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Mental Health: A Focus on Stress, Coping, and Mental Illness as it Relates to Treatment Retention, Adherence, and Other Health Outcomes

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Abstract

Mental health problems are prevalent among HIV-infected individuals, with some estimates that 50% likely meet criteria for one or more psychiatric disorders. The mental health of HIV-infected individuals is important not only for quality-of-life concerns, but also in regard to HAART adherence and biological disease progression. The current review focuses on research published between 2009 and April of 2011, exploring mental health, coping, and stress in relation to HIV care behaviors including HAART adherence, quality of life, treatment retention, health care utilization, and disease progression amongst HIV-infected individuals. Specifically, we reviewed the most prevalent and interfering concerns among HIV-infected individuals—depression, post-traumatic stress disorder, interpersonal violence, stigma and shame, and body image concerns. Despite advances over the last 2 years documenting the deleterious effects of mental health on important HIV self-care behaviors, there is continued need for developing and disseminating evidence-based psychosocial interventions that integrate treating mental health problems with improving self-care behaviors for those living with HIV.

Keywords

HIV/AIDS; Stress; Coping; Mental illness; Treatment retention; Health care utilization; HAART adherence; Health behaviors; Health outcomes; Viral load; CD4; Disease progression

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Introduction

Approximately half of all HIV-infected individuals screen positive for one or more psychiatric disorders [1], which are also associated with worse health-related quality of life [2]. Further, individuals living with chronic medical illness and comorbid mental health problems can face increased challenges in managing their health. For HIV-infected individuals, there is the added stressor of stigma associated with the infection. This stigma is often confounded with pre-existing stigmas based on gender, race, ethnicity, or sexual orientation, with epidemiologically disproportionate numbers of men who have sex with men (MSM), African-American individuals, and other stigmatized groups being affected by HIV [3, 4]. Managing HIV in the context of multiple stressors can lead to mental health problems which in turn represent barriers to quality of life, treatment adherence, and important health outcomes.

In this update, we addressed research published in the past 2 years (2009 to April 2011), as well as in-press/under review studies we were able to locate through author queries, on the most prevalent and interfering psychosocial problems in regard to HIV self-care behaviors, including depression, post-traumatic stress disorder (PTSD), interpersonal violence (IPV), stigma and shame, and body image concerns. While depression has received the most attention in the past 2 years, within each section we reviewed recent findings on HAART adherence, biological disease progression, treatment retention, health care utilization, and quality of life.

Depression

Depression is one of the most common psychosocial problems among HIV-infected individuals. Recall that depression, as a diagnosis, is characterized by depressed mood, anhedonia, sleep and appetite changes, psychomotor agitation or retardation, fatigue, difficulties concentrating, guilt/worthlessness, and suicidal thoughts, though there are complexities in assessing depression in HIV (see Simoni et al. [5•] for a review). The best prevalence estimate of depression among HIV-infected individuals available is from the Bing et al. [1] study, which was a national representative survey of HIV care clinics in the US. Here, 36% of individuals with HIV screened in for a major depressive episode in the past year, which was compared to 7.6% who, in the general US population, screened in using a similar measure. These figures underscore the highly disproportionate rates of depression that occur among HIV-infected individuals.

Although individuals cannot always change the environments which lead to HIV-related depression, two new studies have examined the negative effects of certain ways of coping with HIV-related stress as they relate to depressive symptoms. Vosvick et al. [6] found that while HIV-infected men and women generally have similar ways of coping, for men, greater use of distraction, blame, expression, and lower use of positive growth were significantly predictive of increased depression. In that study, for women, only greater use of blame was significantly predictive of increased depression. Orban et al. [7] examined coping style and HIV-related immunity (CD4 count) among a sample of HIV-infected youth. Results indicated that HIV-infected youth with moderately advanced disease (CD4 count between 200 and 500 cells/mm) utilized a passive coping style more often than healthier (i.e., CD4 count >500 cells/mm) HIV-infected youth. Orban et al. [7], however, did not examine depression as a mediator, as it is possible that the effects of passive coping on CD4 may occur through the mechanism of depression, given prior work in psychoimmunology examining the association of depression to CD4 [8, 9] and work examining the association of passive coping to depression [10].

