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Predictors of Death and Survival Duration Among a Sample of Persons Living With HIV/AIDS

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A follow-up study was conducted on a sample of 120 ethnically diverse HIV-positive men and women first interviewed in 2000. Participant survival and death rates were ascertained from death records and analyses were performed to identify demographic and psychosocial predictors of survival from the original data. Consistent with past studies, factors associated with survival were age, CD4 count, years HIV positive, and lower alcohol use. Two analyses identified use of professional counseling as a unique factor associated with reduced risk of death. Contrary to our hypotheses, the results from these analyses did not suggest that social groups with fewer economic and institutional resources or those with limited access to highly active retroviral therapy (HAART) therapies were at reduced risk of survival.

KEYWORDS HIV, predictors of death and survival, professional counseling

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INTRODUCTION

Since the implementation of highly active retroviral therapy (HAART), AIDS-related morbidity and mortality rates are on the decline and persons living with HIV (PLWH) are living longer, healthier lives. While HAART is responsible for significant decreases in mortality rates, there is still a substantial number of AIDS related deaths among some HIV-positive populations. Prior to the introduction of HAART, the major factors reported to affect survival of HIV individuals were age and time since seroconversion (McFarland, Chen, Hsu, Schwarcz, & Katz, 2003). After HARRT was introduced in 1996, multiple determinants of survival were noted with many of these disparities attributable to differential effects of, access to, or usage of HAART therapies (Nash, Katyal, & Shah, 2005). These disparities included demographics factors such as: persons of African-American descent (Blair, Fleming & Karon, 2002; Hall, McDavid, Ling, & Sloggett, 2005; Hall, Byers, Ling, & Espinoza, 2007; Hanna, Pfeiffer, Torian, & Sackoff, 2008; Levine et al., 2007; Nash et al., 2005; Palella, Baker, Moorman, Chmiel, Wood, Brooks & Holmberg, 2006) and Hispanic race/ethnicity (Blair et al., 2002; Hall et al., 2007; Hanna et al., 2008; Nash et al., 2005); women (Hall et al., 2005; Levine et al., 2007; Nash et al., 2005); low socioeconomic status (Hanna et al., 2008; McDavid, Hall, Ling, & Song, 2007; McFarland et al., 2003; Levine et al., 2007; Rapiti, Porta, Forastiere, Fasco, & Perucci, 2000); unemployed persons (Delpierre et al., 2006); those who are publicly insured (Palella et al., 2006); and persons aged 60 and over (Nash et al., 2005). Other reasons for decreased survival rates include low CD4 count/high viral load at time of AIDS diagnoses (Hanna et al., 2008; Martinez et al., 2007); limited access to care (Cunningham et al., 2000); and lack of timely initiation of HAART and/or adherence to its medical regime (Cunningham et al., 2000; Hogg et al., 2001).

Additionally, AIDS patients with a history of injection drug use (IDUs) have been found to have lower survival rates (Hanna et al., 2008; Martinez et al., 2007; Palella et al., 2006). Several studies have indicated for individuals receiving HAART, non-HIV-related deaths are more common (Martinez et al., 2007). Conflicting findings, however, have surfaced. Wood and colleagues (2008) did not find decreased survival rates among IDUs.

The effect of gender on survival among AIDS patients is uncertain. For example, Moore and colleagues (2003) found no differences with regard to gender, while Prins et al. (1999) and Junghans, Ledergerber, Chan, Weber, and Egger (1999) found females fare better than men.

Research investigating predictive associations of HIV disease progression and various psychosocial factors is very limited (Burgoyne, 2005; Siegel & Schrimshaw, 2005). Bower, Kemeny, Taylor, and Fahey (1998) found that HIV-positive men recently experiencing AIDS-related bereavement but who reported finding meaning in the loss showed less rapid declines in CD4 T cell levels and lower rates of AIDS-related mortality. Perceived social

support has been found to be associated with positive outcomes in relation to HIV diagnosis and its chronic and disabling conditions (Hays, Turner, & Coates, 1992; Crystal & Kersting, 1998; Richardson et al., 2001; Serovich, Bruckner, & Kimberly, 2000). Burgoyne (2005) found HIV-positive persons appeared to experience better clinical benefit if they perceived interpersonal, informational, and emotional support to be available.

