



Published in final edited form as:

*J Nerv Ment Dis.* 2014 August ; 202(8): 583–588. doi:10.1097/NMD.0000000000000165.

## Self-efficacy and Quality of Life among People with Bipolar Disorder

Kristen M. Abraham, Ph.D.<sup>a,b</sup>, Christopher J. Miller, Ph.D.<sup>c,d</sup>, Denis G. Birgenheir, Ph.D.<sup>b,e</sup>, Zongshan Lai, MPH<sup>b,e</sup>, and Amy M. Kilbourne, Ph.D., MPH<sup>b,e</sup>

<sup>a</sup>Department of Psychology, University of Detroit Mercy, Detroit, MI, United States

<sup>b</sup>VA National Serious Mental Illness Treatment Resource and Evaluation Center, Center for Clinical Management Research, Ann Arbor, MI, United States

<sup>c</sup>Center for Organization, Leadership, and Management Research, VA Boston Healthcare System, Boston, MA, United States

<sup>d</sup>Department of Psychiatry, Harvard Medical School, Boston, MA, United States

<sup>e</sup>Department of Psychiatry, University of Michigan Medical School, Ann Arbor, MI, United States

### Abstract

People with bipolar disorders report a lower quality of life than the general population, and few mutable factors associated with health-related quality of life (HRQoL) among people with bipolar disorders have been identified. Using a cross-sectional design, these analyses examined whether self-efficacy was associated with mental and physical HRQoL in a sample of 141 patients with bipolar disorder who completed baseline assessments for two randomized controlled trials. Multiple linear regression analyses indicated that higher levels of self-efficacy were associated with higher mental and physical HRQoL, after controlling for demographic factors and clinical factors (including mood symptoms, co-morbid medical conditions, and substance use). Future research should examine whether targeted treatments that aim to improve self-efficacy (such as self-management interventions) lead to improvements in HRQoL among people with bipolar disorder and other serious mental illnesses.

---

Bipolar disorders are a leading cause of disability worldwide (WHO, 2011), and people with bipolar disorders experience a lower quality of life than the general population (Dean et al., 2004; Sierra et al, 2005), including difficulties in areas of work, family, and social functioning (for a review, Sanchez-Moreno et al., 2009). Moreover, they are burdened by medical comorbidities that place them at risk for premature death (Angst et al., 2002; Kilbourne et al., 2009). Health-related quality of life (HRQoL) encompasses an individual's perception of his/her overall well-being, including physical, psychological, and social

---

Correspondence regarding this manuscript should be addressed to Dr. Kristen Abraham, VA National Serious Mental Illness Treatment Resource and Evaluation Center, 2800 Plymouth Road, Building 16 Floor 2, Ann Arbor, MI 48109-2800.

*Conflicts of Interest:* Dr. Kilbourne is author of the workbook *Overcoming Bipolar Disorder: A Comprehensive Workbook for Managing Your Symptoms & Achieving Your Life Goals* (New Harbinger Publications, 2008), which was the basis for many of the current study intervention materials, and receives publication royalties. Drs. Abraham, Miller, Birgenheir, and Mr. Lai report no competing interests.

functioning (IsHak et al., 2012). Improving HRQoL among people with bipolar disorders is critically important because HRQoL is a meaningful indicator of current functioning (Guyatt, 1995; Hays et al, 2002). Additionally, across several populations, lower HRQoL and self-reported health status is associated with an increased risk of cause-specific and/or all-cause mortality (for reviews, see Idler & Benyamini, 1997; Tsai et al; 2007).

Prior research sought to identify mutable clinical factors that are associated with HRQoL among patients with bipolar disorder, so that interventions can be targeted to improve these factors and ultimately improve HRQoL. Studies indicate depressive symptoms are associated with reduced HRQoL among people with bipolar disorders (Kilbourne et al., 2009; Miller et al., 2013; Simon et al., 2007), however, it is also clear that even when not experiencing (hypo) manic or depressive episodes, HRQoL is compromised in this population (IsHak et al., 2012). Alcohol dependence (Singh et al., 2005), illicit drug use (Kilbourne et al., 2009), and medical comorbidities (Kilbourne et al., 2009; Miller et al., 2013) are also each uniquely associated with HRQoL. Yet, knowledge regarding mutable factors (beyond symptoms and co-occurring diagnoses) that contribute to HRQoL among patients with bipolar disorder is limited.

