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Self-Care Behaviors and Activities for Managing HIV-Related Anxiety

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Abstract

The goal of this study was to identify the baseline prevalence and effectiveness of anxiety self-management strategies in a convenience sample of persons living with HIV (PLWH; $n = 343$) in the United States, Puerto Rico, Kenya, and South Africa who reported HIV-related anxiety symptoms. Relationships between demographics and anxiety characteristics were determined, as was the effectiveness of self-care activities/behaviors to reduce anxiety. We found that the use of anxiety self-management strategies varied by gender and that ratings of effectiveness varied by country. Highest anxiety intensity scores were found in participants who were taking antiretroviral medications and who had undetectable viral loads. Forty-five percent of the persons with a diagnosis of AIDS reported anxiety symptoms. As HIV increases in areas of the world where self-care is the primary approach to managing HIV, additional research will be needed to address the effectiveness of cross-cultural differences in strategies for self-managing HIV-related anxiety.

Keywords

AIDS; anxiety; HIV; self-care; self-management; symptom management

Advances in the treatment of HIV infection have dramatically transformed the course of HIV disease from an acute illness into a more manageable chronic condition (Wantland et al., 2008). Even with recent treatment advances, persons living with HIV (PLWH) often struggle as they attempt to manage the unique physical and psychological challenges that accompany living with this chronic illness.

Despite the availability of highly efficacious psychological and pharmacological treatments, HIV-related anxiety remains one of the most commonly diagnosed conditions affecting PLWH (Bing et al., 2001). While much attention has been directed toward identifying the prevalence of HIV-related anxiety and the effectiveness of interventions to diminish anxiety symptoms, there is still comparatively little information on the use of self-management strategies used by PLWH to ameliorate anxiety symptoms.

Features of Anxiety

Anxiety has many autonomic and somatic manifestations including heart palpitations or pounding, sweating, trembling or shaking, sensation of shortness of breath, chest pain or discomfort, nausea or abdominal distress, feeling dizzy or lightheaded, or having hot flushes. Additional symptoms may include muscle tension, hyperventilation, sleep disturbance, fatigue, increased perspiration, or cold sweat (Grillon, 2005).

Multiple investigators have found that anxiety disorders, including generalized anxiety disorders, panic disorders, and posttraumatic stress disorder (PTSD), are highly prevalent in PLWH. Data from the national HIV Costs and Service Utilization Study (HCSUS) showed that 16% of PLWH had symptoms of generalized anxiety disorder, while 10.5% screened positive for a history of panic attacks (Bing et al., 2001). HCSUS results indicated that anxiety symptoms were only slightly higher in women than men. In the Coping with HIV/AIDS in the Southeast Study (CHASE), over one quarter (29.5%) of the participants with HIV living in the Deep South of the United States experienced significant levels of anxiety (Pence et al., 2007). In the CHASE study, African Americans were less likely to have symptoms of anxiety, although no differences in gender were identified. There is also evidence that the prevalence of anxiety disorders may be elevated among groups with higher HIV prevalence rates, including men who have sex with men, and high-risk women of color (O'Cleirigh, Skeer, Mayer, & Safren, 2009). In our own previous research, we also found that HIV-related anxiety was one of the most common symptoms experienced by PLWH (Kemppainen et al., 2006).

Anxiety and Other Mental Health Problems

HIV-related anxiety frequently occurs in combination with other mental health disorders, including mood and substance-use disorders. A study of psychiatric diagnoses in a population of PLWH by Gaynes, Pence, Eron, and Miller (2008) found that having more than one psychiatric diagnosis concurrently with an anxiety disorder was common. Twenty-one percent of the 152 HIV-infected patients seeking care at an academic medical center in the Southeastern United States had experienced an anxiety disorder within the previous 12 months. Of those diagnosed with an anxiety disorder, 62% had a coexisting mood or substance abuse disorder. In that study, psychiatric comorbidity was associated with younger age, White non-Hispanic race/ethnicity, and an increased number of HIV-related symptoms.

Much of the research examining rates of anxiety disorders among PLWH has focused on PTSD. Reported prevalence rates greatly exceed that of the general population, ranging from 16%–60% (Martinez, Israelski, Walker, & Koopman, 2002; Pence, Miller, Gaynes, & Eron, 2007). High rates of PTSD may be indicative of a traumatic response to receiving an HIV diagnosis or to other traumatic stressors (Whetten et al., 2008). Research has also suggested that rates of PTSD were higher among women than men (Olley, Zeier, Seedat, & Stein, 2005), as well as among PLWH who experienced persistent pain (Tsao, Dobalian, & Naliboff, 2004) or stressful or traumatic life events (Reisner et al., 2009).

