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Medication Adherence Challenges among Patients Experiencing Homelessness in a Behavioral Health Clinic

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Abstract

Background—Behavioral health medication nonadherence is associated with poor health outcomes and increased healthcare costs. Little is known about reasons for nonadherence with behavioral health medications among homeless people.

Objectives—To identify reasons for medication nonadherence including the sociodemographic, health-related factors, and behavioral health conditions associated with medication nonadherence among behavioral health patients served by a Health Care for the Homeless center (HCH) in Virginia.

Methods—The study sample was selected from an existing database that included sociodemographic, health-related information, and medication-related problems identified during a pharmacist-provided medication review conducted during October 2008–September 2009.

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Patients experiencing or at risk of homelessness who were 18 years old with at least one behavioral health condition who had a medication review were eligible for the study. A qualitative content analysis of the pharmacist documentation describing the patient's reason(s) for medication nonadherence was conducted. The Behavioral Model for Vulnerable Populations was the theoretical framework. The outcome variable was self-reported medication nonadherence. Descriptive and multivariate (logistic regression) statistics were used.

Results—A total of 426 individuals met study criteria. The mean age was 44.7 ± 10.2 years. Most patients were African-American (60.5%) and female (51.6%). The content analysis identified patient-related factors (74.8%), therapy-related factors (11.8%), and social or economic factors (8.8%) as the most common reasons for patients' medication nonadherence. Patients with post-traumatic stress disorder (PTSD) (adjusted odds ratio: 0.4; 95% CI: 0.19–0.87) were less likely to have a medication adherence problem identified during the medication review.

Conclusions—The content analysis identified patient-related factors as the most common reason for nonadherence with behavioral health medications. In the quantitative analysis, patients with a PTSD diagnosis were less likely to have nonadherence identified which may be related to their reluctance to self-report nonadherence and their diagnosis, which warrants further study.

BACKGROUND

Medication adherence is the extent to which a person's medication taking behavior corresponds with healthcare providers' recommendations.[1,2] Long-term adherence to chronic medications has been estimated to be as low as 50%.[2] Nonadherence is a concern because it can lead to poor patient outcomes and increased healthcare costs. In fact, the New England Healthcare Institute (NEHI) estimated that medication nonadherence alone contributes up to $290 billion in annual medical costs.[3]

Medication nonadherence is also prevalent in behavioral health treatment. Approximately 42% of patients discontinue their antidepressant in the first month and 72% discontinue their medication after 3 months.[4] Reasons for nonadherence to antidepressant therapy include adverse effects or anxiety about adverse effects, poor patient-physician communication, carelessness with taking medication, poor social support, low efficacy, and lack of knowledge.[5,6,7,8] Long-term adherence to medications for bipolar disorder, such as lithium, ranges from 20 to 66%.[9] Low adherence to behavioral health medications is a concern due to increased risk of relapse, suicide attempts, and hospitalizations leading to increased morbidity and mortality.[10,11] In addition, behavioral health medication nonadherence has been associated with an increase in emergency department visits and overall healthcare costs.[10,12]

In January 2010, approximately 649,917 people were homeless in the United States on a single night, with approximately 62% in a shelter.[13] At this time, an estimated 26% of sheltered homeless adults had a serious mental illness and approximately 34% had a chronic substance abuse problem.[13] Several barriers to medication adherence exist in the homeless,

including limited or no prescription insurance coverage, financial instability, lack of storage space for medications, limited privacy, and lack of transportation to pick up their medications.[14,15] Further, medication adherence may not be a primary concern to an individual who is homeless because of issues with meeting basic needs, such as obtaining food or housing.[15]

Only a few studies have examined medication use and adherence in homeless patients. These have focused on patients with human immunodeficiency virus (HIV) and tuberculosis (TB). Homelessness has been found to be associated with low adherence to medications associated with these chronic conditions.[16–22] In one study examining the factors associated with adherence to highly active antiretroviral therapy in homeless adults with HIV, it was found that younger age, lack of health insurance, illicit drug use, and greater risk of depression or stress was associated with lower medication adherence.[23]