While depression has historically been linked to HIV disease progression, the mechanisms behind this association have not been fully explicated. In a prospective study, Carrico et al. [11•] explored inconsistent HAART adherence as a possible casual mechanism in the relationship between depression and HIV disease progression. Participants were 603 HIV-infected individuals who participated in a larger study [12]. The investigators analyzed the effects of baseline depression on viral load over a 25-month period while controlling for baseline CD4. As expected, increased depression predicted increased viral load over the 25-month period. After controlling for baseline CD4 count, increased depressive symptoms at baseline predicted a 50% increase in viral load; however, when accounting for HAART discontinuation the relationship between depression and viral load was no longer significant, indicating partial mediation occurred. These results highlight that inconsistent HAART use is one mechanism that accounts for the effect of depression on HIV disease progression. However, it is also worth noting that this effect was simply a partial mediation, suggesting that there is still much variance left unaccounted for in this relationship. Indeed, as the authors note, these results do not preclude the possibility of biological pathways between depression and HIV disease progression. Psychological stress may activate increases in cortisol and norepinephrine, which could directly affect disease progression.

One of the most important HIV self-care behaviors is adherence to HAART, and depression is consistently associated with worse medication adherence [13, 14]. Over the last 2 years, several important works have added to this literature. In a longitudinal study, Bottonari et al. [15•] assessed the effects of acute stressful life events and chronic stress in predicting HAART adherence among HIV-infected individuals with and without depression. Acute and chronic stressors predicted decreased HAART adherence more so for depressed individuals compared to their non-depressed counterparts, which was not moderated by coping strategies. These results suggest that being depressed, clinically, *in addition* to experiencing acute stress, places patients at an increased risk for nonadherence. In another longitudinal study, Kacanek and colleagues [16] explored the prospective nature of depression to nonadherence. Uniquely, the investigators examined onset of depression on adherence. Patients who developed depression were more likely to be HAART nonadherent at follow-up.

International work over the last several years in the area of depression and adherence has also revealed important findings. Among HIV-infected women living in Zimbabwe, Patel et al. [17] examined the role of depression, quality of life, and HAART adherence. Findings from this cross-sectional study revealed that women who were on a HAART regimen reported higher quality of life and lower depression than those who were not on HAART. In other words, women who were not on HAART reported greater depression; whether this was a result of not being on HAART or rather, a reason they were not on HAART remains to be seen. Safren and colleagues [18] also examined quality of life among 1563 participants across the US and eight resource-limited countries prior to beginning HAART. Results revealed that higher quality of life was associated with higher CD4 count and lower viral load. There were also significant differences noted between quality of life factors as a function of country. Although a nuanced set of findings is reported [18], one clear trend was that India obtained scores among the top three countries across each quality of life factor, whereas the United States was near the lowest in each. The results of Safren et al. and Patel et al. add important contributions to the literature; however, prospective studies in this area would help disentangle the temporal relationship among these variables.

In a paradoxical finding, Magnus et al. [19] found that among a sample of HIV-infected young MSM, patients with increased depression were more likely to be retained in care. Although the theory behind this finding is unclear and replication is needed, Magnus and colleagues offer the possibility that patients with increased depression may be sicker (both psychologically and physically) and thus need additional care compared to those who are less depressed or earlier in the disease progression.

There has been some previous indication that mental health treatment affects HIV disease progression and survival [20–22]; however, additional research is needed to better understand this complex association. Among a recent nationally representative retrospective study of HIV-infected men who received care in the US Veterans Affairs health care system, Mkanta et al. [23] found that patients with longer survival time after initial AIDS diagnosis also had higher rates of outpatient mental health visits. Prolonged survival, increased CD4 count, and reduced mortality were associated with greater mental health service use. Specifically, outpatient mental health visits for stress, adjustment, and anxiety disorders occurred at significantly higher rates with a longer survival time. Although these are intriguing results, again the mechanism of action remains unclear. It is possible that patients who receive more mental health treatment achieved reductions in psychological distress, in turn increasing HAART adherence. It is also possible, as Carrico et al. [11•] suggested, biological pathways involving the HPA axis mediated these relationships.