Anxiety and Physiological Changes

The presence of a heightened state of anxiety is especially concerning because of the major impact on HIV disease progression. Research has shown that increased levels of psychological distress, including anxiety, may result in physiologic changes that impact health outcomes (Mugavero et al., 2009). Physiologic changes include the dysregulation of stress regulation hormones, norepinephrine, and cortisol. Additional changes include a diminished regulation of the immune system, an increase in viral replication, increased severity of fatigue (Barroso et al., 2010), and an impaired response to HIV therapies (Greeson et al., 2008). In a study of 188 outpatients with HIV disease in England, Lampe et

al. (2010) found that anxiety was strongly predictive of virologic rebound among patients with virologic suppression on combination antiretroviral (ARV) therapies.

In addition to physiologic changes, the presence of anxiety symptoms can impact the practice of health behaviors and adherence to medical recommendations. Anxiety has been associated with a decreased quality of life in HIV disease, decreased health care utilization (O'Cleirigh et al., 2009), and non-adherence to HIV therapies (Campos, Guimaraes, & Remien, 2010). In a recent study, Comulada and colleagues (2010) found high rates of depression and anxiety among a subset of PLWH who continued to engage in high-risk behaviors associated with HIV transmission.

Despite the growing body of literature directed toward identifying the characteristics of HIV-related anxiety and its impact on health outcomes, a gap exists related to the complex issues surrounding the self-management of HIV-related anxiety. Given the critical role that self-management practices play in determining health-related outcomes in HIV disease, there is urgent need for further study on self-management practices related to HIV anxiety. We conducted this study to identify the prevalence and characteristics of anxiety self-management strategies in several countries.

Methods

This study is a secondary data analysis from an international multisite randomized controlled trial (RCT) conducted by the International Nursing Network for HIV Research. The RCT was designed to compare the efficacy of an HIV symptom–management manual with that of a basic nutrition manual, over 3 months in 14 sites in the United States, Puerto Rico, and Africa (Wantland et al., 2008). The symptom-management manual contained self-care strategies for commonly occurring symptoms, and its content was validated by HIV expert clinicians and corroborated by scientific evidence on 21 commonly occurring HIV symptoms.

In the original study, data were collected from a convenience sample of 1,886 PLWH receiving care through university-based HIV clinics, private practices, residential and day care facilities, public and private hospitals, community-based organizations, and home care services. U.S. data collection sites included California (San Diego, San Francisco), Pennsylvania (Philadelphia), Utah (Salt Lake City), Massachusetts (Boston), Illinois (Chicago), and Texas (Corpus Christi, Harlingen, Houston). International sites included Puerto Rico (San Juan, Vega Baja), Kenya (Narobi), and South Africa (Guateng). In order to engage in the study, participants had to be 18 years of age or older, diagnosed with HIV, and receiving care and treatment through their respective facilities. Speaking English was an inclusion criterion in all study sites except for Puerto Rico, where speaking Spanish was an inclusion criterion. Both English- and Spanish-speaking participants were included at the two South Texas sites. Study instruments were translated/back-translated into Spanish for use at the two South Texas sites and in Puerto Rico. They were administered in English at all other study sites, including Kenya.

The study was approved by the Committee on the Protection of Human Subjects at the University of California, San Francisco (UCSF), as well as institutional review boards in each city in the United States and in each non-U.S. country. All subjects gave informed consent.

The aim of this analysis was to examine the prevalence and characteristics of anxiety self-management strategies in the subsample of PLWH in the United States, Puerto Rico, Kenya, and South Africa who reported HIV-related anxiety symptoms at the study baseline. The impact of anxiety on daily activities was also examined. In addition to identifying the self-care practices used to manage HIV-related anxiety, the study determined the effectiveness of the anxiety self-care activities/behaviors.

Instruments

Demographic data questionnaire.—Demographic questions included age, gender, ethnicity, education level, and whether or not the participants had children. Participants were also asked if they had an adequate income, worked for pay, had health insurance, and whether or not they were taking ARV medications. Physiologic health status indicators included self-reports of CD41 T cell counts and viral loads, length of time infected with HIV, and whether or not there was an AIDS diagnosis.

The Revised Sign and Symptom Check-List for HIV (SSC-HIVrev).—The SSC-HIVrev asked PLWH to identify and rate the most frequently experienced HIV symptoms. This 72-item checklist has three parts: (a) Part I consists of 45 items that cluster into 11 factor scores along with a total score, with reliability estimates ranging from 0.76 to 0.91; (b) Part 2 consists of 19 HIV-related symptoms that do not cluster into factor scores but may be of interest from a clinical perspective; and (c) Part 3 consists of eight items related to gynecological symptoms for women (Holzemer, Hudson, Kirksey, Hamilton, & Bakken, 2001). Participants were asked to rate the symptoms they had experienced that day on a 3-point Likert scale with *1* = *mild*, *2* = *moderate*, and *3* = *severe*. Chronbach's alpha factor reliability scores, ranging from 0.85 to 0.90 for each of the factors and 0.92 for the overall 64-item instrument (excluding the eight-item gynecologic factor), were obtained for this study (Nicholas et al., 2010).