Identifying mutable factors that are associated with HRQoL among people with bipolar disorder can inform the development or adaptation of interventions for this group. In particular, based on awareness that a large proportion of patients with bipolar disorder are treated exclusively in primary care settings (Kilbourne et al., 2012a), there is growing interest in briefer interventions that aim to improve self-management of mood disorders (e.g., Houle et al., 2013; Jones et al., 2011) and can be delivered both within *and* outside specialty mental health settings, including in primary care (Kilbourne et al., 2012a,b). Self-management interventions are relatively brief and aid patients in developing a personalized plan to help them to respond to and prevent psychiatric and physical health symptoms so that they may live meaningful lives in the community (Houle et al., 2013; Sterling et al., 2010).

Conceptually, building self-efficacy is a cornerstone of self-management interventions. Self-efficacy is one's belief in his/her ability to perform behaviors that will result in specific outcomes in a given domain (Bandura, 2012, 2006). Studies indicate that both self-efficacy and HRQoL can improve in response to self-management interventions for chronic conditions (Beverly et al, 2013; Chen et al., 2012). Additionally, among people with chronic medical conditions (e.g., asthma, congestive heart failure) and unipolar depression (Houle et al., 2013) higher levels of self-efficacy to manage their chronic condition are related to higher HRQoL (Börsbo et al., 2010; Joeke et al., 2007; Mancuso et al., 2010).

Although the association between self-efficacy and HRQoL has not been empirically examined among patients with bipolar disorder, Hansson (2006) suggests improvements in self-efficacy may be associated with improvements in quality of life among people with serious mental illnesses. Qualitative studies capturing patients' perspectives further highlight the relevance of self-efficacy to the lives of people with bipolar disorders, as people with serious mental illness express doubts in their ability to improve their physical health and a lack of confidence in their ability to control their mood episodes and manage life stressors,

despite their desire to do so (Schmutte et al., 2009; Lim et al., 2004). Improving self-efficacy through self-management interventions may be a way to improve HRQoL among people with bipolar disorder. However, it first needs to be established whether self-efficacy and HRQoL are empirically associated in this population. Accordingly, the aim of the present cross-sectional analyses was to assess whether self-efficacy is associated with mental and physical HRQoL among people with bipolar disorder, after accounting for bipolar disorder symptoms and other demographic and clinical characteristics. Higher levels of self-efficacy were expected to be associated with higher levels of mental and physical HRQoL.

## Methods

### Study Sample

This study utilized baseline data from two randomized controlled trials of a collaborative care program conducted between 2008 and 2011. Patients with bipolar disorders were identified as potential participants from four outpatient clinics; two were community-based clinics in southeastern Michigan and two were Veterans Affairs clinics in southeastern Michigan and northern Ohio. Further details regarding both studies are available elsewhere (Citations deleted for blind review).

In brief, administrative data were used to identify all patients diagnosed with bipolar disorder receiving care at one of the sites. Patient recruitment lists were updated quarterly and were cross-referenced with the site's electronic medical record data on current medical and psychiatric diagnoses to verify inclusion and exclusion criteria. Patient inclusion criteria were: 1) adult patients (age ≥ 18 years) who had a current diagnosis of bipolar disorder (I, II, or NOS) based on clinician determination, and 2) diagnosed with one of the following CVD risk factors: hypertension, hyperlipidemia, obesity (BMI >25), or diabetes. Patient exclusion criteria were 1) active or unresolved substance use disorder at the time of recruitment, 2) current enrollment in intensive case management or another mental health program in which clinical caregivers deliver services to the patient in the community, 3) inability to give informed consent or comply with study requirements at the time of enrollment (e.g., due to terminal medical illness), or 4) severe cognitive impairment or dementia, or inability to understand English.

Eligible patients were approached by research staff on a day they presented to the clinic for a scheduled appointment. Research staff invited patients' participation, obtained informed consent, and administered a baseline assessment. The studies were approved by the medical center and local VA Institutional Review Boards and all patients provided informed consent.

### Measures

The baseline self-report assessment included clinical and demographic information and the following questionnaires. Participants completed assessments in approximately 30 minutes.

**Self Efficacy Scale**—The Self-Efficacy in Chronic Disease management scale (Lorig et al., 2001) taps participants' confidence in their ability to engage in strategies to prevent their chronic illness from interfering with their lives. Originally developed to assess self-efficacy

to manage asthma, the measure has been modified to assess patients' self-efficacy to manage various chronic diseases and has good psychometric properties (Lorig et al., 2001). Participants rate 6 items on a scale from 1 (*Not Confident at All*) to 10 (*Totally Confident*). Per prior research (Lorig et al., 2001), the mean of participants' responses across all 6 items was computed for a total score, with higher scores indicating greater self-efficacy in self-management (possible score range of 1 to 10). For the present study, items were linguistically modified to assess participants' perceptions of their ability to manage both bipolar disorder and other chronic health conditions.

