# Reasons for Nonadherence to Psychiatric Medication and Cardiovascular Risk Factors Treatment among Latino Bipolar Disorder Patients living in Puerto Rico A Qualitative Study

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## Abstract

Latinos with Bipolar Disorder (BD) have a high rate of nonadherence to psychiatric medication and treatment for other medical conditions such as Cardiovascular Disease (CVD) risk factors than non-Latinos with BD. The aim of this study is to identify patients' perspectives on the reasons for nonadherence to psychiatric medication and for CVD risk factors conditions in outpatients with BD. Three focus group sessions were held for a total of 22 adults ranging from 23 to 60 years old. Participants had BD, Type I/II and CVD risk factors. Audio-recordings of focus groups were transcribed and a content analysis was performed. Reasons identified as barriers to adherence were somewhat different for BD medications in comparison to CVD risk factors suggesting the need for integrated interventions targeting these barriers to adherence for both BD and CVD risk factors.

### Keywords

bipolar disorder; cardiovascular disease risk factors; nonadherence; qualitative content analysis; Latinos; Stigma

## Introduction

Cardiovascular Disease (CVD) is the leading cause of morbidity and mortality among patients with Bipolar Disorder (BD) (García-Portilla, et al. 2009). Several studies have established the prevalence of CVD as significantly greater in patients with BD as compared to Major Depressive Disorder patients, and non-psychiatric control group (Goldstein, et al. 2009 & Goldstein, et al. 2015). Individuals with BD are vulnerable to a variety of health problems including hypertension, hyperlipidemia, type 2 diabetes, obesity and metabolic syndrome, also known to be risk factors for CVD.

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There is ample evidence for an increased risk of CVD in BD (Fiedorowicz, et al. 2008). In a study that evaluated a psychosocial intervention, 70% of the sample had three or more CVD risk factors, and 60% had moderate to high 10-year risk for CVD (Goodrich, et al. 2012). These risk factors in patients with BD are about twice as common than in the general population (García-Portilla, et al. 2009).

Specifically, Latinos have demonstrated an alarmingly high proportion of CVD risk factors, and the prevalence of three or more CVD risk factors was higher among men and women of Puerto Rican background and low educational level than other Latino group (Daviglus, et al. 2014). In the United States, Latinos with Severe Mental Illness (SMI), including BD, have higher rates of CVD and shorter life expectancy when compared to other minorities in the general population or with non-Latino Whites with SMI (Carliner, et al. 2014). Thus, there is a double burden of risk associated with race/ethnicity and psychiatric diagnosis.

There are a variety of reasons for the association between CVD and BD, including unhealthy lifestyles exacerbated by psychiatric symptoms (e.g., obesity, cigarette smoking) and side effects of medications (Slomka, et al. 2012). Although CVD risk factors have been associated with psychiatric medications, several studies have shown that CVD mortality is overrepresented in BD patients prior to the advent of atypical antipsychotics, and prior to the use of tricyclic antidepressants and lithium (Goldstein, et al. 2009).

Although pharmacotherapy is essential for the successful management of bipolar disorder, nonadherence rates are up to 60% (Levin, et al. 2015). The lack of adherence to medication is a common, potent, but modifiable risk factor for a poor outcome (Depp, et al. 2007). Adherence is influenced by patient-related reasons, such as: poor insight, negative attitude toward medication, lack of understanding of the illness, side effects of medication, the complexity of a medication regimen, and environmental risks (i.e., poor clinician-patient alliance, poor aftercare environment, and family support, among others) (Lacro, et al. 2002; Sajatovic, et al. 2009).

Latinos with BD in the continental US are more likely to be nonadherent to psychiatric medication and other medical conditions than Euro-Americans (Lanouette, et al. 2009; Maina, et al. 2013). These other medical conditions are associated with CVD risk factors such as hypertension, and hyperlipidemia. In the case of diabetes, Latinos are more nonadherent than non-Latinos (Carliner, et al. 2014). The reasons for diminished adherence in Latinos are unclear. For example, poor adherence is related to substance abuse, limited family support; Spanish-speaking but not bilingual patients, less acculturated patients, socioeconomic status, barriers to accessing quality care, lack of health insurance, and in settings where providers are non-Latino (Lanouette, et al. 2009; Rodríguez-Gómez and Salas, 2006).

