Title

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Journal

Journal of Consulting and Clinical Psychology, 82(3)

ISSN

0022-006X

Authors

Chavira, Denise A
Golinelli, Daniela
Sherbourne, Cathy
et al.

Publication Date

2014-06-01

DOI

10.1037/a0036365

Peer reviewed

Published in final edited form as:
J Consult Clin Psychol. 2014 June ; 82(3): 392–403. doi:10.1037/a0036365.

Treatment Engagement and Response to CBT among Latinos with Anxiety Disorders in Primary Care

Denise A. Chavira,
Department of Psychology, University of California Los Angeles, Department of Psychiatry, University of California San Diego

Daniela Golinelli,
RAND Corporation, Santa Monica, California

Cathy Sherbourne,
RAND Corporation, Santa Monica, California

Murray B. Stein,
Department of Psychiatry, University of California San Diego, Family and Preventive Medicine, University of California San Diego

Greer Sullivan,
Department of Psychiatry University of Arkansas for Medical Sciences, Little Rock, Arkansas, VA South Central Mental Illness Research, Education, and Clinical Center University of Arkansas for Medical Sciences, Little Rock, Arkansas

Alexander Bystritsky,
Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine, University of California Los Angeles

Raphael D. Rose,
Department of Psychology, University of California Los Angeles

Ariel J. Lang,
VA San Diego Health Care System Center of Excellence for Stress and Mental Health, Department of Psychiatry, University of California San Diego

Laura Campbell-Sills,
Department of Psychiatry, University of California San Diego

Stacy Welch,
Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine and Harborview Center for Healthcare Improvement for Addictions, Mental Illness, and Medically Vulnerable Populations (CHAMMP), Seattle, Washington

Kristin Bumgardner,

Corresponding author: Denise A. Chavira, Ph.D., Department of Psychology, University of California Los Angeles,: 1285 Franz Hall, Box 951563, Los Angeles, CA, 90095-1563. Telephone: (310) 825-8466; dchavira@psych.ucla.edu.

Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine and Harborview Center for Healthcare Improvement for Addictions, Mental Illness, and Medically Vulnerable Populations (CHAMMP), Seattle, Washington

Daniel Glenn,
Department of Psychology, University of California Los Angeles

Velma Barrios,
Los Angeles County Department of Mental Health

Peter Roy-Byrne, and
Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine and Harborview Center for Healthcare Improvement for Addictions, Mental Illness, and Medically Vulnerable Populations (CHAMMP), Seattle, Washington

Michelle Craske
Department of Psychology, University of California Los Angeles

Abstract

Objective—In the current study, we compare measures of treatment outcome and engagement for Latino and non-Latino White patients receiving a cognitive-behavioral therapy (CBT) program delivered in primary care.

Method—Participants were 18–65 years old and recruited from 17 clinics at four different sites to participate in a randomized controlled trial for anxiety disorders, which compared the CALM intervention (consisting of CBT, medication, or both) to usual care. Of those participants who were randomized to the intervention arm and selected CBT (either alone or in combination with medication), 85 were Latino and 251 were non-Latino White; the majority of the Latino participants received the CBT intervention in English (n = 77). Blinded assessments of clinical improvement and functioning were administered at baseline, and at 6, 12, and 18 months after baseline. Measures of engagement, including attendance, homework adherence, understanding of CBT principles, and commitment to treatment were assessed weekly during the CBT intervention.

Results—Findings from propensity weighted linear and logistic regression models revealed no statistically significant differences between Latinos and non-Latino Whites on symptom measures of clinical improvement and functioning at almost all time points. There were significant differences on two of seven engagement outcomes, namely number of sessions attended and patients' understanding of CBT principles.

Conclusions—These findings suggest that CBT can be an effective treatment approach for Latinos who are primarily English speaking and likely more acculturated, although continued attention should be directed toward engaging Latinos in such interventions.

Keywords

anxiety; Latinos; primary care; engagement; treatment

Anxiety disorders are prevalent in Latino populations. Findings from epidemiological studies based in the United States (US) suggest that lifetime rates of anxiety disorders

among Latinos range from 19–30% (Burnam, Hough, Karno, Escobar, & Telles, 1987; Vega et al., 1998; Vicente et al., 2006). Data also suggest that US born Latinos, particularly those of Mexican origin, are at higher risk than immigrant Latinos, for mood, anxiety, and substance use disorders (Alegría et al., 2008; Grant et al., 2004; Vega et al., 1998). Despite the remarkable presence of anxiety and related disorders, Latinos are less likely than non-Latino Whites to use outpatient mental health services (Miranda & Green, 1999; Ojeda & McGuire, 2006) and are also less likely to receive evidence-based care (U.S. Department of Health and Human Services, 2001). These disparities underscore a treatment need for a large and growing segment of the US population.

Cognitive-behavioral therapy (CBT) is the primary evidence-based psychosocial intervention for anxiety disorders (Butler, Chapman, Forman, & Beck, 2006). However, few studies have examined the efficacy of CBT with Latinos (Miranda et al., 2005; U.S. Department of Health and Human Services, 2001). Most randomized controlled trials (RCTs) for adults with anxiety disorders have only recruited small proportions of Latinos, making any kind of ethnic specific analysis impossible. As an example, in a recent review of RCTs for obsessive compulsive disorder, only 1.0% of 2,221 participants from 21 trials were Hispanic/Latino (Williams, Powers, Yun, & Foa, 2009). Studies examining the efficacy of CBT for Latino children and adolescents with anxiety disorders are more common, albeit still few. Findings from these RCTs have found comparable outcomes among Latino and non-Latino White youth on measures of clinical response, remission, symptom severity and overall functioning (Piña, Silverman, Fuentes, Kurtines, & Weems, 2003; Piña, Zerr, Villalta, & Gonzales, 2012; Silverman, Piña, & Viswesvaran, 2008).