HIV Self-Care Symptom Management Survey (HIV-SCSMS).—The HIV-SCSMS identifies frequently occurring HIV-related symptoms as well as self-care activities or behaviors used to manage those symptoms. The initial part of the HIV-SCSMS asks study participants to identify symptoms most frequently experienced during the past week from a list of six commonly experienced HIV-related symptoms, including depression, anxiety, nausea, neuropathy, diarrhea, and fatigue. For each reported symptom, participants were asked to rate the frequency, intensity, and impact of each symptom on a 10-point scale. Checklists of self-care activities used to manage each of the six corresponding symptoms were presented in the second part of the instrument. Each checklist contained a listing of self-care activities specific to that symptom. In addition to selecting self-care activities, participants were asked to rate the frequency of use (daily, weekly, monthly) and also the

effectiveness on a scale of 1–10 (*1* = *very poor* to *10* = *excellent*; Nicholas et al., 2007). The current analysis was based on the 20-item checklist specific to HIV-related anxiety.

The listing of self-care activities for each symptom was based on previous research aimed at identifying and categorizing schemes of self-care strategies reported by PLWH (Chou, Holzemer, Portillo, & Slaughter, 2004). Items for each of the self-care activity checklists were developed through qualitative surveys obtained from 359 HIV-infected persons through a UCSF Internet Website, as well as from participants in five geographic data collection sites in Boston, (MA), New York (NY), Oslo (Norway), Patterson (NJ), and San Francisco (CA; Chou et al., 2004; Kemppainen et al., 2003; Nicholas et al., 2007). Content analysis was used to analyze the self-care strategies for inductive development of category schemes, enabling the development of symptom-specific self-management checklists for six commonly occurring HIV-related symptoms. Major categories of symptom self-care activities across all symptoms included Activities/thoughts, Exercise, Medications, Complementary Therapies, and Substance Use. The HIV-SCSMS checklist on anxiety self-management was included in this analysis.

Data Analysis

Descriptive statistics were used to assess the demographic characteristics of respondents and the characteristics of anxiety, as well as anxiety self-care activities and behaviors. Bivariate statistics examined relationships between demographic and anxiety characteristics. Statistical significance was defined as a *p*-value less than .05 (two-sided). The Statistical Package for the Social Sciences (SPSS, version 18.0) was used to analyze the data.

Results

Subjects

The sample included in this analysis consisted of 343 PLWH (44.2% of a larger study) who reported anxiety, the second most frequently reported symptom, in the broader study. This subset of study participants included 203 males (59.2%), 131 females (38.2%), and nine transgender (2.6%) persons, with a mean age of 43.4 years (range = 21–70 years, *SD* = 9.3 years). Seventy-three percent of the sample was non-White. The ethnically diverse sample included participants from Africa (*n* = 20, 6% of total sample reporting anxiety), Puerto Rico (*n* = 64, 19.5% of the total sample reporting anxiety), and the United States (*n* = 259, 74.5% of the total sample reporting anxiety). Race/ethnicity included Hispanic/Latino (*n* = 121, 35.3%), African American/Black (*n* = 104, 30.3%), Caucasian (*n* = 91, 26.5%), Asian/Pacific Islander (*n* = 7, 2.0%), Native American (*n* = 4, 1.2%), and other (*n* = 16, 4.7%). Sixty-four percent of the sample had an education level of high school or less, with 24.5% (*n* = 84) completing grade school. Although 50% (*n* = 172) had children, 63% (*n* = 108) of those with children had at least one child living at home.

Health status indicators included a self-reported mean CD41 T cell count at 409.2 cells/mm^3 (*SD* = 286.7), with an average of 15 years (*SD* = 6.2) since being diagnosed with HIV infection. Forty-five percent (*n* = 146) of the participants with AIDS at baseline identified anxiety as the most frequently experienced symptom during the previous week. Seventy-two

percent (n = 247) were currently taking ARV medications, with 37% (n = 126) reporting undetectable viral loads. Nine percent of the participants reported taking anti-anxiety medications at baseline compared with 16% taking antidepressants. Demographics by country are presented in Table 1.

Symptom Frequency of Anxiety

At baseline, participants reported an average anxiety symptom intensity of 6.1 (SD = 2.6) on a 10-point scale. The self-rating of psychological status was 6.5 (SD = 2.6, scale of 1–10 with *1 = very poor* and *10 = excellent*) contrasted with the high level of anxiety symptoms. The self-rating of physical status was 6.5 (SD = 2.2, scale of 1–10) and the self-rating of social support was 6.4 (SD = 2.6, scale of 1–10). The most frequently reported symptoms on the Sign and Symptom Checklist reflected somatic and psychological manifestations of anxiety including depression, fatigue, feeling anxious, insomnia, muscle aches, fears/worries, and difficulty concentrating.