The aim of this study is to identify patient perspectives on the reasons for nonadherence to medication for psychiatric symptoms and CVD risk factors, including healthy behaviors in a cohort of outpatient Puerto Ricans with BD. The health belief model is used as a background to understand why patients do not take medications as prescribed, and with the purpose of designing successful interventions that promote adherence (Kamran, et al. 2014). This

model was chosen because it supports that patients are able to make decisions and take action to protect their health, but this is dependent upon whether they believe that they are susceptible to a health condition, the perception of the severity or threat; if the benefits of taking the action overcome the costs; and the perceived barriers (Champion and Skinner, 2002). Another aim of this study is to explore if there is a different set of experiences related to nonadherence to psychiatric medication, to physical illness medication associated with CVD risk factors and the development of healthy behaviors. Lay public distinguish between mental and physical illnesses (Kendell, 2001). Three specific research questions were raised: 1) What are the barriers to adherence among patients with BD at risk of CVD? 2) What is the pattern for nonadherence among them? 3) Are there different patterns between nonadherence to psychiatric medication, and prescriptions for the risk factors of CVD?

## Methods

### Participants

Sample sizes, in qualitative research, are typically small (Vargas-Huicochea, et al. 2014). Twenty-two patients were included to participate in four focus groups, each with an average number of five or six participants. All participants, except three of them, attended a total of three sessions of the focus groups. The participants were outpatients recruited from the Community Mental Health Clinic (CMHC) of Carlos Albizu University (CAU) and the Mental Health and Substance Abuse Administration (ASSMCA) outpatient sites: Psychosocial Center of Trujillo Alto, Mental Health Clinic of San Patricio, and Psychosocial Center of Cayey. This was a convenience sample. The recruited participants were between 23 to 60 years old; and had been diagnosed with BD, Type I/II; and one or more of the following self-reported CVD risk factors: hypertension, obesity (abdominal obesity), diabetes, hypercholesterolemia, smoking, poor diet, limited physical activity, or a high level of stress. In the Center of Trujillo Alto, five participants were recruited, with four participating. In the Center of San Patricio, seven patients participated. And, in the Center of Cayey, two patients participated in the study as no other BD patients were available in the clinic at that time. At the CMHC at CAU, eight patients were recruited, with six participants completing the focus group sessions.

### Procedures

The Institutional Review Board of the University of Puerto Rico, Medical Sciences Campus approved this study. Clinical psychologists and/or social workers at the facilities (or supervised graduate students in psychology from the CMHC of CAU) invited possible candidates to participate in the study. The PI was notified to contact the candidate. Before enrollment in the study, a signed consent form was obtained. All subjects that signed written informed consent answered a questionnaire that solicited sociodemographic and mental and physical health data from each participant. All participants that consented and answered the questionnaire received an incentive of $30 for this initial visit. In the final group session, each participant received an additional $30 for transportation and food expenses. The focus groups met for 90 to 120 minutes during three sessions in which each subject participated. Prior to the start of each focus group meeting, the rules and requirements for maintaining anonymity were explained. The participants were explicitly invited to share all of their

thoughts, and beliefs about a particular topic. The first author led the focus group meetings, and two research assistants (one in each group) took notes and recorded the sessions.

We developed a guide composed of open-ended questions (Creswell, 2013; Krueger, 2002) based on a review of the literature (Samalin, et al. 2014) (See Supplemental Material). A set of questions was generated to guide the sessions in consultation with two experts. The sessions were divided in three broad topics related to the aims of this research.

In the first session, we explored the barriers for adherence to treatment medication and learned what was needed to help them adhere to their treatment regimens. The questions were related to the pattern of nonadherence to the psychiatric medication, such as: When was the first time that you missed a dose and why did you not take it? What was the reason for not taking your medication? Three broad categories of nonadherence were discussed in the focus groups. Participants identified with some of these categories or named other reasons for nonadherence.

