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Psychological Wellbeing among Individuals Aging with HIV: The Value of Social Relationships

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Abstract

Objective—Utilizing a heterogeneous sample of adults diagnosed with HIV infection, the current study sought to explore associations among age, various dimensions of social support, and psychological and functional wellbeing.

Methods—Cross-sectional data capturing subjective and instrumental support, social interaction, behavioral health service utilization, and psychological wellbeing (i.e., positive affect and depressive symptomatology), as well as physical functioning, were collected from 109 men and women living with HIV. In order to explore age group differences, participants were stratified by age (≤ 54 vs. 55 + yrs.).

Results—Despite endorsing greater medical comorbidity, older adults reported significantly lower depressive symptomatology, greater positive affect, and were less likely to report seeing a behavioral health specialist than their younger counterparts. No age group differences emerged for instrumental support or amount of social interaction. However, older adults reported higher subjective support, which in turn was associated with lower depressive symptomatology, greater positive affect, and non-utilization of behavioral health services.

Conclusion—More attention should be paid to the social environment of individuals diagnosed with HIV, as the quality of social relationships may be particularly important for successful psychological adaptation to HIV.

Keywords

HIV positive; social support; depressive symptoms; positive affect; aging

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Introduction

Recent years have seen significant growth in the number of older adults living with HIV/AIDS. Since the beginning of the epidemic, 13% of all AIDS diagnoses have been among individuals aged 50 and above, and current reports estimate that 15.6% of new HIV/AIDS cases occur among this older cohort[1]. Coupled with advances in the treatment of HIV infection (e.g., Highly Active Anti-Retroviral Therapy (HAART)), HIV/AIDS has transformed into a chronic condition with which increasing numbers of both younger and older adults are aging. As is the case with other chronic health conditions, individuals with HIV often experience challenges that tax coping resources and impact quality of life, including changes in neuropsychiatric functioning,[2] a reduced ability to participate in daily activities,[3] adherence to complicated treatment regimens,[4] and changes in social network composition.[5]

In part due to these physical and neuropsychiatric sequelae, individuals with HIV often experience co-occurring mental health issues. For example, approximately one-third to one-half of individuals with HIV experience depressive symptoms.[6-8] Accordingly, depression is the most common mental health disorder among individuals living with HIV, with rates of diagnosable depression ranging from 20-54%.[9-10] Depression and depressed affect are related to accelerated disease progression, as evidenced by declines in CD4+ cell counts and increases in viral load,[11-12] higher frequencies of health care visits and hospitalizations,[9-10] and reduced survival rates.[13] Furthermore, depression is associated with poorer disease management, as depressive symptoms can interfere with medication adherence and compliance with treatment regimens.[9,14] It is therefore important to identify protective factors and the mechanisms by which they are associated with sustained psychological wellbeing among individuals with HIV/AIDS. Such efforts may lead to reduced rates of depressive disorder and, ultimately, improve quality of life.

One important sociodemographic correlate of depression and overall wellbeing is age. Despite greater medical comorbidity, greater limitations in physical functioning (Nokes et al., 2000),[15] and more rapid disease progression[16-17] among older individuals with HIV, studies suggest that older adults may fare better and be more psychologically resilient than their younger counterparts. Comparisons of younger and older adults with HIV/AIDS, for instance, reveal that older adults experience either comparable or fewer depressive symptoms, as well as greater overall emotional wellbeing, than younger age groups.[15,18] A number of explanations have been offered for these age differences, including greater wisdom, patience and contentment in old age, less threatening perceptions of illness, and less resentment due to being diagnosed with a chronic condition.[19]

Another mechanism that might account for fewer depressive symptoms and greater psychological resilience among older adults is the quality and perceived supportiveness of their social relationships. Both structural (e.g., network size, frequency of contact, living situation, etc.) and functional (e.g., perceived quality and availability of support and satisfaction with support) aspects of social ties have been shown to change over the lifespan. In spite of declining rates of social interactions and reductions in social network size with advancing age,[20-21] research suggests that social ties are no less important in later life than at other points in the lifespan.[22-23] Relationships in later life tend to be of better quality and characterized by greater emotional closeness and less negativity.[24-26] One explanation for these findings is that older adults are more adept at selectively managing their social contacts in order to maximize positive affect. According to Socioemotional Selectivity Theory (SST), with increasing age comes the realization that time is limited.[27] As a result, people are driven to satisfy emotional needs. Thus, as people age, they selectively prune their social networks and shape their social environments in order to spend time with emotionally rewarding partners. By doing so, older adults achieve

increasing emotional closeness in significant relationships, thereby maximizing positive and minimizing negative affect.