**Health-Related Quality of Life**—Patient-reported mental and physical HRQoL was assessed with the Short Form Health Survey (SF-12) (Ware et al., 1996), a widely used measure of HRQoL which includes two subscales, Mental Component Scale (MCS) and the Physical Component Scale (PCS), which examine mental HRQoL and physical HRQoL, respectively. Scores on the MCS and PCS are standardized, such that the general population norm is 50 (SD = 10), and higher scores correspond to better HRQoL.

**Bipolar Disorder Symptoms**—A well-validated self-report measure of bipolar symptoms, Internal State Scale (ISS) (Bauer, et al., 1991; Glick et al., 2003), was used to assess participants' current bipolar symptoms. The measure is comprised of four subscales, Activation (5 items), Depression Index (2 items), Perceived Conflict (5 items), and Well-being index (4 items), which measure (hypo) manic symptoms, depressive symptoms, and global psychopathology, and well-being, respectively. Participants responded to each item on a scale ranging from 0 (*Not at all*) to 100 (*Very much so/Much of the time*). To compute participants' scores for each subscale, responses on the items were summed and divided by 10. Higher scores indicate higher levels of the measured subscale construct. Although the subscales can be used in combination to assess a current mood episode (Glick et al., 2003; Bauer et al., 2000), the subscales were used as continuous measures for the present study. Prior research supports ISS subscale construct validity (Bauer et al., 1991; Glick et al., 2003).

**Substance Use**—Hazardous alcohol use was assessed by the Alcohol Use Disorders Identification Test, Alcohol Consumption Questions (AUDIT-C), a widely used three-item self-report measure (Dawson et al., 2005a; Dawson et al., 2005b). Item scores range from 0 to 4, and can be summed to obtain a total score for each participant. Total sum scores of four or more (for men) and three or more (for women) are indicative of hazardous drinking (Bush et al., 1998; Bradley et al., 2003). For the present study, we used the AUDIT-C sum score as a continuous measure of hazardous drinking, because higher total scores are indicative of greater health risks (Chavez et al., 2012; Harris et al., 2009; Kinder et al., 2009; Rubinsky et al., 2012).

Illicit drug use was assessed by a single item ascertaining participants' self-report of using any illicit substances in the past year. Responses were dichotomized (yes, no) to indicate whether the participant used any illicit substance within the past year.

**Medical Comorbidities**—Participants self-reported whether they had ever been told by a doctor that they any of the following medical comorbidities: hypertension or high blood

pressures, diabetes or high blood sugar, high cholesterol, heart attack or myocardial infarction, arthritis or a chronic pain condition, angina or coronary heart disease. The presence of these conditions was summed for a total score ranging from 0–6. This method of ascertaining medical comorbidities has been previously used (Kilbourne et al., 2009).

### Statistical analysis

We used descriptive statistics, including means, standard deviations, and percentages to describe the sample. We then examined the association between self-efficacy and HRQoL, first with bivariate analyses and secondly with multivariable analyses. Bivariate analyses included Pearson correlations between self-efficacy and HRQoL subscales MCS and PCS. Multivariable analyses were two sets of multiple linear regression models with covariates entered in the first step, and self-efficacy entered in the second step; one analysis included MCS as the dependent variable and one analysis included PCS as the dependent variable. Covariates included participant age, gender, race, living situation (alone vs. with others), level of education (some college or more vs. no college), number of medical comorbidities, alcohol use, illicit drug use, the healthcare setting where the patient received care (VA vs. community-based clinic), and symptoms of bipolar disorder. All analyses were conducted using SAS 9.2 (Cary, NC).

## Results

### Participant Characteristics

The sample included 141 patients with bipolar disorder with a mean age of 49.88 (SD = 11.14). Most participants were male (71.6%), Caucasian (90.1%), and reported that they did not live alone (64.5%) (Table 1).

### Self Efficacy and Quality of Life

At the bivariate level, self-efficacy was significantly associated with both MCS ( $r = .48, p < .0001$ ) and PCS ( $r = .33, p < .0001$ ), such that higher levels of self-efficacy were associated with higher mental and physical HRQoL. In both full regression models, higher self-efficacy was significantly associated with higher HRQoL (MCS:  $\beta = .29, p < .01$ ; PCS:  $\beta = .26, p < .05$ ) (Table 2). Moreover, self-efficacy accounted for a significant proportion of variance in HRQoL above and beyond demographic and clinical factors (MCS: adjusted  $R^2$  increased from .29 to .33; PCS: adjusted  $R^2$  increased from .19 to .22).

Few other covariates significantly predicted HRQoL. Lower levels of depressive symptoms were associated with higher mental HRQoL ( $\beta = -.28, p < .01$ ). For physical HRQoL, having fewer medical comorbidities ( $\beta = -.44, p < .0001$ ), being male ( $\beta = .20, p < .05$ ), and being non-Caucasian ( $\beta = -.17, p < .05$ ) was significantly associated with higher HRQoL.