RCTs that evaluate CBT for Latinos with depression, a distinct but related disorder, are more numerous, particularly in primary care settings (Horrell, 2008; Miranda et al., 2005). Primary care based interventions may be particularly well-suited for Latinos who often experience more barriers to access, and endorse more stigma regarding seeking services from specialty mental health settings (Vega et al., 2007; Vega et al., 1999). Findings from these studies suggest that Latinos with depression, including low-income, and Spanish speaking patients, have comparable responses to CBT as other ethnic groups (Miranda, Azócar, Organista, Dwyer, & Areane, 2003; Muñoz et al., 1995). In large scale quality improvement programs, which have included a CBT option, significant short and long term effects have been found for quality of care received by Latinos, African Americans and non-Latino Whites, and significant reductions in depressive symptoms have also been found for Latinos and African Americans (Miranda, Duan et al., 2003; Wells et al., 2005). In smaller, community based studies, favorable responses to CBT have also been found for various Latino ethnic subgroups (Comas-Diaz, 1981; Organista, Muñoz, & Gonzalez, 1994; Rossello & Bernal, 1999).

While findings offer some support for comparable clinical outcomes among Latino and non-Latino White participants who have received CBT, less attention has been devoted to engagement-related constructs, which typically reflect the extent to which a patient participates in treatment (e.g., treatment uptake, adherence, and attrition). Previous studies have found that lower engagement, as defined by fewer sessions attended, lesser homework adherence, and/or higher rates of attrition, can have negative effects on clinical outcomes

(Glenn et al., 2013; O'Brien, Fahmy, & Singh, 2009). Studies which have examined differences in engagement between Latinos and non-Latino Whites have mostly focused on depression; these studies have found higher attrition rates in both pharmacological and psychosocial interventions for Latinos when compared to non-Latino Whites (Arnow et al., 2007; Organista et al., 1994). Additionally, problems with medication compliance, CBT attendance, and completion of CBT homework assignments among Latinos have been reported (Aguilera, Garza, & Muñoz, 2010; Ayalon, Areán, & Alvidrez, 2005; Miranda & Cooper, 2004). To our knowledge, no studies have examined engagement outcomes for Latino adults participating in a CBT intervention for anxiety disorders.

The current study addresses a gap in the literature on the impact of culture/ethnicity on treatment outcomes for patients with anxiety disorders. In this study, participants were recruited from primary care settings, and received therapist-delivered, computer-assisted CBT for anxiety disorders ("CALM: Tools for Living") as part of the CALM (Coordinated Anxiety Learning and Management) study (Roy-Byrne et al., 2010; Craske et al., 2011). Clinical outcomes such as symptom reduction and remission as well as engagement-related outcomes including session attendance, treatment completion, homework adherence and acceptance of CBT, were examined. Based on the available literature, we hypothesized that Latinos who received CBT would have similar clinical outcomes as non-Latino Whites at the various assessment points. We also hypothesized that engagement outcomes would be less favorable among Latino compared to non-Latino Whites, however given the limited literature, analyses were somewhat exploratory in this regard.

Method

Participants

Over a two-year recruitment period, 1004 patients with anxiety disorders were recruited from a total of 17 primary care clinics for participation in the CALM study [for a full description see (Roy-Byrne et al., 2010; Sullivan et al., 2007)]. Study clinics were located in Little Rock, Arkansas, Los Angeles and San Diego, California, and Seattle, Washington. Prior to study start, all primary care professionals were educated about the CALM program and eligibility criteria. All recruitment was facilitated by primary care providers who had the option to use a brief anxiety screener (Means-Christensen, Sherbourne, Roy-Byrne, Craske, & Stein, 2006) or to refer patients directly to the study.

All patients had to be between the ages of 18 and 75 years, and meet Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) (American Psychiatric Association, 2000) criteria for one or more of the following anxiety disorders; panic disorder (PD), generalized anxiety disorder (GAD), social anxiety disorder (SAD), and post-traumatic stress disorder (PTSD). The Mini International Neuropsychiatric Interview (Sheehan et al., 1998) was used to determine diagnostic eligibility. Patients also had to score 8 or above on the Overall Anxiety Severity and Impairment Scale (OASIS), to ensure at least moderate anxiety-related symptoms and impairment on this validated quantitative measure (Campbell-Sills et al., 2009). Comorbidity was permitted including major depressive disorder, alcohol abuse, nicotine dependence, and marijuana abuse. Individuals who had other conditions that would compromise their participation in the

program or who were unlikely to benefit from CALM were excluded (e.g., unstable medical conditions, marked cognitive impairment, active suicidal intent or plan, psychosis, bipolar I disorder, and substance use disorders except for nicotine dependence, alcohol abuse and marijuana abuse). Patients already receiving CBT or medication from a psychiatrist in the community were excluded, as were persons who could not speak and read in English or Spanish. All patients gave written informed consent for the study, which was approved by each institution's institutional review board.

