a statistically significant association between outpatient behavioral health engagement

TABLE 1. DEMOGRAPHICS OF THE ANALYTIC SAMPLE

Variable	AFAB (N=73)	AMAB (N=72)	Total (N=145)	AFAB vs. AMAB, p
Age in years				
Mean (SD)	27.9 (6.9)	35.7 (13.7)	31.8 (11.5)	
Median	25.0	30.0	27.0	0.001
Range	19–50	21–64	19–64	
Population age strata (years), N (%)				
18–25	40 (54.8)	24 (33.3)	64 (44.1)	<0.001
26–49	32 (43.8)	33 (45.8)	65 (44.8)	
50+	1 (1.4)	15 (20.8)	16 (11.0)	
Race/ethnicity				
White	55 (75.3)	60 (83.3)	115 (79.3)	0.235
Black/African American	5 (6.8)	1 (1.4)	6 (4.1)	
Latinx/Hispanic	2 (2.7)	3 (4.2)	5 (3.4)	
Multiracial	7 (9.6)	5 (6.9)	12 (8.3)	
Other	3 (4.1)	2 (2.8)	5 (3.4)	
Not indicated	1 (1.4)	1 (1.4)	2 (1.4)	
Employment				
Working full or part time	51 (69.9)	48 (66.7)	99 (68.3)	0.200
Not working (unemployed, retired, or disabled)	10 (13.7)	17 (23.6)	27 (18.6)	
Student	12 (16.4)	7 (9.7)	19 (13.1)	
Income				0.587
At or below poverty level	29 (39.7)	31 (43.1)	60 (41.4)	
100%–200% of poverty level	8 (11.0)	11 (15.3)	19 (13.1)	
200%–300% of poverty level	17 (23.3)	11 (15.3)	28 (19.3)	
Over 300% of poverty level	17 (23.3)	19 (26.4)	36 (24.8)	
Not indicated	2 (2.7)	0 (0.0)	2 (1.4)	

Bold indicates statistical significance ($p < 0.05$). The response rate was 100% for all variables, except where the table states “Not indicated.”

AFAB, assigned female sex at birth; AMAB, assigned male sex at birth; SD, standard deviation.

and the following: case management utilization, any anxiety disorder, and MDD (Table 9). Other psychiatric statistical predictor variables, such as BPAD and personality disorders, were not associated with outpatient behavioral health engagement.

Discussion

This study expands our understanding of the prevalence of and factors associated with psychiatric diagnoses (including SUDs), psychiatric acuity, and outpatient behavioral health engagement among transgender and nonbinary adults. To our knowledge, this study is the first to comprehensively ex-

amine factors associated with these dimensions of mental health in a cohort of transgender and nonbinary adults. Approximately, one-quarter of participants were nonbinary identified; inclusion of this subgroup reflects the reality of clinical practices. Nonbinary identities in this sample did not have a statistically significant association with any outcome assessed in bivariate or multivariable analyses.

Mental illness burden among transgender and nonbinary people

We found a higher prevalence of psychiatric disorders among transgender and nonbinary adults compared with

TABLE 2. GENDER IDENTITY-RELATED CHARACTERISTICS OF THE ANALYTIC SAMPLE

Variable	AFAB (N=73), N (%)	AMAB (N=72), N (%)	Total (N=145), N (%)	AFAB vs. AMAB, p
Gender identity				0.733
Nonbinary	19 (26.0)	16 (22.2)	35 (24.1)	
Binary	54 (74.0)	56 (77.8)	110 (75.9)	
Hormones prescribed by primary care provider	69 (94.5)	69 (95.8)	138 (95.2)	1.000
Current medically unmonitored hormone use	0 (0.0)	3 (4.2)	3 (2.1)	0.120
Any past medically unmonitored hormone use	0 (0.0)	6 (8.3)	6 (4.1)	0.013
Any gender-affirming surgery	27 (37.0)	20 (27.8)	47 (32.4)	0.314
Age at hormone therapy initiation				
Mean (SD)	27.9 (7.1)	33.3 (13.2)	31.8 (11.1)	
Median	24.0	27.0	27.0	0.001
Range	8–50	15–64	8–64	

Bold indicates statistical significance ($p < 0.05$). The response rate was 100% for all variables.

