Published in final edited form as:
AIDS Care. 2013 ; 25(9): 1185–1192. doi:10.1080/09540121.2012.752788.

The impact of depressive symptoms on patient–provider communication in HIV care

Charles R. Jonassaint[a,*], **Carlton Haywood Jr.**[b,c], **Philip Todd Korthuis**[d], **Lisa A. Cooper**[a,c], **Somnath Saha**[d], **Victoria Sharp**[e], **Jonathon Cohn**[f], **Richard D. Moore**[a], and **Mary Catherine Beach**[a,c]

[a]Division of General Internal Medicine, Johns Hopkins University, Baltimore, MD, USA

[b]Berman Institute of Bioethics, Johns Hopkins University, Baltimore, MD, USA

[c]Welch Center for Prevention, Epidemiology, and Clinical Research, Johns Hopkins University, Baltimore, MD, USA

[d]Section of General Internal Medicine, Portland VA Medical Center, Department of Medicine, Oregon Health & Science University, Portland, OR, USA

[e]Department of Medicine, St. Luke's–Roosevelt Hospital, New York, NY, USA

[f]School of Medicine, Wayne State University, Detroit, MI, USA

Abstract

Persons with HIV who develop depression have worse medical adherence and outcomes. Poor patient–provider communication may play a role in these outcomes. This cross-sectional study evaluated the influence of patient depression on the quality of patient–provider communication. Patient–provider visits ($n = 406$) at four HIV care sites were audio-recorded and coded with the Roter Interaction Analysis System (RIAS). Negative binomial and linear regressions using generalized estimating equations tested the association of depressive symptoms, as measured by the Center for Epidemiology Studies Depression scale (CES-D), with RIAS measures and postvisit patient-rated quality of care and provider-reported regard for his or her patient. The patients, averaged 45 years of age (range = 20–77), were predominately male ($n = 286$, 68.5%), of black race ($n = 250$, 60%), and on antiretroviral medications ($n = 334$, 80%). Women had greater mean CES-D depression scores (12.0) than men (10.6; $p = 0.03$). There were no age, race, or education differences in depression scores. Visits with patients reporting severe depressive symptoms compared to those reporting none/mild depressive symptoms were longer and speech speed was slower. Patients with severe depressive symptoms did more emotional rapport building but less social rapport building, and their providers did more data gathering/counseling (*ps* < 0.05). In postvisit questionnaires, providers reported lower levels of positive regard for, and rated more negatively patients reporting more depressive symptoms ($p < 0.01$). In turn, patients reporting more depressive symptoms felt less respected and were less likely to report that their provider knows them as a person than none/mild depressive symptoms patients (*ps* < 0.05). Greater

---

[*]Corresponding author. charles.jonassaint@jhmi.edu.

None of the authors have any relevant financial conflicts of interest.

psychosocial needs of patients presenting with depressive symptoms and limited time/resources to address these needs may partially contribute to providers' negative attitudes regarding their patients with depressive symptoms. These negative attitudes may ultimately serve to adversely impact patient–provider communication and quality of HIV care.

Keywords

depression; communication; quality of health care; patient satisfaction; HIV

Introduction

High-quality health care is characterized by the presence of a "healing relationship" between the patient and their provider (Committee on Quality of Health Care in America, 2001). Communication styles that improve patient engagement, build rapport, and shared decision-making are critical components of effective interpersonal care. In HIV care, the quality of patient–provider communication affects medical adherence, virologic outcomes, and overall patient health (Beach, Keruly, & Moore, 2006; Clucas et al., 2011; Schneider, Kaplan, Greenfield, Li, & Wilson, 2004).

Depression is common among patients with HIV. Rates of depression vary widely across HIV-infected populations but are as high as 63% (Rabkin, 2008). Not only are increased depressive symptoms associated with poor HIV patient outcomes (Leserman, 2008) but also based on evidence from other patient populations, depressive symptoms may also have a detrimental effect on patient–provider communication. In type II diabetes, patients with severe depressive symptoms report experiencing more verbal dominance and less patient activation and rapport building with their primary care provider than patients without depression (Swenson, Rose, Vittinghoff, Stewart, & Schillinger, 2008). Also, depressed patients with coronary artery disease were more likely to report that their provider was unresponsive to their medical treatment preferences (Schenker, Stewart, Na, & Whooley, 2009).