There is some support for the application of the Vulnerable Populations Model to mortality and morbidity rates among HIV-positive individuals. The Vulnerable Populations Model proposes that resource availability, relative risk, and health status are inter-related (Flaskerund & Winslow, 1998). Resource availability refers to the availability of various socioeconomic (i.e., income, jobs, education, housing) and environmental (access to health care and quality of care) resources. Those who have limited resources have higher relative risk for poor health outcomes compared to those that have resources. Thus, the social groups with limited resources and consequent high level of risk for poor health outcomes are considered vulnerable populations. The Vulnerable Population Model has been applied to populations of high-risk mother and infants, the chronically ill, the mentally ill, substance abusers, abusing families, and the homeless (Aday, 1993, 1994). It has been suggested that vulnerable populations are at higher risk because they lack the resources that would enable them to maintain health behaviors and prevent poor health outcomes. As such, disease progresses faster among persons with limited environmental health care resources (Aday, 1993; Flaskerud, 1998; Flaskerud & Winslow, 1998).

It is critical to understand the factors that determine both death and survival duration for persons living with HIV/AIDS. Understanding these predictors can provide useful effective prevention, intervention, and treatment services aimed at reducing morbidity and mortality among persons with HIV/AIDS. In the present study, we examined a broad range of predictors of both death/survival status and survival duration using interview data collected from a sample of HIV-positive individuals in 2000. Based on the review of literature and the conceptual framework outlined in the Vulnerable Populations Model, we hypothesized that individuals with fewer economic and institutional resources (such as limited access to HAART therapies, social services, and psycho-social support) will have higher rates of death and lower survival durations.

METHODS

Procedures

A follow-up study was conducted on a sample of 120 HIV-positive individuals from October 2007 through March 2008. The original study was conducted in August through December, 2000, to explore the correlates

of high-risk sex among this group of individuals. Participants' death status and their survival duration were ascertained from death certificates from the Clark County Health District, which is the repository of all deaths in Nevada. The Health District used various search engines, which are connected to a national database to ascertain the survival/death of the 120 original participants. Employees from the Health District re-contacted individuals from the original study to ascertain their interest in being re-interviewed. Those agreeing either gave permission for researchers to contact them directly or were given a contact person to schedule an interview. Thirty-four participants were determined to be deceased; 86 participants were survivors. Interview data from the original study was linked to survival/death outcomes to examine correlates of survival/death as well as duration of survival.

HIV-positive participants were originally recruited with the cooperation of medical staff from both private and public health care sites in the Las Vegas Valley area. An estimated 75 percent of all people under care for HIV/AIDS in the Las Vegas area receive their medical care services at these sites (Clark County Health District, 2008). Convenience sampling was used to select 120 participants. The sample was balanced by gender (60 females, 60 males) and by ethnic group (40 African American, 40 Latino, 40 Caucasian). Face-to-face interviews were arranged at the participant's convenience in a private office within the medical site. Trained interviewers that matched the participant's gender and ethnicity conducted the interviews. Respondents were paid $40 for participating in both interviews. The research protocol, including data collection instrument, was reviewed and approved by the hospital and a university institutional review board.

Outcome Measures

Participants' death status was ascertained early in 2008, 7–8 years following the interview. Death was coded as 0 (survived) and 1 (died). A second outcome measure, survival duration, was computed the time from HIV diagnosis to death.

Interview Measures

The 48-page interview instrument assessed a wide range of demographic, medical, behavioral, and psychosocial variables. A more detailed description of these scales can be found in Reilly & Woo (2001).