## Discussion

The present cross-sectional analyses indicate self-efficacy is associated with both mental and physical HRQoL, independent of symptoms and other demographic and clinical characteristics. Specifically, a one-point increase in an individual's mean score on the self-

efficacy scale translated to approximately a one-point increase in both mental and physical HRQoL. This finding extends prior research by identifying a mutable factor, self-efficacy, that appears to contribute to HRQoL among patients with bipolar disorder and can be addressed through self-management interventions. Additionally, consistent with prior research, we found that depressive symptoms were associated with lower mental HRQoL, and medical comorbidities were associated with lower physical HRQoL (Kilbourne et al., 2009; Miller et al., 2013). This adds to the growing literature illustrating the importance of interventions that improve the physical health of people with bipolar disorders (Kilbourne et al., 2010).

Our findings regarding the association between self-efficacy and HRQoL yield implications for clinical practice. Interventions for bipolar disorder are traditionally aimed at controlling mood symptoms, with less emphasis focusing on interventions that give patients tools to cope with symptoms themselves or in how to live with bipolar disorder as a chronic illness (Geddes & Milkowitz, 2013). Although psychiatric symptom reduction is important, existing research indicates that reducing depressive symptoms among people with bipolar disorder is particularly challenging (Geddes & Milkowitz, 2013). Moreover, research suggests that even after accounting for depressive symptoms' role in functioning, a large amount of the variance in functioning remains unexplained (Gyulai et al., 2008), and low levels of functioning persists even when depression symptoms are subsyndromal (Marangell et al., 2009). Our findings suggest improving self-efficacy may be an important goal to achieve among patients with bipolar disorder as it is independently associated with improved HRQoL, *above and beyond* symptoms of bipolar disorder and co-morbid medical conditions. A recent study among people with schizophrenia found that functional capacity was associated with actual real-world functioning when self-efficacy was high, but not when self-efficacy was low (Cardenas, Abel, Bowie, Tzinado, Depp, Patterson, Jeste, & Mausbach, 2013). Thus, self-efficacy may be a mechanism by which people with serious mental illness apply their existing abilities to improve their functioning (Cardenas et al., 2013). In the context of present study findings, this suggests that higher levels of self-efficacy may aid people with bipolar disorder in enacting illness self-management strategies to improve their quality of life.

Self-management interventions that target improvements in self-efficacy may be a way to improve both physical and mental HRQoL among people with bipolar disorder. Notably, research in a sample of people with another chronic condition (multiple sclerosis) suggested that improvements in self-efficacy mediate the relationship between treatment and improvements in HRQoL (Motl et al., 2013). Given pharmacotherapy alone may be insufficient in helping patients with bipolar disorder to manage their psychiatric conditions (Geddes & Milkowitz, 2013), that access to evidence-based psychotherapies for bipolar disorder may be limited in particular (e.g., rural, primary care) settings (Kazdin & Blase, 2011), and that a substantial number of patients with bipolar disorder are seen exclusively in primary care (Kilbourne et al., 2012a), self-management interventions that can be delivered across settings may be particularly useful for improving self-efficacy and HRQoL of people with bipolar disorder.

Present findings are limited in that our study was conducted using self-report measures from a relatively small sample of patients from the same region. Although the use of self-report measures is an inherent study limitation, it is important to note that the measure we used to assess symptoms of bipolar disorder (the ISS), has yielded good agreement with clinician assessments of patients' current mood episodes (Bauer et al., 2000), and all participants were previously diagnosed by clinicians as having a bipolar disorder. Moreover, use of a self-report measure to assess symptoms was a cost-effective way to reduce potential participant burden and enroll a larger sample of participants. Additionally, the cross-sectional design of the study makes it impossible to conclude whether higher levels of self-efficacy may precede improvements in HRQoL, or whether having a higher level of HRQoL may contribute to greater feelings of one's ability to take action managing psychiatric and medical conditions. Interestingly, a recent prospective study found that baseline levels of self-efficacy predicted improvements in quality of life over 10 years among people with schizophrenia and schizoaffective disorder (Ritsner, Arbitman, Lisker, & Ponizovsky, 2012). Thus, improvements in self-efficacy may precede improvements in HRQoL. However, longitudinal investigation of whether increases in self-efficacy translate to increases in HRQoL among larger samples of persons with bipolar disorder, specifically, is an important question for future research. Such research questions could be addressed in naturalistic prospective studies as well as in the context of research trials that examine mediators of successful outcomes in self-management interventions for people with bipolar disorder. Additionally, longitudinal studies can further clarify how the relationship between self-efficacy and HRQoL develops and whether the association between self-efficacy and HRQoL changes over time or in response to different conditions (i.e., moderating factors).