Patient depression can also affect provider attitudes. Some providers may perceive their patients with depression or other mental health concerns more negatively than their healthier patients (Hall, Epstein, DeCiantis, & McNeil, 1993; Jackson & Kroenke, 1999). In clinic visits with emotionally distressed patients, providers are more negative and are less likely to engage in social chit-chat (Hall, Roter, Milburn, & Daltroy, 1996). These negative attitudes may be partly due to the increased burden posed by patients with depression who require more provider time and resources (Cooper, Valleley, Polaha, Begeny, & Evans, 2006; Flocke, Frank, & Wenger, 2001).

The aim of the current study was to determine the association between patient depressive symptoms and observer-coded patient–provider communication, patient-reported ratings of care, and provider-reported regard for their patient. We hypothesized that patient depressive symptoms would be associated with less socio-emotional patient–provider communication during the visit, and lower postvisit patient ratings of care and provider reported regard for his or her patient.

Materials and methods

Participants

Study participants were 46 HIV care providers (attending physicians, nurse practitioners, or physician assistants) and their patients at four HIV outpatient care sites in the USA (Baltimore, MD; Detroit, MI; New York, NY; and Portland, OR) that were part of the Enhancing Communication and HIV Outcomes Study (ECHO) (Beach et al., 2010). The primary aim of the ECHO study was to assess possible racial/ethnic disparities in patient–provider communication in HIV care. Each site's Institutional Review Board (IRB) approved this study. Providers were eligible if they provided HIV primary care at participating sites. Eligible patients were HIV-infected, aged 19 years or older, English-speaking, identified in the medical record as non-Hispanic black, Hispanic, or non-Hispanic white, and had at least one prior visit with their provider.

All participating providers and patients gave informed consent. Digital audio-recording devices were placed in the examination room to record the patient–provider visit. Providers completed a baseline questionnaire and then a postvisit questionnaire regarding their perceptions of the patient. Research assistants interviewed patients following their visit, assessing demographic, social, and behavioral characteristics, and their ratings of care. Patients' clinical data were extracted from patients' medical records.

Measures

Patient–provider relationship measures came from four sources: (1) audio-recorded communication, (2) pre-visit patient questionnaires that included depressive symptoms, (3) postvisit patient ratings of the quality of their medical care, and (4) providers' postvisit ratings of their patients.

Audiotaped patient–provider clinic interactions were analyzed using the Roter Interaction Analysis System (RIAS), a coding system to assess patient–provider communication behaviors with well-documented reliability and predictive validity (Bertakis, Roter, & Putnam, 1991; Levinson, Roter, Mullooly, Dull, & Frankel, 1997; Wissow et al., 1998). RIAS analysts assign one of 37 categories to each complete thought expressed by either the patient or provider (referred to as an utterance). These categories can be combined to reflect four broad types of exchanges (Table 1): biomedical question-asking and counseling, psychosocial/lifestyle question-asking and counseling, rapport building or socio-emotional talk, and patient activation. Two coders who were blinded to the study aims did all RIAS coding. The overall intercoder reliability, calculated on a random sample of 41 audiotapes, across categories for patient and provider behaviors was 0.71–0.95. Missing audio data were predominately due to equipment failure and were therefore considered missing at random.

Other aspects of the medical visit that are measured using RIAS are overall process (duration of visit and average speech speed) and overall emotional tone (patient and physician positive/negative affect scores). Visit length was the total recorded visit time in minutes from the start of the medical visit until its conclusion. Speech speed was calculated by taking the total number of patient and provider utterances divided by the visit length.

Overall emotional tone is reflected by four global affect measures: (1) physician positive affect (mean of coder ratings of physicians' interest, friendliness, engagement, sympathy, and respectfulness); (2) physician negative affect (mean of coder ratings of physicians' anger, anxiety, dominance, and hurried behaviors); (3) patient positive affect (mean of coder ratings of patients' interest, friendliness, engagement, sympathy, and respectfulness); and (4) patient negative affect (mean of coder ratings of patients' anger, anxiety, depression, and emotional distress behaviors). All global affect dimensions are coded on a numeric scale of 1–5 (1 = low/none and 5 = high).

In postvisit interviews, patients rated the quality of their overall medical care using a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5), for the following statements: "My provider knows me as a person" and "My provider respects me." Patients were also asked, "Overall, how would you rate the quality of medical care that you received in the past 6 months?" They responded based on a 5-point Likert scale ranging from poor (1) to excellent (5). For the purpose of analysis, we dichotomized these variables between "strongly agree" or "excellent" and lower ratings.