Procedure

After the initial eligibility interview with an anxiety clinical specialist (ACS), (a clinician trained to facilitate the CALM intervention), patients were randomized to intervention or usual care (UC), using an automated computer program at RAND Corporation. All assessments after the initial eligibility interview were conducted by telephone in English or Spanish by members of the RAND Survey Research Group, who were blind to treatment assignment. Randomization was stratified by clinic and presence of comorbid major depression using a permuted block design.

Patients in the intervention group were initially allowed to choose which treatment they wanted to receive – medication, CBT, or both – for 12 weeks. Patients with more than one anxiety disorder, who received CBT, were asked to choose the most disabling or distressing disorder to focus on with the expectation that treatment effects would generalize to their other disorders. CBT was administered by the anxiety clinical specialist (ACS); medication was prescribed by the primary care provider, with consultation from study psychiatrists as needed. A computer program (CALM Tools for Living) was used to assist with the delivery of the CALM intervention; this program was used as an adjunctive tool and not as a stand-alone intervention. Overall, the therapist-delivered CBT program included five generic modules (education, self-monitoring, hierarchy development, breathing training, and relapse prevention) and three modules tailored to the four specific anxiety disorders (cognitive restructuring, exposure to internal stimuli, and exposure to external stimuli) (see Craske et al., 2011). All intervention materials were translated into Spanish by certified translators, including the computer program.

For intervention patients who opted for medication management, the ACS monitored adherence to the medication regimen and provided basic counseling to encourage healthy behaviors (e.g., avoidance of alcohol and improvement of sleep hygiene and behavioral activation). The ACS also conveyed pharmacotherapy suggestions from the supervising psychiatrist to the primary care physician.

A total of 14 ACSs were involved in this project and administered the eligibility assessment and CALM intervention. The ACSs included six social workers, five registered nurses, two masters-level psychologists, and one doctoral-level psychologist. Eight of the specialists had some mental health experience and four had some CBT training. All ACSs received two hours of training in issues of cultural competency, specific to patients with anxiety disorders, and a bilingual therapist delivered the CBT in Spanish at selected sites.

The ACS used a Web-based system to enter scores for the Overall Anxiety Severity and Impairment Scale (OASIS) and a 3-item version of the Patient Health Questionnaire-9 (Kroenke, Spitzer, & Williams, 2001) that were collected at each patient visit to track patient outcomes. Using the CALM model, patients who were symptomatic and thought to benefit from additional treatment with CBT or medication could receive more of the same modality (stepping up) or the alternative modality (stepping over) for up to 3 more steps of treatment. For a full description of the CALM model and training, please see (Craske et al., 2009; Rose et al., 2011; Roy-Byrne et al., 2010).

Patients in the usual care (UC) group received treatment by their physician in the usual manner (i.e., with medication, counseling, or referral to a mental health specialist) with no further intervention by study clinicians. After the eligibility interview, the only contact UC patients had with study personnel was for the telephone assessments conducted by RAND.

Given the study focus on CBT treatment effects across Latinos and non-Latino Whites, only patients in the intervention condition who received CBT were included in the current analyses (i.e., those who received CBT or CBT plus medication) (n = 336). Participants who were African-American or identified as Other (including Asian-Americans) were not included in this study. The flowchart for screening and randomization is presented in Figure 1. A total of 1062 of 1620 patients (66%) who were referred were eligible for study participation. Of these, 98% (n = 1036) consented to participate and 1004 were randomized. More than 80% of patients were assessed at each time point, and retention was high across both treatment groups. For a detailed review of patient flow please see Roy-Byrne et al., 2010 (Roy-Byrne et al., 2010).

The primary outcome measure was the 12-item Brief Symptom Inventory (BSI-12) which includes subscales of anxiety and somatization (Derogatis, 2001). Using procedures we described elsewhere (Roy-Byrne et al., 2010) treatment response was operationalized as at least a 50% reduction on the BSI-12 and treatment remission was defined as a face-valid per-item score on the BSI-12 of less than 0.5 (between none and mild, total BSI-12 score <6). Measures for secondary analyses included the Anxiety Sensitivity Index (Reiss, Peterson, Gursky, & McNally, 1986), the Patient Health Questionnaire (8-item version which does not include suicide item) for depression (Kroenke et al., 2001), the Sheehan Disability Index modified to assess anxiety related disability (Sheehan, Harnett-Sheehan, & Raj, 1996), the Short-Form Health Survey (SF-12) (i.e., Mental Health Composite Summary scale) (Ware, Kosinski, Bowker, & Gandek, 2002), and a brief survey to assess satisfaction with mental health treatment for anxiety.

These measures have been widely used in diverse populations and both the English and Spanish versions have good psychometric properties. Specifically, the ASI has been examined in Latino clinical and nonclinical samples and good internal consistency, test-retest reliability, and convergent validity with other anxiety measures have been reported (Cintron, Carter, Suchday, Sbrocco, & Gray, 2005; Novy, Stanley, Averill, & Daza, 2001; Sandin, Chorot, & McNally, 1996). The BSI-18 has been examined in numerous Spanish speaking samples and demonstrates good reliability and validity; although a couple studies have found an inconsistent factor structure, suggesting the need for more work to establish

the psychometric properties of the BSI-18 with Latinos (Galdon et al., 2008; Torres, Miller, & Moore, 2012; Wiesner et al., 2010). The Spanish version of the PHQ has been shown to have good internal consistency, concurrent and structural validity in primary care and community samples (Diez-Quevedo, Rangil, Sanchez-Planell, Kroenke, & Spitzer, 2001; Donlan & Lee, 2010; Merz, Malcarne, Roesch, Riley, & Sadler, 2011) and both the SDS and the SF-12 have been shown to be reliable and valid in Spanish speaking primary care patients (Ayuso-Mateos, Vasquez-Barquero, Oviedo, & Diez-Manrique, 1999; Castillo, 2007; Luciano et al., 2010).