## Conclusions

Recovery-oriented mental health care focuses on assisting patients in living meaningful lives in the community even though they may continue to experience symptoms of their illness (Davidson et al., 2007). Accordingly, learning to successfully manage one's mental health condition and feeling capable of doing so while pursuing personal goals and valued social roles is indeed a recovery-oriented goal (Sterling et al., 2010). Continued development and implementation of scalable self-management interventions that 1) target and improve self-efficacy to manage serious mental illnesses and accompanying medical comorbidities, and 2) can be implemented across a wide array of clinical settings (both mental health and medical), may be central to improving HRQoL among the population of people with bipolar disorder and other serious mental illnesses.

## Acknowledgments

*Source of Funding:* This work was supported by Veterans Health Administration, Clinical Sciences Research and Development (CSR D S06), the VA Health Services Research and Development Center for Organization, Leadership, and Management Research (COLMR), and the National Institute of Mental Health (R34MH74509 and R01 MH79994). Preparation of this manuscript was also supported by VA Office of Academic Affiliations, VA Advanced Psychology Fellowship.

## References

- Angst F, Stassen HH, Clayton PJ, Angst J. Mortality of patients with mood disorders: follow-up over 34–38 years. *J Affect Disord*. 2002; 68:167–181. [PubMed: 12063145]
- Bandura A. On the functional properties of perceived self-efficacy revisited. *J Manage*. 2012; 38:9–44.
- Bandura, A. Guide to the construction of self-efficacy scales. In: Pajares, F.; Urdan, T., editors. *Self-efficacy beliefs of adolescents*. Vol. 5. Greenwich, CT: Information Age; 2006. p. 307-337.
- Bauer MS, Crits-Christoph P, Ball WA, Dewees E, McAllister T, Alahi P, Cacciola J, Whybrow PC. Independent assessment of manic and depressive symptoms by self rating: scale characteristics and implications for the study of mania. *Arch Gen Psychiatry*. 1991; 48:807–812. [PubMed: 1929771]
- Bauer MS, Vojta C, Kinosian B, Altschuler L, Glick H. The Internal State Scale: replication of its discriminating abilities in a multisite, public sector sample. *Bipolar Disord*. 2000; 2:340–346. [PubMed: 11252648]
- Beverly EA, Fitzgerald SM, Sitnikov L, Ganda OP, Caballero AE, Weinger K. *Diabetes Care*. 2013; 36:1501–1506. [PubMed: 23315603]
- Börsbo B, Gerdle B, Peolsson M. Impact of the interaction between self-efficacy, symptoms and catastrophising on disability, quality of life and health in chronic pain patients. *Disabil Rehabil*. 2010; 32:1387–1396. [PubMed: 20513205]
- Bradley KA, Bush KR, Epler AJ, Dobie DJ, Davis TM, Sporleder JL, Maynard C, Burman ML, Kivlahan DR. Two brief alcohol-screening tests From the Alcohol Use Disorders Identification Test (AUDIT): validation in a female Veterans Affairs patient population. *Arch Intern Med*. 2003; 163:821–829. [PubMed: 12695273]
- Bush K, Kivlahan DR, McDonell MB, Fihn SD, Bradley KA. The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. *Arch Intern Med*. 1998; 158:1789–1795. [PubMed: 9738608]
- Cardenas V, Abel S, Bowie CR, Tiznado D, Depp CA, Patterson TL, Jeste DV, Mausbach BT. When functional capacity and real-world functioning converge: the role of self-efficacy. *Schizophr Bull*. 2013; 39:908–16. [PubMed: 22328642]
- Chavez LJ, Williams EC, Lapham G, Bradley KA. Association between alcohol screening scores and alcohol-related risks among female veterans affairs patients. *J Stud Alcohol Drugs*. 2012; 73:391–400. [PubMed: 22456244]
- Chen SM, Creedy D, Lin HS, Wollin J. Effects of motivational interviewing intervention on self-management, psychological and glycemic outcomes in type 2 diabetes: a randomized controlled trial. *Int J Nurs Stud*. 2012; 49:637–44. [PubMed: 22209215]
- Dawson DA, Grant BF, Stinson FS. The AUDIT-C: screening for alcohol use disorders and risk drinking in the presence of other psychiatric disorders. *Compr Psychiatry*. 2005a; 46:405–16. [PubMed: 16275207]
- Dawson DA, Grant BF, Stinson FS, Zhou Y. Effectiveness of the derived Alcohol Use Disorders Identification Test (AUDIT-C) in screening for alcohol use disorders and risk drinking in the US general population. *Alcohol Clin Exp Res*. 2005b; 29:844–854. [PubMed: 15897730]
- Dean BB, Gerner D, Gerner RH. A systematic review evaluating health-related quality of life, work impairment, and healthcare costs and utilization in bipolar disorder. *Curr Med Res Opin*. 2004; 20:139–154. [PubMed: 15006007]
- Davidson L, Tondora J, O'Connell MJ, Kirk T, Rockholz P, Evans AC. Creating a recovery-oriented system of behavioral health care: moving from concept to reality. *Psychiatr Rehabil J*. 2007; 31:23–31. [PubMed: 17694712]
- Geddes JR, Miklowitz DJ. Treatment of bipolar disorder. *Lancet*. 2013; 381:1672–1682. [PubMed: 23663953]
- Glick HA, McBride L, Bauer MS. A manic-depressive symptom self-report in optical scanable format. *Bipolar Disord*. 2003; 5:366–369. [PubMed: 14525558]
- Guyatt GH. A taxonomy of health status instruments. *J Rheumatol*. 1995; 22:1188–1190. [PubMed: 7674253]