Despite evidence for the association between age-related changes in social network functioning and enhanced psychological wellbeing, the literature on this association among individuals with HIV is sparse. Prior work on structural aspects of social ties suggests that older adults living with HIV are more likely to be socially isolated, live alone, and/or have smaller social networks than their younger counterparts.[5,18,28] However, few studies have examined age-related differences in functional aspects of social ties, such as perceived quality and availability of support, and the impact of such differences on depression and overall psychological wellbeing among individuals with HIV. In one of the only studies to specifically examine age group differences in the relationship between perceived social support and affect among HIV-infected men, social support was shown to have a greater impact on both negative and positive moods among older relative to younger men.[29]

The general lack of attention to age-related variability in functional aspects of social ties is unfortunate given that functional aspects have been shown to be just as, if not more, important for psychological wellbeing than structural aspects of social ties.[30-31] Among individuals with HIV/AIDS, social support has been linked to factors such as less distress and greater positive affect,[29,32] better medication adherence,[14,33] more consistent medical appointment attendance,[34] and slower disease progression.[35] Furthermore, functional and structural features of social ties are often distinct, and in some cases uncorrelated. For example, Crystal et al. (2003) found that although older adults with HIV were more likely to live alone, there were no age group differences in perceived tangible or emotional support.[18] Finally, functional and structural aspects of social ties can differentially impact health outcomes,[36-37] further highlighting the need to study multiple facets of social relationships among individuals with HIV.

To address these gaps in the literature, the current study sought to explore the association between age and both functional and structural aspects of social network functioning among individuals aging with HIV. Specifically, we were interested in examining the extent to which functional and structural aspects of social ties accounted for, or statistically mediated, age group differences in depressive symptoms and positive affect. A better understanding of the psychosocial processes underlying the relationship between age and psychological wellbeing can help inform the treatment and care of both younger and older adults living with the chronic stress of HIV infection, and potentially delay the onset and progression of depression among this vulnerable cohort. Thus, we first examined the association between age and various indices of physical and psychological wellbeing. We hypothesized that despite greater physical comorbidity and pain, older adults with HIV would report fewer depressive symptoms and more positive affect than their younger counterparts. Next, we examined whether functional and structural aspects of social ties played a role in the observed age group differences in psychological wellbeing. We hypothesized that older adults would report greater subjective support, or higher perceived quality of social support, from network members, and that this would account for age differences in depression and positive affect.

Methods

Participants and Procedure

Data for this study were derived from the HIV-Aging Study, a cross-sectional study designed to investigate age differences in rates of mental health and substance abuse conditions and behavioral health service utilization among adults with HIV infection. Study recruitment and data collection occurred between October 2004 and September 2005. A detailed description of the sampling and recruitment procedures employed in this study is provided elsewhere[38] and briefly summarized here.

Participants for the study were recruited from two sources--the Philadelphia Center for AIDS Research (CFAR) clinical registry and coordinating CFAR clinics. A stratified random sampling procedure (based on gender and age group criteria) was used to recruit individuals from the CFAR registry. The registry included adults receiving treatment for HIV at local infectious disease clinics who had consented to being contacted for research recruitment. Participants from the CFAR coordinating clinics, however, were referred by clinical staff and/or self referral.

Two hundred and forty-four patients who met age and gender group stratification criteria and whose physicians provided consent were contacted by phone and recruited for study participation. Of those contacted, 109 (44%) agreed to participate. All participants met the following inclusion criteria: diagnosed as HIV+, at least 18 years of age, English-speaking, and cognitively intact (i.e., Mini-Mental State Examination (MMSE) score > 16). It is important to note that consistent with findings from other studies of individuals with HIV,[39] older women were not equally represented in our sample. This was primarily due to the fact that women represented a smaller proportion of patients in both the CFAR clinics and registry, thus making recruitment difficult.

In comparison to those recruited from the CFAR registry (n=72), study participants recruited from coordinating clinics/referrals (n=37) were significantly younger ($p < .001$), and were more likely to be married ($p < .001$), to have received behavioral health treatment within 90 days prior to the study interview ($p = .019$), and to have agreed to participate in the study ($p<.001$). However, there were no significant differences between the two recruitment groups in terms of gender, race, education, social support, work status, income, insurance, or mental health/substance abuse status.

During the study interviews, trained research assistants collected information on sociodemographic characteristics, psychiatric and physical health, alcohol and substance use, cognitive functioning, social support, and medication adherence. Prior to starting the interview, all participants provided written consent in accordance with the University of Pennsylvania Institutional Review Board (IRB) regulations. Interviews took approximately 3 hours to complete. Upon completion of the interview, participants were compensated with $40 for their time and effort.

Measures

Sociodemographic variables—Variables including age, gender, sexual orientation, marital status, education, and ethnicity were assessed by questionnaire at baseline. Table 1 presents a summary of the sociodemographic characteristics of the entire sample.