When participants included in this analysis were also asked to rate the number of anxiety episodes/week at baseline, they reported a mean score of 4.7 (SD = 2.0). They also reported a mean rating of 6.2 (SD = 2.8, scale of 1–10) at baseline regarding the “impact” of anxiety on their daily lives.

The percentage of study participants reporting anxiety varied by site, from 4 (1.2%) in Kenya to 47 (13.7%) in one of the Puerto Rico sites. There were also significant differences in the number of days/week that participants experienced anxiety, as well as the intensity and impact of anxiety. The highest frequency rating of 5.8 days/week (SD = 1.3) was reported at one of the Puerto Rico sites, and the lowest frequency of 2.7 days/week (SD = 1.0) was in Kenya. The mean anxiety intensity rating (range 0–10) was highest in one of the San Francisco sites (M = 7.3, SD = 2.5) and also in one of the Puerto Rico sites (M = 7.0, SD = 2.2). Kenya reported the lowest intensity and impact ratings, although the sample from this site was small. Self-ratings of psychological condition on a scale of 1 to 10 (1 as the lowest rating and 10 as the highest rating) varied by site with Chicago having the highest level (M = 8.4, SD = 2.6) and South Africa having the lowest level (M = 4.8, SD = 2.6). A comparison of baseline anxiety by site is presented in Table 2.

A significant difference was found between male and female participants (p = .048) for anxiety intensity but not for frequency or impact. Participants who were currently taking ARV medications (p = .036) as well as those with undetectable viral loads reported significantly higher anxiety intensity mean scores (p = .045). The frequency of anxiety symptoms was significantly lower in participants who worked for pay (p = .031) and those who attended a technical or vocational school or college (p = .001). No differences were found, however, in anxiety scores related to having children, having insurance, being White/non-White, or having an AIDS diagnosis.

Self-Care Behaviors for Anxiety Symptoms

Although anxiety was the second most commonly reported symptom in the broader study (n = 343, 44.2%), only 200 (58.3%) of the study participants reported that they engaged in self-

care behaviors to manage their anxiety symptoms. Watching television was the most frequent strategy identified by study participants (n = 200, 58.3%). Other self-management strategies for managing anxiety symptoms included talking with family and friends (n = 199, 58.0%), talking with a health care provider (n = 182, 53.1%), praying (n = 177, 51.6%), going for a walk (n = 174, 50.7%), talking myself through it (n = 165, 48.1%), staying alone (n = 157, 45.8%), reading (n = 154, 44.9%), cooking (n = 152, 44.3%), talking with others (n = 144, 42.0%), crying (n = 139, 40.5%), using denial (n = 118, 34.4%), exercising (n = 111, 32.4%), using relaxation techniques (n = 96, 28.0%), taking prescribed antidepressants (n = 91, 26.5%), meditating (n = 90, 26.2%), attending a support group (n = 83, 24.2%), playing cards (n = 67, 19.5%), and taking prescribed anti-anxiety medications (n = 61, 17.8%). Unhealthy self-management behaviors included smoking cigarettes (n = 114, 33.2%), drinking alcohol (n = 62, 18.1%), using marijuana (n = 60, 17.5%), and taking street drugs (n = 32, 9.3%). See Table 3.

For the total sample, the use of prayer received the highest overall rating of effectiveness of any self-management strategy at 8.33 (scale 1–10). Going for a walk (M = 7.88), attending a support group (M = 7.86), and meditating (M = 7.87) were also rated as highly effective strategies.

Table 4 presents the frequency and effectiveness of anxiety self-management strategies by country. The use of prayer received the highest rating of effectiveness by U.S. participants at M = 8.2 (scale 1–10), while staying alone was rated most effective by participants from Puerto Rico at M = 9.7. The strategy receiving the highest rating of effectiveness by participants from Africa was reading (M = 9.0).

While female participants attended more support groups (p = .025), more men reported that they talked with family and friends (p = .009). More male participants used cigarettes (p = .028) and street drugs (p = .009) to alleviate anxiety symptoms. Males also reported higher ratings of effectiveness for alcohol (p = .037) and going for a walk (p = .001).

Discussion

Study results suggest that HIV-related anxiety has a high prevalence and is frequently experienced by PLWH across the spectrum of HIV disease. Anxiety was the second most commonly reported HIV-related symptom in an international randomized controlled trial designed to assess the efficacy of an HIV symptom management manual. The highest anxiety intensity scores were found in participants who had an undetectable viral load and were currently taking ARV medications. In a noteworthy finding, 45% of the persons with an AIDS diagnosis reported anxiety symptoms. This is consistent with previous research by O’Cleirigh, Hart, and James (2008), which found elevated anxiety disorders in groups with higher AIDS prevalence rates. Despite the high intensity of reported anxiety symptoms (M = 6.1, SD = 2.5, on a scale of 0–10), few study participants indicated that they were taking prescribed anti-anxiety or antidepressant medications. In this study, no associations were found between having children, having health insurance, or the subject’s race/ethnicity and the presence of HIV-related anxiety. Similar to other studies that have demonstrated a connection between poverty and mental health, including anxiety and depression (Najman et

al., 2010), we found higher rates of anxiety in participants who reported an inadequate income.