Provider positive regard for their patient was obtained through a postvisit provider questionnaire. Providers were asked to indicate on a 5-point Likert scale their level of agreement (strongly agree to strongly disagree) with the following seven items: "I have a great deal of respect for this patient," "I really like this patient," "I find this patient interesting," "I find it easy to understand this patient," "This patient is one of those people who makes me feel glad I went into medicine," "This patient is the kind of person I could see myself being friends with," and "This patient frustrates me." All items were positively coded and averaged to create scores that ranged from one to five, low to high positive regard.

Our independent variable was patient depressive symptoms as measured by the 10-item Center for Epidemiologic Studies Depression Scale (CES-D) (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). The CES-D is particularly appropriate for medically ill populations because it does not have a strong emphasis on physical symptoms of depression such as fatigue (Pandya, Metz, & Patten, 2005). By convention, scores of 10 or greater out of a possible 30 points are indicative of clinically significant depression. A score cut-off of ≥15 points out of 30 on the CES-D has previously been used in an HIV population to denote severe depressive symptoms (Kilbourne et al., 2002). Scores were categorized into mild or no symptoms (≤9), moderate (10–14), and severe (≥15) CES-D depressive symptom groups for ease of interpretation. Only 12 participants reported 0 depressive symptoms.

Statistical analyses

We first calculated descriptive statistics by none/mild, moderate, and severe CES-D depressive symptoms groups. Next, we used three types of generalized estimating equation regression models to test the associations between patient depressive symptoms and patient–provider communication variables, patient-rated quality of care, and provider regard for the patient: (1) negative binomial regression for RIAS count variables (utterances); (2) logistic regression for patient care ratings for quality of care and perceived liking and respect from provider (strongly agree/excellent vs. other), and (3) linear regression for continuous outcomes (provider regard, verbal dominance, speech speed, and visit length). All models adjusted for clustering by provider. Incidence rates ratios (IRR) are reported for utterances per minute. Covariates were selected based on significance of $p \leq 0.20$ and/or hypothesized relevance based on previous literature (i.e., race and length of patient–provider relationship). Due to a strong observed association between education and employment status within our sample, only education was retained as a covariate out of the two. All analyses controlled for patient gender, race, education, length of patient–provider relationship and site. In sensitivity analyses, we re-ran all prior analyses using only the subset of observations that contained no missing data on any variables of interest ($n = 389$).

Results

CES-D depression scores were available for 434 patients seen by 45 providers, with 58% of the sample meeting the CES-D cut-off criteria for probable clinically significant depression. Table 2 shows the differences in patient and provider demographics by patient depressive symptoms.

An audio-taped clinical visit and study covariates were available for 406 patients. Model-adjusted mean differences in patient–provider communication and rating scales are shown in Table 3. On average, length of visit was longer ($\beta = 3.61$, $p < 0.01$) and speech speed was slower ($\beta = -1.95$, $p < 0.01$) for clinic visits with patients reporting severe depressive symptoms compared to those in the none/mild depressive symptoms group. There were no depression-related differences in verbal dominance.

For patient talk variables, patients with moderately (IRR = 1.28, $p = 0.02$) and severe depressive symptoms (IRR = 1.27, $p = 0.03$) engaged in more emotional talk than the none/mild group. Patients with severe depressive symptoms did less social chit-chat (IRR = 0.60, $p = 0.02$) and expressed more negative affect ($\beta = 0.24$, $p < 0.01$) compared to the none/mild group. There were no depression differences in biomedical talk, psychosocial talk, patient activation, positive rapport building, negative rapport building, or positive affect.

For provider talk variables, providers did more biomedical (IRR = 1.11, $p = 0.03$) and psychosocial data gathering and questioning (IRR = 1.33, $p < 0.01$) during visits with severe depressive symptoms patients than with none/mild depressive symptoms patients. There was less social chit-chat with severe depressive symptoms patients (IRR = 0.57, $p < 0.01$) and more negative rapport building with patients reporting moderate depressive symptoms (IRR = 1.46, $p = 0.04$) when compared to visits with none/mild depressive symptoms patients. We found no differences in provider talk by depressive symptoms group for patient activation, positive rapport building, or affect.