While it is known that homeless patients poorly adhere to HIV and TB medications, there is limited information about specific reasons for behavioral health medication nonadherence in the homeless population. Therefore, the objectives of this study were to: 1) identify reasons for medication nonadherence; and 2) examine the sociodemographic, health-related factors, and behavioral health conditions associated with medication nonadherence in patients served by a behavioral health clinic at an urban federally-qualified health care for the homeless center (HCH). Identification of these patient-specific reasons may help pharmacists and other healthcare providers develop targeted interventions to improve medication adherence.

METHODS

The study sample was selected from a behavioral health clinic database at an HCH center in central Virginia.[24,25] The database included sociodemographic, health-related information, and the number and type of medication-related problems identified during a pharmacist-provided medication review conducted between October 2008–September 2009. Clinical faculty pharmacists and community pharmacy practice residents who practiced in this HCH's behavioral health clinic provided the medication review. The pharmacist-provided medication review primarily focused on behavioral health medications. The pharmacist used structured interview questions to assess medication adherence, over-the-counter and herbal medication use, adverse drug events, and lifestyle behaviors and then used probing questions to get more information based upon answers to the structured questions. All pharmacists and residents were trained in this process to identify and document medication-related problems (e.g. medication nonadherence) and provide medication education, as needed. Patients experiencing or at risk of homelessness who were   18 years old with at least one behavioral health condition who had a medication review were eligible for the study.[24,25]

Medication Nonadherence

The pharmacist assessed whether or not the patient was adhering to his/her prescribed medication regimen during a medication review and documented the encounter in the patient's electronic medical record.[24,25] A patient was considered nonadherent to medications if they self-reported during the interview that they were not taking the

medication as prescribed and nonadherence was included in the final problem list in the pharmacist's note.[24,25]

Content Analysis

A qualitative content analysis of the pharmacists' documentation describing the patient's reason(s) for medication nonadherence was conducted. The unit of analysis for the patient's reason for nonadherence was either a word or brief phrase. Two independent raters (ABC and LRM) coded each reason for medication nonadherence. It was possible for there to be more than one reason for nonadherence. The initial review was inductive and categories for medication nonadherence were not defined *a priori*. After the initial review, the literature was reviewed to guide decisions regarding category names. The World Health Organization framework, which includes five dimensions of adherence, patient-related, therapy-related, social/ economic-related, healthcare system-related, and condition-related factors, was used to guide the selection of final categories.[2] Condition-related factors did not emerge as a theme from this content analysis.

Several subcategories under each main dimension of reasons for nonadherence were included. Examples of patient-related subcategories include self-management, forgetfulness, psychosocial stress, anxieties about adverse effects, and low attendance at follow-up.[2] Low attendance at follow-up is a concern because patients at this HCH center typically need to see their provider each month for a new prescription(s). Social/economic-related subcategories include high cost of medication, lack of transportation to pick up medication, and unstable living conditions.[2] Healthcare system-related subcategories are related to communication issues, such as lack of provider-provider communication, and transitions of care (e.g. lack of medication continuation after incarceration or hospital discharge).[2] Therapy-related reasons include side-effects, regimen complexity, and hard to swallow dosage forms.[2] The coding of the reasons for nonadherence was compared between the two raters in a consensus meeting, during which discussion and agreement on the categories/ reasons for nonadherence occurred.

Determinants

A modification of the Behavioral Model for Vulnerable Populations was used to examine the relationship between study variables, described below, and medication nonadherence (Figure 1) for the quantitative portion of this study.[26] The Behavioral Model for Vulnerable Populations was developed from the Andersen Behavioral Model of Health Services Use to examine which factors affect a vulnerable population's utilization of health care services, personal health practices, and to predict health outcomes.[26,27] The model incorporates predisposing, enabling, and need factors, from both traditional and vulnerable domains, to predict health behaviors and health outcomes.[26] The addition of the vulnerable domains gives a focus to social structure and enabling resources that are applicable to a marginalized population, such as the homeless.[26]

The dependent variable was the patient health care behavior of medication nonadherence (Yes/No). *Predisposing traditional domain* factors that were collected include the demographic variables age (18–34 years, 35–49 years, or 50+ years), race/ethnicity (White,

African-American, or Other), and gender (Male or Female). Age was grouped into these three categories based upon the variable's distribution. For race, other was excluded from the final analysis due to a low number of patients in this category.