- Gyulai L, Bauer MS, Marangell LB, Dennehy EB, Thase ME, Otto MW, Zhang H, Wisniewski SR, Miklowitz DJ, Rapaport MH, Baldassano CF, Sachs GS. STEP-BD Investigators. Correlates of functioning in bipolar disorder. *Psychopharmacol Bull.* 41:51–64. [PubMed: 19015629]
- Hansson L. Determinants of quality of life in people with severe mental illness. *Acta Psychiatr Scand.* 2006; 429(Suppl):46–50.
- Harris AH, Bryson CL, Sun H, Blough D, Bradley KA. Alcohol screening scores predict risk of subsequent fractures. *Subst Use Misuse.* 2009; 44:1055–1069. [PubMed: 19544147]
- Hays RD, Hahn H, Marshall G. Use of the SF-36 and other health-related quality of life measures to assess persons with disabilities. *Arch Phys Med Rehabil.* 2002; 83(12 Suppl 2):S4–9. [PubMed: 12474166]
- Houle J, Gascon-Depatie M, Bélanger-Dumontier G, Cardinal C. Depression self-management support: A systematic review. *Patient Educ Couns.* 2013; 91:271–9. [PubMed: 23414831]
- Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav.* 1997; 38:21–37. [PubMed: 9097506]
- IsHak WW, Brown K, Aye SS, Kahloon M, Mobaraki S, Hanna R. Health-related quality of life in bipolar disorder. *Bipolar Disord.* 2012; 14:6–18. [PubMed: 22329468]
- Joekes K, Van Elderen T, Schreurs K. Self-efficacy and overprotection are related to quality of life, psychological well-being and self-management in cardiac patients. *J Health Psychol.* 2007; 12:4–16. [PubMed: 17158836]
- Jones S, Deville M, Mayes D, Lobban F. Self-management in bipolar disorder: the story so far. *J Ment Health.* 2011; 20:583–92. [PubMed: 22126635]
- Kazdin AE, Blase SL. Rebooting psychotherapy research and practice to reduce the burden of mental illness. *Perspect Psychol Sci.* 2011; 6:21–37.
- Kilbourne AM, Goodrich DE, Lai Z, Clogston J, Waxmonsky J, Bauer MS. Life Goals Collaborative Care for patients with bipolar disorder and cardiovascular disease risk. *Psychiatr Serv.* 2012b; 12:1234–1238. [PubMed: 23203358]
- Kilbourne AM, Goodrich D, Miklowitz DJ, Austin K, Post EP, Bauer MS. Characteristics of patients with bipolar disorder managed in VA primary care or specialty mental health care settings. *Psychiatr Serv.* 2010; 61:500–507. [PubMed: 20439372]
- Kilbourne AM, Goodrich DE, O'Donnell AN, Miller CJ. Integrating bipolar disorder management in primary care. *Curr Psychiatry Rep.* 2012a; 14:687–95. [PubMed: 23001382]
- Kilbourne AM, Perron BE, Mezuk B, Welsh D, Ilgen M, Bauer MS. Co-occurring conditions and health-related quality of life in patients with bipolar disorder. *Psychosom Med.* 2009; 71:894–900. [PubMed: 19661187]
- Kinder LS, Bryson CL, Sun H, Williams EC, Bradley KA. Alcohol screening scores and all-cause mortality in male Veterans Affairs patients. *J Stud Alcohol Drugs.* 2009; 70:253–260. [PubMed: 19261237]
- Lim L, Nathan P, O'Brien-Malone A, Williams S. A qualitative approach to identifying psychosocial issues faced by bipolar patients. *J Nerv Ment Dis.* 2004; 192:810–817. [PubMed: 15583501]
- Lorig KR, Sobel DS, Ritter PL, Laurent D, Hobbs M. Effect of a self-management program for patients with chronic disease. *Eff Clin Pract.* 2001; 4:256–262. [PubMed: 11769298]
- Mancuso CA, Sayles W, Allegrante JP. Knowledge, attitude, and self-efficacy in asthma self-management and quality of life. *J Asthma.* 2010; 47:883–888. [PubMed: 20831465]
- Marangell LB, Dennehy EB, Miyahara S, Wisniewski SR, Bauer MS, Rapaport MH, Allen MH. The functional impact of subsyndromal depressive symptoms in bipolar disorder: data from STEP-BD. *J Affect Disord.* 2009; 114:58–67. [PubMed: 18708263]
- Miller CJ, Abraham KM, Bajor LA, Lai Z, Kim HM, Nord KM, Goodrich DE, Bauer MS, Kilbourne AM. Quality of life among patients with bipolar disorder in primary care versus community mental health settings. *J Affect Disord.* 146:100–105. [PubMed: 22981021]
- Motl RW, McAuley E, Wynn D, Sandroff B, Suh Y. Physical activity, self-efficacy, and health-related quality of life in persons with multiple sclerosis: analysis of associations between individual-level changes over one year. *Qual Life Res.* 2013; 22:253–61. [PubMed: 22403041]