In postvisit ratings, a marginally significant result showed that patients with severe depressive symptoms were less likely to be “very satisfied” with their care than the none/mild depressive symptoms group (OR = 0.63, $p = 0.09$). Severe depressive symptoms patients were also less likely to report that their provider knows them as a person (OR = .54, $p = 0.04$), and moderate depressive symptoms patients were less likely to report that their provider respects them (OR = 0.58, $p = 0.01$) compared to none/mild depressive symptoms patients. Similarly, providers reported lower positive regard for their severe depressive symptoms patients ($\beta = -0.24$, $p < 0.01$).

Discussion

Contrary to our hypothesis, patient depressive symptoms were not associated with lower socio-emotional patient–provider communication. In fact, the RIAS-coded audio-recorded data suggest that patient depressive symptoms were associated with more optimal patient–provider communication. Patients with moderate and severe depressive symptoms engaged in more emotional and psychosocial talk with providers than patients with none to mild depressive symptoms. However, in contrast to the audio-recorded data, the postvisit ratings from both patient and provider are consistent with our hypothesis suggesting that patient depressive symptoms are associated with lower-quality care. Patients reporting depressive symptoms were less likely to feel respected and less likely to believe that their provider knows them as a person, and likewise, providers had less positive regard for their patients with more depressive symptoms. Thus, although there were no audible decrements in care delivered to patients with depressive symptoms, as evidenced by our objective audio-recorded data, subjective ratings from both patients and providers suggest that patients with depressive symptoms had interactions with their provider that were characterized by low positive regard and disrespect.

Our findings using objective measures of patient–provider communication do not strongly support studies using self-reported measures showing a link between depression and lower-quality patient–provider communication (Schenker et al., 2009; Swenson et al., 2008). However, to our knowledge, this is the first study to evaluate the effect of depressive symptoms on objective measures of patient–provider communication, which may have contributed to results that differ from previous studies evaluating subjective measures of communication alone. We do find more provider negative rapport building (i.e., criticisms, disagreements, and concern) in visits with moderate depressive symptoms patients but not with the severe depressive symptoms group. Providers may be more likely to challenge or confront patients who are not yet overtly exhibiting depressive symptoms but may be exhibiting poor health or medical compliance behaviors. By not recognizing mild to moderate depressive symptoms, providers may be missing an opportunity to connect with these patients regarding psychosocial issues rather than using negative rapport building strategies. Future studies examining this question will be needed to determine if the association between depressive symptoms and negative rapport building is reliable.

Unlike the association between depressive symptoms and verbal communication, our findings for the association between depressive symptoms and postvisit ratings were more consistent across outcomes and in the predicted direction. The data suggest that patient–provider encounters with depressed patients were characterized by less positive regard and respect than encounters with non-depressed patients. Previous evidence has also linked patient depression with lower patient satisfaction with care (Hall, Roter, Milburn, & Daltroy, 1998). Similarly, we found a marginally significant trend showing that higher depressive symptoms were associated with lower patient satisfaction ($p = 0.09$). Jackson, Chamberlin, and Kroenke (2001) conclude that lower satisfaction is not due to depression per se, but rather, greater unmet expectations among depressed patients. It is not clear that depression directly affects patient satisfaction with care or if there are other mediating factors such as negative provider attitudes.

One important predictor of patient outcomes and patient–provider communication that has not been examined in relation to patient depression is perceived respect from one’s provider (Beach, Roter, Wang, Duggan, & Cooper, 2006; Beach et al., 2005; Clucas & St Claire, 2011). In the current study, we found that patients with depressive symptoms as compared to those with non-depressive symptoms were less likely to feel respected and less likely to believe that their provider knows them as a person. Furthermore, providers reported lower positive regard for their patients with more compared to less depressive symptoms. This supports the notion that patients, even those with depression, are fairly accurate in perceiving when they are respected or not respected by their provider (Beach et al., 2006); in fact, evidence supporting the phenomenon “depressive realism” suggests that depressed individuals may be more accurate in their judgments than non-depressed individuals (Moore & Fresco, 2012). Self-report measures of the patient–provider interaction may capture aspects of the event that are not evident in the audio-recorded communication or through the use of audio-data analysis systems like RIAS.