Medical comorbidity—The Medical History Checklist subscale of the Multilevel Assessment Instrument (MAI)[40] was used to assess for the presence or absence of 23 health conditions (e.g., diabetes, heart trouble, asthma). The total number of reported health conditions was summed to create a composite score.

Pain severity—Pain severity was measured with one item from the Medical Outcomes Study 12-Item Short Form (SF12).[41] Participants were asked to report how much bodily pain they had experienced during the previous 4 weeks. Responses were measured on a 6-point Likert scale (1=*none*, 6=*very severe*). Depending on the analyses conducted, pain severity was treated as either a continuous or dichotomized variable (0=*none-mild*, 1=*moderate to severe*).

Functional and structural social support—An abbreviated version of the Duke Social Support Index[42] was used to assess 3 dimensions of social support: subjective support, instrumental support, and social interactions. The abbreviated measure, which was specifically

developed to facilitate the measure of support among older adults and those with a medical illness, included 23 items. Subjective support was assessed with 7 items measured on a Likert scale (1=*hardly ever*, 3=*most of the time*). These items included how much participants felt satisfied with, understood, and listened to by family and friends. Instrumental support was assessed with 13 items measured on a dichotomous scale (0=*no*, 1=*yes*) and included items on whether family and friends helped with a variety of tasks (e.g., help when sick, run errands, help with money). Finally, frequency of social interaction with family and friends was assessed with 4 items. For each of these subscales, all items were summed, thus creating 3 composite scores.

Depressive symptoms—The depression module of the Patient Health Questionnaire (PHQ-9)[43] was used to measure depressive symptoms. Respondents reported how often they experienced each of 9 symptoms (0=*not at all*, 3=*nearly every day*) during the previous 2 weeks. Items were summed and treated as a continuous variable.

Positive affect—Six items comprising the Vigor subscale of the shortened, 37-item Profile of Mood States (POMS)[44] were used to assess positive affect. The POMS is an adjective checklist assessing how participants have felt during the past seven days, with each item measured on a 5-point scale (0=*not at all*, 4=*extremely*). Adjectives measuring vigor included “cheerful”, “energetic”, and “full of pep”.

Behavioral health service utilization—Participants were asked whether they had seen a therapist -- psychiatrist, psychologist, counselor, or social worker-- for any drug, psychological, or emotional problems during the previous 90 days.

Analytic Strategy

First, descriptive, univariate analyses were run to compute means and standard deviations for continuous outcomes and percentages for binary outcomes. Second, relationships among sociodemographic factors, age, functional and structural support, depressive symptoms, and positive affect were examined in order to identify potential covariates for inclusion in subsequent regression models. Tests of significance included zero-order correlations, *t* tests for equality of means, and chi-square tests for continuous and dichotomous outcomes, respectively. Finally, a series of regression models were run to examine mean group differences and mediating effects. Mediating effects were assessed by comparing main effects of primary covariates with and without mediators in the model. For models containing indices of social support, because social support data were unavailable for a notable proportion of subjects (i.e., >10% of the sample), listwise deletion was used to omit cases with missing data. It is important to note, however, that statistical comparisons of participants with and without missing data yielded no significant differences in any of the following variables: age group membership, depressive symptoms, vigor, medical comorbidity and pain severity.

In order to explore age group differences, participants were stratified by age (<54 = younger adults vs. 55+ = older adults). Thus, age was treated as a dichotomous variable (0=*younger adults*, 1=*older adults*) in all analyses. Our cutoff of 55 and older as the threshold for “older adult” classification is slightly more conservative than other work with samples of individuals with HIV/AIDS, which has tended to use a threshold of 50 and older.[1] Nevertheless, the cutoff of 55+ was chosen due to the fact that the majority of the work on age group differences in social network functioning and psychological and emotional wellbeing outlined above has operationally defined “older adults” using a minimum threshold of 55 years and above.[24-27]

Results

Sample Characteristics

Table 1 presents the sociodemographic characteristics of the sample. Participants were a mean age of 49.42 (SD=14.05) years and primarily African American (63.9%). Roughly half of the sample was male (55%), and 51.9% reported being gay or bisexual. More than half of the sample lived with at least one other person (56.9%) and 19.3% were married. Finally, participants reported a mean of 13.06 (SD=3.79) years of education and 9.87 (SD=6.15) years since being diagnosed with HIV infection.