TABLE 3. SEXUAL ORIENTATION AND HISTORY OF THE ANALYTIC SAMPLE

Variable	AFAB (N=73), N (%)	AMAB (N=72), N (%)	Total (N=145), N (%)	AFAB vs. AMAB, p
Sexual orientation				0.019
Bisexual	9 (12.3)	22 (30.6)	31 (21.4)	
Lesbian, gay, or homosexual	14 (19.2)	15 (20.8)	29 (20.0)	
Straight or heterosexual	15 (20.5)	9 (12.5)	24 (16.6)	
Something else	31 (42.5)	18 (25.0)	49 (33.8)	
Does not know	4 (5.5)	8 (11.1)	12 (8.3)	
Primary sex partner(s)	48 (65.8)	42 (58.3)	90 (62.1)	0.454
Casual sex partner(s)	5 (6.8)	5 (6.9)	10 (6.9)	0.982
Any sexually transmitted infection	13 (17.8)	7 (9.7)	20 (13.8)	0.242

Bold indicates statistical significance ($p < 0.05$). The response rate was 100% for all variables.

the general population.⁴⁶ The 28.3% prevalence of any DSM-5 anxiety disorder in this cohort exceeds the 18.1% prevalence of any DSM-IV anxiety disorder in the U.S. adult population, despite the latter including conditions no longer classified as anxiety disorders under DSM-5, such as PTSD and obsessive-compulsive disorder.⁴⁷ Fewer studies to date have characterized the epidemiology of anxiety disorders in the general population using DSM-5 criteria, and some have found that DSM-5 criteria may lead to increased prevalences of certain disorders across the general population. It will be important to continue comparing prevalences of psychiatric disorders among transgender

and nonbinary communities to prevalences in the general population as studies using DSM-5 criteria continue to emerge.^{48,49}

Compared to the 2.1% prevalence of any personality disorder found in this cohort, the prevalence of any personality disorder in the United States is 9.1%.⁵⁰ Chart audit may yield a different prevalence than a national survey utilizing diagnostic interviewing.⁵⁰ In addition, our cohort is a clinical population in primary care, which may differ from a general population (e.g., our sample could be in better health due to accessing more preventive care, or more capable of engaging in care due to fewer personality disorder symptoms).

TABLE 4. OTHER MENTAL HEALTH FACTORS FOR THE ANALYTIC SAMPLE

Variable	AFAB (N=73), N (%)	AMAB (N=72), N (%)	Total (N=145), N (%)	AFAB vs. AMAB, p
Outcome: any assessed psychiatric diagnosis	43 (58.9)	30 (41.7)	73 (50.3)	0.056
Post-traumatic stress disorder	6 (8.2)	3 (4.2)	9 (6.2)	0.494
Anxiety disorder	28 (38.4)	13 (18.1)	41 (28.3)	0.011
MDD	30 (41.1)	25 (34.7)	55 (37.9)	0.536
Bipolar disorder	2 (2.7)	2 (2.8)	4 (2.8)	1.000
Personality disorder	2 (2.7)	1 (1.4)	3 (2.1)	1.000
Outcome: lifetime SUD	13 (17.8)	17 (23.6)	30 (20.7)	0.511
Current alcohol use disorder	3 (4.1)	8 (11.1)	11 (7.6)	0.129
Past alcohol use disorder	5 (6.8)	5 (6.9)	10 (6.9)	0.982
Current cannabis use disorder	7 (9.6)	5 (6.9)	12 (8.3)	0.782
Outcome: indicators of higher psychiatric acuity	13 (17.8)	11 (15.3)	24 (16.6)	0.852
History of suicide attempt	11 (15.1)	9 (12.5)	20 (13.8)	0.836
History of inpatient psychiatric treatment	11 (15.1)	6 (8.3)	17 (11.7)	0.316
History of residential or partial hospitalization program	2 (2.7)	3 (4.2)	5 (3.4)	0.681
Outcome: outpatient behavioral health engagement	59 (80.8)	47 (65.3)	106 (73.1)	0.054
Current psychotherapist	47 (64.4)	42 (58.3)	89 (61.4)	0.564
Current psychopharmacologist	36 (49.3)	29 (40.3)	65 (44.8)	0.354
Psychiatrist integrated with primary care	3 (4.1)	3 (4.2)	6 (4.1)	1.000
Addictions program integrated with primary care	0 (0.0)	2 (2.8)	2 (1.4)	0.245
Psychiatrist elsewhere	22 (30.1)	13 (18.1)	35 (24.1)	0.132
Lifetime substance use	59 (80.8)	54 (75.0)	113 (77.9)	0.519
Current alcohol use	52 (71.2)	49 (68.1)	101 (69.7)	0.814
Past alcohol use	7 (9.6)	6 (8.3)	13 (9.0)	0.791
Current cannabis use	26 (35.6)	22 (30.6)	48 (33.1)	0.638
Current case management utilization	18 (24.7)	15 (20.8)	33 (22.8)	0.723

Bold indicates statistical significance ($p < 0.05$). The response rate was 100% for all variables.