In the second session, the relationship between bipolar disorder and cardiovascular disease risk factors was explored. For example, "how do you manage the risk factors for CVD? Do you have any problems taking medication for these risk factors? Have you taken into consideration activities and behaviors that promote the improvement of these risk factors?" Between other related questions.

The third session focused on the importance of having family members or significant others participate in the patient's adherence to treatment. For example, how significant is for you to receive family support in adhering to prescribed treatments? How significant is for you to receive support from others: example – friends, community, church, counselor or any other?

### Data Analysis

Audio-recordings of focus groups were transcribed and a content analysis was performed (Cho and Lee, 2014). The PI, and two researcher assistants transcribed each recording verbatim. Data were coded using a conventional content analysis in NVivo 11 for Windows data analysis software (QSR International). Twelve sessions were transcribed. Two investigators coded the transcribed interviews independently to condense the data into analyzable units. Any discrepancies were carried out until a consensus could be reached.

A qualitative content analysis was used based on deductive and inductive approach. A deductive approach was appropriate for this study because it takes into consideration an existing theory in a new context. In this study, the health belief model provides a useful perspective of how patients' beliefs and attitudes can affect adherence. For example, we examined the degree to which each construct related with barriers and benefits to adherence appears in the discourse of the participants. The unit of analysis was selected (focus groups interview transcripts), categories were defined a priori (e.g. patient related reasons for nonadherence), data was coded accordingly, and comparison of categories across cases was carried out (Cho and Lee 2014).

The inductive approach was appropriate when prior knowledge was limited under the study (Elo and Kyngäs, 2008; Zhang and Wildemuth, 2009). Text was extracted from the unit of

analysis, followed with open coding by reading each transcript. The generation of categories based on the unit of analysis helped to compress a large number of texts into fewer content-related categories. After open coding, preliminary codes were developed from which themes were obtained (Elo and Kyngäs, 2008), i.e., main themes, subthemes, and emerging patterns. A segment of the transcripts were assigned more than one code. In moments of disagreements for the assignment of codes, the team members of the research met and discussed how to resolve them. Agreement between raters and Kappa was .97 indicating an excellent agreement.

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## Results

### Baseline sample characteristics

Nineteen (86%) of 22 participants attended all three sessions. The mean age of the 22 participants who completed the informed consent and sociodemographic questionnaire was 42.5 years (SD = 9.4, range 23 – 60 years). The group was predominantly female (86%). In regard to education, 15.8% of the women had a master's degree, 26.3% had taken a technical course, and 21.1% had not finished university studies. More participants had diagnoses of BD I (54.5%), and 45.5% had BD II (see Table 1). All the participants reported current use of psychiatric medication (100%), and 68% participants reported nonadherence to psychiatric medication during the week of recruitment. Fifty two percent of the participants did not take medication for any physical condition.

Regarding the CVD risk factors, 68% of the sample had $BMI > 30$ Kg/m$^2$ (Obesity), 18% was overweight, and 14% was non-obese. Seventy-three percent had *an unhealthy diet and did not exercise*. Forty-one percent had hypertension. Of them, 23% had it under control with medication; 18% were not taking medication for their hypertension. Eighteen percent had *diabetes*. Thirty-seven percent of participants had high cholesterol. Of them, 14% were not taking medication, while 9% did not know their levels. Ninety-one percent of participants expressed had high levels of *stress*. Twenty-seven percent of participants were active smokers, and 18% smoked in the past. Other physical conditions were reported and summarized (Table 2).

The minimum amount of CVD risk factors in bipolar patients was three. This result was in accordance with the study of Daviglus, et al. (2014) that found three or more adverse risks for CVD in a sample of Puerto Rican men and women. Finally, in Table 3 there are the prescribed medications in the sample.

### Qualitative Content Analysis

Analysis of the focus groups transcripts resulted in the identification of 29 categories. These categories were grouped with the purpose of reducing the number of categories. For this study, three main categories were elaborated: 1) the barriers for adherence to treatment for BD; 2) the barriers for adherence to treatment for CVD risk factors; and 3) adherence to treatments (benefits). Each one of these main categories has the barriers identified.

