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The Symptom Experience of HIV/HCV Co-Infected Adults

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Estimates suggest that hepatitis C virus (HCV) infection affects 150,000–300,000 HIV-infected adults in the United States (Alter et al., 1999; Sherman, Rouster, Chung, & Rajicic, 2002). An estimated 25%–40% of HIV-infected patients are thought to be infected with HCV, with the prevalence as high as 90% in some practices (Dieterich, 2004; Sherman et al., 2002; Thomas, 2002). HCV is the most prevalent liver-associated problem in persons with HIV infection, and it progresses more rapidly within the context of HIV infection (Gonzalez & Talal, 2003). To date, most studies of HIV/HCV co-infection have focused on treatment strategies and progression issues, with little attention paid to the symptom experience of HIV/HCV co-infected adults.

Symptoms associated with HIV infection have been well described in the literature (Holzemer, 2002; Johnson, Stallworth, & Neilands, 2003; Lorenz, Shapiro, Asch, Bozzette, & Hays, 2001; Wu et al., 2004). The average number of symptoms experienced by HIV-infected adults can range from 15–21, depending on the scale used and the number of symptoms measured. Some of the common symptoms experienced by HIV-infected adults include fever, night sweats, diarrhea, nausea, headache, and fatigue (Johnson et al., 2003; Wu et al., 2004).

In contrast, reports of symptoms associated with HCV infection (without cirrhosis) have been somewhat inconsistent. For example, findings from Iwasaki and colleagues (2002) suggested that HCV was an asymptomatic disease and that patients did not experience disease-specific symptoms related to this virus. However, Foster, Goldin, and Thomas (1998) reported that persons with HCV developed many physical symptoms that negatively affected health-related quality of life. Symptoms such as fatigue (Hilsabeck, Hassanein, & William, 2005), depression (Golub et al., 2004), urticaria (Cribier, 2006), peripheral neuropathy (Santoro et al., 2006),

joint pain (Palazzi, Olivieri, Cacciatore, Pennese, & D'Amico, 2005), irritability and fatigue (Lang et al., 2006) have been reported. What remains unclear is the actual symptom burden associated with HIV/HCV co-infection. Several researchers have suggested that understanding the symptom experience of persons with HIV infection is fundamental to measuring health care quality (Asch et al., 2004) and achieving improved patient outcomes (Spirig, Moody, Battegay, & De Geest, 2005). Therefore, the purpose of this study was to describe the symptom experience of HIV/HCV co-infected adults at entry into a longitudinal mixed-method study.

Methods

This study used a cross-sectional, descriptive, mixed-method design. The parent study used a longitudinal, mixed-method (primarily qualitative) design to describe the experience of HCV treatment among HIV-infected adults (Bova & Ogawa, 2005). The procedures and data that follow focus on the symptom experience of HIV/HCV co-infected adults at entry into the parent study.

Participants

Purposive sampling was done to recruit adults with HIV and HCV from three HIV-specialty clinics in central and western Massachusetts. Participants were recruited through referral by medical staff and flyers posted in three HIV-specialty clinics. Inclusion criteria were: (1) age 18 years or older, (2) HCV/HIV co-infected (detectable HCV viral load and positive HIV antibody test or viral load documented in medical record), and (3) able to speak English. Forty participants were initially recruited into the study. One participant was excluded from the analysis because she was later found not to be infected with HIV.

Procedure

All extant procedures related to this study were reviewed and approved by the appropriate institutional review board. Individuals interested in participating in the study either called the study team directly (password-protected telephone number) or signed an approved release to have the study staff initiate direct telephone contact to discuss the study and schedule an initial visit. All participants signed a written informed consent form. A baseline visit was scheduled within 2 weeks of the initial contact (and before HCV treatment was started). Interviews were conducted in a private office in one of three health care facilities. Interviews were conducted in a setting that allowed for immediate evaluation if any study participant became distressed or exhibited suicidal ideation.

Data were collected using a structured questionnaire (demographics, clinical characteristics, mental well-being, and symptom experiences), followed by a semi-structured interview guide. The questions from the interview guide that were used for this analysis included:

1. What has the experience of living with hepatitis C infection been like for you?
2. Please tell me a little about any symptoms you are having right now:
 - a. Which symptoms do you believe may be related to hepatitis C infection?
 - b. What are these symptoms?
 - c. How severe are they?
 - d. Why do you believe they are related to HCV?
 - e. Please tell me about how you manage your symptoms.
 - f. How do the symptoms affect your ability to live day to day?