Similar findings in regard to the role of mental health treatment were revealed in a recent report by DeLorenze et al. [24]. The authors examined the associations between psychiatric diagnoses, mental health treatment, and mortality amongst 9751 HIV-infected individuals over a 12-year period. Patients who met criteria for a psychiatric diagnosis (primarily depression) and received mental health treatment had lower odds of mortality (OR=1.42) than patients with a psychiatric diagnosis who were not receiving mental health treatment (OR=3.00). Importantly, the authors controlled for variables such as age, immune status, viral load, and HAART adherence. Thus, these results likely imply that receiving mental health treatment improves HIV-infected individuals’ health beyond behavioral changes in medication adherence.

Given that depression is highly prevalent among HIV-infected individuals, and is associated with disease progression and HAART nonadherence, tailored psychosocial interventions are needed to address depression and adherence in this population. In 2009, Safren et al. [25••] published the results of a randomized controlled trial (RCT) that compared cognitive behavioral therapy for adherence and depression (CBT-AD) versus an enhanced treatment as usual (ETAU) condition. Both groups received a single session of LifeSteps [26], a brief, problem-solving intervention aimed at increasing HAART adherence. Participants were assessed at 3-, 6-, and 12-month follow-ups. Results indicated that at 3 months, participants in the CBT-AD condition reported greater HAART adherence (as measured via an electronic monitoring system) and lower depression compared to participants in the ETAU condition. These results were generally maintained at 6-month and 12-month follow-up. This novel study is the first known RCT that integrated evidence-based psychosocial treatment for depression with an intervention to increase HAART adherence.

The CBT-AD intervention was also tested via an RCT among an opioid-dependent HIV-infected sample [27]. Results revealed that the CBT-AD group reported lower depression at post-treatment, which was maintained at 6-month and 12-month follow-up compared to the ETAU condition. The CBT-AD group possessed greater HAART adherence over the course of active treatment, but these gains were not held at follow-up. Interestingly, viral load did not differ between the two conditions at follow-up assessments; however, the CBT-AD group had significantly improved CD4 cell counts over time compared to the ETAU condition. Currently, our group is conducting a large, multi-site, three-arm RCT for depression and adherence, comparing the CBT-AD intervention to informational and supportive psychotherapy (ISP) and an ETAU condition.

Over the last 2 years there have been many impressive papers published on depression among HIV-infected individuals. Results from the research surveyed over this time period have added to the rich literature base which has continually found depression to be predictive of worse quality of life, HAART nonadherence, disease progression, and reduced survival time. Although there were some longitudinal mediation papers published over the last 2 years, additional sophisticated studies are needed to more fully explicate the complex associations between psychological, behavioral, and psycho-immunological factors.

PTSD

PTSD is a condition that can be comorbid with depression [28], and is also relatively common amongst HIV-infected individuals. One recent study noted a screen-in prevalence rate as high as 54% in a clinic sample of MSM [29]. These rates are well above the estimates for individuals not living with HIV, indicating that like depression, PTSD is highly disproportionate among HIV-infected individuals.

Not only is PTSD common among individuals living with HIV, but it may also be linked to deleterious health and behavioral outcomes, including disease progression [30] and HAART nonadherence [31]. Over the last 2 years, there has been incremental research conducted on these topics. For instance, Reilly et al. [32] noted that HIV-infected individuals with PTSD who were affected by Hurricane Katrina were more likely than their non-PTSD counterparts to have detectable viral loads at 1 and 2 years post–Hurricane Katrina follow-up. Also, in this study, when controlling for HAART adherence, those with PTSD had lower CD4 counts at 2-year post, compared to those without PTSD. Interestingly, after controlling for PTSD and HAART status, depression was not significantly associated with CD4 count or viral load. These findings are in opposition to past research, which has found both depression and PTSD (and their interaction) to incrementally predict HIV health status [31], while others [33, 34] have found only depression to account for unique variance in adherence. It is possible that these divergent results are due to varied methods of measuring PTSD. For instance, in the two studies that found PTSD symptomatology to be non-significantly related to adherence, a four-item brief screener [34] and an instrument that only assessed symptoms over the past week [33] were used. In contrast, both Reilly et al. [32] and Boarts et al. [31] utilized more comprehensive PTSD assessment measures. Clearly, the preponderance of conflicting results suggests more nuanced research is needed to parse these relationships.