Demographic/background items included gender; age in years; race/ethnicity (White, African American, Hispanic, and Other); level of education ranging from *1* (some high school) to *6* (graduate or professional degree); household income ranging from *1* (under $7,500 per year) to *7* (more than $75,000 per year); type of medical insurance (e.g.,

Medicaid, private); having children (yes versus no); and sexual orientation (homosexual, heterosexual, or bisexual).

Health and Medical items included years having been HIV positive at the time of the interview; having an AIDS diagnosis (yes versus no); CD4/T-cell count, ranging from less than 200, 200–500, and over 500; viral load count; types of HIV medications currently used including protease inhibitors, antiviral drugs, and prophylactic drugs; compliance with medications, ranging from *1* (never) to *5* (always); and self-rated health, ranging from *1* (excellent) to *4* (poor).

Substance Use in the past 6 months was measured with items assessing frequency of alcohol consumption ranging from *1* (at least once a day) to *9* (not at all in the last 6 months); number of drinks typically consumed per day; use of marijuana, alkyl nitrites (poppers), MDMA (ecstasy), amphetamines, ketamine (Special K), cocaine and crack cocaine, or other street drugs (yes versus no); whether one injected steroids or hormones (yes versus no); whether one injected recreational drugs (yes versus no); and a summary measure of the total number of street drugs used in the past 6 months.

Use of Services and Perceived Unmet Needs were assessed with two summary scores: (a) the number of 18 services one needed in the past 6 months, including the need for home nursing, housekeeping, food delivery, assistance locating housing, money to pay for housing, entitlements, child care, transportation, support groups, psychological counseling, spiritual assistance, drug dependency treatment, dental care, medical services, employment assistance, antiviral therapies, protease inhibitors, and legal assistance, and (b) the number of unmet needs—that is, if a service was needed, whether or not the needed service was received. The list of 18 services was developed by Piette, Fleishman, and Stein (1993).

Social Support Activities used in the last 6 months to deal with living with HIV included nine individual items assessing the use (yes versus no) of: (a) a professional counselor for emotional support, (b) support groups, (c) involvement with organizations, (d) socializing with other persons with HIV, (e) skills training, (f) Internet resources, (g) healthy lifestyle changes, (h) experimental/alternative methods, and (i) spiritual activities. Each activity was considered as a separate variable.

Helpfulness of Social Support was measured by adapting an instrument from Peterson and colleagues (1992). Participants were asked if they received help for any HIV/AIDS-related issue from 13 sources in the past 6 months, including: spouse, regular sexual partner, casual sex partner, parents, siblings, friends, medical professionals, religious advisors, mental health professionals, social service professional, community organizations, educational sources, and other. Individuals indicating that they received help rated the helpfulness on a scale ranging from *1* (extremely helpful) to *5*

(extremely harmful). Responses were averaged to form a mean helpfulness rating, with lower scores indicating greater helpfulness.

Barriers to Care scale, developed by Heckman and colleagues (1998), was used to assess the severity of geographical, psychosocial, and resource problems that impede care and service provision (e.g., long distance to medical facilities and personnel). An overall score was computed as the mean response across 13 items, and could potentially range from 1 to 4, with higher scores indicating a greater level of severity.

Sexual Activities were measured with items assessing, (a) number of sexual partners in one's lifetime, (b) the number of different men the respondent had sex with in the past 6 months, (c) the number of different women the respondent had sex with in the past 6 months, (d) whether or not the respondent had at least one occasion of unprotected anal or vaginal sex in the previous 6 months, and (e) whether or not the respondent had sex in exchange for money, drugs, or other material things during the past 6 months.

Sexual Compulsivity was assessed by a 10-item scale developed as a measure of tendencies toward sexual preoccupation and hypersexuality (Kalichman & Rompa, 2001). Items were initially derived from self-descriptions of persons who self-identify as having a "sexual addiction" (e.g., My sexual appetite has gotten in the way of my relationships). An overall measure was computed as a mean response ranging from 1 to 4, with 4 indicating higher sexual compulsivity.