Several factors likely account for providers’ low regard for their patients with depressive symptoms. Patients presenting with depression are more likely to be perceived as “difficult” than patients without depression (Jackson & Kroenke, 1999). In addition, depressed patients require more time and resources. Greater psychosocial needs of depressed patients and limited time/resources to address these needs may contribute to negative provider attitudes. Longer clinical visits are common when treating patients with mental illness in the primary care setting (Daumit, Pratt, Crum, Powe, & Ford, 2002). Current study findings showed depressive symptoms were associated with slower speech and more biomedical and psychosocial talk, which may have contributed to longer visit lengths. Indeed, discussion of behavioral or emotional concerns significantly increases the time spent with a patient (Cooper et al., 2006; Flocke et al., 2001).

Depression is common in HIV with data showing that half of HIV-infected patients meet criteria for depression (Kilbourne, Justice, Rabeneck, Rodriguez-Barradas, & Weissman, 2001; Lima et al., 2007); however, the prevalence varies widely by population and patient characteristics. Over half of our patient sample met criteria for clinical depression and 27% endorsed severe depressive symptoms. Consistent with prior studies, unemployed and less educated HIV-infected adults were at particularly high risk of depression (Rabkin, 2008). These findings together stress the importance of improved depression screening and treatment among adults with HIV, particularly among low socioeconomic groups. In addition, improving depression outcomes may help adults with HIV continue working or return to work more quickly (Shacham, Nurutdinova, Satyanarayana, Stamm, & Overton, 2009).

This study has some limitations. First, we were only able to examine one clinic visit and we cannot determine causality. It is unclear what the long-term effects of depression are on the patient–provider relationship, or vice versa. Second, we did not have data addressing history of depression diagnosis and treatment. It is unclear whether provider's level of regard for patients was biased by the patient's mental health history or based solely on presenting depressive symptoms and/or related behaviors. Further, reported depressive symptoms may have been affected by current or past treatment. Finally, the observed effects of depression on communication may be due to factors not measured such as neurocognitive impairment, which is frequent among people infected with HIV(McArthur, Steiner, Sacktor, & Nath, 2010). Poor communication among depressed patients may result from associated cognitive deficits such as slower processing speed or inability to recall information (Swenson et al., 2008). Other factors such as history of poor medication adherence and missed appointments may also have contributed to provider's negative attitudes toward their patients who present with depression.

In conclusion, findings from this study highlight the value of depression screening and treatment in primary care. Specifically, it will be important to address the effect of time constraints on providers' ability to deliver quality care to HIV patients with comorbid depression. Further, the patient–provider interaction and context are different during clinic visits where the patient is depressed or has been diagnosed with depression (Callahan et al., 1996). Recognition of the impact patient depression can have on the clinical visit can provide information for training physicians in how to appropriately manage their patients with emotional distress.

Acknowledgments

This research was supported by a contract from the Health Resources Service Administration and the Agency for Healthcare Research and Quality (AHRQ 290-01-0012). In addition, Dr. Saha was supported by the Department of Veterans Affairs.

None of the funders had a role in the design and conduct of this analysis, nor was it subject to their final approval.

References

Beach MC, Keruly J, Moore RD. Is the quality of the patient-provider relationship associated with better adherence and health outcomes for patients with HIV? Journal of General Internal Medicine. 2006; 21(6):661–665. 10.1111/j.1525-1497. 2006.00399.x. [PubMed: 16808754]

Beach MC, Roter DL, Wang NY, Duggan PS, Cooper LA. Are physicians' attitudes of respect accurately perceived by patients and associated with more positive communication behaviors? Patient Education and Counseling. 2006; 62(3):347–354.10.1016/j.pec.2006.06.004 [PubMed: 16859867]

Beach MC, Saha S, Korthuis PT, Sharp V, Cohn J, Wilson I, Moore R. Differences in patient-provider communication for Hispanic compared to non-Hispanic white patients in HIV care. Journal of General Internal Medicine. 2010; 25(7):682–687.10.1007/s11606-010-1310-4 [PubMed: 20238204]

Beach MC, Sugarman J, Johnson RL, Arbelaez JJ, Duggan PS, Cooper LA. Do patients treated with dignity report higher satisfaction, adherence, and receipt of preventive care? Annals of Family Medicine. 2005; 3(4):331–338.10.1370/afm.328 [PubMed: 16046566]

Bertakis KD, Roter D, Putnam SM. The relationship of physician medical interview style to patient satisfaction. The Journal of Family Practice. 1991; 32(2):175–181. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/1990046. [PubMed: 1990046]

Callahan EJ, Bertakis KD, Azari R, Robbins J, Helms LJ, Miller J. The influence of depression on physician-patient interaction in primary care. Family Medicine. 1996; 28(5):346–351. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8735062. [PubMed: 8735062]

Clucas C, Harding R, Lampe FC, Anderson J, Date HL, Johnson M, Sherr L. Doctor-patient concordance during HIV treatment switching decision-making. HIV Medicine. 2011; 12(2):87–96.10.1111/j.1468-1293.2010.00851.x [PubMed: 20561081]

Clucas C, St Claire L. Influence of patients' self-respect on their experience of feeling respected in doctor-patient interactions. Psychology, Health and Medicine. 2011; 16(2):166–177. 10.1080/13548506.2010. 542168.