To evaluate treatment engagement, ratings were extracted from the web-based system and computerized CBT program regarding engagement outcomes. Homework adherence, session attendance, commitment to CBT, and understanding of CBT principles were all rated by the ACS. Homework adherence was a measure of the quantity of homework completed (0 = missed none; 1 = missed few; 2 = missed half; 3 = missed most), and commitment to CBT reflected the ACS's perception of the patient's motivation in each CBT session (0 = none; 10 = complete). "CBT understanding" was based on the ACS's perception of how well the patient understood the CBT principles being presented in each session. Patient self-report was used for outcome expectancies and self-efficacy (0 = not at all; 4 = 50/50; 8 = certainly). Outcome expectancies reflected patients' beliefs that their participation in the CBT intervention would result in improvement, while self-efficacy reflected patients' beliefs that they were capable of completing the requested CBT activities. These ratings were completed at all sessions and a mean score across sessions was used for the analyses. Lastly, "treatment completion" was defined as the completion of the relapse prevention module of the CBT program (which typically occurred after 8 sessions). These outcomes reflect behavioral manifestations of engagement (e.g., adherence, attendance, and drop-out) as well as aspects of treatment readiness and motivation (e.g., understanding, commitment to treatment, etc.) that influence engagement (Tetley, Jinks, Huband, & Howells, 2011).

Data Analysis

The primary aim of this study was to obtain robust estimates of the association between ethnicity (where ethnicity has only two categories: Latino and non-Latino White) and outcomes. We used propensity score weighted linear and logistic regression models to estimate the effect of ethnicity on clinical outcomes. Propensity score weighting is an effective way of eliminating the differences in observed characteristics (e.g., age, gender, severity at baseline, presence of chronic medical disorders) between the Latino and non-Latino White groups that could bias the estimates of the association between ethnicity and outcomes (Rosenbaum & Rubin, 1983). In contrast, commonly used regression models rely too heavily on the linear assumption and are highly sensitive to model specification, such as the inclusion of important interaction terms.

In this application, we defined propensity score as the conditional probability that a patient is Latino, given a set of observed patient characteristics (Rosenbaum & Rubin, 1983). This probability was used to build weights (Hirano, Imbens, & Ridder, 2003; McCaffrey, Ridgeway, & Morral, 2004) for patients belonging to the non-Latino White group. Patients

in the non-Latino White group who had similar characteristics to patients in the Latino group had a large propensity score and were therefore 'up-weighted' when estimating the association between ethnicity and outcomes. Patients in the non-Latino White group with characteristics dissimilar to the Latino group were 'down-weighted' when computing the effect of ethnicity. We fitted the propensity score weights using the TWANG R package (Ridgeway, McCaffrey, & Morral, 2006) which uses a non-parametric regression technique instead of a logistic regression. The patients' characteristics used to fit the propensity score model were: site, gender, age, diagnoses of PD, GAD, SAD, PTSD and MDD, number of chronic medical conditions, income, marital status, any use of psychotropic medications prior the study start, insurance status, and baseline BSI-12 score. In this study, the obtained propensity score weights effectively eliminated differences between the two ethnic groups for several of the characteristics used in the propensity score (PS) model, but not for all of them. In particular some differences remained for age, PTSD diagnosis, and insurance status.

In the presence of ongoing small imbalances despite propensity score weighting, we adopted a double robust estimation approach to further control for differences in the baseline characteristics between the two ethnic groups. Double robust (DR) estimation methods (Bang & Robins, 2005; Kang & Schafer, 2007) reduce the risk of bias due to remaining small differences between groups and the uncertainty in the treatment effect estimator by reducing the outcome model's residual variance. The adopted DR estimation approach implies fitting PS weighted linear or logistic regressions (depending on the type of outcomes) that control for, in addition to the variable indicating whether a patient is Latino or not, all the patients' characteristics used in the PS model. This approach provided the least biased estimate of the association between ethnicity and outcomes.

Additionally, we developed three separate sets of nonresponse weights to account for missing outcome measures due to patients skipping a particular assessment (e.g., month 6, 12, 18) or for dropping out from the study. Nonresponse weights are an effective way to address missing data when it is due to unit nonresponse (Brick & Kalton, 1996), as was the case for the missing outcome measures. For example, missing 12-month outcomes were due to the fact that a patient failed to respond to the entire 12-month follow-up assessment, rather than a patient refusing to respond to specific questions within the assessment. The nonresponse weights were estimated in the same way as the propensity score weights. The aim of this method is to weigh those patients with outcomes at a given assessment (e.g., 12-month) to represent the sample of Latino and non-Latino White patients who selected CBT (n=366).