**1) Adherence barriers to BD treatments—**For the main category of nonadherence to BD treatments, five barriers were found through the content analysis of the narratives of the participants. These five barriers had the following order based on the percentage of major responses expressed by the majority of the participants: 1.1) Stigma about the psychiatric condition (33%), 1.2) patient-related reasons (19%), 1.3) medication-related reasons (18%), 1.4) poor support from family members (17%), and 1.5) provider relationship factors (14%). A variety of quotes were selected to illustrate each of these barriers. These quotes, at the same time, represent subthemes that emerged for each category. The participants' quotes are illustrated in italics below.

**1.1) Stigma about the psychiatric condition:** The theme of stigma about psychiatric conditions emerged from the beginning in the verbal expressions of the participants as one of the barriers that most influenced adherence to treatment. For example, stigma was of the fear to be labeled as "crazy" by families and others and fear to be "addicted to pills" was repeated by different participants in this sample. Several participants identified this barrier as stigma and others described in detail how they were affected by the prejudice that society, family and the individuals had against them. Examples are: *"As always, this is a stigma that I have a mental problem and that means that I am not functional, I am not worthy." "In my case, my family, my brothers told me 'you are crazy'. I did not want to be told that. Sure, they were like me, but they did not accept it." "Some people say 'because you took this pill, you're going to be addicted to pills. All of this is only mental'".*

**1.2) Patient-related reasons for nonadherence:** For the barrier of patient-related reasons, there were a variety of subthemes, among them denial about their diagnosis.

Denial. *"Then denial, I cannot have this, this may not be what they are saying and then you do not want to realize that one has a mental problem." "In my case it was because of denial, I did not accept the condition and as my family did not accept it, I did not accept." "The doctor said to me: 'You have bipolar II. You have to take this.' My response: I had nothing!"*

Forgetfulness. It was another subtheme under patient-related reasons for nonadherence to BD treatments. Example: *"I also have gaps, I forget, but I was taking them when I remembered." "Sometimes I forget... Sometimes, oh Virgin, I have not taken my medication."*

*If there are no symptoms, why take medications.* When the patient thought and felt well, there was no reason to take medications. Example: "*Another reason is because I feel I do not need them (medications). I feel so well, that I feel that I can control myself.*"

Mood changes. And, finally in cases when the mania or depression *mood* arose: "*Or when I'm coming to mania, therefore may be difficult for me to do this, to consider medication.*"

**1.3) Medication-related reasons:** This was the third theme that emerged from the content analysis. Related to medication-related reasons, we found that side-effect and complex doses were the most marked.

Side-effects. *"I stopped taking them a few times. One time because I had gained weight. Do you remember the Depakote? I was like a cow. People made fun of me. And instead of two Depakote, I took only one."* (She eventually discontinued all medication).

Complex doses. *"…Before, I took out the pills, and there were so many … so many that, that, that distracted me. They were so many that they fell to the floor."*

**1.4) Poor support from family members:** Poor support from family members included pressure to stop the medication. For example: *"I stop to take my medication because my dad tells me I do not need it. I mean, when he sees me too anxious and everything else, he cares. But he says to me do not take these drugs, these medications are bad to you. You're going to get worse." "Because …when I'm about to explode like a pressure cooker, I go to my room and look for my medications. When I leave the room my dad says 'you are taking your drugs!' And I say 'No. I'm fine daddy. Why would I take my medication?' (His father says): 'Yeah baby that is not good for you to continue taking so much medication. It hurts you'."*

**1.5) Provider-relationship factors:** This was a theme that came up when the participants talked about the relationship with the psychiatrist. They felt that their needs were not attended. *"He definitely was not listening. I came (to the office) … (the psychiatrist said) 'Ah, you're still seeing things, hearing things. Are you still sad? Still' … 'Ok, I see you.' (She laughed): And you were five hours in the waiting room and…, gave me a prescription and you do not know for what. Then you get to your house and they all say (you have) schizophrenia and so on. And (she thought) 'Oh my God what do I have?' "You do not know what you have because they either tell you what you have. And that is why, I stopped taking the (medications)."*

Change of provider. Related to provider-relationship factors, change of provider was another subtheme indicated by the participants: *"… if they do not change medications, every time… But they change the medication each time, by a person who does not know you and has not seen you more than once."* When different psychiatrists saw the patient in every medical appointment and changed the medications, the stability of the patient was affected.

