

Associations among depressive symptoms, well-being, patient involvement, provider cultural competency, and treatment nonadherence: An exploratory study among university student-patients

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Many students on US university campuses are underserved and undertreated for common mental health and medical conditions. The limited extent to which university students seek psychological and medical care when they need it has long been a problem. Among those who do seek care, treatment adherence appears to be an issue as well. However, few studies have examined factors that may be related to treatment nonadherence in university student-patients. The present survey study examined often-understudied constructs (i.e. patient involvement, treatment nonadherence, and provider cultural competency) in 243 university student-patients. Specifically, using a correlational research design, we examined the relations among depressive symptoms, well-being, patient involvement, cultural competency, and treatment nonadherence. Using multiple linear regression analysis, we also explored the extent to which the exploratory variables predicted treatment nonadherence separately and jointly. The current study revealed two important findings. First, all four factors – depressive symptoms, well-being, patient involvement, and cultural competency – were related to nonadherence to treatment. Second, depressive symptoms and patient involvement explained unique variance in nonadherence to treatment. The findings suggest that increased awareness of and attention to depressive symptoms and patient involvement may have important relevance for engendering healthy campuses and for reducing nonadherence in student-patients. Implications and directions for future research are proffered.

Keywords: treatment nonadherence; university student-patients; depressive symptoms; well-being; patient involvement; provider cultural competency

The emotional distress and psychological health of students attending US colleges and universities continue to worsen (Benton, Robertson, Tseng, Newton, & Benton, 2003; Castillo & Schwartz, 2013; Furr, Westefeld, McConnell, & Jenkins, 2001; Hyun, Quinn, Madon, & Lustig, 2006; Rudd, 2004; Twenge, Gentile, DeWall, Ma, Lacerfield, & Schurtz, 2010). In particular, results from recent survey studies of college student health have found that prevalence rates of depression continue to escalate (American College Health Association, 2009, 2012). Similarly, poor overall physical health and serious

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medical conditions (e.g. comorbid diabetes, asthma, and obesity) seen in community and clinical populations are emerging as important health issues relevant to university and college students (American College Health Association, 2011; Burwell, Dewald, & Grizzell, 2010; Hooper & Doehler, 2011). Despite increasing rates of psychological distress and serious physical health conditions, many university students fail to seek help or to receive the treatment and services that they so urgently need (Blanco et al., 2008; Broman, 2012; Castillo & Schwartz, 2013; Tjia, Givens, & Shea, 2005).

Providers in university medical centers and student health counseling centers have long struggled to determine the best methods to reach students who fail to seek out services (Tjia et al., 2005). In addition, providers have reported substantive difficulties (e.g. inadequate time, lack of confidence, and need for consultation; Alschuler, Hoodin, & Byrd, 2008) in treating students who do present at medical centers with emotional distress and health issues. Few studies have uncovered factors or developed effective models (e.g. integrative behavioral health care models) to help providers encourage students to engage in and adhere to treatment recommendations (Alschuler et al., 2008; Herman et al., 2011). When students fail to receive necessary treatment and services, the implications are critical and urgent. Some far-reaching effects include poor academic achievement, inability to form and maintain positive relationships, inability with self-care and self-soothing, suicide ideations and attempts, binge drinking, sleep disturbances, and other pernicious short- and long-term health effects during this pivotal developmental time of emerging adulthood (Alschuler et al., 2008; Furr et al., 2001; Pinder-Amaker & Bell, 2012). Eisenberg, Hunt, and Speer (2012) contended, "This lack of treatment represents a missed opportunity to decrease the burden of mental illness in our population" (p. 222).

In addition to ongoing changes in the psychological and physical health seen in student populations, another important change is found in the demographics of US university and college students (Byrd & McKinney, 2012; Hyun et al., 2006; Snyder & Dillow, 2012). Namely, the college student population is becoming increasingly more diverse across gender, age, socioeconomic status, and race (Byrd & McKinney, 2012; Keller, 2001; Reason, 2009). Thus, one possible solution to increase all students' willingness to seek help may be to offer culturally sensitive and responsive services (see Eisenberg et al., 2012; Tucker, Marsiske, Rice, Nielson, & Herman, 2011).

In addition, the changing twenty-first-century student-patient may want to be involved in treatment decisions and recommendations in a manner not seen previously, just as clinical and community adult counterparts have reported a preference for being involved in the direction of their care (Makoul & Clayman, 2006). Student health and university medical center providers may have failed to incorporate an updated version of the university student and patient care process: that is, new approaches that are patient-centered and culturally sensitive to the needs of diverse university and college student populations (Eisenberg et al., 2012). Specifically, Eisenberg et al. (2012) contended, "Mental health services' cultural competence may be a potential barrier for certain groups of students" (p. 226), and some providers may lack sensitivity to cultural issues, such as race, ethnicity, and students' sexual orientation, that may have an impact on help-seeking.

The cultural competency construct has often been operationalized as the extent to which a provider has knowledge, skills, and awareness about patients' racial and cultural factors, values, and beliefs as well as patients' presenting problems (e.g. patients'

attributions about their psychological and medical conditions; D'Andrea, Daniels, & Heck, 1991). Knowledge, skills, and awareness of cultural differences – and training in these differences – should allow providers to offer better quality care to all patients, including student-patients.