Committee on Quality of Health Care in America. Crossing the quality chasm: A new health system for the 21st century. Washington, DC: National Academies Press; 2001.

Cooper S, Valleley RJ, Polaha J, Begeny J, Evans JH. Running out of time: Physician management of behavioral health concerns in rural pediatric primary care. Pediatrics. 2006; 118(1):e132–138.10.1542/peds.2005-2612 [PubMed: 16818528]

Daumit GL, Pratt LA, Crum RM, Powe NR, Ford DE. Characteristics of primary care visits for individuals with severe mental illness in a national sample. General Hospital Psychiatry. 2002; 24(6):391–395. S016383430200213X. [pii]. [PubMed: 12490340]

Flocke SA, Frank SH, Wenger DA. Addressing multiple problems in the family practice office visit. The Journal of Family Practice. 2001; 50(3):211–216. jfp_0301_02110. [pii]. [PubMed: 11252208]

Hall JA, Epstein AM, DeCiantis ML, McNeil BJ. Physicians' liking for their patients: More evidence for the role of affect in medical care. Health Psychology. 1993; 12(2):140–146. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8500441. [PubMed: 8500441]

Hall JA, Roter DL, Milburn MA, Daltroy LH. Patients' health as a predictor of physician and patient behavior in medical visits. A synthesis of four studies. Medical Care. 1996; 34(12):1205–1218. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8962587. [PubMed: 8962587]

Hall JA, Roter DL, Milburn MA, Daltroy LH. Why are sicker patients less satisfied with medical care tests of two explanatory models. Health Psychology. 1998; 17(1):70–73. Retrieved from http://psycnet.apa.org/journals/hea/17/1/70/. [PubMed: 9459073]

Jackson JL, Chamberlin J, Kroenke K. Predictors of patient satisfaction. Social Science and Medicine. 2001; 52(4):609–620. Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0-0034751089&partnerID=40&md5=16f1463f963d4df93f078de98e2d1353. [PubMed: 11206657]

Jackson JL, Kroenke K. Difficult patient encounters in the ambulatory clinic: Clinical predictors and outcomes. Archives of Internal Medicine. 1999; 159(10):1069–1075. Retrieved from http://archinte.ama-assn.org/cgi/reprint/159/10/1069.pdf. [PubMed: 10335683]

Kilbourne AM, Justice AC, Rabeneck L, Rodriguez-Barradas M, Weissman S. General medical and psychiatric comorbidity among HIV-infected veterans in the post-HAART era. Journal of Clinical Epidemiology. 2001; 54(Suppl 1):S22–S28. S089 5435601004437[pii]. [PubMed: 11750206]

Kilbourne AM, Justice AC, Rollman BL, McGinnis KA, Rabeneck L, Weissman S, Rodriguez-Barradas M. Clinical importance of HIV and depressive symptoms among veterans with HIV infection. Journal of General Internal Medicine. 2002; 17(7):512–520. jgi10803[pii]. [PubMed: 12133141]

Kohout FJ, Berkman LF, Evans DA, Cornoni-Huntley J. Two shorter forms of the CES-D (Center for Epidemiological Studies Depression) depression symptoms index. Journal of Aging and Health. 1993; 5(2):179–193. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10125443. [PubMed: 10125443]

Leserman J. Role of depression, stress, and trauma in HIV disease progression. Psychosomatic Medicine. 2008; 70(5):539–545.10.1097/PSY.0b013e3181777a5f [PubMed: 18519880]

Levinson W, Roter DL, Mullooly JP, Dull VT, Frankel RM. Physician-patient communication. The relationship with malpractice claims among primary care physicians and surgeons. JAMA. 1997; 277(7):553–559. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9032162. [PubMed: 9032162]