- Ritsner MS, Arbitman M, Lisker A, Ponizovsky AM. Ten-year quality of life outcomes among people with schizophrenia and schizoaffective disorder II: Predictive value of psychosocial factors. *Qual of Life Res.* 2012; 21:1075–84. [PubMed: 21964946]
- Rubinsky AD, Sun H, Blough DK, Maynard C, Bryson CL, Harris AH, Hawkins EJ, Beste LA, Henderson WG, Hawn MT, Hughes G, Bishop MJ, Etzioni R, Tønnesen H, Kivlahan DR, Bradley KA. AUDIT-C alcohol screening results and postoperative inpatient health care use. *J Am Coll Surg.* 2012; 214:296–305. [PubMed: 22244208]
- Sanchez-Moreno J, Martinez-Aran A, Tabarés-Seisdedos R, Torrent C, Vieta E, Ayuso-Mateos JL. Functioning and disability in bipolar disorder: an extensive review. *Psychother Psychosom.* 2009; 78:285–97. [PubMed: 19602917]
- Schmutte T, Flanagan E, Bedregal L, Ridgway P, Sells D, Styron T, Davidson L. Self-efficacy and self-care: missing ingredients in health and healthcare among adults with serious mental illnesses. *Psychiatr Q.* 2009; 80:1–8. [PubMed: 19048375]
- Sierra P, Livianos L, Rojo L. Quality of life for patients with bipolar disorder: relationship with clinical and demographic variables. *Bipolar Disord.* 2005; 7:159–165. [PubMed: 15762857]
- Simon GE, Bauer MS, Ludman EJ, Operskalski BH, Unützer J. Mood symptoms, functional impairment, and disability in people with bipolar disorder: specific effects of mania and depression. *J Clin Psychiatry.* 2007; 68:1237–1245. [PubMed: 17854249]
- Singh J, Mattoo SK, Sharan P, Basu D. Quality of life and its correlates in patients with dual diagnosis of bipolar affective disorder and substance dependence. *Bipolar Disord.* 2005; 7:187–191. [PubMed: 15762860]
- Sterling EW, von Esenwein SA, Tucker S, Fricks L, Druss BG. Integrating wellness, recovery, and self-management for mental health consumers. *Community Ment Health J.* 2010; 46:130–138. [PubMed: 20033488]
- Tsai SY, Chi LY, Lee CH, Chou P. Health-related quality of life as a predictor of mortality among community-dwelling older persons. *Eur J Epidemiol.* 22:19–26. [PubMed: 17216549]
- Ware J, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Med Care.* 1996; 34:220–233. [PubMed: 8628042]
- World Health Organization (WHO). World report on disability 2011. 2011. Retrieved from WHO Press at [http://www.who.int/disabilities/world\\_report/2011/report.pdf](http://www.who.int/disabilities/world_report/2011/report.pdf)

**Table 1**

Demographic and Clinical Characteristics of Participants (N= 141)