Providers' cultural competency has therefore been proposed as a way to improve patient care and reduce health disparities in most, if not all, populations (Betancourt, Green, Carrillo, & Ananeh-Firempong, 2003; Brach & Fraserirector, 2000; Hoban & Ward, 2003; Lucas, Michalopoulou, Falzarano, Menon, & Cunningham, 2008). Cultural competency may be related to treatment adherence as well. The relation between providers' cultural competency, on the one hand, and student-patients' adherence to treatment and consistency in returning for care, on the other hand, may be an important link – one that has been missed in the clinical and research literature base (Eisenberg et al., 2012). Numerous studies have shown a positive relation between providers' cultural competency training and their cultural knowledge, attitudes, and skills in relationship to treating diverse populations (Brathwaite, 2005; Godkin & Savageau, 2001; Nora, Daugherty, Mattis-Peterson, Stevenson, & Goodman, 1994; Smith, 2001; Way, Stone, Schwager, Wagoner, & Bassman, 2002). However, less research has examined this link among college and university populations, including how it may relate to positive student-patient outcomes, such as treatment adherence and well-being (Beach et al., 2005).

The present study adds to the literature base by examining nonadherence to treatment among US college students. In addition, this study includes student-patients' perceptions of providers' cultural competency as a potentially important yet unexplored predictor of treatment nonadherence. Given the extant literature base as well as the high prevalence rates of depression in university and college students (American College Health Association, 2009, 2012), this study includes depressive symptoms and wellness as relevant measures of psychological distress and health, respectively. Finally, this study explored a second understudied construct in college students – patient involvement (e.g. the patient's knowledge about and participation in the treatment decision-making process) – as a potential factor that may relate to and predict treatment nonadherence (e.g. the patient's willingness to follow a provider's treatment recommendations) among university student-patients. In sum, this study aims to fill a gap in the literature by assessing the relations among depressive symptoms, wellness, patient involvement, a provider's cultural competency – as perceived by the university student-patient – and treatment nonadherence.

Review of the literature

Depression and wellness in college populations

Depression in college populations

Depression is a significant health threat (Kessler, Chiu, Demler, & Walters, 2005). In community samples, lifetime prevalence rates for major depressive disorder have recently been assessed at 18.3% (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012). Similarly, university and college students face high rates of major depressive disorder, with reported prevalence rates ranging from 6–53% (Eisenberg, Gollust, Golberstein, & Hefner, 2007; Furr et al., 2001; Klein, Ciotoli, & Chung, 2011; Lindsey, Fabiano, & Stark, 2009; Zivin, Eisenberg, Gollust, & Golberstein, 2009). In one

Internet-based study in a large public university, researchers found that 13.8% of undergraduates and 11.3% of graduate students screened positive for depression (Eisenberg et al., 2007). Depression screenings at another university health center indicated that 6% of students had depression symptoms (Klein et al., 2011). Of significance, Klein et al. (2011) reported that only 35.7% of those who were found to have depression symptoms and who were referred to a provider went on to seek treatment in the 30 days following the referral.

Although few investigations have explored the link between depressive symptoms and treatment nonadherence in college students, we can extrapolate from studies that have focused on these constructs in adult community patients. For example, major depressive disorder and depressive symptoms (i.e. the focus of the current study) have been linked both to treatment nonadherence (Ciechanowski, Katon, & Russo, 2000; DiMatteo, Lepper, & Croghan, 2000; Gehi, Haas, Pipkin, & Whooley, 2005; Gonzalez et al., 2007) and to decreased patient involvement (Clever et al., 2006) in adult populations. In a meta-analysis of noncompliance associated with depression, DiMatteo et al. (2000) found that depressed adult patients are three times as likely not to adhere to medication as a healthy sample. Depression severity in diabetic patients has been found to relate to treatment nonadherence as well. Gonzalez et al. (2007) found that depression severity predicts nonadherence to medication, diet, and exercise recommendations, as well as the extent to which patients monitor their glucose levels. Depression has also been shown to affect the rate of forgetting medications, or deciding not to take them, among coronary heart disease patients (Gehi et al., 2005). Clever et al. (2006) found that as patient involvement in decision making increases, patients are more likely to receive guideline-concordant care and exhibit fewer depressive symptoms.

Wellness in college populations

Psychological wellness and life satisfaction may be defined as the extent to which a person perceives his or her actual situation to be similar to his or her ideal situation (Diener, Emmons, Larsen, & Griffin, 1985). Socioeconomic status, levels of health, employment, disability, and social support have been found to affect one's life satisfaction, with the greatest contributor being emotional support (Barger, Donoho, & Wayment, 2009). Well-being has been linked to many positive health outcomes. For example, it has been shown to decrease mortality (Chida & Steptoe, 2008; Diener & Chan, 2011; Koivumaa-Honkanen et al., 2000) and lower suicide risk (Koivumaa-Honkanen et al., 2001).

Wellness in college student populations has been studied extensively (Diener & Seligman, 2002; Murphy, McDevitt-Murphy, & Barnett, 2005; Pilcher, 1998; Pilcher, Ginter, & Sadowsky, 1997; Reich & Zautra, 1981; Seibel & Johnson, 2001). Pilcher (1998) assessed determinants of life satisfaction in college students and found that depression, negative affect, and frequency of illness all predict lower life satisfaction scores. Sleep quality, vigor, and anger also were associated with satisfaction with life in theoretically expected ways: Sleep quality and vigor were positively associated with satisfaction with life and anger was negatively associated with satisfaction with life (Pilcher, 1998).