The wide variation in reported prevalence rates of HIV-related anxiety may reflect cultural, social, or educational factors that frequently surround the acknowledgment of a psychological issue. Although the sample of participants from Kenya was small, they reported the lowest mean anxiety intensity and impact along with the highest rating of physical condition. This finding is consistent with a recent study by Shacham, Reece, Ong'or, Omollo, and Basta (2010) that found low levels of psychological distress, including anxiety and depression, in a Kenyan sample of PLWH who were self-enrolled in HIV-related mental health care. The author suggested that social and cultural expectations in Kenya might limit the expression of psychological expectations. Lower levels of anxiety and depression in rural residents with a chronic illness could be attributed to a tightly knit society and strong social support systems (Ndetei et al., 2009). In addition to major challenges of poverty and economics impacting Kenya, there is a lack of adequate resources for mental health treatment. Although resources are more likely to be available in larger urban cities like Nairobi, formal mental health systems are scarce. Rural populations are underserved and the majority of patients with mental health disorders related to chronic disease such as cancer and HIV, frequently remain undiagnosed and untreated (Ndetei et al., 2009). Since the sample size in this study is small, it is difficult to generalize these findings to all PLWH in Kenya.

Participants from both study sites in Puerto Rico reported the highest rates of anxiety intensity and impact. Varas-Diaz, Serrano-Garcia, and Toro-Alfonso (2005) suggested that high rates of anxiety found in PLWH in Puerto Rico might represent a negative personal consequence of the continuous existence of the HIV stigma that PLWH face on almost a daily basis. The Latino community, especially Puerto Ricans, has shown concern about HIV stigma and has reported feeling that stigmatizing attitudes have intensified in the past 5 years (Varas-Dias et al., 2005). Health disparities intertwined with socioeconomic factors that persist in Puerto Rico may also impact high rates of anxiety. As many as 58.9% of Puerto Rico's families live below the poverty level, and 62% are medically indigent (U.S. Census Bureau, 2000). Due to the heavy economic burden and the lack of efficient specialized care required for PLWH, disparities continue to exist for this population.

Participants from the U.S. at the San Diego site reported the highest mean anxiety frequency, while San Francisco participants reported the highest anxiety impact. Despite the availability of mental health resources, HIV care providers are increasingly confronted by comorbid mental health issues among their patients, and rates of HIV-related anxiety remain high (Basu, Chwastiak, & Bruce, 2005; O'Cleirigh et al., 2009; Pence et al., 2007).

Despite increased reports of anxiety frequency and impact, slightly more than one half (58%) of the participants in this analysis reported the use of self-care strategies to ameliorate symptoms of HIV-related anxiety. The most frequently reported self-management strategies for alleviating anxiety symptoms included watching TV, followed by talking with family and friends, talking with a health care provider, using prayer, going for a walk, talking oneself through it, staying alone, reading, cooking, and talking with others. Self-care strategies

reflecting avoidant coping included crying, using marijuana, smoking cigarettes, and using alcohol or street drugs.

For the total sample, the use of prayer received the highest rating of effectiveness as a self-care strategy for managing anxiety ($M = 8.33$), followed by going for a walk ($M = 7.88$), meditation ($M = 7.87$), and attending a support group ($M = 7.86$). These findings are consistent with our previous studies (Kemppainen et al., 2006).

The ratings of effectiveness of anxiety self-care strategies varied by country. While the use of prayer was seen as the most effective self-management strategy by the U.S. participants ($M = 7.8$), those who lived in Puerto Rico felt that staying alone was most effective ($M = 9.7$). Participants from Africa rated reading as the most effective self-management strategy ($M = 9.0$).

In this study, men and women differed in the reported rates of anxiety intensity. Findings from epidemiological studies have repeatedly shown a higher prevalence and intensity of anxiety diagnoses in women compared to men (Kelly, Tyrka, Price, & Carpenter, 2008; Matud, 2004). While previous studies have found that women endorse the use of emotional support more frequently, it is interesting to note that both male and female participants in this study identified social support as an important anxiety self-management strategy. Men reported that they talked to family and friends, while women attended support groups. Kelly and colleagues (2008) reported consistent findings in a study that examined gender difference in coping strategies used to manage anxiety in a carefully screened, nonclinical, community-based sample. As Matud (2004) suggested, this finding may reflect decreasing differences in the use of coping strategies that parallel changes in gender roles and constraints. In addition to increasing social support, men reported that they used street drugs, cigarettes, alcohol, and going for a walk to alleviate anxiety symptoms.