The association between PTSD and disease progression is controversial, as not all studies have found significant relationships between these variables. In their sample of 44 HIV-infected patients from Gambia, Klis et al. [35] failed to find a significant relationship between PTSD symptoms and CD4 count. It should be noted that the Klis et al. study consisted of a relatively small sample, which may have had limited power to detect medium or small effects. Further, in contrast to the significant prospective results between PTSD and biomarkers in the Reilly et al. [32] study, Klis et al. was cross-sectional in nature, and thus it could be expected that any negative biological effects of PTSD would be delayed in time, and would not necessarily be evidenced within a cross-sectional design.

In our group's own work, we have recently examined the role of PTSD and depression in prediction of quality of life and health care utilization [29]. Among a sample of 502 HIV-infected MSM, O'Cleirigh et al. [29] found that PTSD and depressive symptoms accounted for significant variation in general health and pain, as well as role and work-related impairment. Additional results revealed that depressive and PTSD symptoms (and their interaction) predicted increased health care utilization. Importantly, these novel findings controlled for disease stage, demographic characteristics, and HAART adherence. Thus, it appears that PTSD is a salient factor in regard to both quality of life and health care utilization, and the co-occurrence of PTSD and depression may be particularly troublesome.

Research on PTSD among HIV-infected individuals over the last 2 years has produced interesting, and sometimes conflicting results. It is clear that PTSD is a salient issue among this population. However, there is continued controversy centered around the unique role PTSD plays in both HAART adherence and disease progression. While some methodological differences may help explain disparate findings, additional research is also needed. Given the high rates of comorbidity between depression and PTSD, and their effect on HIV health behaviors, perhaps interventions that address both psychosocial problems in conjunction with HIV self-care behaviors would be a fruitful avenue of future clinical and/or research intervention.

Interpersonal Violence

Closely aligned to trauma is the construct of IPV, which includes child and partner abuse, in addition to adult abuse from non-partners (i.e., hate crimes, rape, sexual assault [36]). It should be noted that IPV also refers to a more restrictive definition of intimate partner violence, which would not include violence from strangers. IPV has been linked to increased depression, PTSD, physical injury, chronic pain, health risk behaviors, and a greater utilization of health care resources [37, 38], suggesting it is an important variable to explore in terms of health outcomes.

Over the last year, there have been several studies that have explored IPV among HIV-infected individuals, with findings revealing that IPV is associated with negative health and behavioral outcomes. Among their sample of 56 HIV-infected individuals, Ramachandran et al. [39] explored intimate partner violence (i.e., a global variable of verbal, physical, and sexual abuse) among HIV-infected individuals attending an urban HIV treatment clinic. Results revealed that the sample reported a 73% lifetime prevalence of IPV, with rates highest among African-American and MSM participants. Those who had not had IPV were significantly more likely to report taking HIV medications at the time of the interview (93%) compared to participants who reported current abuse (66%). Although adherence was not explicitly assessed, these figures suggest that HIV-infected individuals who were abused were less likely to be adherent with HAART. Indeed, other recent work has echoed these findings, and added nuance to this relationship. Lopez et al. [40] found, among a sample of 190 HIV-infected individuals, that IPV (specifically, extreme violence—such as use of a weapon) cross-sectionally predicted HAART nonadherence; however, this relationship was only significant for women. These studies, however, did not explore the mechanism of action behind the relationship between IPV and HAART nonadherence.