Interviews were conducted by the principle investigator (PI) and a trained research assistant (RA). All interviews conducted by the RA were reviewed by the PI. The semi-structured part of the interview was audiotaped and transcribed verbatim by a professional transcriptionist. Each subject received a stipend of \$25 at completion of the interview.

Measures

The semi-structured interview explored the experiences of living with HIV/HCV co-infection and included questions about symptoms related to HCV and HIV. The structured questionnaire was administered in a face-to-face interview. Symptom experience was measured using the HIV Symptom Experience Inventory (HIV-SEI) (Bova, 1998). The HIV-SEI was developed with HIV-infected adults and includes physical signs and symptoms commonly experienced by HIV and HCV-infected patients (e.g., fatigue, muscle aches, pruritis, and nausea). The HIV-SEI results in two scores, one for the total symptom experience (presence and severity of symptoms; possible range = 0–78) and one that indicates the total number of different physical symptoms experienced (possible range = 0–26). Higher scores equal greater symptom burden. In addition, the HIV-SEI asks participants to list the three most bothersome symptoms experienced. Each participant may add additional symptoms not already included in the HIV-SEI. The HIV-SEI has demonstrated excellent reliability ($\alpha = 0.87$) in HIV-infected adults (Bova, 1998). Construct validity was supported by the ability of the HIV-SEI to discriminate between women with asymptomatic HIV infection and those with symptomatic disease or AIDS (Bova, 1998). In the present study ($N = 39$), the Cronbach's alpha for the HIV-SEI was 0.86.

The Mental Health Index -5 (MHI-5) was used to measure general mental well-being (Ware, Kosinski, & Keller, 1994). The MHI-5 contains 5 items designed to measure positive and negative affective states within the previous month (e.g., feeling happy, peaceful, anxious, depressed, or blue) (Stewart, Ware, Sherbourne, & Wells, 1992). Higher scores on the MHI-5 indicate better mental health. The MHI-5 has demonstrated excellent reliability ($\alpha = 0.91$ – 0.94) and validity in general populations (Berwick et al., 1991) as well as those with HIV infection (Berwick et al., 1991; Holmes, 1998; Revicki, Sorensen, & Wu, 1998). In the present study, the Cronbach's alpha for the MHI-5 was 0.89.

Data Analysis

This paper presents an analysis of baseline data. Qualitative descriptive methods (Sandelowski, 2000; Sullivan-Bolyai, Bova, & Harper, 2005) and qualitative content analysis were used to analyze the study participants' responses to the semi-structured interview questions (within and across data) related to HIV and HCV symptomatology. Interview data were coded by developing descriptive codes (Miles & Huberman, 1994) that categorized text into themes or categories. Case comparisons were made to discover variations in themes or categories. Memoing (written form of thinking about the data) and diagramming (graphic representations of the relationships between themes or concepts) were conducted throughout data collection and analysis. Data reflecting the symptom experience of living with HIV/HCV co-infection were isolated, coded, and categorized. As a validity check, codes and categories were verified with study collaborators. Findings from qualitative analyses were compared and contrasted with responses to the standardized symptom experience measures (HIV-SEI). For example, qualitative responses were reviewed for study participants with high symptom-experience total scores (greater than the sample mean) to evaluate correspondence between interview data and scores on the HIV-SEI.

The quantitative data were analyzed using SPSS for Windows version 14.0. Descriptive statistics were computed for all demographic and clinical cofactor variables to describe the sample. Means and standard deviations were calculated for the symptom scores by

demographic and clinical characteristics. Raw scores from the MHI-5 (possible scores range from 5–30) were standardized by linear transformation to range between 0 and 100 (higher scores indicating better mental well-being). Cronbach's alpha was computed for the HIV-SEI and MHI-5. Finally, symptom data from a study of adults with HIV (Johnson et al., 2003) and a study of adults with HCV (Lang et al., 2006) were compared to the prevalence rates of symptoms reported for the present HIV/HCV patient sample.

