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The relationship of gender and gender identity to treatment adherence among individuals with bipolar disorder

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Abstract

Aims—It has been demonstrated that 46– 48% of individuals with bipolar disorder (BD) are at least partially non-adherent with prescribed medication. While some reports note male gender as a predictor of treatment non-adherence in BD, findings have been inconsistent. The construct of gender may also be a matter of cultural orientation, and psychological gender, as a component of self-perception may affect the experience of mental illness. Gender identity is the subjective experience of one's individuality as male or female. This cross-sectional study evaluated gender and gender identity among men and women with BD as it relates to self-reported medication treatment adherence.

Methods—This secondary analysis of a larger study on treatment adherence evaluated 70 men and 70 women with bipolar disorder, being treated with mood stabilizing medications in a public mental health setting. Gender identity and adherence were evaluated with the Bem Sex Role Inventory (BSRI) and Tablets Routine Questionnaire (TRQ) respectively. Other measures included BD symptoms with the Hamilton Depression Rating Scale (HAM-D), and Young Mania Rating Scale (YMRS) as well as locus of control with the Multidimensional Health Locus of Control Scale (MHLC) and social support with the Interpersonal Support Evaluation List (ISEL).

Results—Women with BD had mean scores on the BSRI consistent with general population norms while men with BD had scores suggesting lower levels of self-perceived masculinity than population norms. There were no differences between men and women on adherence, however men with high BSRI masculinity scores had less adherence compared to other men in the sample

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($p=.04$). Lower scores on the “powerful others” dimension of locus of control was associated with lower adherence. For women there was no relationship between BSRI masculinity scores and adherence.

Conclusions—Gender identity in men with BD differs from general population norms and appears related to adherence. Treatment approaches that are intended to optimize adherence need to consider the construct of gender identity or gender role.

Keywords

adherence; compliance; gender; gender identity; bipolar disorder; treatment attitudes

Introduction

Psychotropic medications to manage psychiatric symptoms are an important component of evidence-based treatment of patients with bipolar disorder (BD), however medication non-adherence is common and has negative effects on health outcomes (1, 2). Two large case registry studies conducted in the U.S. Veterans Health Administration demonstrated that 46–48% of individuals with BD are at least partially non-adherent with prescribed BD medication (3, 4). Colom (2000) summarized categories of factors associated with reduced adherence among individuals with BD, including patient, illness, treatment and provider-related variables (5). Patient-related predictors of treatment non-adherence in BD include male gender, younger age, unmarried status, minority ethnicity, poor social support, inadequate knowledge of BD, and health beliefs that are not consistent with maintaining long-term medication prophylaxis (3, 4, 6–9). Both Adams (2000) and McGavock (1996) noted that highly adherent individuals with serious mental illness believe that their health is controlled by external rather than internal factors (10, 11).

While there has been a fairly extensive research on gender as it relates to adherence, findings have been inconsistent (6, 12). Previous studies have evaluated gender based on the dichotomous variables of “male” and “female”. However, it has been suggested that studies on individuals with serious mental illness should also consider how the construct of gender may also be a matter of cultural orientation, and that psychological gender, as a component of self-perception may affect the experience of illness (13–15).

Gender identity is the subjective experience of one’s individuality as male or female (16), and it has been suggested that gender identity may impact treatment and recovery among those with mental illness (13–15). Given the importance of treatment adherence among individuals with BD, a greater understanding of the relationship between gender identity and adherence could facilitate the development of treatment approaches that are comprehensively sensitive to gender.

This is a cross-sectional baseline analysis of gender and gender identity among men and women with BD as it relates to self-reported treatment adherence. To the best of our knowledge this is the first study to evaluate gender identity using a standardized measure in individuals with BD. Based on work involving persons with schizophrenia (15), we hypothesized that gender identity in woman with BD would be similar to established general population norms, whereas gender identity in men with BD would differ from population norms. We also hypothesized that adherence would be lower for men who score high on masculine gender identity after adjusting for other factors such as social support, symptoms, locus of control, and substance abuse.