In determining whether to include sociodemographic characteristics as confounders in subsequent analyses of the relationships between age group, social support, and physical and psychological outcomes, we examined bivariate associations between the sociodemographic variables and key study variables (i.e., age group, medical comorbidity, pain, social support indices, depressive symptoms, and vigor,). Analysis of age group differences in sociodemographic characteristics yielded only one significant finding--older adults were more likely to be men (74.3% vs. 45.9%; χ^2=7.71, p=.005). We did not, however, control for gender in the analyses of the age-outcome relationships, because gender was not significantly related to any of the key study variables. Furthermore, zero-order correlations revealed that education was positively associated with subjective support (r=0.40, p<.001) and vigor (r=0.34, p<.001), and negatively associated with depressive symptoms (r=-0.26, p=.01) and pain severity (r=-0.25, p=.01). Caucasians also reported slightly greater levels of subjective support (F=4.86, p=0.03). Finally, married individuals (F=18.66, p=.004) and those living with at least one other person (F=4.02, p=.05) reported less pain severity. Nonetheless, because education, ethnicity, living situation, and marital status were not associated with age group (p>.05), we did not control for these variables as confounders in the outcome analyses involving age.

Age Group Differences in Physical and Psychological Functioning and Functional and Structural Social Support

Next, age group differences in medical comorbidity, pain severity, depressive symptoms, positive affect, behavioral health service utilization, and social support indices were assessed. As seen in Table 2, despite reporting a greater number of medical conditions (F=4.20, p=.04), older adults endorsed fewer depressive symptoms (F=5.97, p=.01) and more vigor (F=5.51, p=.02), and were less likely to have visited a behavioral health specialist (OR=0.36, 95% CI=0.13, 0.99, p=.04) than their younger counterparts. Table 3 presents results from analyses of age-group differences in social support variables. Although there were no differences between younger and older adults with respect to social interactions or instrumental support, older adults did report significantly greater subjective support (F=4.05, p=.04) than their younger counterparts.

The Mediating Role of Functional and Structural Social Support

Having examined the associations between age and physical and mental health and social support, we next were interested in relationships between social support and psychological outcomes. Greater subjective support was significantly associated with fewer depressive symptoms (b=-.81, p<.001), greater vigor (b=.60, p<.001), and a lower odds of having seen a behavioral health specialist (OR=0.75, 95% CI=0.64, 0.88, p<.001), while greater social interaction only was related to greater vigor (b=.58, p=.005). Instrumental support was unrelated to any of the psychological variables.

In order to assess whether functional and structural indices of social support mediated, or statistically accounted for, the relationship between age group and depressive symptoms, vigor, and behavioral health service utilization, a series of regression models were run.[45] In each of

these models, age group and social support composites were entered in the first and second steps, respectively (Table 4). Results from these analyses indicated that the significant associations of age with depressive symptoms (b=-2.39, p=.04) and vigor (b=2.56, p=.03) in the first stage regressions became non-significant with the addition of subjective support to the second stage models. In contrast, the association between age group and behavioral health service utilization was not diminished by the introduction of subjective support. Similarly, social interactions and instrumental support did not reduce the significance of the age relationship with any of the outcome variables, indicating that social interaction and instrumental support were not mediators of the relationships involving age.*

Discussion

Individuals aging with HIV often experience chronic challenges that may tax coping resources and negatively impact their mental health. Thus, in an effort to improve the quality of life of individuals with HIV/AIDS, it is important to identify factors that are related to fewer depressive symptoms and sustained psychological wellbeing. There is a good deal of evidence suggesting that older adults are better able to regulate their emotions in the face of negative life circumstances (e.g., chronic illness) and that this may be attributed, in part, to the quality, as opposed to quantity, of their social relationships.[27,46] Furthermore, a robust literature supports the notion that functional aspects of social relationships are just as important as structural aspects in predicting psychological wellbeing.[30-31] However, the majority of prior work examining associations among age, physical and psychological wellbeing, and social relationships among individuals with HIV has yielded mixed results, utilized homogeneous samples, and focused on structural, rather than functional, dimensions of social ties. Thus, the current study sought to build upon this work by exploring age group differences in physical health, depressive symptoms, and positive affect, as well as differences in both structural and functional aspects of social support, among a heterogeneous group of adults with HIV.

As hypothesized, comparisons of younger and older adults revealed that although older adults experienced greater medical comorbidity, they reported fewer depressive symptoms, greater vigor, and were less likely to have seen a behavioral health specialist than younger adults. These results are in line with prior work that has shown that older adults with HIV/AIDS experience fewer depressive symptoms when compared to younger adults.[18] Prior work on patients experiencing other chronic conditions, such as chronic pain, has yielded comparable findings, whereby older adults report fewer depressive symptoms than their younger counterparts.[47] One mechanism that may account for age group differences in psychological wellbeing among individuals with chronic health conditions such as HIV/AIDS is the perceived quality of their social ties.[29] Results from this study, which used a multifaceted measure of social support to capture both structural and functional dimensions of social relationships, lend support to this notion.

