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HEALTH RELATED QUALITY OF LIFE AND PSYCHOSOCIAL CORRELATES AMONG HIV-INFECTED ADOLESCENT AND YOUNG ADULT WOMEN IN THE US

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Abstract

In this study HIV health-related quality of life (HIV-HRQOL) is examined among 179 behaviorally infected adolescent and young adult women. Modifiable psychosocial variables including depression, stigma, social support, and illness acceptance, and the biological end-points of CD4 cell count and viral load were explored in relation to HIV-HRQOL. The three factors of the HIV-HRQOL measure include current life satisfaction, illness related anxiety and illness burden. Bivariate linear regression analysis demonstrated statistically significant associations for all psychosocial variables and HIV-HRQOL factors ($p < .01$), but not for biological end-points. In multivariate linear regression analysis significant associations remained between: depression ($p = .006$), illness acceptance ($p < .001$), social support ($p = .001$), and current life satisfaction, and depression ($p = .012$), illness acceptance ($p = .015$), and illness burden. A trend in association was noted for HIV stigma, with current life satisfaction and illness related anxiety but did not reach statistical significance ($p = .097$ and $p = .109$ respectively). Interventions that effectively decrease stigma and depression and increase social support and illness acceptance will likely improve the well-being and quality of life of HIV-infected adolescent women.

Health-related quality of life (HRQOL) is an important measure of patient well-being and, together with biological end-points, captures a more robust understanding of intervention effectiveness and factors influencing significant facets of patient life. This is a particularly important construct to understand in relation to HIV/AIDS, given the chronic and fatal nature of this illness, and the social stigma attached to infection. HIV-HRQOL may be a particularly crucial measure of treatment and care programs for behaviorally infected adolescent and young adult women because of the unique stress experienced during this stage of cognitive and sexual development. Further, behaviorally infected youth describe increased concerns over stigma compared with perinatally infected youth, and challenges in coping with the physical and social aspects of illness (Orban et al., 2010).

In the United States, adolescent and young adult women are an important part of the population of people living with HIV/AIDS (PLWHA), yet limited research has explored illness-related quality of life and correlates of this measure in this population. It is currently estimated that 23,524 adolescents and young adults between the ages of 13 and 24 are living with HIV/AIDS, representing an increase of 25% in this population from 2004. Women consistently comprised approximately 26% of PLWHA in this age group from 2004 to 2007 based on national surveillance statistics (Centers for Disease Control and Prevention [CDC], 2007a). Surveillance from adolescent medicine clinics report an HIV prevalence rate (0.4%) that is the same for young men and women, and data from Job Corps entrants demonstrates an increase in HIV prevalence among female entrants between 1993 and 1997 (CDC, 2007B).

The multidimensional construct of HRQOL has been employed among PL-WHA to capture dimensions of patient well-being, including physical function and symptoms, performance of social roles, emotional status, and cognitive functioning (Clayson et al., 2006; Croog, & Levine, 1989; Wu et al., 2000; Garvie, Lawford, Banet, & West, 2009). Additional yet less commonly captured dimensions include sexual relationship and environmental well-being (Solomon 2009; Thomas et al, 2005). HRQOL has been accepted as an important metric for the evaluation of HIV-related services ranging from clinical interventions to psychological, social, and ancillary services (Chin, Botsko, ehar, & Finkelstein, 2009; Liu et al., 2006; Wu et al., 2000). It has also been recognized as an important tool in understanding individual and psychosocial factors that influence patient well-being. One of the key aspects of this constructs is that it facilitates a patient's perspective of their own health as an outcome measure (Clayson et al., 2006; Garvie et al., 2009). Coupled with clinical indicators, perceived well-being on the part of PLWHA develops a more complete and robust understanding of the impact of services geared toward this population and important factors to address in interventions.