Predisposing vulnerable domain factors that were examined include the number of behavioral health conditions and presence of a specific behavioral health diagnosis. The specific behavioral health diagnoses included were substance abuse, depression, bipolar disorder, personality disorder, post-traumatic stress disorder (PTSD), anxiety, and schizophrenia spectrum disorders. The category schizophrenia spectrum disorders included schizophrenia and schizoaffective disorder.[28]

The *need traditional domain* factors included in this study were the number of all medications at baseline (1–2, 3–5, and 6 medications) and the presence of a medical condition. The number of all medications at baseline was categorized into these three levels based upon this variable's distribution. The presence of a medical condition (yes/no) did not include behavioral health conditions. *Enabling domain* factors were not included in this study due to lack of access to this information.

Data Analysis—Descriptive (means, frequencies, standard deviations) statistics are reported for the study variables. Logistic regression, employing a prediction modeling strategy, was used to evaluate the association between predisposing traditional domain factors (demographic variables), predisposing vulnerable domain factors (number of behavioral health conditions and specific behavioral health diagnoses), and need traditional domain factors (number of baseline medications and presence of a medical condition) with medication nonadherence. Adjusted odds ratios and 95% confidence intervals are reported. Multicollinearity of the independent variables was assessed and ruled out because no two variables were correlated 0.80 or higher. The *a priori* significance level was p < 0.05. SAS/PC for Windows version 9.3 was used for data analysis (SAS Institute Inc., Cary, N.C.). This research project was approved by the Institutional Review Board at Virginia Commonwealth University.

RESULTS

Demographics

A total of 426 individuals met study criteria. Table 1 provides a summary of the demographics in this sample of patients. The mean age was 44.7 ± 10.2 years. Most patients were in the 35–49 year old age category (49.1%). The majority of patients were African-American (60.5%), and there was an approximately equal distribution of gender. The mean number of all medications at baseline was 3.4 (± 2.4), with most patients in the 1–2 or 3–5 baseline medications category. Approximately 46% of patients had a medical condition. The majority of patients had a behavioral health diagnosis of substance abuse (52.6%). In addition, over a quarter of patients had a diagnosis of depression, bipolar disorder, or personality disorder (44.4%, 30.1%, and 25.8%, respectively) and the mean number of behavioral health diagnoses was 2.2 (± 1.0).

Reasons for Medication Nonadherence

Approximately 36.4% of patients had medication nonadherence identified during a medication review with a pharmacist. Patients may have had medication nonadherence identified more than one time during the study period, which resulted in a total of 204 medication nonadherence problems. Reasons for medication nonadherence were categorized into patient-related, therapy-related, social/economic-related, and healthcare system-related factors. Each of the four main categories contained a number of subcategories. It was possible for more than one reason for medication nonadherence to be categorized. For example, if a patient was splitting medication to make it last until the next appointment because they could not afford the medication, then, a patient-related reason of self-management and a social/economic-related reason of cost were coded. A total of 238 reasons were categorized for the medication nonadherence problems.

The majority of reasons for medication nonadherence were patient-related (74.8%). The three primary patient-related reasons for nonadherence were related to self-management of medications, running out of medications, and low attendance at follow-up visits.

Approximately 11.8% of the reasons for nonadherence were therapy-related, followed by social/economic-related (8.8%), and healthcare system-related factors (4.6%). The subcategory of side effects accounted for 92.9% of the reasons for in the therapy-related domain. The most common social/economic subcategory for medication nonadherence was related to medication cost and patient finances (76.2%). Communication issues were the most prevalent healthcare system-related subcategory (54.5%). Table 2 summarizes the reasons for nonadherence.