Results

Sample

The study participants included 39 adults, ages 34–56 ($M = 45$, $SD = 5.0$), 53.8% ($n = 21$) male, 51.3% ($n = 20$) minority, and 59% ($n = 23$) with HCV genotype 1 (see Table 1). The majority of participants had a history of substance abuse ($n = 37$; 95%), were not currently employed ($n = 25$; 65.8%), were single ($n = 20$; 51.3%), and/or were living in a rented apartment ($n = 23$; 59%). Most individuals reported living with HIV infection for a long time ($M = 13.5$ years; range = 2–22 years). As a group, the participants had fairly well preserved CD4 cell counts ($M = 439$, $SD = 239.9$ cells/mm³) with only 11.4 % ($n = 4$) having CD4 cell counts less than 200 cells/mm³. They also had relatively low HIV viral loads ($M = 8400$; 34% undetectable at < 75 copies/mL and 61% < 400 copies/mL). HCV viral loads were significantly higher, with most being greater than 100,000 copies/mL ($n = 35$; 90%). The mean ALT level was 46.9 ($Mdn = 46.0$, $SD = 22.5$), with a range of 13.0–92.0 IU/L.

Qualitative Results

Four major themes emerged from the qualitative interviews: (a) difficulty differentiating between HIV and HCV-related symptoms, (b) commonly cited HCV-related symptoms, (c) ways to control or manage HCV-related symptoms, and (d) lack of symptoms or tests to monitor HCV disease. The most common theme that participants discussed was the difficulty of differentiating which symptoms were related to HIV and which were HCV related. For example, one participant stated, “You know it’s really hard to differentiate.... I don’t have any symptoms from it [HCV] because I’ve had the same symptoms from HIV, and I just really can’t tell which is which.” Many participants discussed the experience of living with HIV-related symptoms for a very long time and indicated that the symptoms seem to “overlap” with symptoms caused by HCV co-infection. Several participants indicated that they could not answer the question because they didn’t know enough about HCV, and one respondent indicated that he was “too high” to notice any symptoms.

Among respondents who were able to differentiate HCV-related symptoms, the most frequently reported symptoms were fatigue, depression, generalized weakness, nausea, pain over the liver, and abdominal swelling. Peripheral neuropathy and decreased mental acuity were mentioned only once by different study participants as HCV-related symptoms.

Study participants also discussed the ability to control symptoms by avoiding alcohol and drugs. One woman admitted, “I know when I use [alcohol or drugs] I get pain all over.... if I am not using drugs or alcohol and remain clean and sober I should be okay.” Another woman stated:

My liver was enlarged. I just stopped drinking for a while and it went down and that’s about it. It hurts now and then, the pain... as long as I don’t pick up and drink and drug, I’ll be fine. My chances don’t look very good if I pick up. So I’m not taking any chances with it.

Several participants also mentioned the use of antiretroviral agents and over-the-counter analgesics as causing HCV-related symptoms. One woman stated,

... they gave me some pills [antiretrovirals] while I was in prison that wasn't for my system and I almost get into a coma and that is when I stopped taking pills. I didn't trust the pills anymore. Pills make my liver hurt. I even know when I was taking Tylenol it hurts.

Another participant described this as follows:

I was on some HIV medications years ago when I guess the medication activated my liver and I turned yellow and I started throwing up and that is when I got scared... that was the only symptom I had.

Finally, participants discussed fear related to HCV because of the lack of symptoms or ways to monitor it. One woman stated,

I'm not afraid of HIV but I'm afraid of Hep C. When I think about it, it just freaks me out – there's no way to tell what is going on except for a needle biopsy and just thinking about having it scares me, and sometimes I can't sleep. I think I'm going to die from Hep C. Hep C scares me deeply.

Another participant expressed concern that the liver enzyme tests were not helpful for monitoring the disease. He stated, "I never really know how my Hep C is doing. I know it does attack your liver, right? But they said my liver enzymes are pretty okay – so what does that mean?"

Quantitative Results

The average symptom experience score was 18.33 ($Mdn = 18.0$, $SD = 11.6$; range = 2–47), and the average number of symptoms experienced by participants was 9.97 ($Mdn = 10$, $SD = 4.8$; range = 2–19). Symptoms experienced by more than half of the participants were fatigue, shortness of breath, muscle aches, difficulty sleeping, bone aches, pain, and headaches (see Table 2 for symptom frequency by severity rating). Difficulty sleeping and bone aches received the most frequent "severe" scores. Participants were also asked to list the three most bothersome symptoms. Pain was listed most frequently ($n = 26$), followed by fatigue ($n = 14$); gastrointestinal problems such as nausea, vomiting, diarrhea, indigestion, reflux ($n = 8$); mood disturbances ($n = 5$); weight changes ($n = 3$); and sleep disturbances ($n = 3$).