MDD, major depressive disorder; SUD, substance use disorder.

TABLE 5. CO-OCCURRENCE OF PSYCHIATRIC DIAGNOSES AND SUBSTANCE USE DISORDERS

Variable	AFAB (N = 73), N (%)	AMAB (N = 72), N (%)	Total (N = 145), N (%)	AFAB vs. AMAB, p
Lifetime psychiatric diagnoses (excluding SUDs)				
0	30 (41.1)	42 (58.3)	72 (49.7)	0.056
1	23 (31.5)	18 (25.0)	41 (28.3)	0.493
2	15 (20.5)	10 (13.9)	25 (17.2)	0.400
3	5 (6.8)	2 (2.8)	7 (4.8)	0.442
Lifetime SUDs				
Total	13 (17.8)	17 (23.6)	30 (20.7)	0.511
SUDs co-occurring with other psychiatric disorders	11 (15.1)	9 (12.5)	20 (13.8)	0.836

Nearly 14% of study participants had a history of suicide attempt. Although strikingly high compared with suicide attempt prevalence in the general population (4.6%), this estimate is much lower than the lifetime prevalences exceeding 40% found in recent studies.^{19,20} Many of these studies used surveys, but this study used chart review to identify past suicide attempts. Patients may have underreported suicide attempts to clinicians and our data may thus underestimate attempts. Alternatively, given that all patients in this study were proactively seeking health care, our sample may not have included patients with severe mental illness that impedes them from accessing care and who are more likely to attempt suicide. Regardless of which findings more accurately reflect suicide attempt prevalence, both results are concerning.

Psychiatric diagnoses, SUDs, psychiatric acuity, and outpatient behavioral health engagement

Psychiatric diagnoses. In this cohort, not working was associated with increased odds of any non-SUD psychiatric diagnosis. This finding is consistent with general population data; a recent report found that 80% of people receiving public mental health services were unemployed.⁵¹ Employment may provide increased financial security, purpose, and community.⁵¹ Although the existing literature is inconsistent with regard to the differential psychiatric epidemiology of AMAB versus AFAB adults,¹⁷ in this cohort, being AFAB was associated with higher odds of non-SUD psychiatric diagnoses, consistent with a recent study which found that trans masculine youth carry ~25% more mood disorder diagnoses than trans feminine youth.⁵²

Substance use disorders. Factors associated with increased odds of a lifetime history of any SUD included older age at hormone therapy initiation and history of suicide attempt. A relationship between age at hormone therapy initiation and SUDs was also present in our previous study, which examined the same sample and which aimed to characterize predictors of gender-affirming care utilization.⁴⁴ Although that study was otherwise not overlapping in scope or findings, in it we did find that alcohol use disorder, in particular, significantly predicted older age at hormone initiation. Given the common sample investigated in that study and this study, the related findings are not surprising. This study newly characterizes the association as being broader than with alcohol use alone, and it may be explained by decreased at-risk substance use after accessing gender-affirming care.⁷ Transgender and nonbinary adults with access to gender-affirming hormones at an earlier age may experience less gender dysphoria and develop more adaptive coping skills.^{7,20,44,53,54} Alternatively, participants with SUDs may have more behavioral disorganization or encounter gatekeeping by clinicians, both of which may impede linkage to gender-affirming medical care.⁴⁴

The relationship between suicide attempts and increased odds of any SUD is complex. SUDs are second only to mood disorders as a risk factor for suicide.⁵⁵ In addition, transgender and nonbinary people may experience lifelong minority stress associated with their gender identity, which can impede development of adaptive coping strategies and increase likelihood of attempting suicide or using substances to manage life stressors.^{20,53} Provision of gender-affirming care that addresses social determinants of health may decrease both SUDs and suicide risk among transgender and nonbinary people.⁵⁶

TABLE 6. SIGNIFICANT OUTCOMES OF LOGISTIC REGRESSION MODELS ON PRESENCE OF ANY PSYCHIATRIC DIAGNOSIS (EXCLUDING SUBSTANCE USE DISORDERS)

Variable	Bivariate models		Multivariable model	
	OR (95% CI)	p	OR (95% CI)	p
Demographics				
AMAB	0.50 (0.26–0.97)	0.039	0.40 (0.20–0.81)	0.011
Not working (unemployed, retired, or disabled)	4.42 (1.67–11.81)	0.003	5.54 (2.00–15.33)	0.001
Dummy variable (tested with N = 201)	0.44 (0.23–0.85)	0.015		

N = 145. Bold indicates statistical significance ($p < 0.05$). Mental health treatment utilization variables, including inpatient psychiatric treatment, residential or partial hospitalization program, and outpatient behavioral health engagement, were excluded from this regression to avoid using treatment modality variables to predict diagnoses.

