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Risk and protective factors for health-related quality of life among persons aging with HIV

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Abstract

For persons living with HIV, health-related quality of life (HRQOL) may be threatened by physical and mental conditions but may be protected by positive psychological traits. We performed an exploratory look at the risk and protective factors for HRQOL in older adults living with HIV. Cross-sectional analyses of baseline data from the Rush Center of Excellence on Disparities in HIV and Aging (CEDHA), a community-based cohort of persons ages 50 living with HIV ($n = 176$) were performed. Analyses examined the relationship between risk/protective factors and two outcomes (i.e., self-reported health status [SRHS] and the healthy days index [HDI]). Having good/excellent health was associated with being a non-smoker ($p = 0.002$), greater purpose in life ($p = 0.006$), higher education ($p = 0.007$), fewer depressive symptoms ($p = 0.004$), fewer disabilities ($p = 0.000$), and less loneliness ($p = 0.002$) in bivariate analyses. Males ($p = 0.03$) and African Americans/Blacks ($p = 0.03$) reported higher HDI. Fewer depressive symptoms ($p = 0.000$), disabilities ($p = 0.002$), adverse life events ($p = 0.0103$), and loneliness ($p = 0.000$) were associated with higher HDI in bivariate analyses. In a logistic regression model, greater purpose in life, fewer disabilities, and being a non-smoker were associated with better SRHS after adjusting for covariates. For African Americans/Blacks, having fewer depressive symptoms and disabilities were associated with higher HDI after adjusting for covariates. Disabilities, depression, smoking status, race/ethnicity, and purpose in life were significantly associated with HRQOL. Findings support the need for research to examine the influence of cultural interpretations of life quality and focus on promoting physical function, smoking cessation, and psychological wellness in persons aging with HIV.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Keywords

Psychosocial; well-being; self-rated health; depressive symptoms; disabilities

Introduction

The number of older adults living with HIV is growing due to the effectiveness of advanced anti-retroviral therapy (ART) (Cahill & Valadez, 2013). In the U.S., HIV infection has become a chronic condition prompting a focus on the well-being of individuals as they age with the infection.

Health-related quality of life (HRQOL) is a measure of well-being in the context of illness and combines constructs of self-assessed physical and mental health (Ferrans, Zerwic, Wilbur, & Larson, 2005). For people living with HIV, HRQOL may be threatened by challenges such as depression (Monteiro, Canavarro, & Pereira, 2016), diminishing social support (Shippy & Karpiak, 2005), victimization (Emlet, Fredriksen-Goldsen, & Kim, 2013), and comorbidities (Balderson et al., 2013). Despite living with chronic conditions and facing HIV-related adversities, older adults can still maintain well-being through activating positive psychological constructs including resilience, social support, and emotional support (Emlet et al., 2013; Fang et al., 2015; Slater et al., 2013).

The positive-aging framework emphasizes an individual's ability to tap into psychological resources to engage in healthy ways of coping with age and illness-related challenges or declines (Hill, 2011). Applied to aging with HIV, the framework suggests that it is possible for individuals living with disease-related burdens to experience positive well-being. Thus, determining the risk and protective factors for HRQOL among older adults living with HIV has important health promotion implications. In this paper, we examine the risk and protective factors for HRQOL using de-identified, cross-sectional, data from a community-based cohort of older adults living with HIV.

Methods

We obtained data from the 2012 baseline cohort of the Research Core of the Rush Center of Excellence on Disparities in HIV and Aging (CEDHA). The cohort is further described in Han et al. (2017). We extracted data pertaining to HIV seropositive participants for this analysis ($n = 176$). Use of data for this paper was approved by the Institutional Review Boards of each affiliated institutions.

Measures

Socio-demographics and health—Continuous variables included age, education, years since HIV diagnosis, CD4 count, and number of lifetime illicit drugs used. Categorical variables included gender, race/ethnicity, virologic control, and lifetime smoking status (former/current smoker vs non-smoker).