Depression (Sherbourne et al., 2000), stigma (Busch, Relber, Stevens, & Polk, 2008; Greeff et al., 2009; Subramanian, Gupte, Dorairaj, Preiannan, & Mathai, 2009; Larios, Davis, Gallo, Heinrich, & Talavera, 2009; Sowell et al., 1997; Thomas et al., 2005), social support (Thomas et al., 2005; Yadav 2010) and illness acceptance (Carrico et al., 2006; Evers et al., 2002) are psychosocial variables shown to significantly influence HRQOL among PLWHA. HIV-infected individuals who are depressed or anxious report reduced HRQOL (Sherbourne et al., 2000), as do persons who report higher levels of stigma (Buseh et al., 2008; Greeff et al., 2009; Larios et al., 2009; Sowell et al., 1997; Subramanian et al., 2009; Thomas et al., 2005). Stigma may impact depression in that persons who perceive greater stigma are more likely to be depressed and patients who suffer depression may experience greater stigma as a result. A correlation between depression and stigma has been demonstrated in populations of PLWHA (Pearson et al., 2009; Wu et al., 2008), as well as among persons experiencing other forms of illness (Chung, Pan, & Hsiung, 2009; Corrigan 2003). Depression was found to moderate the relationship between stigma and HRQOL among persons diagnosed with

schizophrenia (Staring, Vender Gaag, Van den Berge, Duivenvoorden, & Mulder, 2009). Stigma has also demonstrated a negative relationship with disclosure of HIV status, which in turn influences the social support available to PLWHA (Greeff et al., 2009; Smith, Rossetto, & Peterson, 2008; Subramanian et al., 2009). Thus, PLWHA reporting lower social support also report higher stigma and lower HRQOL (Subramanian et al. 2009; Wu et al., 2008). The relationship of illness acceptance to depression, stigma, and social support has been less studied among PLWHA populations; however, the coping process related to acceptance of HIV infection is likely influenced by these factors.

This article advances current research literature by presenting descriptive data of the HIV-HRQOL of adolescent and young adult women behaviorally infected with HIV, an important group that is not well represented in explorations of HRQOL among PLWHA (Clayson et al., 2006; Garvie et al., 2009). In response to critiques and assessments of HRQOL measures, a measure specific to the condition of HIV was developed based on an existing measure of HRQOL for diabetes that incorporates dimensions particularly relevant to adolescents. The relationship of factors shown to be important to HRQOL among PLWHA is explored including the biological variables of CD4 cell counts and viral load, as well as depression and the psychosocial variables of stigma, social support, and illness acceptance.

METHOD

PARTICIPANTS

Participants consisted of 179 female adolescents and young adults between the ages of 15 and 24 with behaviorally acquired HIV. Accrual for the study started in March 2003, and data collection continued until December 2005. Participants were recruited from six adolescent medicine clinics in New York City, Chicago, Los Angeles (two clinics), Miami, and New Orleans. The adolescent medicine clinics are part of the Adolescent Trials Network for HIV/AIDS Interventions, a collaborative network of adolescent medicine clinics that provides the infrastructure for research on adolescents with or at risk for HIV infection. Participants were recruited during a clinic visit for an ongoing longitudinal study examining associations of substance use, mental health disorders, and social networks with engagement in healthcare of young HIV-infected women. The institutional review boards of all participating institutions approved the study and all participants provided informed consent or parental permission, as required. The current study is limited to the baseline assessment.

PROCEDURES

Participants in the ongoing longitudinal study were interviewed at baseline and every 3 months for 18 months. Face-to-face interview and audio computer-assisted, self-administered interview (ACASI) were used for data collection. The ACASI was used to obtain sensitive information; interview domains included substance use, sexual behavior, attitudes about healthcare and illness, medication adherence, HIV stigma, depression, social support, and HRQOL. The entire ACASI, inclusive of the HRQOL scale used here, was reviewed by clinical and research staff at clinic sites, and pilot tested with a small number of young women with HIV for ease of interpretation and participant response burden and deemed satisfactory for use. The data for the current study were limited to select interview domains of the ACASI, and only data from the baseline assessment were used in the analyses.