***Relationships among themes:*** There was a relationship among each one of these five categories. These five barriers were interrelated in the discourse of the participants. However, several participants explained (without actually labeling the barrier) how the family stigmatized their psychiatric condition and its direct influence over their thoughts of denial about their condition. The patient internalized the prejudice of society about mental illness, and in the case with bipolar patients, through the family or significant other. Patients believe that if the family did not accept their condition, then, they didn't have it. *"Because in many cases the family does not accept it, and if the family does not accept it, you feel rejected, you feel different, and you do not want to be different. And so, you ignore the condition, because others ignore it…" "In my case, bipolar disorder is very common in my family, but is not accepted. I have many people around me who have symptoms and never accept it. Therefore, they are not medicated. They live an uncontrolled life, but you cannot tell them." "What upsets us since we were young… In my case, the fact that my family, my own brothers told me 'Oh, you are crazy'… I do not want to be told that."* In these examples,

we observed the connections between stigma, patient-related reasons (denial) and poor family support.

In the case of change of provider (provider-relationship factors) when the patient was stable with certain medications, and in the next medical appointment, the psychiatrist or new physician changed the doses or the actual medication, the patient discontinued the new medication because of its side effects based on past experiences.

**2) Adherence Barriers to CVD risk factors—**Although the categories of these barriers were similarly related to BD, they did show a different pattern. In this part, we included issues related with barriers for adherence to medication and healthy behaviors. Barriers to CVD treatment adherence varied according to: 2.1) patient-related reasons (65%); 2.2) provider poor orientation or follow-up (14%); 2.3) stigma against taking medications (14%); and 2.4) lack of support (7%).

Several participants indicated that they took their medication for their physical conditions because there was something tangible, more serious, or the physical condition was from birth; meaning, for them, that the physical condition was more real. *"All my life I've taken (medication for physical illness) because I know that these are conditions that are congenital."* The barriers identified were the following.

**2.1) Patient-related reasons:** In this category, some participants talked about the lack of understanding of the purpose of medication although they received information about the medication for the physical conditions. For example: "I did not understand and actually I don't understand why the medication has to do with the condition. I don't know… I stopped taking my medications".

Others did not have the information about the relation between the medication with their conditions and expressed wrong ideas about the medication as part of the lack of understanding. *"During the summer I stopped all medications because I tried to detoxify my body on my own. I did not want to take medication."* The wrong idea was related to the belief of the medication as dangerous.

Finally, other expressions were related to the absence of physical symptoms. Why take medication if there were no physical symptoms: *"That's what I wonder. If one feels well, then why then continue taking medications?"* In this case, the participant was making a reference to the diabetes medication. Another participant: "… *because I take them when I need them."* "Honestly, I stopped taking medications, but it was because I felt better."*

**2.2) Provider poor orientation or follow-up:** In this category, patients felt that doctors did not follow their physical conditions. This was a subtheme that was repeated by the participants. Example: *"I need to keep tract of my medication for cholesterol… Because I have a lot of lab work to do. The doctor does not follow up my physical condition."*

**2.3) Stigma:** Similar to the stigma for patients with BD, the stigma was repeated as a barrier for adherence to medication for physical conditions. Participants thought of their physical conditions as something related to aging. Diabetes was viewed as a disease of the elderly. *"I*

said, but if I am so young and with diabetes… Why? What am I doing on medication for diabetes? When I went to the doctor, there were many old people there around me and the only young one was me."

**2.4) Lack of Support:** This category refers principally with carrying out modifications with health behaviors that are important for improvement of physical condition, as could be healthy diet, exercise, among others. *"No one else does diet in the family"* was one of the subthemes that emerged related with lack of support. *"I had my children at home, and as I was cooking for them…. Because buying foods, you know when the kids are in the house, increases the cost of the monthly purchase… Well, what I was buying was more for them and not for me and to be cooking more for them."*

*Relationships among themes:* As in the case of the barriers for adherence to BD treatments, here was a relationship among these barriers for the physical conditions associated with the risk factor of CVD. In the case of the participant that indicated that she stopped her medications during summer to detoxify her body, thought of the medication as dangerous for her. In this case, a combination of lack of understanding about the medication (patient-related reasons) with poor orientation and follow-up influenced her nonadherence.