The average mental well-being (MHI-5) score was 64.7 ($SD = 24.6$, range = 12–100), with 33.3% ($n = 13$) of the study participants being classified as having poor mental well-being (using the cutoff score of 52, recommended by Holmes, 1998). Table 3 depicts the average symptom experience scores for participants scoring above (good mental well-being) and below (poor mental well-being) the cutoff score and suggests that persons with poor mental well-being were more likely to have a greater symptom burden associated with HIV/HCV co-infection than those with good mental well-being.

Next, we examined the relationship between high scores on the HIV-SEI (those with total scores greater than the mean of 18.33 and more than 10 symptoms) and the qualitative responses of participants with these high scores ($n = 18$) and found that many of these individuals discussed problems with profound fatigue associated with HCV infection. For example, one woman with an HIV-SEI score of 26 and 16 symptoms stated, "I just feel very, very tired most of the times, so I pretty much just stay in the house and I do a lot of sleeping." However, we also found a small group of participants ($n = 4$) with high HIV-SEI scores and symptom numbers who denied having HCV-related symptoms during the interview. It is possible that these individuals believed that all of their symptoms were related to HIV.

Finally, these data raise an important question about whether co-infected adults actually have a greater symptom burden than patients with either HIV or HCV alone. Table 5 depicts

symptom prevalence rates among participants in the present study (HIV/HCV co-infected) and those from published studies on HIV (Johnson et al., 2003) and HCV (Lang et al., 2006) mono-infected samples. Results suggest that for this HIV/HCV co-infected sample, there was no greater symptom burden imposed by co-infection compared with being infected with either virus alone. For example, shortness of breath was the only symptom that was greater in the HIV/HCV co-infected sample as compared with the HIV mono-infected sample. For the HCV mono-infected sample, fatigue, night sweats, nausea, loss of appetite, and itchiness were more common when compared to rates among the HIV/HCV co-infected sample.

Discussion

This study examined the symptom experience of HIV/HCV co-infected adults using both qualitative and quantitative procedures. Qualitative data identified the difficulty experienced by patients when they were asked to identify HCV-specific symptoms. Most indicated that an overlap in symptoms was typical. This overlap has been reported elsewhere for specific symptoms such as peripheral neuropathy in an HCV-infected sample (Estanislao, Morgello, & Simpson, 2005). These data suggest that interventions aimed at reducing the symptom burden associated with either HIV or HCV must include strategies to manage symptoms associated with both viral infections.

Qualitative data also suggested that many patients attempted to strategize about ways to control HCV-related symptoms. These strategies involved staying clean and sober and avoiding harmful medications. Substance abuse and recovery issues were integral to patient attempts to cope with symptoms related to both HIV and HCV. Patients also tried to monitor HCV-related symptoms but were frustrated by the poor prognostic value of common blood tests, such as liver function tests. A body of literature focuses on the natural desire of patients to monitor symptoms for evidence of disease or treatment side effects (Chewning & Sleath, 1996; Leventhal, Leventhal, & Schaefer, 1991), and HIV/HCV co-infected patients are not unique in this regard. Currently, excellent laboratory parameters (HIV viral load, lymphocyte subsets, HIV genotype assays) can measure responses to treatment and progression of HIV disease. There are no comparable ways to monitor progression of HCV disease. Liver biopsy is the current gold standard for measuring the degree of liver fibrosis, but it is less useful as a monitoring tool because it can not be performed on a regular basis to identify subtle changes in disease progression due to the risks, discomforts, and costs associated with the procedure. In addition, patient symptoms often do not correspond to liver biopsy findings, making it less useful for patients to monitor HCV-related disease processes. Therefore, HIV/HCV infected patients are able to develop illness representations for HIV-related symptoms (Leventhal et al., 1991) but have difficulty creating these same representations for HCV-related symptoms.