Dependent variables: health-related quality of life (HRQOL)—These variables were obtained from the Healthy Days Core of the Centers for Disease Control and

Prevention (CDC) HRQOL. Self-reported health status (SRHS) asked respondents, “Compared to other people your own age, would you say that your health is ...” We grouped the responses by poor/fair versus good/excellent and treated SRHS as a dichotomous variable. Two items made up the Healthy Days Index (HDI), calculated using the method described in Zullig (2010). Higher HDI scores indicate more healthy days. SRHS and HDI were treated as separate dependent variables in our analyses.

Independent variables: risk factors for HRQOL—Depressive symptoms were measured using the CESD-10 with higher scores indicating greater levels of depressive symptoms (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). Cognitive impairment was assessed with the 30-item MMSE (Folstein, Folstein, & McHugh, 1975). The Life Events Checklist measured victimization by summing 17 adverse life events such as physical assault, sexual assault, serious injury, etc. Perceived discrimination was measured using the Everyday Discrimination Scale which assessed the frequency of being treated unfairly in common everyday situations (Kessler, Mickelson, & Williams, 1999). Physical disability was captured using the modified version of the Rosow-Breslau scale with questions about an individual’s ability to independently perform three tasks with higher scores indicating more disabilities (Rosow & Breslau, 1966). Finally, the 5-item De Jong-Gierveld Loneliness Scale measured emotional loneliness with higher scores indicating more loneliness (de Jong-Gierveld, 1987).

Independent variables: protective factors for HRQOL—Social network size was measured as a sum of the number of friends and family that participants stated they interacted with at least once a month. Purpose in life was measured with 10 items derived from Ryff’s and Keyes’s scales of psychological well-being with higher summary scores indicating a greater sense of purpose in life (Ryff, 1989).

Data analyses

Participant characteristics were summarized using descriptive statistics. Pearson’s and Spearman’s correlations, t-tests, and ANOVAs were performed to examine the relationships between the risk and protective factors with HRQOL outcomes, where appropriate. Demographics, health characteristics, drug use, and significant variables from the bivariate analyses were added to multivariate regression models for SRHS and HDI, separately. *P*-values ≤ 0.05 were used for all analyses. Analysis was performed with SPSS statistical software version 22.0 (SPSS Inc, Chicago).

Results

Participant characteristics are described in Table 1. Compared to participants with poor/fair health, those in good/excellent health had greater purpose in life ($t(122) = 2.79, p = 0.006$), more education ($t(173) = 2.71, p = 0.007$), fewer depressive symptoms ($t(173) = -2.91, p = 0.004$), and less loneliness ($t(173) = -3.33, p = 0.002$). Good/excellent health was associated with being a non-smoker, $X^2(1) = 9.83, p = 0.002$ and having fewer disabilities $X^2(3) = 17.94, p = 0.000$.

Pearson correlation results are shown in Table 2. Depressive symptoms and victimization were negatively associated with HDI. Spearman's correlations revealed negative relationships between HDI with disability ($r_s = -0.23$, $n = 171$, $p = .002$) and emotional loneliness ($r_s = -0.34$, $n = 171$, $p = 0.000$). A one-way ANOVA between race/ethnicity showed a significant difference between groups for mean HDI ($p = .01$). Post hoc comparisons indicated that mean HDI for Non-Hispanic whites ($M = 19.95$, $SD = 10.53$) was significantly lower than African Americans/Blacks ($M = 24.70$, $SD = 8.70$; $p = 0.03$) but not Hispanic/Latinos ($M = 26.40$, $SD = 7.21$; $p = 0.08$). Mean HDI did not differ significantly between Hispanic/Latinos and African Americans/Blacks.

Logistic regression (dependent variable: SRHS)

The final model for SRHS showed that more disabilities ($OR = 3.07$, $SE = 0.30$, $p = 0.000$), lower purpose in life ($OR = 0.46$, $SE = 0.35$, $p = 0.03$), and past/current smoker status ($OR = 5.45$, $SE = 0.57$, $p = .004$) were associated with worse SRHS (see Table 3).