Predictors of Medication Nonadherence

After adjusting for all predictors in the full logistic regression model, patients with PTSD were 0.4 times less likely to have medication nonadherence identified during a medication review with a pharmacist than those without PTSD (Adjusted OR=0.4, 95% CI: 0.19–0.87). There were no other significant predisposing traditional domain (demographic), predisposing vulnerable domain, or need traditional domain (health-related) variables which predicted medication nonadherence in these patients (Table 3).

DISCUSSION

In this study, patient-related factors were overwhelmingly the main reasons for medication nonadherence. A strength of this content analysis is that it provides explicit practitioner-identified reasons for medication nonadherence. These practitioner-identified reasons were extracted from the patient's electronic medical record and subsequently coded into themes by the researchers. Several of the patient-related reasons for medication nonadherence identified in this group of patients are supported by other studies. Forgetfulness or missed doses were commonly identified as a patient-related reason for medication nonadherence. Sajatovic et al found that forgetting to take medications was the primary self-reported reason for medication nonadherence among patients with bipolar disorder.[29] Lost or stolen medication was another patient-related reason for medication adherence in this group of

homeless patients. Similarly, Nyamathi et al identified lack of an area to store medications, privacy, and medications being stolen or lost as reasons for decreased medication adherence in homeless adults in central Los Angeles.[15]

Low visit attendance at follow-up was a prominent reason for medication nonadherence in this study. In patients referred to an outpatient mental health clinic from an urban Veterans Affairs Medical Center psychiatric emergency department, homelessness was a significant predictor of lower attendance at clinic appointments.[30] Since patients at this HCH center usually need to see their provider each month for a new prescription(s) this information may be useful in designing clinic level educational programs on the importance of attending follow-up visits and medication adherence. Inadequate knowledge and skill in managing the disease symptoms and treatment and self-management of medications were other patient-related reasons for medication nonadherence. One potential explanation for these reasons may be low health literacy. Health literacy can affect how patients obtain or process health services or information and make appropriate health-related decisions.[31] In addition, cost of medications was a prevalent social/economic-related reason categorized. Cost of medications was also a reason for medication nonadherence in patients experiencing homelessness in other studies.[11,15]

In this study, patients with PTSD were significantly less likely to have medication nonadherence identified by a pharmacist after adjustment for all independent variables. In contrast, Kronish et al. found that patients with PTSD were three times more likely to be nonadherent to medications in a group of stroke or transient ischemic attack survivors.[32] In a cross-sectional study of over 1,000 patients with cardiovascular disease, PTSD was associated with medication nonadherence.[33] The relationship of medication nonadherence and PTSD is complex, especially in those who experience dissociative symptoms (disruption in memory, awareness, identity, or perception).[34] A cross-sectional study of patients with HIV identified that PTSD symptoms were associated with medication nonadherence.[34] However, patients with high levels of dissociation symptoms had higher odds of medication nonadherence; whereas patients with low levels of dissociation symptoms did not.[34] This may be associated with the patients level of discomfort or acceptance of PTSD symptoms. In contrast, PTSD symptoms were not associated with antiretroviral medication nonadherence in a randomized, crossover trial in HIV positive patients.[35] In this same trial, depression was associated with medication nonadherence.[35] It is difficult to discern why medication nonadherence was less likely identified in patients with PTSD in this study. It is possible that these patients were less willing to discuss medication nonadherence with the pharmacist and therefore it was underestimated.