Fatigue was the most prevalent symptom associated with HIV/HCV co-infection in our study. This is consistent with other reports in HIV (Johnson et al., 2003; Justice et al., 2001) and HCV (Lorenz et al., 2001; Santoro et al., 2006) mono-infected samples. Among participants with very high quantitative symptom scores, descriptions of profound fatigue were the only commonality found in the qualitative data. Hilsabeck and colleagues (2005) investigated the relationship between fatigue and biopsychosocial variables in patients with HCV and found that poor social functioning and depression were related to fatigue. These authors suggested that interventions aimed at reducing HCV-related fatigue should specifically address social functioning (e.g., through support groups) and mental health (e.g., through counseling and treatment). In addition, it is important to consider that treatment for HCV also causes fatigue (Zucker & Miller, 2001). What remains to be studied is whether co-infected patients (because of their pre-existing high fatigue levels) tolerate HCV treatment-induced fatigue better than HCV mono-infected patients and whether interventions to ameliorate fatigue have similar efficacy rates in HCV versus HIV/HCV co-infected samples.

Braitstein and colleagues (2005) found that HCV co-infected adults reported greater depression, fatigue, and worse quality of life than HIV mono-infected adults. However, these results were better explained by sociodemographic factors related to poverty and injection drug use than by HCV co-infection. Mrus, Sherman, Leonard, Sherman, and Mandell (2006) also found no difference in symptom scores, but they found more depressive symptoms and less social support among HIV/HCV co-infected adults compared with HIV and HCV mono-infected individuals. These results are consistent with our findings that the symptom experience was very similar for adults with HIV, HCV, and HIV/HCV co-infection. The main difference appeared to lie in the mental health and social vulnerability of co-infected patients.

Foster and colleagues (1998) found that for HCV mono-infected patients, symptoms associated with chronic HCV infection were not related to previous drug abuse. In contrast, data from the present study indicated that HIV/HCV co-infected adults discussed their symptom experiences from the perspective of past or present alcohol and drug use (e.g., change in symptoms after getting clean, poor awareness of symptoms while high, or enhanced symptom awareness when not masked by drug use). Evaluating the relationship of substance abuse to HCV symptom experiences will continue to be a methodological challenge in quantitative studies. Limited samples of non-substance abusing subjects in HIV/HCV co-infected cohorts will be available for comparisons because the majority of HCV infections in HIV-infected populations arise from substance abuse. Thus, qualitative studies may be more useful to increase understanding about the role substance use plays in the symptom experience of HIV/HCV co-infected patients.

The prevalence and severity of symptoms in the present co-infected study sample was generally less than that for either the HIV or HCV mono-infected samples reported in previous studies. This finding was interesting because the demographic characteristics of the comparison sample in the Johnson and colleagues (2003) study were similar to the present study sample (by age, ethnicity, education, CD4 cell count, and recent HIV viral load). The only exceptions were that the present study included more women (46.2% as opposed to 10.1%) and individuals who had lived longer with HIV infection ($M = 13.5$ vs. $M = 9.9$ years). These differences would suggest that the present study findings should be biased toward higher symptom scores because historically women and those who have lived with HIV infection longer tend to describe greater symptom burden, but this was not found. Clifford, Evans, Yang, and Gulick (2005) examined the impact of HCV on neurocognitive and general symptom scores in persons with HIV infection and found significantly higher depression scores and poor performance on neurocognitive functioning tests in persons co-infected with HCV. Similar to our findings, they found no difference in general symptom scores between HIV mono-infected and HIV/HCV co-infected adults.

Limitations

Results of this study are limited by the cross-sectional nature of the sample and the sample size, which limits confidence in the analysis of the quantitative data. We also did not measure the length of time someone may have lived with hepatitis C infection. Because acute HCV is often asymptomatic, determining the length of time from infection with HCV is often difficult. However, in future research it will be important to ask subjects to identify when they started using injection drugs (if applicable) to approximate the length of time with HCV. Finally, our symptom measure did not ask about sexual symptoms related to HIV or HCV infection, and no participant discussed sexual symptoms in response to open-ended interview questions. However, recent data and clinical experience indicate that sexual functioning and symptoms (e.g., impotence) may be related to HCV infection (Ferri, Bertozzi, & Zignego, 2002; Soykan et al., 2005). Future studies will need to include specific measures of sexual symptoms in studies of adults with HIV/HCV co-infection.