Multivariate linear regression (dependent variable: HDI)

The final model for HDI was significant and explained 28.7% of the variance in HDI scores [$F(13, 156) = 4.84$; $p = 0.000$] (see Table 4). African Americans/Blacks ($p = 0.02$) had more healthy days. Having fewer depressive symptoms ($p = 0.000$) and disabilities ($p = 0.02$) were associated with more healthy days.

Discussion

The most salient factor associated with HRQOL was disability, which was significantly associated with both SRHS and HDI in multivariate models. Depressive symptoms and being African American/Black were associated only with HDI while purpose in life and lifetime smoking status were associated only with SRHS.

Disability is an important component of well-being for persons living with HIV, and one study found prevalence rates of frailty for older adults living with HIV to be comparable to uninfected older adults who were 10 years older (Desquilbet et al., 2007). Thus, improving physical function to prevent disabilities is an important care goal for older adults with HIV (Nixon, O'Brien, Glazier, & Tynan, 2002; Shah et al., 2016). Smoking status is associated with poorer health status across all ages pointing to the importance of promoting smoking cessation across the lifespan (Nakata, Takahashi, Swanson, Ikeda, & Hojou, 2009; Syamlal, Mazurek, & Dube, 2014). Depressive symptoms can negatively impact well-being, and older adults living with HIV may worry about the impact of their status on their living situation, social relationships, as well as care situations (Solomon, O'Brien, Wilkins, & Gervais, 2014a, 2014b). Despite the prevalence of depression among people living with HIV and its association with poor viral suppression and other comorbidities, it is not subject to routine screening across medical settings (Shacham, Nurutdinova, Satyanarayana, Stamm, & Overton, 2009).

Unexpectedly, our findings demonstrated that compared to whites and Hispanic/Latinos, African American/Blacks had better SRHS. Studies have generally shown that racial and ethnic minority older adults are more likely than whites to have poorer reported health

(Cagney, Browning, & Wen, 2005; Liang et al., 2010; Ng et al., 2014). However, some evidence suggests that racial differences in SRHS may be diminishing (Sarkin et al., 2013). Researchers have also speculated that the subjective nature of self-rated health may be subject to interpretation differences based on individual evaluation frameworks, response styles, and logic of reasoning (Jylha, 2009).

Although purpose in life was not associated with HDI, it was associated with SRHS. Particularly for individuals that face multiple health challenges, teasing out specific traits that can be promoted or intervened upon may provide opportunities to improve well-being. Purpose in life has not yet been well studied but research points to the potential role of life purpose in protecting against disability and cognitive impairment (Boyle, Buchman, Barnes, & Bennett, 2010).

There are a few limitations to this study. The data are cross-sectional thus precluding interpretations of causality, and self-reported data may be subject to response bias. Many participants in this study had good virologic control and may not be representative of people with less success with virologic control. Lifetime smoking status was assessed categorically, and intensity and duration of cigarette use was not measured.

Conclusion

Findings demonstrate that subjective well-being is multi-faceted and associated with physical, psychological, and demographic components. Of note, length since diagnosis, CD4 count, and viral load were not related to HRQOL outcomes, suggesting the need to look beyond the clinical domain to address health promotion more holistically. Alleviating disabilities, screening for and treating depression, promoting smoking cessation, and promoting factors that contribute to building a sense of life purpose are important for the well-being of individuals aging with HIV.

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Table 1

Descriptive data for all participants.

	Mean (SD)	n (%)
Age (years)	58.7 (5.4)	–
<i>Gender</i>		
Male	–	132 (75.0)
Female	–	44 (25.0)
<i>Race/Ethnicity</i>		
Hispanic/Latino	–	10 (5.7)
African American/Black	–	122 (69.3)
Non-Hispanic White	–	44 (25.0)
Education (years)	13.2 (2.8)	–
Years since HIV diagnosis	16.9 (7.4)	–
Self-reported CD4 count	617.9 (283.5)	–
Undetectable viral load (yes)	–	167 (94.9)
Count of illicit drugs ever used	3.4 (2.6)	–
Ever smoked (yes)		139 (79.4)
CES-D score	2.6 (2.5)	–
Mini-mental state exam score	28.4 (1.3)	–
Rosow-Breslau disability scale	0.4 (0.7)	–
De Jong-Gierveld Loneliness scale	2.5 (0.8)	–
Everyday Discrimination Scale	2.8 (2.5)	–
Life Events Checklist	5.0 (3.0)	–
Social network size	4.3 (4.1)	–
Purpose in life score	3.7 (0.6)	–
Self-reported health status	2.7 (0.8)	–
Poor or Fair	–	69 (39.4)
Good or Excellent	–	106 (60.6)
Healthy days index (out of last 30 days)	23.6 (9.3)	–