Whereas previous work with individuals with HIV/AIDS has demonstrated that structural aspects of social ties, such as living situation (i.e., alone vs. with others) and network size, may be compromised among older relative to younger individuals with HIV/AIDS,[5,18,28] no significant differences in living situation or the frequency of social interactions were observed for participants in the current sample. Furthermore, there were no notable differences in the amount of instrumental support received by those in the younger and older cohorts. However, as hypothesized, significant age group differences in the quality, or subjectively perceived supportiveness, of social ties did emerge. Older adults reported significantly greater subjective support relative to their younger counterparts, a finding that is consistent with other investigations of age-related variation in the quality of social support over time.[24,26] Moreover,

*The pattern of these mediation results remained consistent, even after controlling for the effects of medical comorbidity and pain severity.

whereas greater subjective support was associated with fewer depressive symptoms, more vigor, and lower odds of having seen a behavioral health specialist across age groups, with the exception of an association between social interactions and vigor, there were no other significant associations among instrumental support or the frequency of social interactions and these variables. This latter set of findings parallels results from prior work and suggests that perceived satisfaction with social support may be more strongly associated with psychological wellbeing than the amount of support received.[30-31]

Finally, as predicted, subjective support, but not instrumental support or the frequency of social interactions, appeared to statistically mediate, or account for, the associations between age group and both depressive symptoms and vigor. While the exact mechanism underlying these results is unknown, it is possible that the findings reflect a developmental process whereby individuals are motivated to proactively prune their social networks over time in an effort to increase emotional closeness, thereby maximizing positive affect and minimizing negative affect.[27] Thus, one would expect that older adults would report higher quality relationships, and that this greater subjective support would, in turn, predict fewer depressive symptoms and greater vigor. This was indeed the case with the current sample.

Despite the significant mediating effect of subjective support on depressive symptoms and vigor, it is important to note that in the regression analyses, subjective support did not significantly mediate the relationship between age group and behavioral health care utilization. There are numerous explanations for these findings. First, given that the regression analyses testing for mediation were completed for a subset of the full sample and the overall frequency of utilization was relatively low, it is possible that the analyses lacked the power to detect statistically significant effects. Although the findings did not meet statistical significance, mediation analyses did suggest a trend level association whereby the addition of subjective support to the model reduced the significance of the main effect of age group on utilization. Second, due to the fact that older adults in this sample experienced less depressive symptoms, they accordingly may not have needed to use behavioral health services at the same rate as their younger counterparts, irrespective of their perceived social support. Finally, the findings may be attributed to factors identified in previous work as reducing the likelihood that older persons are referred to or utilize services from specialty behavioral health clinics, such as insufficient insurance coverage and perceived stigma associated with mental illness and mental health treatment.[48-50]

While the results from this work have important implications for the wellbeing and care of individuals aging with HIV/AIDS, several issues should be considered when evaluating the findings. First, although the results suggest that subjective support mediated the age-psychological wellbeing link, we cannot rule out the possibility that additional factors such as age-related variability in coping style, life experiences, and health expectancies also play a role in accounting for age-related differences in depressive symptoms and positive affect among individuals with HIV/AIDS.[19,47,51] Future work would benefit from collecting data that taps multiple constructs from larger samples, thereby allowing for analysis of models that capture these complex associations and mechanisms.

Second, although results from predictive and mediation models are presented, it is important to reserve caution when interpreting the findings. In light of the cross-sectional nature of this study, we cannot infer any causal effects, nor can we speak to the sequential ordering of the relationships among the variables. For instance, the current study posits that perceptions of high quality social support foster feelings of self-worth, belonging, and emotional closeness, and thus predict fewer depressive symptoms and greater positive affect. However, it is possible that the relationship between social support and psychological wellbeing is reciprocal in nature. In other words, individuals experiencing distress may have a more negative outlook that results

in harsher, more critical judgments of network members and dissatisfaction with social relationships.[52-54] Additionally, negative affect may precipitate higher frequencies of negative interactions with network members. As a result, depressive symptoms and low positive affect may impair relationship functioning and the overall perceived quality of one's relationships. In order to address these issues, future investigations should incorporate prospective, multi-wave, longitudinal designs. Doing so will enable examination of both reciprocal and non-reciprocal causal models, as well as the lagged associations of these variables upon one another over time.

Conclusion

This study sought to explore psychosocial factors that are associated with reduced depressive symptomatology and greater positive affect among individuals aging with a chronic, neuropsychological condition. While prior work has demonstrated that older adults with HIV/AIDS may be particularly susceptible to social isolation, smaller social networks, and declines in psychological wellbeing, results presented here suggest a different pattern of findings. Older and younger adults reported comparable levels of instrumental support and social interactions, while older adults reported significantly greater subjective support and psychological wellbeing. Subjective social support, in turn, was associated with fewer depressive symptoms and greater positive affect. These findings point to the value of examining multiple facets of the social environment of individuals diagnosed with HIV/AIDS, as opposed to focusing solely on structural aspects.