Conclusion

Results of this study demonstrate the significant symptom burden experienced by adults with HIV/HCV co-infection and the difficulty patients have of attributing symptoms to a specific viral infection. Data suggest that the prevalence of symptoms for HIV/HCV co-infected patients may not be greater than those experienced by individuals with HIV infection alone. Further work needs to be done to examine symptom burden differences in mono-infected and co-infected patient groups. In addition, research that examines sexual functioning and interventions to reduce the symptom burden experienced by persons with HIV and HCV infection are needed.

Clinical Considerations

The following are important clinical considerations from these data:

- Nursing interventions designed to reduce the symptom burden imposed by HIV and HCV co-infection must concurrently address social and mental health issues.
- Mental health and substance use treatment/counseling are important means to help patients self-manage symptoms related to HIV/HCV co-infection.
- The development of new, less invasive tests to monitor HCV disease progression will be extremely helpful to patients as they try to self-monitor HCV infection over time.

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Table 1

Demographic and Clinical Characteristics		
Characteristic	N	%
Gender		
Male	21	53.8
Female	18	46.2
Race/Ethnicity		
White (non-Hispanic)	19	48.7
Hispanic	14	35.9
African American	6	15.4
High School Graduate or GED		
Yes	25	64.1
No	14	35.9
HIV Illness Stage		
Asymptomatic	17	43.6
Symptomatic	8	20.5
AIDS	14	35.9
On Antiretroviral Therapy		
Yes	31	79.5
No	8	20.5
HCV Genotype		
1	23	59.0
2	3	7.7
3	3	7.7
4	2	5.1
unknown or missing	8	20.5
Any Mental Illness		
Yes	34	87.2
No	5	12.8
Depression		
Yes	26	67.7
No	13	33.3
Ever Hospitalized to Treat Major Depression		
Yes	10	25.6
No	29	74.4
History of Suicide Attempt		
Yes	13	33.3
No	26	67.7
Taking Mental Health Medications		
Yes	25	64.1
No	14	35.9
History of Substance Abuse Problems		
Yes	37	94.9
No	2	5.1
Active Substance Abuse (within past month)		
Yes	6	15.4
No	33	84.6
Problematic Substances (multiple responses were possible)		
Heroin	33	84.6
Cocaine	30	76.9
Alcohol	29	75.0
Crack	17	43.6

Table 2

Symptom Frequency and Severity¹

Symptom	Absent N(%)	Mild N(%)	Moderate N(%)	Severe N(%)	N(%) with Symptom
Fatigue	10 (25.6)	8 (20.5)	13 (33.3)	8 (20.5)	29 (74.4)
Shortness of Breath	11 (28.2)	13 (33.2)	9 (23.1)	6 (15.4)	28 (71.8)
Muscle Aches	12 (30.8)	12 (30.8)	7 (17.9)	8 (20.5)	27 (69.2)
Difficulty Sleeping	13 (33.3)	6 (15.4)	9 (23.1)	11 (28.2)	26 (66.7)
Bone Aches	14 (35.9)	9 (23.1)	5 (12.8)	11 (28.2)	25 (64.1)
Pain	14 (35.9)	10 (25.6)	8 (20.5)	7 (17.9)	25 (64.1)
Headache	15 (38.5)	10 (25.6)	7 (17.9)	7 (17.9)	24 (61.5)
Diarrhea	19 (48.7)	10 (25.6)	8 (20.5)	2 (5.1)	20 (51.3)
Cough	21 (53.8)	11 (28.2)	4 (10.3)	3 (7.7)	18 (46.2)
Night sweats	24 (61.5)	9 (23.1)	2 (5.1)	4 (10.3)	15 (38.5)
Lymphadenopathy	25 (64.1)	5 (12.8)	6 (15.4)	3 (7.7)	14 (35.9)
Weight Gain	26 (66.7)	4 (10.3)	7 (17.9)	2 (5.1)	13 (33.3)
Nausea	26 (66.7)	9 (23.1)	3 (7.7)	1 (2.6)	13 (33.3)
Weight Loss	28 (71.8)	3 (7.7)	4 (10.3)	4 (10.3)	11 (28.2)
Fever	28 (71.8)	7 (17.9)	3 (7.7)	1 (2.6)	11 (28.2)
Hair Loss	29 (74.4)	5 (12.8)	3 (7.7)	2 (5.1)	10 (25.6)
Loss of Appetite	30 (76.9)	6 (15.4)	2 (5.1)	1 (2.6)	9 (23.1)
Oral Thrush	33 (84.6)	5 (12.8)	1 (2.6)	0 (0)	6 (15.4)
Itchiness	34 (87.2)	0 (0)	2 (5.1)	3 (7.7)	5 (12.8)