Results

Baseline Characteristics

Baseline characteristics for Latinos and non-Latino Whites are presented in Table 1. There were 85 Latino and 251 non-Latino White participants who received the CALM CBT intervention; eight Latino participants received the CBT intervention in Spanish. Patients from other ethnic groups including African Americans (n = 51) and patients who identified as Other (n = 69) were excluded from these analyses. Statistical comparisons were made

using t tests for continuous variables and X^2 tests for categorical variables. Significant differences were found for age, gender, income, marital status, chronic medical conditions, PTSD, use of psychotropic medication, and insurance across ethnic groups. The Latino sample was younger, more likely to be married, more likely to be uninsured, had lower incomes and disproportionately more women. Latinos also had fewer chronic medical disorders, lower rates of psychotropic medication use, and higher rates of PTSD than non-Latino Whites. As described in the statistical approach section, we controlled for all of these differences in patient characteristics using propensity weights and a Double Robust (DR) estimation approach. Analyses were also conducted without controlling for income and insurance; variables which often share an association with acculturation level and consequently may lead to distortions in cultural effects when controlled.

Treatment preference

As described above, participants randomized to the intervention arm were allowed to choose among the treatment options of CBT only, CBT plus medication, and medication only. X^2 tests were used to analyze differences in treatment preference between Latinos and non-Latino Whites. Treatment preference rates did not differ significantly for Latinos and non-Latino Whites, respectively; 40% v. 36% for CBT only, 52% v. 56% for CBT plus medication, and 9% v. 8% for medication only.

Clinical Outcomes

We used PS weighted linear and logistic regression models (DR regression models) to estimate the effect of ethnicity on clinical outcomes. All models included baseline characteristics in addition to the Latino indicator. Only coefficients for Latino ethnicity are presented in Table 2; full models are available upon request. Significant differences were found for the satisfaction scale (i.e., satisfaction with health and mental health care) at 12 months and on the Mental Health Composite Scale score (MCS-12) at 18 months, with *B* coefficients reflecting more positive scores for Latinos at these time points. When analyses were run without controlling for income and insurance status, findings were largely the same, except for the MCS-12 finding at 18 months, which was no longer significant ($B = 2.59$, $p = 0.096$) (full tables are available upon request). The rates of treatment response and remission did not differ significantly between the two groups at any of the three follow-up points. Adjusted treatment response rates for Latinos ranged from 62.7–68.6%, while rates for non-Latino Whites ranged from 60.0–77.3%. Adjusted rates of remissions ranged from 41.9–61.5% for Latinos and 42.8–62.2% for non-Latino Whites.

Engagement Related Outcomes

The same analytic approach described above was used to estimate the effects of ethnicity on engagement-related outcomes. All models controlled for baseline characteristics in addition to the Latino indicator. Only coefficients for Latino ethnicity are presented in Table 3. There were no significant differences for five of the seven engagement related variables (e.g., adherence, treatment completion, commitment to CBT, self-efficacy, outcome expectancies). Mean scores for Latinos and non-Latino Whites ranged from M = 8.29 – 8.52 on overall commitment to in-session CBT activities (using a 10 point scale), and from M = .

66 – .75 for homework adherence (1 = missed few and 3 = missed most). Self-report ratings on treatment outcome expectancies and self-efficacy ranged from Mean = 6.3 – 6.8 on an 8 point scale. A significant difference emerged for "understanding of CBT session principles" with Latinos receiving lower scores than non-Latino Whites. Latinos also attended fewer sessions than non-Latino Whites (adjusted mean number of sessions for Latinos was M = 7.44 versus M = 9.09 for non-Latino Whites, p = .004). Findings remained the same, when income and insurance status were not controlled.

A post-hoc power analysis suggested that given the sample size available, we were able to detect effect sizes in the medium range with 80% power. Effect sizes for clinical and engagement outcomes are presented in the accompanying Tables.

Discussion

The CALM study provides one of the largest samples of Latinos who have participated in an effectiveness trial for anxiety disorders, and is one of the first to examine differences in CBT treatment response and engagement between Latinos and non-Latino Whites. Given the location of participating clinics (predominantly on the West Coast of the U.S.), a sizeable proportion of our sample identified as Hispanic/Latino (approximately 20%). Data regarding Latino ethnic subgroups and acculturation level were not gathered; however, the majority of the Latino sample was English speaking, suggesting a higher level of acculturation, and given Census statistics from participating regions, most likely to be of Mexican origin (U.S. Census Bureau, 2011).

With regard to preference for treatment, the majority of participants from both ethnic groups chose the combination of CBT plus medication over the other treatment modalities, although a sizable number also chose CBT alone. The use of medication alone was not a common preference for either group. These findings are consistent with studies of depression that have found that both Latinos and other ethnic minorities prefer counseling approaches over medication (Cooper et al., 2003; Dwight-Johnson, Sherbourne, Liao, & Wells, 2000). Additionally, among Latinos, the use of antidepressant medication has been associated with beliefs such as greater stigma and perceptions of being more severely ill, being weak or unable to handle one's problems, and being subjected to the negative effects of drugs (e.g., addiction) (Interian, Martinez, Guarnaccia, Vega, & Escobar, 2007; Olfson, Marcus, Tedeschi, & Wan, 2006; Sirey, Bruce, Alexopoulos, Perlick, Friedman et al., 2001; Sirey, Bruce, Alexopoulos, Perlick, Raue et al., 2001). It is possible that Latino participants in the CALM study shared these beliefs. However, the fact that many Latino participants chose the combination approach, which included medication, may suggest greater acceptability of pharmacological approaches, particularly in the presence of a psychosocial intervention.