Greater understanding of the exact mechanisms by which social relationships influence depression and positive affect among individuals with HIV/AIDS could help better inform efforts geared towards sustaining and/or improving psychological wellbeing among this patient population. For example, examining the multiple processes that link social ties to wellbeing may shed light on the extent to which various dimensions of social relationships serve as health-protective resources. This information, in turn, could aid in the design of interventions that utilize social resources to promote successful psychological adaptation among both younger and older adults aging with HIV/AIDS.

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References

1. Centers for Disease Control and Prevention. HIV/AIDS surveillance report: Cases of HIV infection and AIDS in the United States and dependent areas 2005;17
2. Baldewicz RR, Leserman J, Silva SG, et al. Changes in neuropsychological functioning with progression of HIV-1 infection: Results of an 8-year longitudinal investigation. AIDS Behav 2004;8:345–355. [PubMed: 15475681]
3. O'Dell MW, Hubert HB, Lubeck DP, et al. Physical disability in a cohort of persons with AIDS: Data from the AIDS time-oriented health outcome study. AIDS 1996;10:667–673. [PubMed: 8780822]
4. Tsasis P. Health-related quality-of-life measurements in HIV/AIDS care. AIDS Patient Care and STDs 2000;14:427–438. [PubMed: 10977972]
5. Shippy RA, Karpiak SE. The aging HIV/AIDS population: Fragile social networks. Aging & Mental Health 2005;9:246–254. [PubMed: 16019278]
6. Eller LS, Corless I, Haugen B, et al. Self-care strategies for depressive symptoms in people with HIV disease. Journal of Advanced Nursing 2005;51:119–130. [PubMed: 15963183]
7. Swartz HA, Markowitz JC, Sewell MC. Psychosocial characteristics of pregnant and nonpregnant HIV-seropositive women. Psychiatric Services 1998;49:1612–1614. [PubMed: 9856626]

8. Lyketsos CG, Hoover DR, Guccione M, et al. Depressive symptoms as predictors of medical outcomes in HIV. JAMA 1993;270:2563–2567. [PubMed: 7901432]
9. Valente SM. Depression and HIV disease. J Assoc Nurse AIDS Care 2003;14:41–51.
10. Williams P, Narciso L, Browne G, et al. The prevalence, correlates, and costs of depression in people living with HIV/AIDS in Ontario: Implications for service directions. AIDS Educ Prev 2005;17:119–130. [PubMed: 15899750]
11. Burack JH, Barret DC, Stall RD, et al. Depressive symptoms and CD4 lymphocyte decline among HIV-infected men. JAMA 1993;270:2568–2573. [PubMed: 7901433]
12. Ironson G, O'Cleirigh C, Fletcher M, et al. Psychosocial factors predict CD4 and viral load change in men and women with human immunodeficiency virus in the era of highly active antiretroviral treatment. Psychosomatic Medicine 2005;67:1013–1021. [PubMed: 16314608]
13. Mayne TJ, Vittinghoff E, Chesney MA, et al. Depressive affect and survival among gay and bisexual men infected with HIV. Archives of Internal Medicine 1996;156:2233–2238. [PubMed: 8885823]
14. Catz SL, Kelly JA, Bogart LM, et al. Patterns, correlates, and barriers to medication adherence among persons prescribed new treatments for HIV disease. Health Psychology 2000;19:124–133. [PubMed: 10762096]
15. Nokes KM, Holzemer WL, Corless IB, et al. Health-related quality of life in persons younger and older than 50 who are living with HIV/AIDS. Research on Aging 2000;22:290–310.
16. Balslev U, Monforte AD, Stergiou G, et al. Influence of age on rates of new AIDS-defining diseases and survival in 6546 AIDS patients. Scand J Infect Dis 1997;29:337–343. [PubMed: 9360246]
17. Viard JP, Mocroft A, Chiesi A, et al. Influence of age on CD4 cell recovery in human immunodeficiency virus-infected patients receiving highly active antiretroviral therapy: Evidence from the Eurosida Study. J Infect Dis 2001;183:1290–1294. [PubMed: 11262215]
18. Crystal S, Akincigil A, Sambamoorthi U, et al. The diverse older HIV-positive population: A national profile of economic circumstances, social support, and quality of life. JAIDS: Journal of Acquired Immune Deficiency Syndromes 2003;33:S76–S83.
19. Siegel K, Raveis V, Karus D. Perceived advantages and disadvantages of age among older HIV infected adults. Research on Aging 1998;20:686–671.
20. Carstensen LL. Social and emotional patterns in adulthood: support for socioemotional selectivity theory. Psychol Aging 1992;7:331–338. [PubMed: 1388852]
21. Cumming, E.; Henry, WE., editors. Growing old: The process of disengagement. New York: Basic Books; 1961.
22. Antonucci, TC. Personal characteristics, social networks, and social behavior. In: Binstock, RH.; Shanas, E., editors. Handbook of aging and the social sciences. Vol. 2nd. New York: Van Nostrand Reinhold; 1985. p. 94-128.
23. Sherbourne CD, Meredith LS, Rogers W, et al. Social support and stressful life events: age differences in their effects on health-related quality of life among the chronically ill. Qual Life Res 1992;1:235–46. [PubMed: 1299454]
24. Akiyama H, Antonucci T, Takahashi K, et al. Negative interactions in close relationships across the life span. Journal of Gerontology: Pyschological Sciences 2003;58B:P70–P79.
25. Fredrickson BL, Carstensen LL. Choosing social partners: How old age and anticipated endings make us more selective. Psychology and Aging 1990;5:335–347. [PubMed: 2242238]
26. Rook KS. Positive and negative social exchanges: Weighing their effects in later life. Journal of Gerontology: Social Sciences 1997;52B:S190–S199.
27. Carstensen LL, Isaacowitz DM, Charles ST. Taking time seriously: A theory of socioemotional selectivity. American Psychologist 1999;54:165–181. [PubMed: 10199217]
28. Emlet CA. An examination of the social networks and social isolation in older and younger adults living with HIV/AIDS. Health Soc Work 2006;31:299–308. [PubMed: 17176977]
29. Chesney MA, Chambers DB, Taylor JM, et al. Social support, distress, and well-being in older men living with HIV infection. JAIDS: Journal of Acquired Immune Deficiency Syndromes 2003;33:185–193.
30. Barrera M. Distinctions between social support concepts, measures, and models. American Journal of Community Psychology 1986;14:413–445.