Seibel and Johnson (2001) examined the parent-child relationship and its effects on life satisfaction among undergraduate students. The researchers reported that having

highly controlling parents is associated with lower levels of life satisfaction, but that having accepting parents is associated with a higher life satisfaction. Murphy and colleagues (2005) found that heavy alcohol use is associated with lower general life satisfaction and anticipated life satisfaction among college-age females. Murphy et al. also found that women who abstained from alcohol use had higher life satisfaction and higher anticipated future satisfaction than did both moderate drinkers and heavy drinkers.

Although the adherence literature is scant in the student-patient population, lower levels of functioning and well-being may have an impact on the extent to which patients adhere to treatment recommendations. Student-patients who report lower levels of well-being may feel less motivated, less invested, or even less empowered to seek and adhere to treatment recommendations put forward by providers. This is the focus and the empirical question the current study sought to examine.

Patient involvement in college populations

The health care community and the policies informing it have seen a shift in health providers' role from paternalistic, expert, decision-making figures to partners who invite patient participation in the treatment decision-making process (Charles & DeMaio, 1993; Gemmell & DiClemente, 2009). Patient involvement has been defined as patients' seeking of knowledge about illness, their assertiveness in provider-patient interactions, and the potential for patients' mindful nonadherence to treatments with which they may be uncomfortable (Brashers, Haas, & Neidig, 1999).

Studies have found that a large percentage of college-age students have used the Internet to actively seek health information, suggesting that they have an interest in being involved in their healthcare decisions (Escoffery et al., 2005; Hanauer, Dibble, Fortin, & Col, 2004; Ogan, Ozakca, & Groshek, 2008; Percheski & Hargittai, 2011). In a recent study composed of patients at a university medical center, Campbell, Auerbach, and Kiesler (2007) found that patient involvement during a healthcare visit is linked to higher rates of patient satisfaction with the visit. That study also found that the majority of college-age patients wanted information about their health and treatment options, wanted the ability to influence decisions regarding treatment, and felt competent to manage their own health outcomes. Further, in a different study concerning smoking cessation advice, Gemmell and DiClemente (2009) found that the college student population favored a motivational, participatory approach by the provider.

Numerous studies have found an association between increased patient involvement and positive outcomes (Beach, Duggan, & Moore, 2007; Brody, Miller, Lerman, Smith, & Caputo, 1989; Greenfield, Kaplan, & Ware, 1985; Hack, Degner, Watson, & Sinha, 2006; Parchman, Zeber, & Palmer, 2010). Greenfield et al. (1985) found that after an intervention to increase patient involvement, patients not only were more active and assertive in provider visits, but also experienced fewer physical and role limitations on functional ability due to their illness. Beach et al. (2007) found that patients with HIV who desired a medical decision-making partnership, as opposed to a relationship in which the provider makes the decisions alone or the patient makes the decisions alone, were more likely to receive and adhere to HIV treatments. And in a sample of diabetes patients, Parchman et al. (2010) found that participatory decision making and patient activation during medical visits were associated with improved medication adherence, improvements in hemoglobin A1C levels, and a reduction in cholesterol.

As noted, patient involvement has been shown to relate to treatment adherence in adult patient and community populations. However, there is a dearth of research examining the relation between these two constructs in student-patient populations. Given that patient involvement has been linked to treatment adherence or nonadherence among adult clinical patients (Beach et al., 2007; Parchman et al., 2010), the same association may be evinced in student-patient populations. Our conjecturing about the extent to which this relation may be evidenced in both populations has some preliminary support in the literature. For example, Eisenberg et al. (2012) contended that current emerging adults and future generations appear to be becoming more comfortable with seeking out health care services, and their involvement in their care may therefore become a “normal and desirable” part of routine self-care (p. 229).

Perceived cultural competency and college populations

Cultural competency has often been described as the extent to which providers have knowledge, skills, and awareness about the racial and cultural factors, values, and beliefs of their patients and about the extent to which all of these may affect physical or psychological health (D’Andrea et al., 1991; Holcomb-McCoy & Myers, 1999; Lucas et al., 2008; Ponterotto, Gretchen, Utsey, Rieger, & Austin, 2002). Other models of cultural competency have included the extent to which providers seek out cultural encounters (Campinha-Bacote, 2002), the desire of providers to become culturally aware and knowledgeable (Campinha-Bacote, 2002), providers’ relationship with racial and ethnic minority patients (Sodowsky, Taffe, Gutkin, & Wise, 1994), providers’ understanding of how culture affects beliefs and values (Burchum, 2002), and providers’ respect for cultural diversity (Burchum, 2002). Cultural competency has been further described as the ability to tailor health care services to address the social, cultural, and linguistic needs of a patient population that holds diverse belief systems and behaviors (Betancourt et al., 2003). The American Institutes for Research (2002), along with the Office of Minority Health (2001), asserted that religion, gender, age, sexual orientation, literacy, disability status, and socioeconomic status, in addition to race and ethnicity, are important cultural factors to consider in the patient–provider relationship.