**3) Adherence to treatment for BD and CVD risk factors**—In this part, we explored the factors that promote adherence to treatment from the patient's perspective. The themes that emerged were in the following order: *Support (from family, significant others or providers, and group support) (55%); patients responsibility (29%); orientation/ psychoeducation (7%); psychotherapy (6%) and health behaviors (3%).*

**3.1) Support:** The main strategy to improve adherence from the participants was support. Indeed, the first major theme that emerged during the qualitative analysis was related to Support. Under the theme of Support, the subthemes were related to Family, Significant others and Group support.

Support from family. *"Because without their support (family), I do not think I could have achieved it." "Ever since when I've been sick, is another person who is responsible for giving them to me (medication)… I had to live several months with my dad as I returned to recovery… You know during my relapses they (family) are those that manage."*

Support from significant others. *"I like having someone to talk to and share my burdens when I feel bad. We all need that kind of support." "I would like to live in a community where I could have conversations with my neighbors."*

Group Support. *"We can form a support group. We all have the same condition, and we have common situations …" "We meet here today, it is a motivation to prepare myself, even wear lipstick. That is, if I were in my house, I would not. It is a motivation."*

**3.2) Patient Responsibility:** Patients recognized that they need to take responsibility of their life to maintain adherence to treatments. Example: *"For me it is myself as a patient, I should*

*seek information and know my medications … to know the names of medications, their side effects, the milligrams I am taking, etc."*

Routine establishment is a subtheme emerging from patient responsibility. The participants explained the importance of have a routine to improve their adherence to treatment as follows: *"What I need is a routine. Through a routine I can achieve adherence to my medications. Because sometimes if I am sleepless during the night, watching a movie, then I fail to get up at the time that I'm supposed to take my medication."*

Activities, such as a task or assignment to do later, as part of a group support and a routine establishment. "*Yeah, that works for me. For example, write down when I feel I have courage, or when I experience a change. The situation that caused it … I kept a diary … and I become aware*." Participants shared about previous experiences by doing tasks where they were able to review what worked in therapy. By keeping a journal, they can go back and reread their accomplishments to improve their knowledge about their difficulty for adherence, etc.

**3.3) Orientation/Psychoeducation:** This theme emerged from the interest of participants to receive orientation and psychoeducation about their mental illness, physical illness, medications through orientation, and where the family or significant other can participate. As one participant explained, *"More education is needed everywhere and for oneself. They should explain, not just assume that you understand."* "*I know that I am bipolar II, but what the hell is that? I want to know how to deal with my condition*." And, finally: *"Having written information about medications"*, was another subtheme emerged.

**3.4) Psychotherapy:** This theme emerged during the focus group talked about what is needed to help them adherent to their treatments. *"Therapy, a lot of therapy. I received a lot of empathy from my psychologist from the beginning. Empathy. That is a very important issue for us and that the professional show interest." "I think the help is very important from both professional psychologist, psychiatrist, etc."*

**3.5) Health Behaviors:** Participants explained what healthy behaviors were needed. *"Eat well." "Being knowledgeable about nutrition. A nutritionist or dietitian." "It would be ideal if you would put in a gym or get us out to walk." "The exercises … I have to keep my mind occupied …"* Other activities mentioned were dance, aerobics, walking, quit smoking, lose weight, listen to music, improve sleep patterns, stress management, among others.

## Discussion

Nonadherence behaviors are a complex phenomenon, with a wide variety of determinants (Acosta, et al. 2012). Therefore, it is needed to identify patient's reasons for nonadherence and to work with these barriers for the successful management of BD patients and their physical conditions associated with CVD risk factors. This study is the first to explore nonadherence to medications and to healthy behaviors among the Puerto Rican Latino population with BD at risk of CVD. The findings addressed initial questions related to the presence of different patterns between nonadherence to psychiatric medications and

treatment for the physical conditions. Although themes overlapped in many respects, there was a somewhat different set of experiences related to nonadherence to psychiatric medication and medication for the physical illness.