Pantalone et al. [41•] sought to address the questions regarding the mechanisms of action in the relationship between adult IPV (assessed as physical, sexual, or psychological abuse by romantic partner or another adult) and various health outcomes among 178 HIV-infected MSM using path-analysis. Findings indicated that IPV and mental health problems were associated with increased viral load, worse health-related quality of life (HRQOL), poor HAART adherence, and increased ER visits. The only significant direct effect between IPV and health outcomes was in regard to ER visits, which logically follows, as physical abuse can often times result in significant physical injury. All other associations between IPV and health outcomes were mediated by mental health problems (i.e., depression, anxiety, suicidal ideation, and PTSD). These findings suggest that IPV leads to increased problems with mental health, which in turn leads to these negative health outcomes. However, although the data fit the model, because this study was a cross-sectional design, the paths cannot be definitively considered causal. Thus, prospective studies are needed to address the temporal prediction of IPV, mental health, and health outcomes.

Shame and Stigma

The social context of HIV undeniably influences the total physical and mental well-being of HIV-infected individuals, including their associated health behaviors. Negative social factors of the disease can threaten both the physical and mental health of HIV-infected individuals along external pathways, for example via HIV-related stigma, and internal pathways, such as via HIV-related shame. HIV-stigma can be defined as a socially imposed negative evaluation of the disease, while shame is conceptualized as a painful emotion resulting from negative social evaluation. These factors create daunting social barriers to HIV-infected individuals receiving optimal health services, adhering to their treat ment plan, and achieving positive health-related quality of life.

Past research has found HIV-related stigma to be associated with poor physical health and lower help-seeking behavior [42, 43]. Recent research has extended these findings by revealing that internalized HIV-related stigma is associated with impaired access to HIV care [44]. Notably, however, Sayles et al. [44] demonstrated that stigma was not related to having a source for regular HIV care, indicating that the influence on retention in care may be influenced more so by components of the established patient–provider relationship, such as open communication or trust. Sayles et al. [44] also demonstrated that mental health mediated the relationship between HIV-stigma and self-reported medication adherence, underscoring the importance of intervening on psychological health to improve medication adherence, particularly in the context of previous findings linking HIV-related stigma to poor mental health [45–47].

Past research has also found shame to be related to poorer HRQOL among HIV-infected individuals [48–50]. Persons et al. [51] were the first to explore childhood sexual abuse (CSA)–related shame on HRQOL among HIV-infected individuals. Findings revealed that HIV-related shame, but not CSA-related shame, was strongly associated with overall poor HRQOL. Persons et al. also demonstrated that HIV-related shame was a significant predictor of emotional health. Adapting a PTSD model of shame-related symptoms, Persons et al. suggest that the association between shame and avoidant coping can significantly reduce motivations to access health care or social support, or follow a provider's HIV treatment plan. HIV-related shame could also lead to lowered self-efficacy, inhibiting an individual's ability to manage one's health.

Recent research has begun to place more attention on neglected groups within the HIV community. One such group is transgender women, a highly stigmatized and poorly understood segment of the HIV community. Noting that rates of HIV are high and barriers to health care are common in this population [52–54], Sevelius and colleagues explored correlates of HAART non-adherence among transgender women. Results demonstrated that transgender women, regardless of whether they were currently prescribed a HAART regimen, reported significantly lower positive provider interactions. Poor patient–provider relationships can negatively impact retention in care or future initiation of new care, and may be influenced by both the patient (shame), or the provider (stigma and discrimination). Additionally, transgender women reported lower HAART adherence self-efficacy, demonstrating a notably impaired ability to incorporate adherence to their medication regimen into their daily lives. This component of self-efficacy may be inhibited by the multiple stigmatized identities held by the population (i.e., HIV-infected and transgender).

Another underrepresented group among HIV research is black MSM. Bogart and colleagues [55] examined the role of three types of perceived discrimination (i.e., racial, HIV, and gay related) in predicting depressive and PTSD symptoms. Results revealed that possessing high levels of all three variations of perceived discrimination yielded higher levels of depression than reporting high levels in two, or only one category. Regarding PTSD symptoms, the only uniquely predictive variable was HIV-related perceived discrimination. Not only does perceived discrimination predict increased depression and PTSD, Bogart et al. [56] also revealed that perceived racial discrimination uniquely prospectively predicted HAART nonadherence among HIV-infected black MSM. These findings together underscore the nuanced and salient role of perceived discrimination in the lives of HIV-infected black MSM.