CI, confidence interval; OR, odds ratio.

TABLE 7. SIGNIFICANT OUTCOMES OF LOGISTIC REGRESSION MODELS ON LIFETIME HISTORY OF SUBSTANCE USE DISORDER

Variable	Bivariate models		Multivariable model	
	OR (95% CI)	p	OR (95% CI)	p
Gender identity-related characteristics				
Age at hormone therapy initiation	1.04 (1.00–1.07)	0.041	1.04 (1.01–1.08)	0.025
Mental health				
History of suicide attempt	5.25 (1.93–14.25)	0.001	5.79 (2.08–16.15)	<0.001

N=145. Bold indicates statistical significance ($p < 0.05$). Mental health treatment utilization variables, including inpatient psychiatric treatment, residential or partial hospitalization program, and outpatient behavioral health engagement, were excluded from this regression to avoid using treatment modality variables to predict diagnoses.

Psychiatric acuity. BPAD, a psychiatric disorder thought to be less directly driven by longitudinal environmental influences, was not associated with increased psychiatric acuity in our study.⁵⁷ This finding was surprising, as many studies have found increased suicidal ideation and attempts among individuals with BPAD.^{58–63} The absence of integration of psychiatrists into primary care was associated with increased odds of acuity, whereas integration of psychiatrists with primary care was not. Taken together, these findings have vital implications for designing health care systems. Psychiatric service integration into primary care through collaborative care models could help improve mental health for transgender and nonbinary patients, as has been demonstrated in other patient populations.^{64–67}

Outpatient behavioral health engagement. Case management utilization was significantly associated with outpatient behavioral health engagement. This suggests that case management may improve engagement with behavioral health care within this population. Alternatively, this association could reflect the increased likelihood for behavioral health providers to work in teams and engage patients with case management services. Gender minority people disproportionately experience social determinants such as poverty, housing instability, and unemployment that impact health adversely; thus, they may particularly benefit from case management support.⁵³

Outpatient behavioral health engagement was associated with anxiety disorders and MDD. Anxiety and depression are highly prevalent among transgender adults,⁶⁸ and it is therefore heartening that this population appears ready to engage in behavioral health care when an inclusive, affirming environment is accessible. Although data are not available on gender minority people, sexual minority people are three times more likely to use group therapy compared with heterosexual-identified people, and four times more likely to use psychopharmacology compared with heterosexual-identified people.⁶⁹ Given the similar mechanisms of action for minority stress on both sexual and gender minority adults, we are hopeful that transgender and nonbinary patients will access needed care if affirming services are offered.

Limitations

Limitations of this study should be addressed. First, the cross-sectional study design does not allow for causal inference regarding relationships between predictor and outcome variables. Second, the study sample is from one LGBTQ-specialized urban health center that provides care to a primarily Caucasian patient population, limiting generalizability. The sample was drawn from an FQHC, which by definition cares for a patient population with lower socioeconomic status that may therefore have a higher burden of mental illness.⁷⁰ We were limited in our comparison of this cohort with regard to personality disorder diagnoses; we

TABLE 8. SIGNIFICANT OUTCOMES OF LOGISTIC REGRESSION MODELS ON INDICATORS OF HIGHER PSYCHIATRIC ACUITY

Variable	Bivariate models		Multivariable model	
	OR (95% CI)	p	OR (95% CI)	p
Demographics				
Not working (unemployed, retired, or disabled)	4.37 (1.67–11.41)	0.003		
Mental health				
Past alcohol use	3.72 (1.10–12.57)	0.035		
Lifetime SUD	5.72 (2.23–14.71)	<0.001		
Current alcohol use disorder	19.67 (4.73–81.85)	<0.001	31.54 (5.73–173.51)	<0.001
Post-traumatic stress disorder	24.50 (4.70–127.77)	<0.001	18.14 (2.62–125.71)	0.003
Anxiety disorder	3.17 (1.29–7.82)	0.012		
MDD	6.81 (2.50–18.54)	<0.001	6.62 (1.72–25.44)	0.006
Current psychotherapist	8.87 (2.00–39.38)	0.004		
Psychiatrist integrated with primary care	5.62 (1.06–29.74)	0.042		
Psychiatrist elsewhere	6.67 (2.61–17.03)	<0.001	4.52 (1.26–16.22)	0.021

N=145. Bold indicates statistical significance ($p < 0.05$).