The increase in racial and cultural diversity among student populations on US college campuses may point to an increased need for culturally competent care. If providers working in university medical centers and student health counseling centers lack cultural competency, student-patients may be less inclined to follow treatment recommendations or to return for treatment services (see Hoban & Ward, 2003). Only one empirical study has examined the link between student-patients’ perceptions of providers’ cultural competency and treatment adherence (Brozyna, 2006). In that study, Brozyna (2006) found that providers’ cultural competency is significantly and positively related to treatment adherence in a sample of 198 primarily White American college students.

In the current study, we borrow from Cross and colleagues’ work (1989) to define cultural competency. They define cultural competency as a provider’s desire, knowledge, and ability to treat patients effectively across different cultures, religions, languages, cultural beliefs, and social backgrounds (Cross, Bazron, Dennis, & Isaacs, 1989). Thus, in the current study, student-patients reported the extent to which they perceived their providers as culturally competent.

Treatment adherence and nonadherence

In the past, treatment adherence research in adult patient and community samples has focused on the extent to which patients follow given medication instructions. More recently the definition has been expanded to include the extent to which a patient's behavior follows a range of treatment recommendations concerning medication, diet, counseling recommendations, preventative care measures, or lifestyle changes (Sabate, 2003). Thus, treatment adherence includes following the recommendations of providers for treatments of both physical conditions and psychological distress. Nonadherence is evidenced when patients do not follow the recommendations and instructions of their providers.

Nonadherence is a serious problem that affects treatment outcomes and quality of care (Urquhart, 1996; Vermeire, Hearnshaw, & Van Royen, 2001). Between 1948 and 1998, average nonadherence rates in 569 studies approached 25% (DiMatteo, 2004). Overall economic costs from nonadherence have been cited as high as \$100 billion per year when accounting for revenue from unfilled prescriptions, an increased need for costly hospital and nursing home admissions, and lost productivity (Berg, Dischler, Wagner, Raia, & Palmer-Shevlin, 1993).

Several studies have found differences in rates of treatment adherence across racial and ethnic groups (Gazmararian et al., 2006; Gellad, Haas, & Safran, 2007; Siegel, Lopez, & Meier, 2007; Tseng et al., 2008), indicating that culture may play a role in treatment adherence levels. Gellad et al. (2007) analyzed medication adherence among adult patients and found that Black Americans and Hispanic Americans are more likely not to adhere to treatment due to medication costs. Gazmararian et al. (2006) found that Black Americans are 1.74 times more likely to have low refill adherence compared to White Americans. Further, numerous studies have examined a link between culturally tailored health care interventions (e.g. using culturally matched health educators or community-based partnerships) and treatment adherence (Allen & Bazargan-Hejazi, 2005; Corkery et al., 1997; Lorig & Gonzalez, 2000; McElmurry et al., 2009; Rosal et al., 2011; Wang & Chan, 2005). Taken together, preliminary findings from these studies, composed of racially diverse adult patients, indicated that culturally tailoring treatments and interventions increased adherence to treatment recommendations for mammogram screening (Allen & Bazargan-Hejazi, 2005), blood glucose self-monitoring and changes in eating habits (Rosal et al., 2011), and overall diabetes management (Wang & Chan, 2005).

Scant attention has been given to this important construct in student-patient populations (Eisenberg et al., 2012). The present study will fill an important gap in the literature regarding nonadherence and health care services on university campuses.

The present study

The present study explored correlates and predictors of nonadherence in US university student-patients. Given the foregoing literature review and the exploratory nature of our study, we tested two correlational hypotheses. Our guiding research question was as follows: To what extent is there an association among the following variables in a university student-patient population: depressive symptoms, wellness, patient involvement, cultural competency, and treatment nonadherence (Alschuler et al., 2008; American College Health Association, 2012; Beach et al., 2005; Blanco et al., 2008; Broman,

2012; Herman et al., 2011; Makoul & Clayman, 2006; Tjia et al., 2005)? We also explored the extent to which our exploratory variables predict treatment nonadherence separately and jointly. We hypothesized that depressive symptoms are positively associated with treatment nonadherence and that wellness, patient involvement, and cultural competency are negatively associated with treatment nonadherence (Alschuler et al., 2008; American College Health Association, 2012; Beach et al., 2005; Blanco et al., 2008; Broman, 2012; Herman et al., 2011; Makoul & Clayman, 2006; Tjia et al., 2005).

Method

Participants and procedure

Participants were 243 primarily White American patients visiting a large university student health center in the southern region of the United States. The sample was 59.3% female ($n = 144$) and 40.3% male ($n = 98$). Of these participants, 84.8% ($n = 206$) identified as White American, 6.58% ($n = 16$) as Black American, 4.1% ($n = 10$) as mixed race, 3.7% ($n = 9$) as Asian or Asian American, and 0.4% ($n = 1$) as Hispanic. Most participants, 81.4% ($n = 198$), were single; a few participants, 18.5% ($n = 45$), self-identified as married or coupled.

Following approval from the institutional review board for research with human subjects, study recruitment took place from April to November 2012. Patients were recruited from the university student health center, which offers a range of services for physical complaints, psychological symptoms, and emotional distress. Patients were approached while waiting for their appointments. Potential participants were asked to complete a 20- to 25-min paper-and-pencil survey about their physical and psychological health, cultural factors, and their relationship and experiences with their providers based on their previous visits. Each participant who orally agreed to take part in the study received a packet that included an informed consent form, a demographic information sheet, and several questionnaires measuring the study variables.