MEASURES

HIV Health-Related Quality of Life—Jacobson and Fried's (1994) Diabetes Quality of Life (DQOL) scale for youth with insulin-dependent diabetes mellitus was chosen as the

HRQOL measure for adaptation. The measure incorporates core facets of HRQOL as well as facets that may be unique to adolescents and young adults, including future oriented worries around social and role expectations of heightened relevance to this age group including marriage, children, getting a job and completing education; worries related to social relationships such as dating or body image; the effects of illness on family, school, and peer relationships; and school specific issues such as worry about differential treatment and school disruption (Jacobson & Fried, 1998). The process of adapting the existing DQOL for use with HIV-infected adolescents and adults was based on an expert review by a team consisting of three clinical psychologists, a community psychologist, and an adolescent medicine physician, all with extensive clinical and research experience with HIV-infected adolescents. The measure consists of 30 questions designed to encompass accepted domains of HRQOL including social, emotional, and physical functioning as well as one's general outlook on life (Aaronsen et al., 1991; Murphy et al., 2005; Spitzer, 1987). Factor analysis revealed a three-factor structure consisting of current life satisfaction (Factor 1), illness-related anxiety (Factor 2), and illness burden (Factor 3) (Table 1).

Response categories varied by item. Twenty-two questions utilized 5-point Likert scales of "very satisfied" (lowest score 1) to "very dissatisfied" (highest score 5) or "never" (lowest score 1) to "all the time" (highest score 5). The other eight questions had four answer choices ranging from "never" (lowest score 1) to "all the time" (highest score 4). Scale summary scores are the summation of all individual items. For Factor 1 (current life satisfaction), a low score indicates high satisfaction; for Factor 2 (illness-related anxiety), a low score indicates less illness-related anxiety; and for Factor 3 (illness burden), a low score indicates less illness burden. Subjects' scale summary scores were considered missing if they were missing values for any of the items within a specific subscale domain. In our study, Cronbach's alpha was .88 for current life satisfaction, .86 for illness-related anxiety, and .86 for illness burden.

HIV-Related Stigma—Two subscales of the HIV Stigma Scale were utilized to assess the extent of stigma experienced by participants in relation to their HIV diagnosis (Berger, Ferrans, & Lashley, 2001). Anchors range from 1 to 4, all items were summed to create one stigma score, with higher scores indicating greater stigma. In our study, Cronbach's alpha for the HIV-Related Stigma Scale was 0.89.

Depressive Symptoms—The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used to assess self-reported depressive symptoms in the last week. Anchors range from 0 to 3 with higher scores indicating greater depressive symptoms. For the current study, we report a binary score as an indicator of more serious levels of depressive symptoms. The cut-point for our binary score was adapted from Garrison, Addy, Jackson, McKeown, and Waller (1991), where scores of 21 or higher were indicative of clinically significant depressive symptoms. Cronbach's alpha for the CES-D in our sample was .90.

Illness Acceptance—The Illness Cognition Questionnaire for Chronic Diseases (Evers et al., 2001) was used to assess participants' acceptance of HIV disease. The Illness Cognition Questionnaire for Chronic Diseases consists of three subscales and demonstrates adequate validity and reliability (Evers et al., 2001). In this study we used the acceptance subscale, a six-item scale that measures cognitions related to acceptance of disease, considered an adaptive coping strategy for dealing with chronic illness. Anchors range from 1 to 4 with higher scores indicating greater acceptance. Coefficient Cronbach's alpha for the subscale in our sample was .91.

Perceived Social Support—Perceived social support was measured using the Social Provisions Scale (Russell, Cutrona, Rose, & Yurko, 1984). This is a 24-item scale, anchors range from 1 (strongly disagree) to 4 (strongly agree) for a possible range of 24 to 96, with higher scores indicating higher support. Coefficient Cronbach's alpha in this study was .91.

Biological End-Points—CD4 cell counts and viral load were obtained via chart review at each assessment point. The most recent assessment of CD4 and viral load at baseline assessment obtained from the chart review was utilized in the current analyses. All data from chart reviews was double entered into the database to ensure accuracy in recording.

STATISTICAL ANALYSES

Factor analysis with varimax rotation was used to explore the structure of the HIV- HRQOL and determine the three-factor structure of the measure. Bivariate linear regression analysis was performed using each HIV-HRQOL as dependent variables and the sociodemographic factors and psychosocial variables as independent variables in regression models. Dependent variables significant at p value $< .05$ in bivariate analysis were retained and multivariate linear regression models using each HIV-HRQOL factor as the dependent variable were constructed. SAS version 8.2 was used to conduct factor analysis. SPSS version 16.0 was used to conduct all other statistical analysis.