Because of the high prevalence of anxiety among PLWH, and the potential impact of anxiety on the transmission and progression of HIV disease, it is important for providers to remain alert for signs and symptoms of anxiety. Anxiety symptoms may range in severity from a nearly undetectable, mild sense of unease to a debilitating panic attack (Basu et al., 2005). A detailed history can reveal the source of anxiety symptoms. A diagnostic workup should include an assessment of sleep patterns and of previous psychiatric history; recent medication or substance use history, including over-the-counter medications and herbal drugs; significant trauma, or exposure to domestic violence (Basu et al., 2005). In addition to assessing the causes and levels of anxiety, providers should assess the use and effectiveness of strategies to self-manage anxiety symptoms, recognizing that PLWH use a wide variety of self-care strategies for managing anxiety symptoms and that those self-management patterns vary by country and by gender. It is important to remember that referral to a mental health provider is indicated when anxiety is persistent or severe or when anxiety symptoms do not respond to standard pharmaceutical treatment or to supportive interventions.

Conclusions

The present study builds upon our previous work, creating an emerging picture of the high incidence of HIV-related anxiety and the wide variation in self-care strategies used to manage anxiety. Future programmatic research is urgently needed to enable a more precise understanding of the impact of anxiety self-management strategies, especially in light of a growing body of literature that links anxiety to increased transmission of HIV, as well as to an accelerated disease course. Higher levels of anxiety also interfere with HIV treatments. As HIV increases in areas of the world where self-care is the primary approach to managing HIV, additional research is also needed to address the effectiveness of cross-cultural and gender differences in strategies for self-managing HIV-related anxiety.

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Clinical Considerations

- The high incidence of untreated HIV-related anxiety symptoms is related to faster disease progression and higher HIV transmission.
- Elevated anxiety symptoms can decrease adherence to ARV medications.
- Nurses need to regularly assess and monitor anxiety symptoms and understand the use of self-management strategies to relieve anxiety symptoms.
- Nurses and other health care providers must be able to educate patients about the use of self-care strategies as a complement to more traditional treatments.
- Traditional measures (anti-anxiety medications, supportive psychological counseling, referrals to mental health professionals) need to be offered for intense, disabling anxiety symptoms.

Table 1.

Characteristics of Study Participants With HIV-Related Anxiety in Africa, Puerto Rico, and the United States (n = 343)

Characteristics	Total (n = 343)		Africa (n = 20)		Puerto Rico (n = 64)		United States (n = 259)	
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)
Gender								
Male	203	59.2	6	30.0	31	48.4	166	64.1
Female	131	38.2	14	70.0	30	46.9	87	33.6
Transgender	9	2.6	0	0.0	3	4.7	6	2.3
Race/ethnicity								
Asian/Pacific Islander	7	2.0	1	5.0	0	0.0	6	2.3
African American/Black	104	30.3	17	85.0	2	3.1	85	32.8
Hispanic/Latino	121	35.3	0	0.0	57	89.1	64	24.7
Native American Indian	4	1.2	0	0.0	1	1.6	3	1.2
White/Anglo (non-Hispanic)	91	26.5	0	0.0	1	1.6	90	34.7
Other	16	4.7	2	10.0	3	4.7	11	4.2
Education								
Grade school	84	24.5	11	55.0	21	32.8	52	20.1
High school or GED	135	39.4	4	20.0	22	34.4	109	42.1
AA degree/technical/vocational school	82	23.9	5	25.0	17	26.6	60	23.2
College (BS or BA)	32	9.3	0	0.0	4	6.3	28	10.8
Master’s degree	8	2.3	0	0.0	0	0.0	8	3.1
Doctoral/medical/law degree	2	0.6	0	0.0	0	0.0	2	0.8
Insurance								
Yes	224	65.3	2	10.0	55	85.9	92	35.5
No	119	34.7	18	90.0	9	14.1	167	64.5
Children								
Yes	172	50.1	16	80.0	43	67.2	113	43.6
No	171	49.9	4	20.0	21	32.8	146	56.4
Work for pay								
Yes	82	23.9	6	30.0	13	20.3	63	24.3

Characteristics	Total (*n* = 343)		Africa (*n* = 20)		Puerto Rico (*n* = 64)		United States (*n* = 259)	
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)
No	261	76.1	14	70.0	51	79.7	196	75.7
AIDS diagnosis								
Yes	143	42.6	9	45.0	17	26.6	120	43.6
No	181	52.8	10	50.0	42	65.6	129	49.8
Don't know	16	4.7	1	5.0	5	7.8	10	3.9
Taking HIV meds now								
Yes	247	72.0	10	50.0	40	62.5	197	76.1
No	96	28.0	10	50.0	24	37.5	62	23.9
Other medical conditions								
Yes	240	70.0	9	45.0	55	85.9	176	68.0
No	103	30.0	11	55.0	9	14.1	83	32.0
	M(SD)		**M (SD)**		**M (SD)**		**M (SD)**	
Age	43.5 (9.5)		36.8 (7.7)		44.0 (10.3)		43.9 (9.3)	
CD41 T cell count (cells/mm^3)	409.2 (286.7)		275.9 (159.6)		540.7 (273.4)		387.0 (287.5)	
Length of HIV	13.9 (6.3)		6.9 (3.3)		14.4 (6.0)		14.4 (6.1)	

NOTE: *M* = mean; *SD* = standard deviation.