Sexual Sensation Seeking, a measure of the propensity to seek out novel or risky sexual stimulation (Kalichman & Rompa, 1995), was measured as the mean response to 11 items (e.g., I like wild, uninhibited sexual encounters). Scores ranged from 1 to 4, with higher scores indicating higher sexual sensation seeking.

Risk Avoidance Strategies was a measure adapted from a scale developed by Kalichman and Rompa (1995). A risk avoidance score was computed as the mean response to 8 items assessing the use of strategies to resist temptation or pressure to have unsafe sex (e.g., I will keep condoms nearby). Scores ranged from 1 to 5, with higher scores indicating greater use of risk avoidance strategies.

Self-esteem was assessed with the Rosenberg Self-Esteem Scale (Rosenberg, 1965) a 10-item self-report measure of overall feelings of self-worth or self-acceptance. Items are answered on a 4-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). After reverse scoring several items, responses were summed to compute final scores ranging from 10 to 40, with higher scores indicating higher self-esteem.

Depression was measured as the mean response to the 5-item Mental Health Inventory. Its performance has been evaluated and deemed highly acceptable (Berwick et al., 1991). Scores ranged from 0–5, with higher scores representing greater depression.

Satisfaction with Life Scale was measured by a 5-item instrument designed to measure global cognitive judgments of satisfaction with one's life (Diener, Emmons, Larsen, & Griffin, 1985). Items (e.g., In most ways my life is close to my ideal) are rated on a scale ranging from *1* (strongly disagree) to 7 (strongly agree). A mean of the 5 items' responses was computed with higher scores indicating higher life satisfaction.

Statistical Analysis

Because of the large number of potential predictor variables relative to the number of patients, we first examined bivariate associations between predictor variables and death status using chi-square and independent sample *t*-tests. Significant predictors within a broad area (e.g., demographic/background predictors, substance use predictors) were further tested in separate logistic regression models. Those predictors remaining significant in the initial logistic analyses were included in a final logistic model predicting death. In addition, Cox regression survival analysis was conducted to examine variables independently predictive of longer *survival duration* (i.e., time from HIV diagnosis to death).

RESULTS

Participants

Participants were 120 patients, exactly half of who were male. Non-Hispanic Whites, African Americans, and Hispanics each comprised one-third of the sample. The average age was 40 years, with a range from 21 to 63 years. Thirty percent has some high school, 31% had a high school degree, and 39% had some college or a college degree. Twenty-four percent were employed either full or part time, 22% were unemployed, and 53% reported being disabled. The average (mean category) total household income was $7,500 to $14,999 per year. Most patients (78%) had some type of health insurance, primarily Medicaid or Medicare. The average time since first testing positive for HIV was 7 years; 42% had been diagnosed with AIDS. Sixty one percent reported being heterosexual/straight, 12% reporting being bisexual, and 28% reported being homosexual (gay or lesbian). Thirty-four (28.3%) of the 120 participants had died at the time of the follow-up. Of those that died, 21% had engaged in unsafe sex within the previous 6 months, compared to 31% of survivors.

Table 1 presents sociodemographic/background variables by death status. Those who died were significantly older, more likely to be disabled, and less likely to have received professional counseling in the past 6 months than survivors. Although only marginally significant, mortality tended to be higher among those with low CD4 counts.