RESULTS

SAMPLE CHARACTERISTICS

Participants in this study ($n = 179$ HIV-infected women) were an average age of 21 years old (range 15–24) (Table 2). The study sample was predominantly African American (73%) or Hispanic (21%). The majority of participants were not in school (67%) and 52% had completed more than eighth grade but did not complete high school. Most participants reported living in their own house or apartment (42%), only 30% reported cohabitation with a partner, and 28% reported living with their children. A minority yet substantial number of participants (30%) reported a desire to become pregnant. Slightly more than half of the study sample (59%) reported currently being in a relationship that was longer than 6 months, but the vast majority (92%) reported that they were not married. Participants in this study were generally of good health as indicated by 82.7% of respondents with CD4 levels of 200 or above (Department of Health and Human Services Panel on Antiretroviral Guidelines for Adults and Adolescents, 2008). A total of 86.6% of respondents had viral loads 400 or above.

DESCRIPTIVE STATISTICS OF HIV-HRQOL FACTORS AND PSYCHOSOCIAL SCALES

Overall, the female youth in this study reported high measures of HIV-HRQOL. The mean score for the current life satisfaction component of the HIV-HRQOL was 17.5 (possible range of 8 to 40). Participants were also seldom bothered by illness-related anxiety (mean score = 17.2 with possible range of 8 to 32), and usually perceived little HIV illness burden (mean score = 10.6 with possible range of 7 to 35). Participants reported a moderate level of perceived HIV stigma (mean score = 58.0 with possible range 21 to 84). The mean CES-D depression score was 16.5 ($SD = 12.8$). A CES-D depression score of 21 or greater, considered an indicator of clinically relevant depressive symptoms, was observed in 31.3% (52/166) of the participants. Young women also reported very high acceptance of their HIV illness (mean score = 18.0 with possible range of 6 to 24), and high levels of social support (mean score = 74.6 with possible range 24–96).

RELATIONSHIP BETWEEN HIV-HRQOL SUBSCALES AND CLINICAL AND PSYCHOSOCIAL VARIABLES

Bivariate linear regression results indicate that participants with greater current life satisfaction (Factor 1) perceived lower levels of HIV stigma ($p < .001$), were less likely to be clinically depressed ($p < .001$), had greater acceptance of HIV illness ($p < .001$) and had higher levels of social support ($p < .001$) (Table 3). Results were similar for HIV-HRQOL Factors 2 and 3 so that persons with less illness related anxiety and less illness burden perceived lower levels of HIV stigma ($p < .001$ for both factors), were less likely to be clinically depressed ($p < .001$ for both factors), had greater acceptance of illness (Factor 2, $p = .011$ Factor 3) and had greater social support ($p = .006$ Factor 2, $p < .001$ Factor 3). Most sociodemographic characteristics, including living with parent or partner, living with children, desire for pregnancy, and relationship status, were not statistically associated with the three HIV-HRQOL factors. Neither a continuous nor categorical measure of age (≤ 19 or >19) was associated with any HIV-HRQOL. However, persons with greater current life satisfaction were more likely to complete a high school degree ($p = .056$), persons with less illness-related anxiety were less likely to live in their own home ($p = .021$), and persons with less illness burden were less likely to be African American ($p = .034$) and less likely to be enrolled in school ($p = .039$). Neither measure of clinical outcomes showed significant association with the three HIV-HRQOL factors.

Variables significant in the bivariate analysis were included in multivariate linear regression models (Table 4). The amount of variance explained by the independent variables differed among the three HIV-HRQOL factors. In the multivariate model with HIV-HRQOL factor 1 as the outcome variable, persons who were depressed ($p = .006$) reported lower levels of current life satisfaction, whereas persons who reported greater illness acceptance ($p < .001$) and social support ($p = .001$) had higher levels of current life satisfaction. In this model, HIV stigma demonstrated a trend toward association with current life satisfaction, but did not reach statistical significance ($p = .097$). None of the independent variables were statistically significantly associated with HIV-HRQOL Factor 2, illness related anxiety, in the multivariate model. However, HIV stigma again demonstrated a trend in association ($p = .109$) such that persons who perceived higher levels of HIV stigma also reported a higher level of illness related anxiety. In the multivariate model with HIV-HRQOL Factor 3 as the outcome persons who were depressed reported higher levels of illness burden ($p < .012$), and persons with more illness acceptance had lower levels of illness burden ($p = .015$). Neither HIV stigma nor social support showed statistically significant associations with illness burden. None of the sociodemographic characteristics included in the multivariate models based on their associations in bivariate analysis showed a significant relationship with any of the three HIV-HRQOL factors in the multivariate model.