31. Sarason, BR.; Pierce, GR.; Sarason, IG. Social support: The sense of acceptance and the role of relationships. In: Sarason, BR.; Sarason, IG.; Pierce, GR., editors. Social support: An interactional view. New York: Wiley; 1990. p. 97-128.
32. Kelly JA, Murphy SA, Bahr GR, et al. Factors associated with severity of depression and high-risk sexual behavior among persons diagnosed with human immunodeficiency virus (HIV) infection. Health Psychology 1993;12:215–219. [PubMed: 8500451]
33. Gonzalez JS, Penedo FJ, Antoni MH, et al. Social support, positive states of mind, and HIV treatment adherence in men and women living with HIV/AIDS. Health Psychology 2004;23:413–418. [PubMed: 15264978]
34. Catz SL, McClure JB, Jones GN, et al. Predictors of outpatient medical appointment attendance among persons with HIV. AIDS Care 1999;11:361–373. [PubMed: 10474634]
35. Leserman J, Jackson ED, Petitto JM, et al. Progression to AIDS: the effects of stress, depressive symptoms, and social support. Psychosom Med 1999;61:397–406. [PubMed: 10367622]
36. Broadhead WE, Gehlbach SH, DeGruy FV, et al. Functional versus structural social support and health care utilization in a family medicine outpatient practice. Medical Care 1989;27:221–233. [PubMed: 2784523]
37. Murrell SA, Norris FH, Chipley QT. Functional versus structural social support, desirable events, and positive affect in older adults. Psychol Aging 1992;7:562–570. [PubMed: 1466825]
38. Zanjani F, Saboe K, Oslin D. Age difference in rates of mental health/substance abuse and behavioral care in HIV-positive adults. AIDS Patient Care STDS 2007;21:347–55. [PubMed: 17518527]
39. Pitts M, Grierson J, Misson S. Growing older with HIV: A study of health, social, and economic circumstances for people living with HIV in Australia over the Age of 50 years. AIDS Patient Care and STDS 2005;19:460–465. [PubMed: 16053403]
40. Lawton MP, Moss M, Fulcomer MC, et al. A research-and science-oriented multilevel assessment instrument. Journal of Gerontology 1982;37:91–99. [PubMed: 7053405]
41. Ware J Jr, Kosinski M, Keller SD. A 12-item short-form health survey: construction of scales and preliminary tests of reliability and validity. Med Care 1996;34:220–233. [PubMed: 8628042]
42. Koenig HG, Westlund RE, George LK, et al. Abbreviating the Duke Social Support Index for use in chronically ill elderly individuals. Psychosomatics 1993;34:61–69. [PubMed: 8426892]
43. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. Journal of General Internal Medicine 2001;16:606–613. [PubMed: 11556941]
44. Curran SL, Andrykowski MA, Studts JL. Short form of the Profile of Mood States (POMS SF): Psychometric information. Psychological Assessment 1995;7:80–83.
45. Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. J Pers Soc Psychol 1986;51:1173–1182. [PubMed: 3806354]
46. Lawton MP, Kleban MH, Rajagopal D, et al. The dimensions of affective experience in three age groups. Psychology and Aging 1992;7:171–184. [PubMed: 1610505]
47. Green CR, Tait RC, Gallagher RM. The unequal burden of pain: Disparities and differences. Pain Medicine 2005;6:1–2.
48. Bartels SJ, Coakley EH, Zubritsky C, et al. Improving access to geriatric mental health services: A randomized trial comparing treatment engagement with integrated versus enhanced referral care for depression, anxiety, and at-risk alcohol use. The American Journal of Psychiatry 2004;161:1455–1462. [PubMed: 15285973]
49. Robb C, Haley WE, Becker LA, et al. Attitudes towards mental health care in younger and older adults: Similarities and differences. Aging & Mental Health 2003;7:142–152. [PubMed: 12745392]
50. Arean PA, Alvidrez J, Barrera A, et al. Would older medical patients use psychological services? The Gerontologist 2002;42:392–398. [PubMed: 12040142]
51. Watson TL, Blanchard-Fields F. Thinking with your head and your heart: Age differences in everyday problem-solving strategy preferences. Aging, Neuropsychology, & Cognition 1998;5:225–240.
52. Burns DD, Sayers SL, Moras K. Intimate relationships and depression: Is there a causal connection? Journal of Consulting and Clinical Psychology 1994;62:1033–1043. [PubMed: 7806712]