TABLE 1 Comparison of Demographic/Background Variables for Those Patients who Survived and Died

Characteristic	% or Mean (*SD*)		
	Survived ($n = 86$)	Died ($n = 34$)	χ^2 or *t*-statistic
Gender (%)			
Male	46.5	58.8	
Female	53.5	41.2	1.48
Age in years (mean)	38.6 (8.2)	43.6 (6.7)	−3.43**
Race/Ethnicity (%)			
White non-Hispanic	34.9	29.4	
African American	29.1	44.1	
Hispanic	36.0	26.5	2.54
Education (%)			
Less than High School	27.9	33.3	
High School Diploma	33.4	21.6	
Some college or higher	38.4	29.8	1.31
Income (mean category)	2.4 (1.6)	2.2 (1.2)	0.30
Employment Status (%)			
Full or Part time	30.2	8.8	
Unemployed	19.8	29.4	
Disabled	50.0	61.8	6.26*
Sexual Orientation (%)			
Heterosexual/Straight	60.5	60.6	
Bisexual	11.6	12.1	
Homosexual (gay/lesbian)	27.9	27.3	0.01
Years with HIV (mean)	6.8 (4.6)	7.8 (5.1)	−0.91
Diagnosed with AIDS (% yes)	38.4	50.0	1.36
CD4 Count (%)			
Low (less than 200)	20.3	40.0	
Medium (200–500)	40.5	36.7	
High (over 500)	39.2	23.3	4.96[a]
Medical insurance (% yes)	77.9	79.4	0.85
Private medical insurance (% yes)	34.9	20.6	2.33
Professional counseling (% yes)	27.1	5.9	6.56*

*$p < .05$; **$p < .000$; [a]$p = .08$.

Logistic Regression Predicting Death

An initial series of bivariate and logistic regression analyses, conducted to reduce the large number of candidate predictor variables, resulted in seven predictors for use in a final model. The seven predictors used in the final logistic model were age in years, CD4 count, current use of prophylactic drugs, use of crack within the past 6 months, use of psychological counseling services during the past 6 months, sexual sensation seeking, and risk avoidance scores. A global test of goodness of fit indicated that the model was an adequate fit to the data.

Table 2 presents results of a final logistic regression analysis predicting death from those seven variables. Because of the exploratory nature of the study and the small sample size, *p* values less than or equal to

TABLE 2 Results of Logistic Regression Predicting Death Among HIV-Positive Patients

	B	S.E.	Sig.	Adj. OR	95.0% C.I. for OR	
					Lower	Upper
Age	.073	.038	.056	1.076	.998	1.160
CD4 Count*			.273			
Medium	−.853	.647	.187	.426	.120	1.515
High	−1.117	.746	.134	.327	.076	1.412
Prophylactic Drugs	.689	.588	.241	1.992	.629	6.314
Crack Use	1.095	.768	.154	2.989	.663	13.476
Professional Counseling	−1.517	.845	.073	.219	.042	1.150
Sexual Sensation Seeking	−.283	.427	.507	.753	.326	1.740
Risk Avoidance	.055	.388	.887	1.056	.494	2.260

*"Low" CD4 count is the reference group.

.10 were considered significant. Age was independently and significantly associated with death, such that older patients had a higher probability of dying. Patients with medium and high CD4 counts were less likely to have died than those with low CD4 counts, although the association did not reach statistical significance. Having seen a professional counselor for emotional support to deal with living with HIV was protective (i.e., those having seen a counselor were more likely to have survived). Use of prophylactic drugs, use of crack, sexual sensation seeking, and risk avoidance measures were not associated with death after adjusting for other variables in the model.

Survival Analysis Predicting Survival Duration

In addition to prediction of death *status* in the logistic model, a survival analysis was conducted to examine variables independently predictive of longer *survival duration*. A feature of survival analysis not available with other conventional statistics is appropriate handling of censored data. Censoring occurs when an individual is not followed up to the occurrence of the event of interest, in this case, death. Censoring leads to loss of information due to incomplete observation, and because those not followed up fully may have a different experience than non-censored cases, there may well be bias in the study. In survival analysis, censored observations contribute to the analysis until the time of censoring, reducing bias. In the present study, patients still alive early in 2008 were handled as censored cases.