DISCUSSION

In this study, we investigated the HIV-HRQOL of 179 young women behaviorally infected with HIV and receiving care at HIV clinics across the US. HRQOL is a multidimensional psychosocial construct that enables us to explore the impact of illness on patient well-being beyond the scope of purely biomedical issues. The value of this type of holistic understanding of how HIV-infection impacts patient life is in the guidance it provides toward multiple modifiable factors for intervention. A majority of the young women in this study self identified as African American or Hispanic, thus findings from this study provide descriptive data on HIV-HRQOL among one of the hardest hit populations for HIV-infection in the United States (CDC, 2007a).

Analysis of the HIV-HRQOL measure yielded three subscales representing various domains of HRQOL identified and labeled as current life satisfaction (e.g., with sex life, with work or

school), illness-related anxiety (e.g., worry about missing school or work or about body looking different), and illness burden (e.g., frequency of feeling physically ill or of missing school or work owing to illness). Overall, the young HIV-infected women in this study expressed moderate satisfaction with the time spent managing their HIV (e.g., the time it takes, checkups, etc.) while expressing some dissatisfaction with the impact that they feel HIV has on their family and with the effect it has on their sex life. In terms of illness-related anxiety, the major issues that most participants were concerned about were getting married and having children. Finally, in terms of illness burden, participants tended to report that they never or very seldom were burdened by their illness. The associations found here suggest the importance of future social and intimate relationships to these young women. Given the lack of association with sociodemographic variables such as relationship status, this finding is interesting because it suggests that beyond one's actual relationship status, there are worries and concerns directly associated with the future of living with HIV that are linked to adjustment outcomes. This is in line with other research among behaviorally infected adolescents that describes unique coping challenges related to stigma anxiety and romantic relationship (Orban et al., 2010). The area of relationships both intimate/sexual and family should be considered in further refinement and testing of the instrument with young HIV-infected individuals. Living with HIV is likely to be particularly difficult in terms of negotiating relationships and sexual situations, as well as concerns regarding future pregnancy; thus, this may be an important focus for caregivers in clinical settings or important facets of HRQOL to assess in outcome studies.

Contrary to expectation, health status as assessed by CD4 counts and viral load levels was not significantly associated with the HIV-HRQOL factors. There are several possible reasons that this relationship was not substantiated. It is possible that the relatively small sample sizes in each category limited power for detecting differences across CD4 and viral load levels. As all of the young women in this sample were linked to care, and expressed relatively high satisfaction with psychosocial functioning and care, relationships between clinical variables and HRQOL may be obscured. Other research of HRQOL with child and adult samples also failed to show links to disease markers (Gortmaker et al. 1998; Lenderking, Testa, Katzenstein, & Hammer, 1997; Rao 2007). In one study among HIV-infected adult women, participants with CD4 cell counts above 200 reported better physical functioning but poorer social and emotional functioning (Rao et al., 2007). The authors suggest that persons with lower CD4 cell counts may have developed better coping skills to deal with emotional and social aspects of HIV. They also suggest that biological markers may correlate with the physical dimension of HRQOL measures but not cognitive and social dimensions. In the current study, physical functioning was not a separate dimension but incorporated as part of current life satisfaction, illness-related anxiety, and illness burden, and this may be why a correlation with biological markers was not found. It has been suggested that HIV patients may be asymptomatic even when CD4 counts are below 200, and HRQOL may not be responsive to these clinical indicators until the illness is more advanced (Lenderking et al., 1997). As the young women in this sample became infected with HIV through behavioral pathways (and were thus most likely infected recently, given their status as adolescents and young adults), it may be that the relative early stage of disease is behind the lack of association. Alternatively, it is possible that HRQOL may influence disease outcomes indirectly, through psychosocial factors (Wilson & Cleary, 1995). There is some evidence to suggest that HRQOL measures more readily tap into cognitive and social aspects of well-being than physical health (Patel et al., 2009). Patients are known to emphasize psychological and social functioning rather than physical functioning on HRQOL questionnaires (Smith, Avis, & Assmann, 1999). The contradictory findings related to HIV-HRQOL and biological outcomes suggest that the use of both types of measures as end-points in evaluation of treatment regimens and other interventions may be a more

appropriate method of accurately assessing intervention effects in physical, cognitive, and social domains.