Table 2.

Site Comparison of Anxiety Symptoms at Baseline ($n = 343$)

Variable	Total sample ($n = 343$)	San Francisco 1 ($n = 29$)	San Francisco 2 ($n = 18$)	Salt Lake City ($n = 35$)	Boston ($n = 40$)	Puerto Rico 1 ($n = 47$)	Puerto Rico 2 ($n = 17$)	Philadelphia ($n = 19$)
Percentage of anxiety	100%	8.5%	5.2%	10.2%	11.7%	13.7%	5.0%	5.5%
	M (SD)	**M (SD)**	**M (SD)**	**M (SD)**	**M (SD)**	**M (SD)**	**M (SD)**	**M (SD)**
Days/week	4.7 (2.0)	5.2 (1.8)	4.2 (2.1)	3.5 (2.1)	4.5 (2.3)	4.7 (2.1)	5.8 (1.3)	4.5 (2.1)
Anxiety intensity (scale 1–10)	6.1 (2.6)	7.3 (2.5)	4.5 (2.5)	5.0 (1.4)	5.4 (2.7)	6.6 (2.6)	7.0 (2.2)	5.8 (2.8)
Anxiety impact (scale 1–10)	6.2 (2.8)	7.7 (2.4)	5.3 (2.6)	4.5 (3.5)	5.5 (2.9)	7.1 (2.8)	7.6 (2.3)	5.6 (2.5)
Self-rating of physical condition	6.5 (2.2)	6.6 (1.6)	6.2 (2.4)	6.4 (2.1)	6.8 (2.0)	6.9 (2.5)	5.2 (2.7)	7.3 (1.4)
Self-rating of psychological condition (scale 1–10)	6.5 (2.6)	6.9 (2.1)	6.7 (2.8)	5.8 (2.5)	7.1 (2.5)	6.7 (2.5)	5.6 (3.2)	7.3 (2.4)
Self-rating of social support (scale 1–10)	6.4 (2.6)	6.7 (1.8)	6.9 (2.3)	5.6 (2.0)	6.7 (2.1)	7.5 (2.8)	5.2 (2.9)	7.0 (1.6)

Variable	Kenya ($n = 4$)	San Diego ($n = 6$)	Chicago ($n = 7$)	Texas 1 ($n = 33$)	Texas 2 ($n = 36$)	Texas 3 ($n = 36$)	South Africa ($n = 16$)
Percentage of anxiety	1.2%	1.7%	2.0%	9.6%	10.5%	10.5%	4.7%
	M (SD)	**M (SD)**	**M (SD)**	**M (SD)**	**M (SD)**	**M (SD)**	**M (SD)**
Days/week	2.7 (1.0)	4.8 (2.4)	4.9 (2.3)	4.6 (1.9)	4.6 (2.1)	4.9 (2.0)	4.2 (2.3)
Anxiety intensity (scale 1–10)	2.5 (1.3)	5.8 (2.6)	5.4 (3.2)	6.5 (2.4)	6.1 (2.2)	6.3 (2.8)	4.9 (2.2)
Anxiety impact (scale 1–10)	2.5 (1.3)	5.2 (2.5)	5.4 (3.5)	6.5 (2.1)	6.0 (3.0)	6.3 (2.9)	4.9 (2.5)
Self-rating of physical condition	8.3 (1.3)	6.7 (2.0)	5.6 (1.5)	6.6 (2.5)	6.4 (1.8)	6.1 (2.6)	4.9 (2.4)
Self-rating of psychological condition (scale 1–10)	7.0 (4.2)	7.5 (1.9)	8.4 (2.6)	6.5 (2.5)	6.5 (1.9)	5.6 (2.6)	4.8 (2.6)
Self-rating of social support (scale 1–10)	7.3 (2.5)	6.8 (2.5)	5.6 (3.2)	6.5 (2.9)	7.1 (2.8)	4.9 (3.0)	4.1 (2.2)

NOTE: *M* = mean; *SD* = standard deviation.

Table 3.