Notes: Sample size = 176; CES-D = Center for Epidemiologic Studies Depression Scale.

Table 2

Correlation coefficients (r) calculated for all dependent variables and covariates.

Variables	1	2	3	4	5	6	7	8	9	10	11
1 HDI	–										
2 Age	0.14										
3 Years of education	0.03	0.06									
4 Years since HIV diagnosis	–0.02	–0.03	0.13								
5 CD4 count	–0.06	0.04	0.10	0.08							
6 Count of illicit drugs ever used	–0.05	–0.04	–0.27**	0.07	0.02						
7 CES-D	–0.42**	–.20**	–0.16*	–.22**	–0.02	0.04					
8 MMSE	–0.14	–0.07	0.27**	–0.05	–0.05	0.03	0.01				
9 Life Events Checklist	–0.23**	0.02	–0.01	0.10	0.04	0.28**	0.28**	0.11			
10 Everyday Discrimination Scale	–0.10	–0.15*	–0.12	0.05	0.04	0.19*	0.41**	–0.14	0.24**		
11 Social network size	–0.05	–0.02	–0.02	–0.02	–0.05	–0.00	–0.02	0.04	0.04	–0.03	1.00

* p 0.05;

** p 0.01.

CES-D = Center for Epidemiologic Studies Depression Scale; MMSE = Mini Mental State Exam.

Table 3

Logistic regression model with self-reported health status as the dependent variable.

Variables	Beta	Odds Ratio	Standard Error	p-value
Age	0.02	1.02	0.04	0.65
Education (years)	−0.61	0.94	0.08	0.43
Male (yes)	0.32	1.37	0.46	0.49
Hispanic/Latino (yes)	−0.87	0.42	0.96	0.37
African American/Black (yes)	−0.76	0.47	0.49	0.12
Years living with HIV	0.00	1.00	0.03	0.95
CD4 count	−0.00	1.00	0.00	0.44
Undetectable viral load (yes)	0.24	1.28	0.81	0.76
CES-D	0.03	1.03	0.09	0.75
De Jong-Gierveld Loneliness scale	0.28	1.32	0.28	0.32
Rosow-Breslau disability scale	1.12	3.07	0.30	0.00
Ever smoked (yes)	1.70	5.45	0.59	0.00
Purpose in life	−0.79	0.46	0.35	0.03

Notes: Sample size = 176; CES-D = Center for Epidemiologic Studies Depression Scale.

Table 4

Linear regression model with the healthy days index as the dependent variable.

Variables	B	SE	<i>t</i>	<i>p</i> -value
Age	0.09	0.12	0.71	0.48
Education (years)	−0.16	0.26	−0.61	0.55
Male (yes)	2.73	1.62	1.68	0.10
Hispanic/Latino (yes)	1.83	3.11	0.59	0.56
African American/Black (yes)	4.08	1.71	2.38	0.02
Years living with HIV	0.16	0.09	1.71	0.09
CD4 count	−0.00	0.00	−0.79	0.43
Undetectable viral load (yes)	−1.55	2.92	−0.53	0.60
CES-D	−1.26	0.34	−3.75	0.00
De Jong-Gierveld Loneliness scale	−0.62	0.97	−0.64	0.52
Rosow-Breslau disability scale	−2.32	0.96	−2.42	0.02
Life Events Checklist	−0.29	0.23	−1.27	0.21

Notes: Sample size = 176; CES-D = Center for Epidemiologic Studies Depression Scale.