There were no statistically significant differences between Latinos and non-Latino Whites on measures of clinical outcome including anxiety sensitivity, depression, cognitive and somatic anxiety, and disability at any assessment point. Further, there were no significant differences between groups on indicators of treatment response or clinical remission at any time point. Significant differences did emerge for overall mental health functioning at 18 months and satisfaction with mental health care at 12 months, with Latinos having more

favorable scores than non-Latino Whites. When analyses were conducted without adjusting for insurance and income, variables that are often confounded with culture, findings were largely the same. These findings parallel prior findings in child anxiety and adult depression where comparable clinical outcomes and response rates have been reported in CBT studies with Latinos and non-Latino Whites (Cardemil, Reivich, Beevers, Seligman, & James, 2007; Marchand, Ng, Rohde, & Stice, 2010; Miranda, Azócar et al., 2003; Miranda, Duan et al., 2003; Muñoz et al., 1995).

Based on previous studies, we expected more ethnic differences to emerge for the engagement outcomes however overall there were more similarities than differences. According to the anxiety clinical specialist, both Latino and non-Latino White participants exhibited “good” levels of homework adherence and overall commitment to session activities. Using patient self-report, both Latinos and non-Latino Whites reported favorable expectations regarding treatment outcomes and beliefs that they could complete the CBT activities. Significant differences emerged for treatment attendance and understanding of CBT principles. Latinos attended fewer sessions than non-Latino Whites, approximately seven versus nine sessions, respectively. Similarly, rates of treatment completion, defined as the completion of the relapse prevention module, tended to be higher for non-Latino Whites (75%) than Latinos (64%) although this difference did not reach statistical significance. Differences in attendance rates and premature termination have been found in other studies and have been attributed to logistic (e.g., multiple competing demands, transportation etc.), motivational, and attitudinal factors (e.g., outcome expectancies and stigma) (McCabe, 2002; Miranda, Azócar et al., 2003; Organista et al., 1994). These explanations may also apply to participants in our study; however, as noted, patient ratings of outcome expectancies, commitment to CBT, and self-efficacy were similar for non-Latino Whites and Latinos. Ratings of satisfaction with mental health care were also similar across all time points. Further, given propensity weights for baseline differences, income related stressors were likely not the primary cause of differential rates of attendance. Other factors such as perceived cultural fit of the program and therapist-client ethnic match, may have had an effect on attendance, but were not measured. Alternatively, it may have been that Latinos were satisfied with the number of sessions they received and did not feel the need to attend as many sessions as non-Latino Whites or to complete the intervention. The other significant difference, poorer understanding of CBT principles by Latinos, has not been reported previously in the treatment literature. It is possible that this difference may be explained by language barriers either in understanding the translation of the CBT materials or in the patient conveying their understanding of the principles to the ACS. It may also be attributed to varying conceptualizations of anxiety disorders and its treatment, although limited data exist in this regard (Chavira et al., 2008; Hinton, 2012; Lewis-Fernandez et al., 2010).

The reason for comparable clinical outcomes in the presence of differential attendance warrants some discussion. One explanation for this disconnect may be that certain aspects of engagement have a greater impact on clinical outcomes than others. For example, the impact of homework adherence on clinical outcomes has been well-established in the treatment literature (Kazantzis, Whittington, & Dattilio, 2010; Mausbach, Moore, Roesch, Cardenas, & Patterson, 2010). In the presence of good homework adherence, as noted in this study, the impact of other engagement related variables for Latinos, such as attendance, on clinical

outcomes may be mitigated. Also, previous studies support the importance of distinguishing between pre-treatment, early treatment, and later stage treatment attrition (Gonzalez, Weersing, Warnick, Scahill, & Woolston, 2010; Hofmann et al., 1998; Issakidis & Andrews, 2004). Given that Latinos attended an average of seven treatment sessions, it is likely that most drop-out occurred at later stages, reducing the potentially more deleterious effects of early attrition on clinical outcomes. Lastly, the use of face-valid measures of engagement may have influenced the study findings, and should be interpreted with caution. In general, efforts are necessary to further improve the definition of engagement as well as its measurement (Drieschner, Lammers, & van der Staak, 2004). Although measures of engagement exist, most are limited in scope (e.g., only address homework compliance etc.), have limited psychometric support, and are not generalizable across populations and treatment modalities (Tetley et al., 2011). These efforts may be particularly relevant to Latinos and other underrepresented groups who are likely to encounter greater barriers to mental health services and may be more difficult to engage.

A focus on differential clinical and engagement-related outcomes between Latinos and non-Latino Whites is timely in the context of continued debate regarding cultural adaptations for evidence-based interventions (Barrera & Castro, 2006; Chu, Huynh, & Areán, 2012). According to a popular cultural adaptation framework (Lau, 2006), tailoring efforts are best guided by empirical findings that support ethnic differences in the social validity of an intervention (e.g., engagement and acceptability), clinical outcomes, and/or risk and resiliency factors that may affect the etiology or course of the disorder. Similar to previous treatment studies for anxiety and depression (Huey & Polo, 2008; Miranda et al., 2005; Piña et al., 2003), findings from this study support mostly comparable clinical outcomes for CBT, across non-Latino Whites and Latinos, specifically, English speaking, Latinos. However findings from the current study raise some concerns regarding the social validity of the CALM intervention among Latinos given lower self-reported understanding of CBT principles, fewer sessions attended, and a trend toward lower CBT completion rates. These findings suggest that tailoring efforts to improve engagement for Latinos receiving CBT interventions like CALM may be warranted.