Lima VD, Geller J, Bangsberg DR, Patterson TL, Daniel M, Kerr T, Hogg RS. The effect of adherence on the association between depressive symptoms and mortality among HIV-infected individuals first initiating HAART. AIDS. 2007; 21(9):1175–1183.10.1097/QAD.0b013e32811ebf57 [PubMed: 17502728]

McArthur JC, Steiner J, Sacktor N, Nath A. Human immunodeficiency virus-associated neurocognitive disorders: Mind the gap. Annals of Neurology. 2010; 67(6):699–714.10.1002/ana.22053 [PubMed: 20517932]

Moore MT, Fresco DM. Depressive realism: A meta-analytic review. Clinical Psychology Review. 2012; 32(6):496–509.10.1016/j.cpr.2012.05.004 [PubMed: 22717337]

Pandya R, Metz L, Patten SB. Predictive value of the CES-D in detecting depression among candidates for disease-modifying multiple sclerosis treatment. Psychosomatics. 2005; 46(2):131–134.10.1176/appi.psy.46.2.131 [PubMed: 15774951]

Rabkin JG. HIV and depression: 2008 review and update. Current HIV/AIDS Reports. 2008; 5(4): 163–171. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/18838056. [PubMed: 18838056]

Schenker Y, Stewart A, Na B, Whooley MA. Depressive symptoms and perceived doctor-patient communication in the Heart and Soul study. Journal of General Internal Medicine. 2009; 24(5): 550–556.10.1007/s11606-009-0937-5 [PubMed: 19274477]

Schneider J, Kaplan SH, Greenfield S, Li W, Wilson IB. Better physician-patient relationships are associated with higher reported adherence to antiretroviral therapy in patients with HIV infection. Journal of General Internal Medicine. 2004; 19(11):1096–1103. Retrieved from http://pubmedcentralcanada.ca/picrender.cgi?artid=1337987&blobtype=pdf. [PubMed: 15566438]

Shacham E, Nurutdinova D, Satyanarayana V, Stamm K, Overton ET. Routine screening for depression: Identifying a challenge for successful HIV care. AIDS Patient Care and STDs. 2009; 23(11):949–955.10.1089/apc.2009.0064 [PubMed: 19925308]

Swenson SL, Rose M, Vittinghoff E, Stewart A, Schillinger D. The influence of depressive symptoms on clinician-patient communication among patients with type 2 diabetes. Medical Care. 2008; 46(3):257–265.10.1097/MLR.0b013e31816080e9 [PubMed: 18388840]

Wissow LS, Roter D, Bauman LJ, Crain E, Kercsmar C, Weiss K, Mohr B. Patient-provider communication during the emergency department care of children with asthma. Medical Care. 1998; 36(10):1439–1450. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9794338. [PubMed: 9794338]

Table 1

Description of RIAS scales used in analyses.

Major category	Sub-category	Examples of specific RIAS codes
Biomedical	Question-asking	Open-ended and closed-ended biomedical questions
	Information-giving	Gives lifestyle and psychosocial information
Lifestyle/Psychosocial	Question-asking	Open-ended and closed-ended psychosocial questions
	Information-giving	Gives biomedical and therapeutic information
Rapport building	Emotional talk	Empathy, legitimation, and partnership
	Positive talk	Laughter, approval, and compliments
	Negative talk	Criticisms, disagreements, and concern
	Social chit-chat	Chit-chat
Patient activation	–	Asking for other's opinion, confirming the other's understanding, clarifying one's own understanding
Verbal dominance	–	Ratio of physician statements to patient statements

Table 2

Patient and provider demographics and characteristics of the echo study by patient CES-D depressive symptoms

		CES-D depression score category			
Patient characteristic	**Totals (*n* = 434)**	**None/Mild 0–9 (*n* = 182)**	**Moderate 10–14 (*n* = 133)**	**Severe 15+ (*n* = 119)**	***P*-value**
Age, Mean (SD)	45.3 (9.4)	45.2 (9.8)	45.7 (9.2)	45.2 (9.2)	0.908
Female, N (%)	147 (34.0)	56 (30.9)	38 (28.6)	53 (44.5)	0.015
White, N (%)	101 (23.3)	40 (22.0)	30 (22.6)	31 (26.1)	0.697
Some college or more, N (%)	113 (26.2)	55 (30.6)	38 (28.6)	20 (16.8)	0.022
Employed, N (%)	110 (25.4)	60 (33.2)	33 (24.8)	17 (14.3)	0.001
Currently on ARV therapy, N (%)	334 (78.6)	151 (84.4)	98 (76.6)	85 (72.0)	0.032
On ARV and Viral load ≤75, N (%)	192 (57.7)	91 (60.7)	57 (58.2)	44 (51.8)	0.412
Duration of patient-provider relationship >5 years, N (%)	144 (33.3)	65 (35.9)	46 (34.9)	33 (27.7)	0.308
Characteristics of providers (*N* = 46) seen by patient					
Age, Mear (SD)	44.6 (8.2)	44.4 (8.4)	44.7 (7.8)	44.5 (8.1)	0.956
Female, N (%)	251 (57.8)	110 (60.4)	75 (56.4)	66 (55.5)	0.639
White, N (%)	307 (70.7)	132 (72.5)	87 (65.4)	88 (74.0)	0.353
Physician, N (%)	315 (72.2)	134 (73.6)	92 (69.2)	89 (74.8)	0.819