Several of the predisposing traditional domain factors (demographic variables) and predisposing vulnerable domain factors (e.g. specific behavioral health diagnoses) have been associated with behavioral health medication nonadherence in studies conducted in the veteran population; however, they were not found to be significant predictors of medication nonadherence in this study. In a study of veterans with bipolar disorder, patients who were younger, non-white, homeless and had co-occurring substance abuse were more likely to be nonadherent to behavioral health medications.[19,20] Among veterans with schizophrenia or schizoaffective disorder, younger age, non-white race/ethnicity, psychiatric hospitalizations,

and substance use diagnosis were found to be associated with consistently poor antipsychotic medication adherence.[36] In a study that assessed antidepressant medication adherence in veterans with depression after psychiatric hospitalization, Zivin et al found that non-white and unknown race, substance abuse, male gender, younger age, and personality disorder were associated with lower antidepressant adherence at 3 months.[37] They also found that other anxiety disorders and PTSD were associated with higher antidepressant adherence at 3 months.[37] The lack of these significant variables in this study may be related to the type of data analyzed (veterans claims data versus this study's electronic medical record review to identify patient's self-reported medication nonadherence).

Information gained from this study may be useful to pharmacists and other healthcare providers in the development of targeted interventions to improve medication adherence and patient care. For example, forgetfulness was found to be one of the patient-related reasons for medication nonadherence. Pharmacists can provide a medication pillbox organizer as a simple, low-cost intervention to those patients with forgetfulness or missed doses.[38] Petersen and colleagues found that the use of a pillbox organizer improved medication adherence in a group of HIV positive, urban poor including homeless patients.[39]

This study also may have implications for clinic level initiatives such as the incorporation of a health literacy screening tool. The tool can provide guidance to pharmacists and other healthcare providers about the patient's reading level and quantitative skills.[40] Additionally, self-management was this study's top patient-related reason for medication nonadherence. Provision of a wallet-sized card containing a patient's health information, such as laboratory results, vital signs, or follow-up visits, can serve as a self-management tool for patients or for sharing information with other healthcare providers.[41] An intervention conducted in an inner-city health system in Atlanta, Georgia provided patients with a pill card that contained pictures, names, indication, and dosing instructions for each of their medications. The patients reported that they were very satisfied with the pill card and used the card when seeing different providers.[42] The National Consumers League and partners have launched the *Script Your Future* educational campaign to increase medication adherence and awareness.[43] As part of this campaign, free tools are available on their website for patients and providers, such as the *Script Your Future* wallet card to help patients keep track of their medications and questions to ask their pharmacist or doctor about medications.[44] As care transitions and communication issues were identified as a healthcare system-related reason for medication nonadherence in this group of patients, the provision of a medication list or card can help with medication reconciliation during transitions of care and increase communication between providers.

Additional implications for practice in this clinic may be for the pharmacist and other health care providers to provide targeted education on the need to attend follow-up appointments at each patient encounter. An appointment reminder card may be an effective method in this population due to their transitional housing and potential lack of consistent or unreliable access to a telephone. Automated telephone appointment reminders were not shown to be effective in improving primary care appointment attendance in homeless HIV patients; however, this study did not assess the percentage of patients with continuous access to telephones or up-to-date contact information.[45] Although cost was identified as a social/

economic reason for medication nonadherence, this HCH center does everything possible to increase access to medications. A subsidy program is provided to patients that cannot afford their medications. Other potential clinic level solutions to increase access to medications and decrease patient costs are utilization of a 340B Drug Pricing Program as a covered entity or collaboration with a 340B pharmacy and drug manufacturer patient assistance programs.[46]

A combination of using self-management tools, such as medication pillboxes, and pharmacist provided medication therapy management (MTM) may provide a multifaceted, provider, and clinic level approach to the complex problem of medication nonadherence in this group of behavioral health patients. During this study period, a medication review was conducted by the pharmacist to assess medication use. Incorporating a more comprehensive, collaborative MTM service into the practice model may be a patient-centered care strategy to improve medication adherence and outcomes.[24] Medication therapy management includes: conducting a medication therapy review to identify medication-related problems, providing the patient and providers with a comprehensive medication record, creating a patient-centered medication action plan, referring the patient to other healthcare providers or intervening as needed, and documenting care activities and providing follow-up.[47] In a group of Medicaid patients, the combination of specialized medication packaging and telephonic MTM increased medication adherence when compared to usual care.[48]