It is important to note that while cultural adaptations were not made to the core components or content of the CBT intervention, surface or peripheral adaptations (Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000; Simons-Morton, Donohew, & Davis Crump, 1997) did occur. All therapists received training in issues of cultural competency, all intervention materials were translated into Spanish including the computer program, and a bilingual therapist delivered the CBT in Spanish at selected sites; such modifications have the potential to improve the overall face validity, understanding, and acceptability of an intervention. In effect, some of the traditional barriers to access and engagement that are common among Latino populations, such as language (Morales, Cunningham, Brown, Liu, & Hays, 1999; Vega & Lopez, 2001), stigma associated with receiving mental health care at specialty care settings (Interian et al., 2007; Nadeem et al., 2007; Sirey, Bruce, Alexopoulos, Perlick, Friedman et al., 2001), and poor therapeutic alliance due to cultural differences (Añez, Paris, Bedregal, Davidson, & Grilo, 2005; Fuertes, Boylan, & Fontanella, 2009; Vasquez, 2007) may have been inadvertently addressed in the development and implementation of the CALM study.

5. Limitations

The CALM study was focused on the overall effectiveness of an innovative model of treatment delivery for patients with anxiety disorders in primary care; as such, it was not designed to focus on ethnic group differences and measures of acculturation were not included in this study. While sample size allowed for the evaluation of overall main effects of ethnicity (i.e., Latino vs. non-Latino White), only effect sizes in the medium range were detectable, and thus smaller yet clinically meaningful differences, may have been missed. Additionally, sample sizes were too small (n = 8) to investigate the effectiveness of the intervention for individuals who were monolingual Spanish speakers, and received the intervention in Spanish. It is possible that differences in engagement may have been more substantial and differences in clinical outcomes may have emerged with a primarily Spanish speaking sample. Understanding barriers to initial uptake and recruitment of monolingual Spanish speakers into interventions such as CALM remains an important direction of research in efficacy and effectiveness trials. The sample is also biased in that it is a primary care sample, and comprised of a group of individuals who chose to participate in a treatment program for anxiety. As a result, the sample may differ from community-based samples, with regard to insurance status, employment, income, access to resources, and level of acculturation. Therefore, caution is advised in generalizing these findings to lower-income, Spanish-speaking, and less acculturated groups. Further, clinical outcome measures such as the Brief Symptom Inventory, warrant additional psychometric examination with Latino populations from diverse acculturation levels. Lastly, many of our measures of engagement related variables were face-valid items that were administered as adjunctive assessments of the therapeutic process and consequently may not have adequately examined the desired constructs.

6. Conclusions

Overall, findings from this study suggest that the CALM CBT program for anxiety can be an effective treatment option for Latinos who are English speaking and likely more acculturated. While current findings do not support the need for extensive tailoring of the CALM CBT intervention to meet the needs of English speaking Latinos with anxiety disorders in primary care, findings underscore the need for continued efforts to understand and improve engagement of Latinos in evidence-based interventions. Further, additional studies with larger sample sizes, monolingual Spanish speaking participants, and standardized measures of acculturation are warranted in order to improve the evidence base for CBT approaches with Latinos.

Acknowledgments

This work was supported by grants U01 MH057858 (Dr. Roy-Byrne), U01 MH058915 (Dr. Craske), U01 MH 070022 (Dr. Sullivan), and U01 MH057835 and K24 MH64122 (Dr. Stein), and K01 MH072952 (Dr. Chavira) from the National Institute of Mental Health. The authors also wish to thank Dr. Jeanne Miranda for conducting the cultural competency training with therapists in this study.

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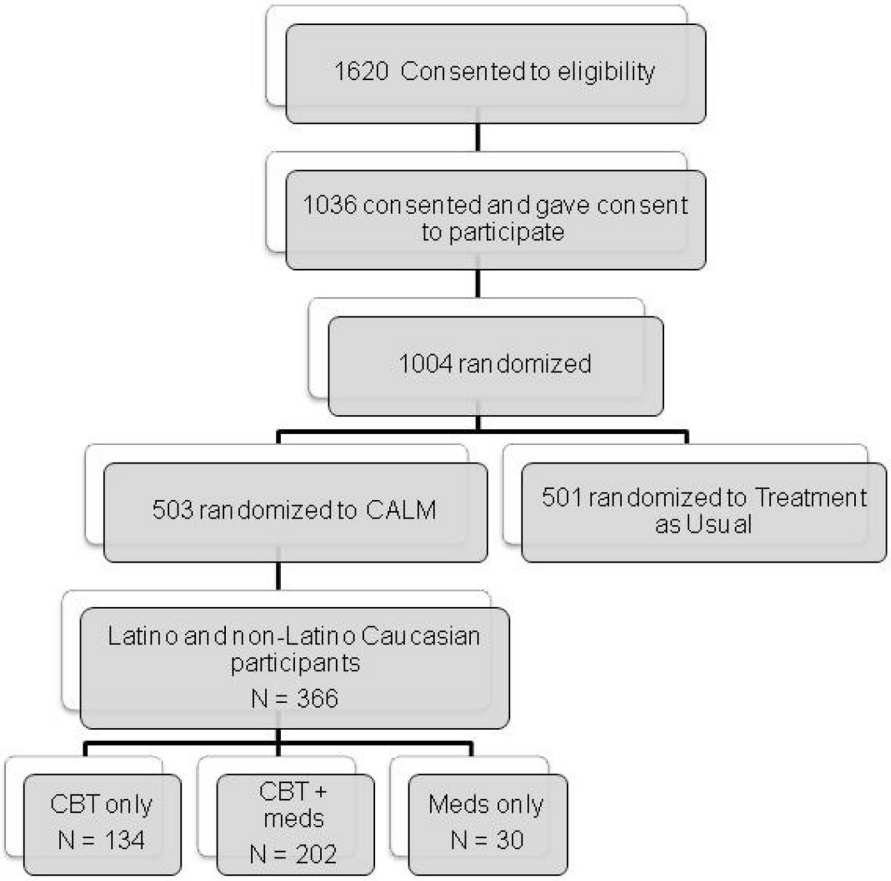