Methods

This is a secondary analysis (using baseline data) of a larger study (NIMH. K 23-MH0655997) on factors related to treatment adherence in 70 men and 70 women with Type I Bipolar disorder being treated with mood stabilizing medications in a community mental health clinic (CMHC) (17). Subjects received a variety of treatment at the CMHC (clinical care determined by the patient's treating clinician) that included pharmacotherapy, psychotherapy and psychosocial interventions. Individuals were categorized as adherent with prescribed bipolar medication vs. non-adherent with prescribed bipolar medication using a standardized self-report measure. Mean age of the sample population was 43.1 for adherent and 40.8 for non-adherent patients. The majority was Caucasian (67% in adherent and 11% in non-adherent group) and African-Americans comprising 18% and 8% respectively.

All study participants had a clinical diagnosis of Bipolar Disorder Type I confirmed by the Mini-International Neuropsychiatric Interview (MINI) (18), illness of at least two years duration, an index depressive episode, and at least six months of treatment with mood stabilizing medication. The study was approved by the local Institutional Review Board (IRB).

Measures

Gender identity

The Bem Sex Role Inventory (BSRI) (19) consists of 60 self-rated items in which individuals are asked to rate personality and attitudinal characteristics in relation to themselves. Responses are scored on a 7-point continuum. The theoretical assumption is that both men and women have masculine and feminine gender attributes. Nevertheless, use of the BSRI has produced norms for gender role identifications for men and for women and both the average woman and the average man's masculine and feminine scores are expected to approximate 5.0 on both scales. Spearman-Brown split-half reliability coefficients for the Masculinity part of the BSRI have been reported as 0.90 for men and 0.84 for women. For the Femininity part of the BSRI, reliability coefficients are 0.89 for men and 0.82 for women (19).

Treatment adherence

Adherence with prescribed medication was evaluated with the self-reported Tablet Routines Questionnaire (TRQ) (9, 20) which is noted to be reliable and appropriate for use in bipolar populations and shows a high correlation with lithium levels (9, 20). The TRQ identifies partial and full adherence, identified as failure to take 30% or more of prescribed medication in the last week or in the last month. This rating has demonstrated statistically significant association with past non-adherence, repeated past non-adherence, any non-adherence in the past month, and non-adherence in the past week ($X^2=7.2$, $df=6$, $p=.03$). Compared with non-adherence in the past two years, missing 30% or more of prescribed mood stabilizers in the past week has a specificity of 100% and a sensitivity of 65%. Compared with non-adherence in the past week, it has a specificity of 87% and a sensitivity of 84% (9, 20).

Bipolar Symptoms

Symptoms of depression were evaluated using the 17-item version of the Hamilton Depression Scale (HAM-D) (21). Symptoms of mania were measured with the Young Mania Rating Scale (YMRS) (22).

Substance Abuse

Substance use severity was assessed as a continuous measure using rater-administered alcohol and drug use ratings on a 0–9 scale. These were based upon the Alcohol/Drug Index, which is a portion of a standardized instrument, the Addiction Severity Index (ASI) (23, 24).

Psychosocial Supports

Psychosocial supports were measured with the Interpersonal Support Evaluation List (ISEL) (25) a 40-item self-report questionnaire. The ISEL captures perceptions of resources provided by others and has been utilized to examine how social support predicts course of BD (26). The ISEL is coded on a four-point Likert scale ranging from definitely false to definitely true. Reliability coefficients for the ISEL are generally good. Alpha coefficients for each of four subscales range from 0.61 to 0.83.

Locus of Control

Locus of control was evaluated using the Multidimensional Health Locus of Control Scale (MHLC). The MHLC is an 18-item instrument that measures three dimensions of locus of control as it pertains to health (internal, IHLC; external-chance, CHLC; and external powerful others, PHLC). Scoring is from 6–36 with higher scores indicating stronger beliefs. The internal consistency reliability using Cronbach's alpha ranges from 0.67 to 0.77 for the three dimensions, and the measure has fairly good criterion validity (27).

Data Analysis

Descriptive statistics and t-tests were used to compare the men and women. BSRI masculinity and femininity scale scores in the sample assumed the established BSRI null mean value of 5.0. Binary logistic regression analysis was conducted to evaluate the association of treatment adherence as measured by the one-week and one-month TRQ measures. Men with high masculinity BSRI scores were hypothesized to be at-risk for non-adherence. We defined a masculine score as "high" if BSRI score was above the 75% percentile of our sample, and included an indicator variable for those in this group. In order to examine the relationship between adherence and gender/gender identity, other explanatory variables were included to simultaneously adjust for social support, symptoms, and substance abuse.