Our focus groups indicated that barriers for adherence to medication for psychiatric symptoms were related to stigma, patient-related reasons, medication-related reasons, poor support from family members, and provider relationship factors. Barriers for adherence to medication for physical conditions related with CVD risk factors were patient-related reasons, provider poor orientation or follow-up, stigma, and lack of support (from family). Several themes were similar but held a different position in their order of frequency, exerting more weight as in the case of the stigma that was the barrier most indicated to treatment adherence for BD in comparison to stigma for CVD risk factors.

In this study, stigma was the first barrier that bipolar patients identified as related to their psychiatric treatment. Fear to be labeled as "crazy" by families and others, or to be labeled as addicted to pills, were subthemes associated with stigma. Also, stigma for physical conditions related to CVD risk factors was a barrier, but emerged in a third position suggesting a different pattern of importance for these participants. Stigma for mental illness is a well-known barrier but for physical illness is less commonly described in the literature. In particularly, there were participants that viewed diabetes as an illness of the elderly. This is similar to a study of Jeragh-Alhaddad, et al. (2015) where social stigma was found as a barrier to medication for diabetes, in which 10% of participants reported never taking their diabetes medications in the presence of others. Adams and Carter (2011) found in a study of barriers related with society among patients with diabetes and/or hypertension that stigma was identified where patients felt that other people, when told that they were hypertensive, thought about them as a different kind of person and shunned them.

Patient-related reasons were the second barrier identified by this cohort for BD treatments. In the case of physical conditions related to CVD risk factors, patient-related reasons were the first barrier. Subthemes in patient-related reasons for nonadherence to BD treatment were denial, forgetfulness, and mood changes. In the case of physical conditions for CVD risk factors, the subthemes were a lack of understanding and 'if no symptoms, why take medications'. This last subtheme emerged in both (for BD symptoms and CVD risk factors). However, patients who stop taking medication for BD symptoms, not necessarily cease taking the medication for their physical condition. There were participants that thought that physical conditions were more real or more important than mental conditions (Kamran, et al. 2014). On the other hand, there were participants that stopped taking the medications for both conditions when they felt well. Several participants stated that mood symptoms influenced adherence for both BD and CVD risk factors. When in mania or depression mood, they stopped taking the medication because of lost of interest or motivation or because they wanted to stay in bed all day.

For the third theme, medication-related reasons for nonadherence to BD medications, side-effects, and complex doses were the subthemes related to it. In the case of the barriers for adherence related to CVD risk factors, these issues did not emerge. Poor support from the family members was the fourth theme that emerged for the nonadherence to BD treatments

as well as CVD risk factors. And, finally, the fifth theme of provider relationship factors, where the relationship with the provider was an important modifier of adherence. In particular, adherence was diminished if participants felt that their provider was not listening. In the case of the barrier for adherence to physical condition, provider poor orientation or follow-up, was the second theme that arose. Similar to the provider relationship factors, participants felt that they received poor orientation or did not receive follow-up to their physical conditions by the provider.

A comprehensive review (Leclerc, et al. 2013) about determinants of adherence to treatment in BD patients found that a stronger alliance among the provider and patient promote a less negative attitude towards medications and lesser sense of stigma. Psychoeducation with peer support promote higher adherence rate, and diminished the perception of stigma. In our study, participants mentioned the development of support (from family, significant others or providers, and group support), patient responsibility, receive orientation/psychoeducation, psychotherapy and improved health behaviors are factors that will help them to be adherent. These results lead us to consider the importance of improving adherence tailoring interventions that focus on these barriers and facilitators.

There were several limitations of this study. There was a low representation of males. The sample was not representative of all Latino patients with BD and does not include representation of all clinic settings across Puerto Rico. People without access to treatment were not included. Given the restricition to residents of Puerto Rico, the findings may not generalize to other Latinos. Some possible aspects of nonadherence were not thoroughly explored such as the use of alcohol, and other substances. However, the participants were referred from clinical settings where drug abuse is excluded. Although formal diagnosis was an inclusion criterion, no formal assessment of BD diagnosis was conducted via structured interview. The CVD and CVD risk factors data was collected by self-report, and there could have been participant that were not aware that they have any of the risk factors for CVD. Finally, they may have had other comorbid psychiatric conditions that were undiagnosed.