Figure 1.
Recruitment flowchart for Latinos and Caucasians randomized to CALM intervention arm

Table 1

Baseline Patient Characteristics[a]

	All (n = 336)	Latinos (n =85)	non-Latino Whites (n =251)
Age, mean (SD), y**	43.46 (13.54)	39.95 (13.58)	44.65 (13.35)
Women**	232 (69.1)	69 (81.2)	163 (64.9)
Income[c]**	M = 5.06	M = 3.55	M = 5.57
Education			
< High school	12 (3.6)	6 (7.1)	6 (2.4)
12 y	55 (16.4)	17 (20.0)	38 (15.1)
> 12 y	269 (80.1)	62 (72.9)	207 (82.5)
Married or Living Together*	201 (59.8)	60 (70.6)	141 (56.2)
No. of chronic medical conditions**	M = 2.14	M = 1.67	M = 2.30
Anxiety disorder[b]			
Panic	154 (45.8)	41 (48.2)	113 (45.0)
Generalized anxiety	256 (76.2)	69 (81.2)	187 (74.5)
Social phobia	142 (42.3)	43 (50.6)	99 (39.4)
Posttraumatic stress**	58 (17.3)	24 (28.2)	34 (13.6)
Major Depression	206 (61.3)	58 (68.2)	148 (59.0)
Type of health insurance[b]			
Medicaid	27 (8.0)	6 (7.1)	21(8.4)
Medicare	42 (12.5)	7 (8.2)	35 (13.9)
Other government insurance[d]	9 (2.7)	3 (3.5)	6 (2.4)
Private insurance	245 (72.9)	55 (64.7)	190 (75.7)
No insurance*	58 (17.3)	23 (27.1)	35 (13.9)
Any prior psychotropic use**	221 (65.9)	45 (52.9)	175 (69.7)
Brief Symptom Inventory (BSI)	M = 15.85	M = 16.82	M = 15.52

*p<.05;

**p <.01

[a]Data are reported as No. (%) unless otherwise indicated.

[b]Because patients could have more than one, Ns may total more than 336.

[c]Income is adjusted for family size and age of respondent. Using Federal Poverty Guidelines (U.S. Census Bureau, 2010), individuals are defined with regard to the poverty line such that 0 would be the poverty level, 1 = 100% above poverty line, 2= 200% above poverty line, 3 = 300% above the poverty line, etc.

[d]Includes Veterans' Administration benefits, TRICARE, county programs, or other government insurance not otherwise specified

Table 2

Double robust estimates of the Latino ethnicity effect on clinical outcomes

	6 months				12 months				18 months			
Dependent Variable	**B**	**T value**	**p**	**ES**	**B**	**T value**	**p**	**ES**	**B**	**T value**	**p**	**ES**
ASI	2.56	1.49	0.136	0.20	1.21	0.60	0.550	0.10	2.87	1.47	0.143	0.23
BSI-12	0.09	0.11	0.908	0.01	1.41	1.33	0.183	0.19	−0.63	−0.62	0.535	−0.08
PHQ-8	−0.39	−0.53	0.593	−0.07	−0.48	−0.63	0.528	−0.09	−0.37	−0.46	0.647	−0.07
MCS	0.29	0.22	0.826	0.03	0.03	0.02	0.981	0.00	3.29	2.23	**0.026***	0.30
SDS	−0.45	−0.52	0.602	−0.07	1.09	1.17	0.245	0.16	0.38	0.36	0.719	0.05
Satisfaction	−0.22	−1.69	0.092	−0.25	0.49	2.81	**0.005****	0.48	−0.07	−0.33	0.743	−0.06
Remission -Latinos	−0.05	−0.12	0.901	41.9%	42.8	−0.08	0.931	61.5%	0.04	0.09	0.928	54.3%
NLW				42.8%				62.2%				53.6%
Response- Latinos	0.14	0.36	0.718	62.7%	−0.53	−1.34	0.179	68.6%	0.27	0.66	0.512	68.1%
NLW				60.0%				77.3%				62.8%

* p <.05,

** p<.01.

Note: ASI = Anxiety Sensitivity Index; BSI-12 = Brief Symptom Inventory; PHQ-8 = Patient Health Questionnaire (8-items); MCS = Mental Health Composite Summary from Short Form Scale-12; SDS = Sheehan Disability Scale. NLW=non-Latino White

Table 3

Double robust estimates of the Latino ethnicity effect on engagement outcomes.

Dependent Variable	B	T value	p	ES
Treatment Completion (%)	−0.64	−1.72	0.087	
Latinos				63.5%
non-Latino Whites				75.3%
Commitment to CBT	−0.24	−1.45	0.148	−0.21
Adherence to treatment/homework	−0.05	−0.55	0.583	−0.08
Outcome expectancies	0.21	1.32	0.188	0.21
Understanding of CBT principles	−0.34	−2.38	**0.017***	**−0.31**
Self-efficacy	0.17	1.10	0.272	0.17
Number of sessions	−1.66	3.28	**0.004****	**−0.44**

* p <.05,

** p<.01