Exploration of psychosocial constructs and HIV-HRQOL in bivariate analysis demonstrated that persons with lower stigma and depression and higher social support and illness acceptance were significantly more likely to report greater current life satisfaction, lower illness-related anxiety and lower illness burden. These findings support those of previous literature with measures of HRQOL among adult HIV-infected populations (Buseh 2008; Larios et al., 2009; Sherbourne et al., 2000; Sowell et al., 1997; Tate et al., 2003). The multifaceted nature of the quality of life construct is both a strength and a weakness in that measures that cross a wide variety of psychosocial domains often also demonstrate complex relationships with other psychosocial variables. This is the case in the current study, where HIV stigma, depression, illness acceptance, and social support, when combined in a multivariate model showed, varying levels of association with the three different quality-of-life factors. Multivariate analysis indicates that depression and illness acceptance are important to both current life satisfaction and illness burden. Illness burden, which measured current management of mostly physical and logistical issues related to HIV, was more related to depressive symptoms and illness acceptance, also measures of current rather than future potential issues related to infection. Similarly, current life satisfaction was correlated with these variables, as well as social support, indicating that social connectedness and aid is important to the overall well-being of adolescent women. Although HIV stigma did not reach a level of statistical significance in this study, it demonstrated a trend in association such that persons with lower levels of HIV stigma reported greater current life satisfaction and less illness-related anxiety. Further analysis using only independent variables statistically significant to each particular factor in bivariate analysis in multivariate models and multivariate models developed through backward stepwise regressions showed minor changes in the coefficient for this variable, suggesting the lack of statistical significance may be related to the sample size.

It should also be noted that an examination of the correlation between the psychosocial variables showed significant relationships between these variables (results not shown), as would be expected from previous literature that has shown a positive correlation between HIV stigma and depression (Berger et al., 2001; Chung 2009; Corrigan, 2003; Pearson et al., 2009; Staring et al., 2009; Wu et al., 2008), and a negative correlation between social support and stigma (Berger et al., 2001; Larios et al., 2009). A moderate negative correlation between depression and illness acceptance, and a moderate positive relationship between social support and illness acceptance, was found in this study. Given the relationship among the independent variables explored, addressing these factors in tandem through comprehensive clinical and social support interventions may produce the greatest impact on quality of life.

This study has several limitations that future research should endeavor to address. One limitation is the derivation of items exclusively by expert review. This measure should be tested with HIV-infected youth and adapted as necessary to include items that may be relevant to their conceptualization of HRQOL but were not included here. Additional refinement of the instrument using cognitive interviewing strategies would also be useful. An additional limitation is the cross-sectional design. Given the cross-sectional nature of the data, we were unable to assess the sensitivity of the measure over time. The survey also did not collect information on the length of time participants have been infected with HIV, which may be a significant factor contributing to the study findings. Longitudinal studies could address the question of changes in HRQOL as a function of disease advancement. Further, sample size in this study was small by some standards and may have limited the ability to see associations with some variables. Additionally, the sample comprised primarily

African American young women (73%) with some Latina youth (21%) but very few participants of other race/ethnicities. Thus, it may not be generalizable to HIV-infected young men or other ethnic groups. However, it is among minority race/ethnicities that the epidemic among adolescent and young adult females is concentrated in the United States (CDC, 2007a); thus, the study is applicable to the HIV-infected population of young women in this country. That this study only included HIV-infected female adolescents from urban settings does, however, limit the generalizability of the findings to other populations.