These results support the need for intervention models that consider barriers and facilitators of adherence to BD treatments and the prevention of CVD risk factors in Latinos, in particular, Puerto Ricans. Team-based integrated healthcare that addresses both CVD risk factors and BD are needed with consideration given to Latino patients who may be at greater risk than non-Latinos with BD.

There are treatment guidelines that recognize interventions specifically for patients with bipolar disorder and other comorbidities that have been found effective, such as, collaborative chronic care models (CCMs) (Kilbourne, et al. 2012). Our findings additionally indicate that CCM and other integrated models that are aimed at the problem of nonadherence in the Latino population may benefit from integration of family members or significant others to provide support (Gaudiano, et al. 2008) for the patient. Family psychoeducation about the purpose and importance of medications is an essential part of this process. In the present study, the theme related to poor support from family members revealed the strong influence of family perspectives on the patient decisions about medications, which may be more relevant to Latinos in comparison with non-Latinos

(Clatworthy, et al. 2007). Our findings regarding stigma are consistent with that of other work indicating Latinos receiving antidepressants experienced a high level of family disapproval of the use of medications (Interian, et al. 2007). On the other hand, positive support from family was a theme that emerged as significantly important in maintaining adherence. Support from family and significant other is associated with positive health outcomes (Alegria, et al. 2007) among Latinos. Finally, psychoeducation is a valuable and effective service to reduce rates of nonadherence (Leclerc, et al. 2013). For that reason, it is important to improve access to integrated health education addressing both BD and CVD risk factors for this vulnerable patient population.

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**Table 1**

Participant Characteristics

| Age in years, Mean (SD) | 42.5, (9.4) |
|---|---|
| Female, n (%) | 19 (86.4%) |
| Race, n (%) | 18 (82%) Whites |
| Ethnicity, n (%) | 21 (95.5%) Puerto Ricans |
| | 1 (4.5%) Dominican Republic |
| **Marital status, n (%)** | |
| Single, never married | 54.5 |
| Married | 0 |
| Divorced | 36.4 |
| Widower | 4.5 |
| Separated | 4.5 |
| **Diagnoses, n (%)** | |
| Bipolar, Type I | 54.5 |
| Bipolar, Type II | 45.5 |

**Table 2**

Self-Reported CVD Risk Factors

|  | (n=22) |
|---|---|
| Hypertension | 41% |
| Overweight | 18% |
| BMI>30kg$^2$ (Obese) | 68% |
| Diabetes | 18% |
| High Cholesterol | 37% |
| No physical exercise | 73% |
| Smoker | 46% |
| Heart Valve Problems | 18% |
| Unhealthy Diet | 73% |
| Stress | 91% |
| **(Other physical conditions)** |  |
| Hypothyroid | 50% |
| Asthma | 36% |
| Cancer | 4% |
| Hepatitis C | 5% |
| Sexually Transmitted Disease | 18% |
| Back pain problem | 27% |
| Spasm Condition | 14% |
| Sclerosis | 5% |
| Sleep Apnea | 18% |
| Osteoarthritis | 18% |
| Kidney problems | 4% |

**Table 3**

Prescribed medications in the sample

| Psychiatric Medications | Medications for physical conditions |
|---|---|
| Divalproex sodium | Simvastatin |
| Clonazepam | Verapamil |
| Quetiapine | Glipizide |
| Lithium | Metformin |
| Temazepam | Metropolol |
| Ativan | Atenolol |
| Bupropion | Gemfibrozil |
| Dalmane | Glimepiride |
| Risperidone | Kombiglyze |
| Sertraline | Captopril |
| Paroxetine | Insulin |
| Alprazolam | Levothyroxine |
| Zolpidem | Cabergoline |
| Trazodone | |
| Lamotrigine | |
| Paliperidone (injection) | |
| Prolixin | |
| Mirtazapine | |
| Thorazine | |
| Haloperidol | |
| Aripiprazole | |
| Escitalopram | |
| Citalopram | |
| Venlafaxine | |
| Amphetamine and dextroamphetamine | |