Social variables, including stigma, and socially affected correlates, such as shame, have been demonstrated to negatively affect health behaviors and outcomes in HIV-infected individuals. Areas for intervention may include empowerment and resiliency interventions to reduce shame in stigmatized populations, as well as education and contact-based programs for individuals not infected with HIV to reduce prejudicial attitudes towards HIV-infected persons.

Body Image

Body morphological changes are common amongst HIV-infected individuals, especially those who have been on HAART for a prolonged period of time. Although not fully understood, lipodystrophy seems to be a result of the disease process in and of itself, as well as side effects from the usage of HAART. Lipodystrophy is a broad, ill-defined term that includes both fat loss (ie, lipoatrophy) and fat gain (ie, lipohypertrophy). Not only can changes in body morphology lead to deficits in quality of life, but there is emerging evidence that it may also predict HAART nonadherence. Among a large sample (n=1671) of HIV-infected women, Plankey et al. [57] investigated the role of fat loss and fat gain at various body locations on HAART adherence. Results revealed that the area associated with the highest level of nonadherence was abdominal fat gain (OR=1.53), followed by fat gains in the arms and legs, and fat loss in the chest, arms, and legs. These results are important, as it was the first study to examine specific body sites associated with lipodystrophy and how they relate to HAART nonadherence. However, a question that remains is how do body morphological changes affect HAART adherence?

In 2010, Blashill and Vander Wal [58] sought to illuminate the pathways between body dissatisfaction and HAART nonadherence among HIV-infected MSM. This added to the literature in several ways. First, to date, no known study has actually assessed body dissatisfaction—that is, the negative affective and cognitive experience of being dissatisfied with one's appearance—in regard to HAART adherence. Second, Blashill and Vander Wal proposed a new mechanistic model to explain how body dissatisfaction impacts HAART adherence, namely, through depression. Results indicated that body dissatisfaction predicted HAART nonadherence through the mechanism of depression only for men who reported elevated levels of body dissatisfaction, or for those with advanced disease status.

Taken together, these findings indicate that body image is an important variable in the lives of HIV-infected individuals, not only due to concerns related to quality of life, but also adherence to HAART. Body image concerns are likely an even more salient issue among HIV-infected MSM [59], as MSM in general report higher levels of body dissatisfaction compared to heterosexual men [60]. Unfortunately, presently, no known studies have examined interventions to reduce body dissatisfaction among HIV-infected individuals. This is an important area for future research, as reducing body dissatisfaction could also reduce depression and nonadherence, which in turn could have implications for secondary prevention.

Conclusions

The literature on stress, coping, and mental illness among HIV-infected individuals over the last several years has continued to highlight the salience of these psychosocial constructs as they relate to health outcomes among this population. Studies exploring the role of depression continue to be prevalent, which is not surprising, given that depression is a common problem amongst HIV-infected individuals and is related to poorer quality of life, HAART nonadherence, and disease progression. Over the last 2 years the first evidence-based psychosocial intervention to treat depression in combination with a targeted adherence treatment was successfully piloted and subsequently demonstrated efficacy in reducing depression and increasing adherence [25••]. Studies such as this are important as they raise awareness that psychosocial problems, such as depression, can effectively be reduced via evidenced-based psychotherapy, and that addressing depression and adherence can have benefits on HIV-infected individuals' health. Other psychosocial problems, such as anxiety disorders, PTSD, and body dissatisfaction, are also related to poor quality of life, nonadherence, and negative health outcomes. Evidence-based interventions for HIV-infected individuals who present with these concerns are also greatly needed, and would likely benefit from the approach taken with depression—that is, combining interventions to treat the psychosocial problem with targeted self-care interventions. A combination treatment would target multiple health outcomes, and potentially represent a cost-effective approach to addressing comorbid conditions among this population.

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