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TABLE 1Item Statistics and Item-Total Correlation for Final HIV-HRQOL Factors ($N = 179$)

Description of items	M (SD)	Item-Total Correlation
Factor 1: Current life satisfaction		
Life1. How satisfied are you—Time it takes to manage HIV	2.22 (1.22)	.64
Life2. How satisfied are you—Time spent getting check ups	2.05 (1.16)	.67
Life4. How satisfied are you—Knowledge about HIV	2.06 (1.18)	.60
Life5. How satisfied are you—Social relationships	2.12 (1.17)	.75
Life6. How satisfied are you—Sex life	2.53 (1.50)	.57
Life7. How satisfied are you—With work or school	2.28 (1.17)	.64
Life8. How satisfied are you—Appearance of body	2.31 (1.36)	.63
Life9. How satisfied are you—In general	2.06 (1.24)	.69
Factor 2: Illness-Related Anxiety		
Life25. How often do you worry—Get married	2.54 (1.21)	.46
Life26. How often do you worry—Have children	2.42 (1.25)	.46
Life27. How often do you worry—Get job	2.24 (1.13)	.59
Life28. How often do you worry—Complete education	2.21 (1.18)	.74
Life29. How often do you worry—About missing school or work	2.01 (1.12)	.66
Life3. How often do you worry—Take vacation or trip	1.99 (1.12)	.64
Life31. How often do you worry—Body looks different	2.08 (1.19)	.62
Life32. How often do you worry—Behind in terms of dating	1.96 (1.15)	.70
Factor 3: Illness Burden		
Life13. How often—Feel physically ill	2.22 (1.09)	.55
Life14. How often—HIV interfere with family life	1.98 (1.31)	.62
Life18. How often—Miss work or school	1.76 (1.14)	.66
Life2. How often—Teased because you have HIV	1.39 (.93)	.69
Life21. How often—HIV prevents participating school activities	1.46 (1.04)	.77
Life22. How often—HIV limiting career or future	1.99 (1.36)	.59
Life24. How often—Close family tease about HIV	1.44 (.97)	.55

TABLE 2

Sociodemographic Characteristics of Sample

Demographic Characteristic	N (%)
Subject age at interview in years. Mean, range (SD)	2.61, 15–24 (2.11)
Race	
White	3 (1.68)
Black/African American	130 (72.63)
Hispanic	38 (21.23)
Asian/Pacific Islander	1 (.56)
Native American/Alaskan Native	2 (1.12)
Other or mixed race	5 (2.79)
Is subject currently in school?	
No	120 (67.04)
Yes	48 (26.82)
Yes, but I am on summer break now	11 (6.15)
Last grade completed by subject	
Eighth grade or less	15 (8.38)
More than eighth grade but did not complete	93 (51.96)
High School	
High School Graduate	36 (2.11)
General Equivalency Diploma (GED)	11 (6.15)
Some College/Technical School	22 (12.29)
Technical School Graduate	2 (1.12)
Currently living/staying place	
Your own house or apartment	76 (42.46)
At your parent(s) house or apartment	51 (28.49)
At another family member(s) house or apartment	21 (11.73)
At someone else's house or apartment	16 (8.94)
Foster home or group home	5 (2.79)
In a rooming, boarding, halfway house, or a shelter/welfare hotel	8 (4.47)
Some other place not mentioned	2 (1.12)
Live with parent	
Yes	62 (34.64)
No	117 (65.36)
Live with partner currently	
Yes	54 (3.17)
No	125 (69.83)
Live with children currently	
Yes	50 (27.93)
No	129 (72.07)
Currently in a long-term relationship that has lasted > 6 months	
Yes	96 (58.54)

Demographic Characteristic	N (%)
No	68 (41.46)
Marital status	
Married	15 (8.43)
Not married	163 (91.57)
Desire to be pregnant	
Yes	44 (29.93)
No	103 (7.07)
CD4 counts (cells/uL) <i>M(SD)</i>	44.43(277.94)
0–199	31 (17.3)
≥ 200	148 (82.7)
Viral load (cells/mL) <i>M(SD)</i>	170,576.01 (831,935.559)
<400	21 (11.9)
≥ 400	155 (86.6)

TABLE 3
 Bivariate Linear Regression of Sociodemographic, Psychosocial and Clinical Characteristics of Participants on HIV-HRQOL Factors (Unstandardized Betas)