TABLE 9. SIGNIFICANT OUTCOMES OF LOGISTIC REGRESSION MODELS ON OUTPATIENT BEHAVIORAL HEALTH ENGAGEMENT

Variable	Bivariate models		Multivariable model	
	OR (95% CI)	p	OR (95% CI)	p
Demographics				
AMAB	0.45 (0.21–0.95)	0.037		
Gender identity-related characteristics				
Any past medically unmonitored hormone use	0.17 (0.03–0.96)	0.045		
Mental health				
Anxiety disorder	23.03 (3.04–174.30)	0.002	15.84 (2.00–125.72)	0.009
MDD	18.50 (4.24–80.70)	<0.001	10.45 (2.28–47.98)	0.003
History of suicide attempt	8.30 (1.07–64.23)	0.043		
Current case management utilization	16.43 (2.16–124.92)	0.007	10.73 (1.32–87.53)	0.027

N = 145. Bold indicates statistical significance ($p < 0.05$).

made the comparison to a national sample, as personality disorder prevalence has not yet been studied within health centers. With one investigating psychiatrist carrying out the manual chart audit, we did not determine interrater reliability for diagnostic assessments. In addition, the patient sampling method consisted only of gender minority patients actively engaged in care. The National Transgender Discrimination Survey found that 30.8% of transgender participants delayed or did not seek care due to discrimination.^{53,71} Thus, this sample may represent a cohort that has experienced less discrimination than the general transgender adult population.

Moreover, incomplete charting, clinical information excluded from patient notes, subjective documentation, and variability in providers' diagnostic biases and documentation practices represent important sources of potential bias that could not be controlled for in this study design.^{38,39,72–75} Several factors known to be predictive of psychiatric diagnoses, including emotional, physical, and sexual trauma, were not included in our models due to inconsistent medical record documentation for these variables. Future research is needed to replicate these findings and expand upon them with adjustment for other covariates and confounders not modeled in this study.

Although this study emphasized rigorous confirmation of patient-level information by manual EHR audit of clinical encounter notes from a smaller subset of the health center's overall transgender and nonbinary patients, larger samples that allow for disaggregation of current gender identity and sex assigned at birth are needed to assess subgroup differences in psychiatric diagnoses among gender minorities. For example, future studies ought to stratify by current gender identity and sex assigned at birth, and by more granular gender identifications among nonbinary people. Stratification based on current gender identity could help deepen our understanding of how current lived experience and physiology relate to mental health, as distinct from associations with sex assigned at birth that may include the influence of genetic factors, early hormonal exposure, and past lived experience. Similarly, larger samples may enable investigation of more complex dynamics among variables than we were able to study, such as level-of-care escalation extent and frequency, the interactions of SUDs with other factors, and additional variables related to stigma and minority stress. Finally, approximately one-quarter of participants were

excluded due to missing data, making the data vulnerable to sample variance.

Conclusion

Our findings point to potential clinical- and systems-level strategies that may mitigate risk factors and promote protective factors that influence psychiatric morbidity among gender minority people. Novel findings include the relationships of systems-level factors to outcomes, such as the association of lack of psychiatric service integration with greater psychiatric acuity, and of case management utilization with greater outpatient behavioral health engagement.

Future work ought to refine tailored, gender-affirming mental health interventions for transgender and nonbinary adults. To expand dissemination and accessibility of such interventions, it will also be critical to continue developing novel models of screening, integration, and collaboration, with staffing by the full continuum of mental health clinicians, including psychiatric mental health nurse practitioners and clinical social workers.^{76–78} Although our cross-sectional study assessed risk and protective factors at individual and systems levels associated with psychiatric morbidity in a cohort of transgender and nonbinary adults, we did not study community-level factors or mechanisms by which these factors influence mental health. Future research ought also to focus on elucidating mechanisms by which stigma and other stressors contribute to adverse mental health in these marginalized groups.⁷⁹ Such studies can inform mental health-focused prevention and treatment strategies tailored for gender minority people.

Acknowledgments

This research was supported by grant U30CS22742 from the Health Resources and Services Administration Bureau of Primary Health Care, grant R34MH104072 from the National Institute of Mental Health (Bethesda, MD), and grant K24 DA022288 from the National Institute on Drug Abuse.

Disclaimer

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Author Disclosure Statement

No competing financial interests exist.

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