Results

Gender identity among people with BD in relation to established general population norms

Table 1 shows BSRI scores for the men and women in the sample. Confidence intervals for the mean scores on masculine and feminine scales for men with bipolar disorder were lower than established general population means, while for women confidence intervals for mean scores were lower for the masculine scale, but not for the feminine scale. Compared to non-psychiatric general population samples (19) women with BD have mean scores on the BSRI which are more consistent with general population norms compared to men with BD. Men with BD have scores on the BSRI suggesting lower levels of self-perceived masculinity.

Treatment non-adherence in relation to gender and gender identity

For individuals with TRQ data, there were 25/136 (18.4%) individuals (12 female) who were non-adherent in the past month and 25/137 (18.2%) (12 female) who were non-adherent in the past week. There were no significant differences in adherence between men and women with BD. There were 19/66 (28.8 %) of BD men with high BSRI masculinity scores and 10/68 (14.8%) women with high masculinity scores. A two-sided Fisher's exact

test indicated a significant interaction of BSRI and TRQ scores ($p=.040$ for both TRQ past month and TRQ past week) suggesting that high BSRI masculinity score was associated with lower adherence. For women there was no relationship between BSRI masculinity scores and adherence.

Relationship between adherence and gender/gender identity after adjusting for social support, symptoms, locus of control and substance abuse

Tables 2a and 2b demonstrate binary logistic regressions conducted for both past week and past month adherence (TRQ), including the binary indicator variable for being male and having a high score on the BSRI masculinity scale. For the past month outcome, there were two clearly significant variables--whether one is male with high BSRI masculinity, and having a high powerful other locus of control scale score (PHLC). The odds are nearly four times as high to be non-adherent if one is both male and has high BSRI masculinity score compared to others who do not have both characteristics. For PHLC, higher scale scores lead to lower relative odds of being non-adherent. For past week adherence only the male and high masculinity score variable is statistically significant.

Discussion

Other investigators have noted the need for research that expands beyond a dichotomous comparison of “male” and “female” differences to examine the role of gender as it affects outcomes among individuals with serious mental illness (14). This analysis evaluated the relationship between gender, gender identity, and treatment adherence among individuals with BD. Self-identification of study participants was characterized with traditionally masculine and traditionally feminine role concepts using the standardized BSRI. Findings suggested that being male or female was not associated with adherence status, but men with high masculinity self-identification are less adherent than men who do not have this BSRI profile. There was no significant relationship between BSRI scores and adherence among women with BD. Lower scores on the “powerful others” dimension of locus of control was also associated with reduced treatment adherence.

Our hypothesis regarding gender identity differences from general population norms was confirmed for men but not for women with BD. It has been suggested that the pervasive stigmatization of men and women with mental illness, may lead to individuals becoming “genderless” insofar as mental illness itself may eclipse other factors in identity (28, 29). For example, it is known that individuals with serious mental illness may be less likely to assume some adult gender roles such as husband, wife, father or mother (30, 31). It is also possible that cultural expectations for men and for women with serious mental illness may differ. For example, men with mental illness may be less likely to be able to carry out expected gender role activities compared to women with mental illness (for example, maintaining full-time employment) (14, 32). This is likely to have important implications in self-esteem and may impact gender identity as evidenced by the fact that men with BD in this sample had overall low scores on self-perceived masculine identity in relation to population norms.

A study on men and women with schizophrenia found that individuals with schizophrenia perceive their gender identity in ways that differ from culturally normative standards (15). In contrast, in the sample reported here, women with BD did not appear to differ much in self-perceived feminine identity in relation to population norms. It is possible that the nature of bipolar mood symptoms (depression and mania/hypomania) may have less of an impact on life-role for women with bipolar disorder as compared to both men and women with primary psychotic disorders such as schizophrenia or to men with bipolar disorder. Perhaps co-workers and supervisors are more tolerant of women with depressive symptoms or

impulsivity then they might be of men with these same symptoms. Alternatively, women may have more role options (e.g. assumption of maternal/household manager role) as compared to men who may have fewer culturally accepted role options.