Frequency and Effectiveness of Anxiety Self-Management Strategies for the Total Sample ($n = 343$)

Self-care strategy	*n*	%	Daily (%)	Weekly (%)	Monthly (%)	Rating of effectiveness (scale 1–10)
Activities/thoughts						
Talk with family and friends	199	58.0	30.6	17.5	6.7	7.12
Talk with health care provider	182	53.1	7.6	10.5	31.2	7.25
Talk with others	144	42.0	19.8	9.3	9.3	7.54
Attend a support group	83	24.2	6.1	9.9	5.2	7.86
Use denial and try not to think about it	118	34.4	23.6	3.8	2.3	5.99
Cry	139	40.5	16.6	10.8	7.9	5.97
Stay alone	157	45.8	23.9	12.8	2.6	6.26
Talk myself through it	165	48.1	33.2	6.7	3.5	7.25
Watch TV	200	58.3	48.7	3.2	.9	7.41
Play cards	67	19.5	8.5	6.0	2.9	6.96
Read	154	44.9	24.8	11.1	2.0	7.64
Cook	152	44.3	30.3	6.7	1.2	7.72
Exercise						
Go for a walk	174	50.7	35.3	8.5	2.3	7.88
Exercise	111	32.4	17.8	9.9	2.3	7.79
Medications						
Take prescribed antidepressant	91	26.5	23.6	1.7	.6	7.22
Take prescribed anti-anxiety medication	61	17.8	12.2	3.8	.3	7.56
Complementary therapies						
Meditate	90	26.2	17.5	3.5	2.6	7.87
Pray	177	51.6	38.5	5.8	1.5	8.33
Relaxation technique	96	28.0	16.6	6.4	1.2	7.62
Substance use						
Use marijuana	60	17.5	8.7	2.6	3.8	7.59
Smoke cigarettes	114	33.2	27.7	1.7	.9	6.34
Drink alcohol	62	18.1	4.1	5.2	5.5	5.88
Use street drugs	32	9.3	3.2	2.6	1.2	6.68

Table 4.

Frequency and Effectiveness of Anxiety Self-Management Strategies by Country (n = 343)

	United States (n = 259)		Puerto Rico (n = 63)		Africa (n = 20)	
Self-care strategy	**Frequency n (%)**	**Rating of effectiveness (scale 1–10)**	**Frequency n (%)**	**Rating of effectiveness (scale 1–10)**	**Frequency n (%)**	**Rating of effectiveness (scale 1–10)**
Activities/thoughts						
Talk with family and friends	148 (57.1)	6.9	42 (65.6)	7.7	9 (45.0)	7.0
Talk with health care provider	121 (46.7)	7.0	48 (75.0)	8.0	13 (65.0)	7.5
Talk with others	103 (39.8)	7.5	34 (53.1)	7.7	7 (35.0)	7.6
Attend a support group	60 (23.2)	7.7	20 (31.3)	8.7	3 (15.0)	6.7
Use denial and try not to think about it	87 (33.6)	5.7	26 (40.6)	7.2	5 (25.0)	4.5
Cry	99 (38.2)	5.7	36 (56.3)	6.9	4 (20.0)	5.8
Stay alone	107 (41.3)	6.1	44 (68.8)	9.7	6 (30.0)	6.0
Talk myself through it	116 (44.8)	7.0	44 (68.8)	7.9	5 (25.0)	7.6
Watch TV	146 (56.4)	7.3	45 (70.3)	7.9	9 (45.0)	7.4
Play cards	58 (22.4)	6.9	7 (10.9)	8.3	2 (10.0)	5.5
Read	114 (44.0)	7.4	34 (53.1)	8.4	6 (30.0)	9.0
Cook	114 (44.0)	7.6	34 (53.1)	8.0	4 (20.0)	8.0
Exercise						
Go for a walk	132 (51.0)	7.8	35 (54.7)	8.4	7 (35.0)	7.0
Exercise	81 (31.3)	7.7	25 (39.1)	8.3	5 (25.0)	7.8
Medications						
Take prescribed antidepressant	75 (29.0)	7.1	15 (23.4)	8.1	1 (5.0)	8.0
Take prescribed anti-anxiety medication	51 (19.7)	7.7	8 (12.5)	6.3	2 (10.0)	7.5
Complementary therapies						
Meditate	64 (24.7)	7.7	21 (32.8)	8.7	5 (25.0)	6.4
Pray	128 (49.4)	8.2	38 (59.4)	9.0	11 (55.0)	7.7
Relaxation technique	77 (29.7)	7.4	17 (26.6)	8.8	2 (10.0)	6.0
Substance use						
Use marijuana	51 (19.7)	7.6	9 (14.1)	7.8	6 (30.0)	.0
Smoke cigarettes	92 (35.5)	6.3	21 (32.8)	6.7	1 (5.0)	7.0
Drink alcohol	52 (20.1)	5.7	10 (15.6)	6.8	0 (0.0)	.0

Self-care strategy	United States (*n* = 259)		Puerto Rico (*n* = 63)		Africa (*n* = 20)	
	Frequency *n* (%)	Rating of effectiveness (scale 1–10)	Frequency *n* (%)	Rating of effectiveness (scale 1–10)	Frequency *n* (%)	Rating of effectiveness (scale 1–10)
Use street drugs	24 (9.3)	6.3	8 (12.5)	8.3	0 (0.0)	.0