Measures

Demographic information sheet

This questionnaire, created for the study, asked for information regarding gender, current age, and marital status. Participants were also asked to report both their race and ethnicity.

Depressive symptoms

The Center for Epidemiologic Studies Depression (CES-D) scale (Radloff, 1977) was developed to assess current levels of depression symptomatology in the general population. Widely used, the CES-D consists of 20 items that correspond to signs and symptoms of major depression. Participants are asked to indicate how many days out of the previous week they experienced a feeling or symptom. Sample items include "I felt that everything I did was an effort," "I was bothered by things that usually don't bother me," and "My sleep was restless." Each item is scored on a 4-point Likert-type scale

ranging from 0 (*strongly agree*) to 3 (*strongly disagree*). Scores range from 0 to 60, with higher scores reflecting greater levels of depression symptoms.

The CES-D was validated in a general population sample and a clinical patient sample. Internal consistency for the measure is considered sound for the general population and clinical population, 0.85 and 0.90 respectively (see Radloff, 1977). The CES-D has been used in college-age populations as well (Okazaki, 1997; Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995). Internal reliability in the current study's sample was acceptable ($\alpha = 0.79$).

Wellness or well-being

The Satisfaction with Life Scale (SWLS; Diener et al., 1985) is a five-item scale designed to measure global life satisfaction. Sample items include "In most ways my life is close to my ideal," "So far I have gotten the important things I want in life," and "If I could live my life over, I would change almost nothing." Items are scored on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores range from 5 to 35, with higher scores reflecting greater global satisfaction with life.

The SWLS was originally validated in a college undergraduate sample (see Diener et al., 1985). Scores from that validation study suggest acceptable reliability (Cronbach's $\alpha = 0.87$) and test-retest reliability (Cronbach's $\alpha = 0.82$). Construct validity was supported with a comparison between SWLS scores and numerous other well-being measures including the Affect Balance Scale (Bradburn, 1969), the Self-Esteem Scale (Rosenberg, 1965), and the Affect Intensity Measure (Larsen, 1983). This measure has been used in several college student populations (Chang, Watkins, & Banks, 2004; Darling, McWey, Howard, & Olmstead, 2007; Pilcher et al., 1997; Sheets & Mohr, 2009; Thome & Espelage, 2004). Internal reliability in the current study's sample was acceptable ($\alpha = 0.89$).

Patient involvement

We used the Patient Self-Advocacy Scale (PSAS) to assess to what extent the student-patients were involved in their health care and treatment decisions. The PSAS (Brashers et al., 1999) is a 12-item survey that measures three dimensions of patient involvement and self-advocacy: increased illness and treatment education, increased assertiveness in health care interactions, and potential for mindful nonadherence. Sample items include "I actively seek out information on my illnesses," "I frequently make suggestions to my physician about my healthcare needs," and "If my physician prescribes something I don't agree with, I question it." Each item is scored on a 5-point Likert-type scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Scores range from 22 to 88, with higher scores reflecting greater levels of patients' involvement in their health care.

Evidence from the validation study – composed of a sample of AIDS patients and a comparison sample – produced acceptable reliability of the overall scale score in each of the samples (Cronbach's $\alpha = 0.78$; see Brashers et al., 1999). Although originally developed for AIDS patients, the PSAS has been adapted for use among patients with a range of illnesses and for the general patient population. For example, the PSAS has been used in patient populations with cancer (Hermansen-Kobulnicky, 2008) and mental

illness (Cook et al., 2009). Few studies, if any, have used the PSAS in a college-age population. Consistent with other studies, the overall reliability coefficient value in the current study was acceptable ($\alpha = 0.79$).

Patient perception of provider cultural competence

The Perceived Cultural Competency scale (PCC; Lucas et al., 2008) is a nine-item patient report measure of cultural competency comprising three domains: cultural knowledge, cultural awareness, and cultural skills. Cultural knowledge is measured by questions such as “How well do you think your doctor understands your culture’s specific characteristics?” Cultural awareness is measured by questions such as “Do you feel as though your doctor is aware of the views that he or she may have towards specific cultural groups?” Cultural skill is measured by questions such as “Does your doctor possess the skills that are needed to treat a patient from your cultural or ethnic background?” Each question is scored on a 7-point Likert-type scale for a total possible range of scores between 9 and 63. Higher scores reflect higher patient-rated cultural competency of providers.

Evidence from Lucas et al. (2008) study suggested that scores from the PCC yield sound convergent, divergent, and incremental validity. Internal reliability values in a recent study ranged from 0.83 to 0.93 (Michalopoulou, Falzarano, Arfken, & Rosenberg, 2009). Few studies, if any, have used this measure in a college-age population. Consistent with other studies, the reliability coefficient value for the overall score in the current sample was high ($\alpha = .93$).

Adherence Starts with Knowledge-20 (ASK-20) Adherence Barrier Survey

We used the Adherence Starts with Knowledge-20 (ASK-20) Adherence Barrier Survey (Hahn et al., 2008) to measure the extent to which student-patients adhered to treatment recommendations. The ASK-20, which consists of 20 items, was developed to measure barriers to adherence across diseases. Sample items include “I know if I am reaching my health goals,” “My doctor/nurse and I work together to make decisions,” and “My use of alcohol gets in the way of taking my medicine.” Items are scored on a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). The ASK-20 total score can range from 20 to 100, with higher scores reflecting higher levels of nonadherence to treatment.