¹ Only symptoms that were present for at least 5 participants are included in Table 2

Table 3

Comparison of Mean Symptom Scores (total score and number of symptoms) by Demographic and Clinical Characteristics

Characteristic	HIV-SEI Total Score ^I	Number of Symptoms
	Mean (SD)	Mean (SD)
Gender		
Female	23.6 (11.2)	11.6 (4.1)
Male	13.9 (10.1)	8.6 (5.1)
Race/Ethnicity		
White	20.0 (11.6)	11.4 (4.4)
Hispanic	15.1 (11.2)	7.8 (5.0)
African American/Black	20.7 (13.4)	10.5 (4.9)
HIV Illness Stage		
AIDS	20.6 (12.9)	10.7 (4.9)
Symptomatic HIV	20.6 (12.2)	10.8 (4.6)
Asymptomatic HIV	15.4 (10.0)	9.0 (4.4)
History of Mental Illness		
Yes	20.4 (10.9)	10.9 (4.3)
No	4.0 (1.6)	3.2 (1.8)
Mental Well-Being (MHI-5)		
Poor Mental Well-Being	23.1 (9.9)	12.2 (3.9)
Good Mental Well-Being	15.9 (11.8)	8.9 (4.9)
History of Depression		
Yes	21.0 (9.5)	11.5 (3.8)
No	13.0 (13.8)	7.0 (5.4)
Taking Mental Health Medications		
Yes	20.6 (9.2)	11.2 (3.6)
No	14.2 (14.4)	7.8 (6.0)
Taking Antiretroviral Medications		
Yes	19.2 (11.5)	10.9 (4.3)
No	14.9 (11.9)	8.1 (5.2)
Active Substance Abuse		
Yes	14.8 (7.5)	9.5 (4.7)
No	18.9 (12.1)	10.1 (4.9)

^I Higher HIV-SEI scores equal greater symptom burden

Table 4

Comparisons of Published Symptom Prevalence Rates in HIV-infected, HCV-infected and the Present HIV/HCV Co-infected Samples

Symptom	Prevalence HIV/HCV Co- infected sample (<i>Present study</i>) %	Prevalence HIV ¹ sample Johnson et al. (2003) % (<i>difference from co-infected sample</i>)	Prevalence HCV ² sample Lang et al. (2006) % (<i>difference from co-infected sample</i>)
Fatigue	74.4	85.3 (+10.9)	85.6 (+11.2)
Shortness of Breath	71.8	56.9 (-14.9)	-
Muscle Aches	69.2	77.1 (+7.9)	54.0 (-15.2)
Difficulty Sleeping	66.7	71.6 (+4.9)	65.4 (-1.3)
Bone Aches	64.1	77.1 (+13.0)	63.6 (-0.5)
Pain	64.1	-	57.2 (-6.9)
Headache	61.5	63.3 (+1.8)	55.6 (-5.9)
Diarrhea	51.3	72.5 (+21.2)	46.5 (-4.8)
Cough	46.2	56.9 (+10.7)	-
Night sweats	38.5	56.9 (+18.4)	46.0 (+7.5)
Lymphadenopathy	35.9	39.4 (+3.5)	-
Weight Gain	33.3	60.6 (+27.3)	-
Nausea	33.3	49.5 (+16.2)	52.9 (+19.6)
Weight Loss	28.2	43.1 (+14.9)	-
Fever	28.2	33.0 (+4.8)	-
Hair Loss	25.6	33.0 (+7.4)	-
Loss of Appetite	23.1	56.0 (+32.9)	50.3 (+27.2)
Oral Thrush	15.4	-	-
Itchiness	12.8	43.1 (+30.3)	41.7 (+28.9)

¹ HCV status is not indicated. It is possible that a percent of this sample may be HCV co-infected

² Study excluded anyone with HIV infection