Note:

[*] *P*-values are based on chi-square analyses for count variables and ANOVAs for continuous variables testing hypothesis that there are no mean differences between groups.

Table 3

Model adjusted patient-provider communication characteristics and post-visit rating scales by patient CES-D depressive symptoms

	CES-D depression score category		
Study outcomes	**None/mild (*n* = 171) ref. group**	**Moderate (*n* = 122)**	**Severe (*n* = 113)**
Length of visit, minutes, mean (SE)	21.11 (0.77)	23.06 (1.19)	24.72 (1.09)***
Verbal dominance, mean (SE)	1.39 (0.04)	1.29 (0.05)	1.42 (0.06)
Speech speed, mean (SE)	29.54 (0.67)	29.32 (0.64)	27.59 (0.59)**
Patient utterances per visit			
Question asking/Information giving, mean (SE)			
Biomedical	97.23 (5.75)	111.03 (6.09)	101.44 (4.92)
Lifestyle/Psychosocial	57.60 (5.57)	66.41 (6.92)	69.64 (5.58)
Patient activation, mean (SE)	7.05 (0.46)	7.91 (0.79)	7.49 (0.49)
Rapport building, mean (SE)			
Positive	71.11 (3.63)	73.16 (3.82)	66.54 (3.93)
Emotional	19.28 (1.77)	24.67 (1.92)*	24.47 (1.77)*
Negative	2.67 (0.40)	3.12 (0.41)	3.32 (0.50)
Social	5.77 (0.83)	4.57 (0.69)	3.48 (0.59)*
Positive affect	3.61 (0.03)	3.57 (0.03)	3.53 (0.03)
Negative affect	1.12 (0.02)	1.19 (0.04)	1.36 (0.05)***
Provider utterances per visit			
Data gathering/Counseling, mean (SE)			
Biomedical	148.95 (6.46)	154.44 (7.89)	165.71 (9.54)*
Lifestyle/Psychosocial	33.70 (3.06)	38.52 (4.16)	45.11 (4.71)***
Patient activation, mean (SE)	43.35 (3.33)	44.98 (3.09)	46.48 (2.89)
Rapport building, mean (SE)			
Positive	53.70 (2.81)	53.13 (3.72)	53.11 (2.98)
Emotional	25.41 (1.50)	27.63 (1.65)	28.50 (1.81)
Negative	1.27 (0.16)	1.86 (0.36)*	1.56 (0.21)
Social	6.89 (1.19)	4.77 (0.66)	3.96 (0.65)
Positive affect	3.73 (0.04)	3.70 (0.03)	3.69 (0.03)
Negative affect	2.02 (0.01)	1.99 (0.03)	1.99 (0.02)
Post visit ratings			
Patient rated quality of care as “Excellent”, N (%)	114 (66.7)	75 (61.3)	63 (56.1)
Provider knows me, N (%)	145 (84.8)	99 (80.9)	86 (75.7)*
Provider respects me, N (%)	106 (62.0)	60 (49.1)*	63 (55.9)
Provider positive regard for patient, mean (SE)	4.11 (0.09)	3.99 (0.08)	3.87 (0.08)**

Note: Adjusted *p*-values:

$^{*}p < 0.05$;

$^{**}p < 0.01$,

[***] $p < 0.001$;

$n = 406$ for individuals with available audio recordings and model covariates. p Values are based on pairwise comparisons with the referent group accounting for clustering by provider, study site, patient gender, race, education, whether they are on ARV, and length of patient-provider relationship. Proportions, means and standard errors are model adjusted.