Sociodemographic Characteristics	Factor 1: Current Life Satisfaction		Factor 2: Illness-Related Anxiety		Factor 3: Illness Burden	
	Beta (SE)	p-value	Beta (SE)	p-value	Beta (SE)	p-value
Age	-0.04 (.27)	.878	-0.22 (.27)	.423	.15 (.18)	.391
Race (Black/African American ref groups)	-3.70 (2.28)	.107	-3.70 (2.31)	.112	-3.24 (1.51)	.034
School enrollment status (in school vs. not)	-0.74 (1.20)	.537	-1.64 (1.17)	.163	-1.64 (.79)	.039
Last grade completed (less than high school ref)	-2.22 (1.15)	.056	-0.55 (1.20)	.649	-0.11 (.76)	.886
Living place (own house/apt vs. other)	-0.29 (1.24)	.813	-2.90 (1.24)	.021	-0.93(.81)	.254
Live with parent (ref no)	-1.69 (1.19)	.155	-0.65 (1.21)	.596	-1.23(.78)	.116
Live with partner (ref no)	.02 (1.25)	.985	-0.87 (1.27)	.492	-1.09 (.83)	.190
Live with children (ref no)	-0.75 (1.25)	.547	-1.88 (1.34)	.162	-0.70 (.83)	.401
In relationship longer than 6 months (ref yes)	.78 (1.41)	.495	-0.66 (1.25)	.597	-0.64 (.77)	.405
Married (ref no)						
Desire to be pregnant (ref no)	-0.50 (.85)					
1.06 (1.38)	.561					
.444	-0.80 (.78)					
1.35 (1.37)	.305					
.324	-0.18 (.56)					
-0.79 (.85)	.748					
.355						
Psychosocial Characteristics						
HIV stigma	.32 (.04)	.000	.21 (.05)	.000	.15(.03)	.000
Depressive symptoms (ref not depressed)	6.61 (1.14)	.000	5.78 (1.21)	.000	4.71(.71)	.000
Illness acceptance	-0.68 (.10)	.000	-0.49 (.11)	.000	-0.20 (.08)	.011
Social support	-0.35 (.05)	.000	-0.15 (.06)	.006	-0.15 (.03)	.000
Clinical Characteristics						
CD4 Cell Count (ref <=200)(cells/uL)	-1.79 (1.52)	.240	-0.33 (1.58)	.835	-1.84 (1.00)	.068
Viral Load (ref <400) (copies/mL)	.30 (1.85)	.872	-0.02 (1.77)	.991	.88 (1.17)	.454

TABLE 4
Multivariate Linear Regression of Sociodemographic and Psychosocial Characteristics on HIV-HRQOL Factors (Unstandardized Betas Presented)

	Factor 1: Current Life Satisfaction		Factor 2: Inness Related Anxiety		Factor 3: Illness Burden	
Sociodemographic characteristics	Beta(Std. Error)	p-value	Beta (Std. Error)	p-value	Beta(Std. Error)	p-value
Race (Black/African American ref groups)	-1.07 (2.06)	.603	-1.94 (3.27)	.554	-0.09 (1.65)	.956
School enrollment status (in school vs. not)	.10 (1.00)	.919	-1.00 (1.54)	.520	-0.73 (.79)	.361
Last grade completed (less than HS ref)	-1.02 (.96)	.287	-0.162 (1.52)	.916	-0.50 (.76)	.508
Living place (own house/apt vs. other)	1.39 (1.05)	.188	-1.66 (1.66)	.322	.46 (.82)	.581
Psychosocial characteristics						
HIV stigma	.08 (.05)	.097	.13 (.08)	.109	.05 (.04)	.204
Depressive symptoms (ref not depressed)	3.28 (1.15)	.006	1.78 (1.90)	.351	2.32 (.90)	.012
Illness acceptance	-0.59 (.12)	.000	-0.03 (.19)	.884	-0.23 (.09)	.015
Social support	-0.16 (.05)	.001	-0.04 (.07)	.616	-0.05 (.04)	.203
R^2	63.7%		19.7%		6.5%	
Model F	16.69	.000	1.81	.094	5.64	.000