The ASK-20 was validated in a sample of adult patients diagnosed with depression, diabetes, or asthma (see Hahn et al., 2008), and it has subsequently been used to study adherence barriers in patients with asthma (Park et al., 2010) and diabetes (Melko, Terry, Camp, Xi, & Healey, 2009). In addition, Matza et al.’s (2008) findings suggested that ASK-20 scores have acceptable reliability (Cronbach’s $\alpha = 0.76$). Few studies, if any, have used this measure in a college-age population. Internal reliability in the current study’s sample was acceptable ($\alpha = 0.75$).

Analysis strategy

All analyses were performed using SPSS version 17.0. We employed the following procedures to examine the data. First, descriptive data (means and standard deviations)

Table 1. Descriptive statistics for variables used in the study.

Variables	Range	<i>M</i>	SD	Alpha
Depressive symptoms	0–60	11.09	8.53	.795
Well-being	0–35	23.89	4.46	.892
Involvement in treatment	22–80	27.44	6.91	.760
Providers' cultural competency	9–63	50.19	9.55	.933
Treatment nonadherence	20–100	43.83	9.21	.788

Notes: Predictor variables: depressive symptoms=Center for Epidemiologic Studies Depression (CES-D) scale; well-being=Satisfaction with Life (WELL); involvement in treatment=Patient Self-Advocacy Scale (PSAS); and provider cultural competency=Perceived Cultural Competency (PCC) scale. Criterion variable: treatment nonadherence=Adherence Starts with Knowledge-20 (ASK-20) Adherence Barrier Survey.

for all study variables were examined (see Table 1). Second, we used scatter plots and Pearson product-moment correlation coefficients to determine the strength of the relations among the study variables. Finally, we conducted a multiple linear regression analysis to examine the extent to which our exploratory study factors predicted treatment nonadherence separately and jointly.

Results

Bivariate relations among study variables

We first explored bivariate relations among the study variables. Table 2 displays the intercorrelations among the study variables. All the variables – depressive symptoms, wellness, patient involvement, and providers' cultural competency – that were examined in the current study were found to be statistically significantly associated with treatment nonadherence. As hypothesized, scores for depressive symptoms are positively associated with nonadherence to treatment. Higher levels of depressive symptoms are positively related to higher levels of nonadherence ($r = .280$). Conversely, higher levels of well-being, patient involvement, and patient-rated cultural competency of providers were found to be negatively associated with nonadherence to treatment. As Table 2 illustrates, the strength of the significant correlations among the study variables was low to moderate and ranged from $r = -.525$ to $r = .280$.

Relating student-patient factors to treatment nonadherence

We also conducted a multiple regression analysis to determine the extent to which the predictor variables explain treatment nonadherence separately and jointly. Treatment adherence was regressed on four predictor variables: depressive symptoms, wellness, patient involvement, and providers' cultural competency. All continuous variables were entered simultaneously. Table 3 presents the findings from the regression analysis. The overall model established the existence of a significant relationship between the four predictor variables and the criterion variable, $F = 6.41$, $p < .0001$, $r^2 = .11$. The R value ($r = .332$) for this model meets the criterion for a medium effect size, as defined by Cohen (1992, Cohen and Cohen (1983)). The R^2 value reveals that 11% of the variance observed in the criterion variable of treatment nonadherence is explained by the model.

Examination of the t -tests on each beta weight (see Table 3) showed that depressive symptom scores (CES-D) made a significant unique contribution above and beyond the

Table 2. Intercorrelations for study variables.

Variables	1	2	3	4	5
Depressive symptoms	–				
Well-being	–.525**	–			
Involvement in treatment	–.048	.042	–		
Providers' cultural competency	–.177**	.133*	.144*	–	
Treatment nonadherence	.280**	–.179**	–.147*	–.151*	–

Notes: Predictor variables: depressive symptoms = Center for Epidemiologic Studies Depression (CES-D) scale; well-being = Satisfaction with Life (WELL); involvement in treatment = Patient Self-Advocacy Scale (PSAS); and provider cultural competency = Perceived Cultural Competency (PCC) scale. Criterion variable: treatment nonadherence = Adherence Starts with Knowledge-20 (ASK-20) Adherence Barrier Survey.

* $p < .05$. ** $p < .001$.

Table 3. Regression analysis summary for predictor variables and treatment nonadherence.

Predictor variable	<i>B</i>	<i>B</i>	β
Depressive symptoms	.216	.202	.013*
Well-being	–.144	–.071	.377
Involvement in treatment	–.213	–.154	.021*
Providers' cultural competency	–.116	–.120	.076

Notes: $R^2 = .11$ ($n = 211$, $p < .001$).

* $p < .05$.

other variables: $\beta = .20$, $p < .013$. Valence of the beta weight suggested that a higher level of depression symptoms is associated with a higher level of treatment nonadherence. In addition, patient involvement (PSAS) made a significant unique contribution above and beyond the other variables: $\beta = -.15$, $p < .021$. Valence of the beta weight suggested that a higher level of patient involvement is associated with a lower level of treatment nonadherence. No other predictor variable was found to be statistically significant, and so no other predictor variable helped to explain the variance in the criterion variable of treatment nonadherence.