Limitations

This study utilized an existing database constructed from a retrospective electronic medical record review. The accuracy and completeness of the database is limited by information contained in the patient's electronic medical record. However, a protocol and procedure for abstracting data from the patient's electronic medical record was followed for this study. The results of this study may have limited generalizability. Even though the clinical faculty members and community pharmacy practice residents used a structured process for conducting the medication reviews, there was a potential for differences in documentation of medication-related problems across the varying levels of practice experience. One additional limitation is possible misclassification of the outcome, medication nonadherence. As medication nonadherence was a self-reported measure, social desirability bias and underreporting of nonadherence is a concern. However, self-reported medication adherence has been used in other studies including those experiencing homelessness.[16,17,23]

CONCLUSION

In this group of patients, the content analysis identified patient-related factors as the primary reason for nonadherence with behavioral health medications. Patients with a PTSD diagnosis were less likely to have nonadherence identified by a pharmacist in a medication review, which may be related to their reluctance to self-report nonadherence and to their diagnosis. Further study is warranted. Overall, this study revealed factors contributing to medication nonadherence in behavioral health patients at an urban HCH center which may be of importance to healthcare practitioners providing care to vulnerable populations.
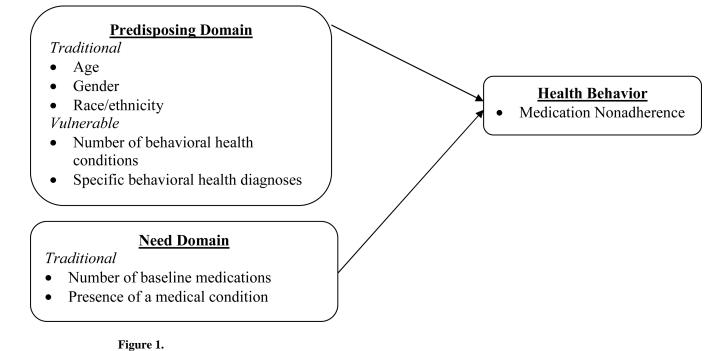
Acknowledgments

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Predisposing Domain

Traditional
- Age
- Gender
- Race/ethnicity

Vulnerable
- Number of behavioral health conditions
- Specific behavioral health diagnoses

Need Domain

Traditional
- Number of baseline medications
- Presence of a medical condition

Health Behavior
- Medication Nonadherence

Figure 1.
Modified Behavioral Model for Vulnerable Populations[26]

Table 1

Demographic Characteristics (N=426).

Variable	N (%), Mean (±SD, range)[a,b]
Age	44.7 (± 10.2)
18–34	71 (16.7)
35–49	209 (49.1)
50	146 (34.3)
Gender	
Female	220 (51.6)
Male	206 (48.4)
Race[c]	
White	154 (36.4)
African-American	256 (60.5)
Other	13 (3.1)
Number of Baseline Medications[d]	
1–2	188 (44.7)
3–5	167 (39.7)
6	66 (15.7)
Presence of a Medical Condition	197 (46.2)
Specific Behavioral Health Diagnoses	
Substance Abuse	224 (52.6)
Depression	189 (44.4)
Bipolar Disorder	128 (30.1)
Personality Disorder	110 (25.8)
Post-Traumatic Stress Disorder (PTSD)	81 (19.0)
Anxiety	52 (12.2)
Schizophrenia Spectrum Disorders[e]	48 (11.3)
Number of Behavioral Health Conditions	2.2 (± 1.0, 1–5)

[a] SD= Standard Deviation.

[b] Percentages may not add to 100 due to rounding.

[c] N=423 due to unknown (N=2) and unreported (N=1) responses. Other includes: Asian (N=7), Other (N=5), and Hispanic (N=1).

[d] N=421 due to exclusion of 5 patients with no medications at baseline.

[e] This category includes patients with schizophrenia (N=24), schizoaffective disorder (N=23), both schizophrenia and schizoaffective disorder (N=1).