	Descriptive Statistics N (%) or M±SD
Demographic Characteristics	
Age (in years)	49.88 ± 11.14
Male gender	101 (71.6%)
Caucasian race	127 (90.1%)
Lives alone (vs. with others)	50 (35.5%)
Any college education (vs. less than college education)	37 (26.2%)
VA recruitment site (vs. community-based clinics)	98 (69.5%)
Clinical Characteristics	
Alcohol use (AUDIT-C score)	1.32 ± 2.42
Presence of past year illicit drug use (vs. absence)	37 (26.2%)
Depressive symptoms (ISS Depressive Index)	7.46 ± 5.66
Activation (ISS Activation)	18.98 ± 12.55
Global psychopathology (ISS Perceived Conflict)	15.31 ± 10.86
Well-being (ISS Well-being Index)	15.83 ± 7.73
Number of medical comorbidities	2.24 ± 1.50
Physical health-related quality of life (SF-12 PCS)	35.02 ± 7.25
Mental health-related quality of life (SF-12 MCS)	32.32 ± 7.35
Self-efficacy	4.99 ± 2.03

**Table 2**

Multiple Linear Regression Models Predicting Health-Related Quality of Life

Variable	PCS <sup>a</sup>					MCS <sup>b</sup>						
	B	SE B	$\beta$	Adj. R <sup>2</sup>	B	SE B	$\beta$	Adj. R <sup>2</sup>	B	SE B	$\beta$	Adj. R <sup>2</sup>
<u>Models with Step 1<sup>c</sup></u>												
Age	.04	.06	.07	.19***	.01	.05	.02	.29***				
Gender	3.14	1.38	.20*		-.65	1.32	-.04					
Race	-4.02	1.89	-.17*		3.37	1.80	.14					
Living situation	.04	1.23	.00		-.85	1.17	-.06					
Education	2.31	1.32	.14*		1.41	1.26	.08					
Recruitment site	1.67	1.57	.11		1.70	1.50	.11					
Alcohol use	-.16	.26	-.05		-.12	.24	-.04					
Past year illicit drug use	-.08	1.36	-.01		-.72	1.29	-.04					
Number of medical comorbidities	-2.31	.49	-.48***		.23	.47	.05					
Depressive symptoms	-.23	.15	-.18		-.48	.14	-.37**					
Activation	.00	.06	.00		.02	.06	.03					
Perceived Conflict	.06	.08	.09		.01	.01	.08					
Well-being	.10	.09	.11		.22	.09	.23**					
<u>Models with Steps 1 and 2<sup>d</sup></u>												
<b>Self-efficacy</b>	<b>.93</b>	<b>.37</b>	<b>.26*</b>	<b>.22***</b>	<b>1.06</b>	<b>.35</b>	<b>.29**</b>	<b>.33***</b>				
Age	.03	.06	.04		-.01	.05	-.01					
Gender	3.13	1.36	.20*		-.66	1.28	-.04					
Race	-4.02	1.85	-.17*		3.38	1.74	.14					
Living situation	.13	1.21	.01		-.75	1.14	-.05					
Education	2.04	1.30	.12		1.10	1.22	.07					
Recruitment site	2.11	1.55	.13		2.20	1.46	.14					
Alcohol use	-.25	.25	-.08		-.22	.24	-.07					
Past year illicit drug use	.04	1.33	.00		-.57	1.25	-.04					
Number of medical comorbidities	-2.15	.49	-.44***		.42	.46	.09					
Depressive symptoms	-.14	.15	-.11		-.37	.14	-.28**					
Activation	.02	.06	.04		.04	.06	.07					

Variable	PCS <sup>a</sup>				MCS <sup>b</sup>			
	B	SE B	$\beta$	Adj. R <sup>2</sup>	B	SE B	$\beta$	Adj. R <sup>2</sup>
Perceived Conflict	.06	.08	.08	.00	.00	.08	.00	.00
Well-being	-.01	.10	-.01	.08	.08	.09	.09	.09

\*\*\*  
p < .001;

\*\*  
p < .01;

\*  
p < .05

<sup>a</sup> Physical Component Scale of the SF-12, measuring physical health-related quality of life.

<sup>b</sup> Mental Component Scale of the SF-12, measuring mental health-related quality of life.

<sup>c</sup> Step 1 includes the following variables: Age, gender (male = 1; female = 0); Race (Caucasian = 1; Other race = 0); Living situation (living alone = 1; other = 0); Education (any college education or more = 1; less than any college education = 0); Recruitment site (VA = 1; community site = 0); Alcohol use (AUDIT-C total score); Past year illicit drug use (yes, present = 1; no, absent = 0); Number of medical comorbidities; Depressive symptoms (Internal State Scale Depressive Index); Activation (Internal State Scale Activation); Perceived Conflict (Internal State Scale Perceived Conflict); Well-being (Internal State Scale Well-being Index).

<sup>d</sup> Step 2 includes the addition of the self-efficacy variable (participants' mean score on the modified self-efficacy scale), while controlling for all variables entered in Step 1.