Discussion

The purpose of the present study was to explore correlates and predictors of treatment nonadherence in university student-patients. Specifically, we tested an exploratory model undergirded by select factors – depressive symptoms, wellness, patient involvement, cultural competency, and treatment nonadherence – whose importance has been demonstrated in adult community and clinical populations. The study used a self-selected convenience sample of university students from a southern region of the United States. In this section we first discuss the results of our bivariate analyses, followed by the results of our predictive model.

As hypothesized, bivariate analyses revealed significant relations between the four exploratory constructs and nonadherence to treatment, although the effect sizes of these significant relations were small. Our findings indicate that all four factors are

moderately related to treatment nonadherence in the expected directions. Depression symptoms are positively related to treatment nonadherence. Consistent with other studies composed of adult community and clinical populations (Ciechanowski et al., 2000; DiMatteo et al., 2000; Gehi et al., 2005; Gonzalez et al., 2007), we found that as levels of depression symptoms increased in our sample, nonadherence to treatment recommendations also increased. Given the prevalence rates of depression among university students (American College Health Association, 2012), this finding is important. The ever-increasing level of depressive symptoms in college students (American College Health Association, 2009, 2012) places these students at risk for nonadherence to treatment. It is plausible that students are unaware of or unclear about the services that are available on college campuses. Similarly, students may be unclear about how those services may be beneficial in reducing distress and health symptoms. Consequently, mental health care and medical care available on college campuses should be demystified and destigmatized. That is, campuses should (a) provide information about treatments that are available, (b) offer education about the benefits of seeking out medical and mental health care, and (c) describe how the counseling process works. Importantly, students should be encouraged to use these services when needed (Bundy & Benshoff, 2000).

Correlational tests also revealed significant relations between treatment nonadherence and wellness, patient involvement, and cultural competency. As hypothesized, a negative association was found between these constructs. Higher levels of patient involvement, wellness, and perceived cultural competency of providers were associated with lower levels of nonadherence to treatment. Given that the study was exploratory in nature and that two of these constructs (i.e. patient involvement and perceived cultural competency of providers) have been understudied in student-patient populations, these findings are noteworthy. Specifically, the significant associations point to areas that may be explored when creating outreach strategies, establishing treatment plans, and trying to increase help-seeking behaviors among university student-patients. These associations also point to factors that campus psychoeducational programs could target to increase the likelihood that student-patients will adhere to providers' recommendations.

We also examined the extent to which our four exploratory factors, taken together, are able to predict treatment nonadherence. The overall regression model was significant, although only two of the four predictor variables were found to explain unique variance in the context of the other variables. Specifically, two study factors – depressive symptoms and patient involvement – were significant predictors in explaining 11% of the variance in nonadherence to treatment.

Our study contributes to the literature base by confirming the predictive ability of depressive symptoms for nonadherence in university and college student-patients. Consistent with findings in the literature base focusing on community and clinical populations (Ciechanowski et al., 2000; DiMatteo et al., 2000; Gehi et al., 2005; Gonzalez et al., 2007), depressive symptoms made a unique contribution to the variance in treatment nonadherence in our study. Importantly, given the high prevalence rates of depression among emerging adults and college student populations (American College Health Association, 2009, 2012), providers on university campuses should consider including a routine screening of depressive symptoms in general, as well as a particular assessment of depressive symptoms when patients fail to adhere to treatment recommendations. Moreover, when student-patients present with and self-report medical complaints rather than psychological distress, depressive symptoms may be implicated in treatment

nonadherence. Measures such as the CES-D (Radloff, 1977) are easy to administer and can be used to determine whether depressive symptoms have gone undetected in student-patients presenting at university medical centers.

Our study also contributes to the literature base by examining factors that are often unexplored in student populations, despite their relevance in other adult community and clinical populations. In particular, patient involvement, empowerment, and self-advocacy have been described frequently in the adult clinical and research literature (see Clever et al., 2006). Consequently, the link between patient involvement and treatment nonadherence has emerged as an important topic in that literature base (DiMatteo, 2004; Urquhart, 1996; Vermeire et al., 2001). Our study found patient involvement to be a significant predictor of treatment adherence or nonadherence. This finding suggests that previous outreach and treatment models, in which providers on university campuses are experts, may no longer be applicable or useful (Alschuler et al., 2008). As a result, as providers in university student health counseling centers and medical centers try to improve therapeutic relationships, processes, and outcomes by making them more patient-centered and culturally tailored, the construct of patient involvement needs to be considered (Makoul & Clayman, 2006).

The issue of treatment nonadherence has been minimally explored among student-patients. Adherence to treatment recommendations has relevance for all populations, including university and college students, as observed in the present study. As described by Berg et al. (1993), nonadherence costs society billions of dollars each year. Determining modifiable factors and processes (e.g. screening for depressive symptoms and inviting patient involvement) that may increase participation in and adherence to treatment is an important effort to consider (Alschuler et al., 2008). Providers working in university medical centers and student health counseling centers have a unique opportunity to inform students about the comprehensive and routine services available on campuses. Establishing strategies (e.g. e-mail reminders, brochures about risks related to nonadherence, campus-wide meetings, and screenings) that increase adherence and appointment keeping and reduce nonadherence and early termination of treatment are critical.