Table 2

Patient-related, therapy-related, social/economic-related, and healthcare system-related reasons for medication nonadherence (N=238).

Theme	N
Patient–Related Factors	
Self-management	35
Out of medication	30
Low attendance at follow-up	28
Lack of perceived effect	19
Reason unknown	17
Missed doses	13
Forgetfulness	12
Inadequate knowledge or skill	8
Anxiety about adverse events/dependence	6
Lost or stolen medication	6
Psychosocial stress	4
Therapy-Related Factors	
Side-effects	26
Regimen complexity	1
Dosage form hard to swallow	1
Social/Economic-Related Factors	
Cost	16
Lack of transportation	3
Unstable living conditions	2
Healthcare System-Related Factors	
Communication issues	6
Care transitions	5

Table 3

Relationship between demographic variables, health-related variables, and specific behavioral health diagnoses and medication nonadherence.

	Medication Nonadherence Identified		
	Yes (N=143) N (%), Mean (±SD)[a]	No (N=263) N (%), Mean (±SD)[a]	Adjusted Odds Ratio (95% CI)[b,c]
Age			
18–34	20 (14.0)	48 (18.3)	1.0
35–49	74 (51.8)	122 (46.4)	1.4 (0.74–2.65)
50	49 (34.3)	93 (35.4)	1.1 (0.54–2.13)
Gender			
Female	73 (51.1)	137 (52.1)	1.0
Male	70 (49.0)	126 (47.9)	1.1 (0.69–1.74)
Race			
White	51 (35.7)	102 (38.8)	1.0
African-American	92 (64.3)	161 (61.2)	1.4 (0.88–2.22)
Number of Baseline Medications			
1–2	54 (37.8)	127 (48.3)	1.0
3–5	65 (45.5)	94 (35.7)	1.6 (0.99–2.56)
6	24 (16.8)	42 (16.0)	1.1 (0.58–2.17)
Presence of a Medical Disease			
Yes	77 (53.9)	113 (43.0)	1.4 (0.85–2.16)
No	66 (46.2)	150 (57.0)	1.0
Specific Behavioral Health Diagnoses			
Substance Abuse			
Yes	77 (53.9)	136 (51.7)	0.8 (0.39–1.61)
No	66 (46.2)	127 (48.3)	1.0
Depression			
Yes	74 (51.8)	108 (41.1)	1.2 (0.66–2.17)
No	69 (48.3)	155 (58.9)	1.0
Bipolar Disorder			
Yes	41 (28.7)	78 (29.7)	0.9 (0.48–1.84)
No	102 (71.3)	185 (70.3)	1.0
Personality Disorder			
Yes	41 (28.7)	63 (24.0)	0.9 (0.43–1.91)
No	123 (71.3)	200 (76.1)	1.0
Post-Traumatic Stress Disorder (PTSD)			
Yes	20 (14.0)	60 (22.8)	0.4 (0.19–0.87)
No	123 (86.0)	203 (77.2)	1.0

	Medication Nonadherence Identified		
	Yes (N=143) **N (%), Mean (±SD)**[a]	**No (N=263)** **N (%), Mean (±SD)**[a]	**Adjusted Odds Ratio** **(95% CI)**[b,c]
Anxiety			
Yes	23 (16.1)	25 (9.5)	1.4 (0.66–3.12)
No	120 (83.9)	238 (90.5)	1.0
Schizophrenia Spectrum Disorder			
Yes	9 (6.3)	37 (14.1)	0.4 (0.17–1.09)
No	134 (93.7)	226 (85.9)	1.0
Number of Behavioral Health Conditions	2.3 (± 0.9, 1–4)	2.2 (± 1.0, 1–5)	1.3 (0.80–2.25)

[a] SD= Standard Deviation, Percentages may not add to 100 due to rounding.

[b] N=406 due to missing responses, exclusion of other race category, and exclusion of 5 patients with no medications at baseline.

[c] Likelihood ratio for probability of being nonadherent to medications: $\chi^2 = 28.10$, p =0.02.