53. Gotlib, IH.; Beach, SRH. A marital/family discord model of depression: Implications for therapeutic intervention. In: Jacobson, NS.; Gurman, AS., editors. Clinical Handbook of Couple Therapy. New York: Guilford; 1995. p. 411-436.

54. Wortman, CB.; Conway, TL. The role of social support in adaptation and recovery from physical illness. In: Cohen, S.; Syme, SL., editors. Social support and health. Orlando, FL: Academic Press Inc.; 1985. p. 281-302.

Table 1

Sample Characteristics (N=109).

Continuous Variables	**Mean (SD)**	**Range**
Age (years)	49.42 (14.05)	21-88
Years of education	13.06 (3.79)	2-29
Years since HIV+ diagnosis	9.87 (6.15)	0.67-21
Dichotomous Variables	N (%)	
Male	60 (55.0)*	
Caucasian[1]	35 (32.4)	
Married	21 (19.3)	
Live with others	62 (56.9)	
Gay/Bisexual	56 (51.4)	

Note. Asterisk (*) denotes significant age group difference (p<.01).

[1]The remainder of the sample was African American (63.9%) or “other” (3.7%).

Table 2

Age group differences in Physical and Psychological Well-Being.

	Age Group			
	All (N=109)	**Younger Adults (n=74)**	**Older Adults (n=35)**	***p***
Medical conditions	3.16 (2.69)	2.79 (2.66)	3.91 (2.64)	.04
Pain severity	2.84 (1.52)	2.86 (1.54)	2.79 (1.49)	.83
Depressive symptoms	6.87 (5.70)	7.78 (5.61)	4.90 (5.49)	.01
Vigor	11.61 (5.06)	10.86 (4.93)	13.36 (4.99)	.02
Mental health/Substance abuse visit	32 (29.4%)	26 (37.1%)	6 (17.6%)	.03

Notes. Cell values represent means and standard deviations for continuous variables and counts and percentages for dichotomous variables. Observed ranges for continuous variables were: medical conditions (0-11), pain severity (1-6), depressive symptoms (0-24), and vigor (0-23). Pairwise deletion was used for cases with missing data.

Table 3

Age group differences in social support variables.

	Age Group			
	All	**Younger Adults**	**Older Adults**	***p***
Social interaction	6.48 (2.58)	6.42 (2.48)	6.61 (2.82)	.74
Instrumental support	7.65 (3.42)	7.72 (3.42)	7.53 (3.48)	.80
Subjective support	16.91 (3.30)	16.42 (3.24)	17.87 (3.20)	.04

Notes. Cell values represent means and standard deviations. Observed ranges were: social interaction (1-13), instrumental support (0-12), and subjective support (10-21). Pairwise deletion was used for cases with missing data.

Table 4

Effects of age group and subjective support on depressive symptoms and vigor (n=88).

Variable	Model 1: Depressive Symptoms		Model 2: Vigor	
	b (SE)	p	b (SE)	p
Step 1				
Constant	7.32 (0.66)	<.001	10.80 (.63)	<.001
Age group	-2.39 (1.15)	.04	2.56 (1.12)	.03
Step 2				
Constant	20.11 (2.53)	<.001	1.90 (2.68)	.48
Age group	-1.59 (1.02)	.12	1.67 (1.09)	.13
Subjective Support	-.77 (.15)	<.001	.54 (.16)	.001
ΔR^2	0.23, p<.001		0.11, p=.001	

Notes. Models 1 and 2: b (SE) = unstandardized regression coefficient (standard error).

Model 3: OR (95% CI) = odds ratio (95% confidence interval). Sample size differs from parent sample due to listwise deletion of missing cases for each model.