Limitations of the Study

Despite the strengths of the present study, its limitations must be considered. First, the cross-sectional data collection framework cannot provide information related to causality. Second, the sole use of self-reported information could have introduced bias and error in the data and thereby had an impact on the results of the study. Third, we used a small convenience sample of student-patients at a single university. Although all patients who arrived at the student health center were invited to participate in the study, some student-patients declined to participate in the study, citing lack of time and interest. Thus, our nonrandomized sample could have resulted in selection bias. Also, no claims related to generalizability to all university and college students can be made. Fourth, the study sample lacked racial diversity. Although the study sample had comparable numbers of male and female students and racial/ethnic backgrounds consistent with the university population from which the sample was drawn (i.e. 83% White American), the self-reported race of the participants was nonetheless overwhelmingly White American. Future studies should explore the relations among the study factors in

the context of a larger and more culturally and racially diverse sample. Finally, our model explained 11% of the variance in treatment nonadherence. This finding suggests that many other factors not measured in our study (e.g. financial burden, stigma, and lack of advisor and peer support) may account for nonadherence in university student-patients.

Directions for future research

The psychological, physical, and treatment needs of the college student population are important areas of study that can help establish what factors may relate to a healthy university and college campus (Burwell et al., 2010). Given the persistent findings that many university students are undertreated and underserved (see Blanco et al., 2008; Broman, 2012; Castillo & Schwartz, 2013; Hyun et al., 2006; Tjia et al., 2005), it is paramount that researchers work toward uncovering modifiable factors that may be incorporated into the patient care process (i.e. outreach, assessment, diagnosis, and treatment). Our main findings provide some preliminary information that may inform directions for future research. Specifically, we offer three recommendations to guide future research.

First, given that our study was composed of primarily White American students, future research should consider the extent to which our study factors are similarly or differently related in a racially diverse sample. Broman (2012) contended that racial differences exist in young adults' receipt of health care services. For example, the rates of racial minority student-patients' use of health care services and receipt of first-line, evidence-based treatments for psychological disorders and physical health conditions are well below those rates evidenced among White American college students (Burwell et al., 2010; Hyun et al., 2006). Other studies have shown that racial and cultural differences exist in young adults who receive health care services (Eisenberg, Hunt, Speer, & Zivin, 2011; Masuda et al., 2009). Eisenberg et al. (2011) found that more women than men with psychological and emotional distress receive mental health services, and more White American students (50% received services) in the same study received health care services than Black Americans (19% received services) and Asian Americans (9% received services). We must disentangle the persistent health disparities on college campuses just as we must disentangle the health disparities in adult community and clinical populations (Burwell et al., 2010; Hoban & Ward, 2003). Future research should examine what unique factors – if any – may be incorporated into the patient care process so that all students receive and adhere to the services that they critically need. In addition, future research should consider the extent to which the relations evinced in the current study can be replicated in a more culturally diverse (e.g. gay, lesbian, bisexual, and transgender populations; lower socioeconomic populations; and populations with differing primary languages) and geographically diverse (e.g. urban and rural) sample (Broman, 2012; Kearney, Draper, & Baron, 2005). Given the homogeneity of the present study's sample, we were unable to explore differences in nonadherence based on racial and cultural factors, but future research should consider this an important aim.

Next, given that providers' cultural competency was found to be related to treatment nonadherence in the present study, our second recommendation is that researchers who are developing evidence-based health initiatives should consider how cultural competency may serve as an active ingredient in future models (Brozyna, 2006; Paez,

Allen, Beach, Carson, & Cooper, 2009). As Hoban and Ward (2003) underscored, researchers should examine the extent to which culturally tailored models increase treatment adherence among college student populations. Future researchers should consider developing and testing patient-centered (i.e. patient-involved), culturally tailored models that focus on depression, which may be an indirect path toward decreasing nonadherence among university student-patients (DiMatteo et al., 2000). Because culturally competent care may increase levels of adherence to treatment (Tucker et al., 2011), providers should strive to incorporate these principles in their treatment of university student-patients.

Our third recommendation, one that we have emphasized throughout the article, centers on the fact that most college and university students are not receiving or adhering to the treatment and services that they need to manage their psychological health and physical conditions. Accordingly, researchers need to develop and test new models that may increase help-seeking behaviors and decrease treatment nonadherence. Despite the exploratory nature of the present study, our findings offer preliminary evidence suggesting that even during the emerging adulthood, factors such as patient involvement, cultural competency, and treatment nonadherence need to be considered together. Although other studies are needed to replicate and contextualize the current study's findings, these understudied constructs may point to worthwhile intervention points to be considered in the future. Counseling psychologists, mental health counselors, administrators, faculty advisors, psychiatrists, and other health care providers need to consider new methods and best practices for improved healthcare on university and college campuses (Alschuler et al., 2008; Hyun et al., 2006). Determining what specific factors may contribute to effective outreach, access to treatment, and treatment adherence strategies must be a priority for researchers and providers alike (Eisenberg et al., 2012).

Nonadherence is a serious problem that affects treatment outcomes and quality of care (Urquhart, 1996; Vermeire et al., 2001). Moreover, in addition to the problem of adherence or nonadherence, Alschuler et al. (2008) underscored the critical need to find solutions regarding the absence of optimal health care services on university campuses. They reported that in their study "the most common treatment for patients with behavior problems was no treatment" (Alschuler et al., 2008, p. 392). The factors explored in the present study may serve as a first step in offering specific factors or solutions directed toward increasing help-seeking behaviors and increasing treatment adherence among university and college student-patients.

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