Older reports suggest that “compliance” is typically associated with a feminine gender role or gender identity (33) and we hypothesized that individuals who demonstrate the opposite characteristics might be less “compliant” or adherent with medications as well. Analysis results support our hypothesis and suggest that men with BD and high BSRI masculinity scores are less treatment adherent. Marsh (1995) found that women and men may vary in their experience of power issues that surround the issue of regular taking of medication (34). Possibly, men with BD who chose not to take medications contextualize this as a way of asserting independence in a setting that could be perceived as demeaning or controlling. Treatment approaches that emphasize collaborative care and empowerment are important for all individuals with mental illness (35), but may be particularly important for men with the BSRI profiles associated with lower adherence.

Similar to reports by Adams (2000) and McGavock (1996) we found that external locus of control was more likely to be associated with greater adherence (10, 11). It has been suggested that patients with an internal locus of control prefer psychological treatments, while those with an external locus of control preferred medication (36).

Limitations of our study include the relatively small sample size, reliance on self-reported treatment adherence and lack of a control sample. There are many other factors that may impact treatment adherence in people with bipolar disorder (17) and our study did not address all of these possible factors. Additionally it is not known how gender identity may be related to all of the reasons why individuals may take or not take prescribed medication. Given that gender identity is shaped by culture, it is possible that findings are not generalizable to BD populations in different cultures or in non-public sector care. In spite of these limitations, cautious interpretation of study findings supports the potential importance of gender identity as a determinant of treatment adherence and underscores situations where collaborative or empowering care may be especially critical to health outcomes.

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Table 1

Bem Sex Role Inventory (BSRI) scores in men and women with BD

Variable	N	Mean (SD)	t	df	Mean difference *	Confidence Interval	Significance (2-tailed)
MEN							
masculinity	69	4.636 (.99)	-3.05	68	-.3639	-.603, -.126	.003
femininity	68	4.465 (.76)	-5.81	67	-.5345	-.718, -.351	<.001
WOMEN							
masculinity	69	4.276 (.91)	-6.59	68	-.7232	-.943, -.504	<.001
femininity	69	5.006 (.75)	0.07	68	.0059	-.175, .187	.948

* from established general population norms of 5.0

Table 2a

Logistic regression analysis with past week adherence in men and women with BD**

Explanatory variables	Est. B coefficient	Std. Error	p-value (2-sided)	Est. Odds Ratio
High masculinity and male	1.329	.631	.035	3.776
IHLC	-.079	.053	.136	.924
PHLC	-.042	.041	.298	.958
CHLC	.022	.040	.576	1.022
Alcohol Severity	.061	.091	.503	1.063
Drug Severity	.109	.094	.249	1.115
YMRS	.056	.084	.504	1.058
HAMD	-.014	.052	.791	.986
CGI	.475	.438	.278	1.608
ISEL	.001	.012	.956	1.001
Intercept	-2.544	2.588	.326	.079

Note that high masculinity was determined as being above 75th sample percentile of BSRI Masculinity index.

**

As evaluated by the Tablets Routine Questionnaire (TRQ) at baseline

IHLC = Internal Health Locus of Control Scale

PHLC = Powerful Health Locus of Control

CHLC = External Chance Locus of Control

YMRS = Young Mania Rating Scale

HAMD = Hamilton Depression Scale

CGI = Clinical Global Impression

ISEL = Interpersonal Support Evaluation List

Table 2b

Logistic regression analysis with past month adherence in men and women with BD**

Explanatory variables	Est. B coefficient	Std Error	p-value (2-sided)	Est. Odds Ratio
High masculinity and male	1.372	.644	.033	3.945
IHLC	-.004	.053	.937	.996
PHLC	-.089	.043	.038	.915
CHLC	.079	.043	.064	1.082
Alcohol Severity	.098	.090	.274	1.103
Drug Severity	.039	.091	.668	1.040
YMRS	.017	.086	.843	1.017
HAMD	-.007	.053	.894	.993
CGI	.418	.446	.348	1.519
ISEL	.001	.012	.934	1.001
Intercept	-3.949	2.694	.143	.019

Note that high masculinity was determined as being above 75th sample percentile of BSRI Masculinity index.

**

As evaluated by the Tablets Routine Questionnaire (TRQ) at baseline

IHLC = Internal Health Locus of Control Scale

PHLC = Powerful Others Locus of Control

CHLC = External Chance Locus of Control

YMRS = Young Mania Rating Scale

HAMD = Hamilton Depression Scale

CGI = Clinical Global Impression

ISEL = Interpersonal Support Evaluation List