To narrow down the large number of potential predictors, a process was used similar to the one described above for the logistic model predicting death. A series of Kaplan-Meier and Cox proportional hazards survival analyses were first conducted to identify which individual predictor variables were associated with survival duration at the .10 level of significance. The seven predictors used in the final model were age, number of years having lived with HIV, CD4 count, current use of prophylactic drugs, frequency of alcohol

TABLE 3 Results of Cox Regression Survival Analysis Predicting Survival Duration Among HIV-Positive Patients

					95.0% CI for OR	
	B	SE	Sig.	Adj. OR	Lower	Upper
Age	.053	.025	.031	1.054	1.005	1.106
Years HIV Positive	−.208	.071	.003	.812	.707	.934
CD4 Count*			.112			
Medium	−.817	.503	.104	.442	.165	1.183
High	−1.088	.566	.055	.337	.111	1.022
Prophylactic Drugs	.685	.442	.121	1.984	.835	4.713
Alcohol Use Freq.	−.174	.091	.055	.841	.704	1.004
Professional Counseling	−1.614	.772	.037	.199	.044	.904
Sexual Sensation Seeking	−.449	.349	.199	.638	.322	1.266

*"Low" CD4 count is the reference group.

use, use of psychological counseling services during the past 6 months, and sexual sensation–seeking scores. Five of the seven predictors were the same as those used in the logistic regression model predicting death.

The median predicted survival duration was 22 years for patients overall. Table 3 presents results of Cox regression survival analysis of the independent associations of the seven predictors on survival duration. Odds ratios indicate that younger age and fewer years of being HIV positive were significantly associated with longer survival duration. Those with medium and high levels of CD4 counts survived longer than those with relatively low CD4 counts. Lower frequency of alcohol use and having seen a professional counselor for emotional support to deal with living with HIV were associated with longer survival times. Use of prophylactic drugs to prevent opportunistic diseases and sexual sensation seeking were not independent predictors of survival duration after adjusting for other variables in the model.

Figure 1 present's survival curves for one of the strongest predictors and one potentially amenable to intervention, having received professional counseling. Although cause and effect cannot be assumed, survival curves show clearly that those receiving counseling had a higher estimated survival probability.

DISCUSSION

In this follow-up study of 120 ethnically diverse HIV-positive men and women, two analyses identified use of professional counseling as a factor associated with reduced risk of death. The only other study to examine this factor and find it related to survival did not include men (Cook et al., 2004). Contrary to our hypotheses, the results from these analyses did not suggest that social groups with fewer economic and institutional resources or those

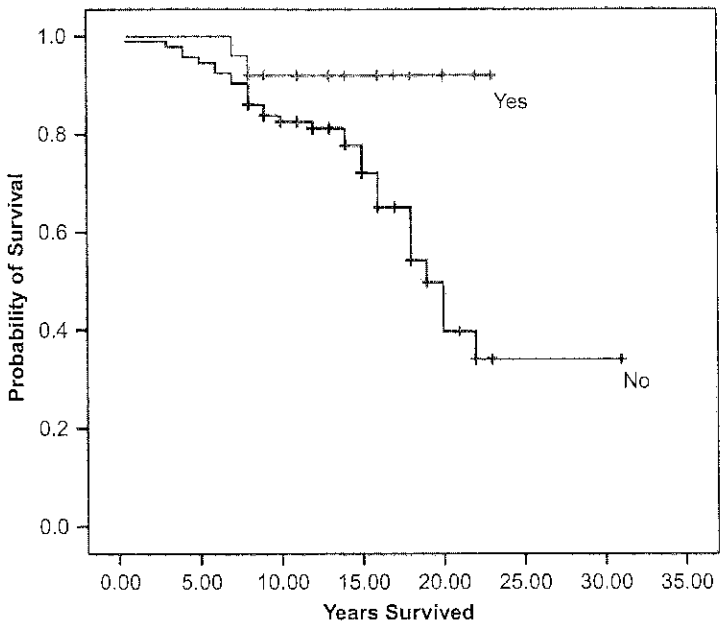

FIGURE 1 Survival curves for counseling status.

with limited access to HAART therapies were at reduced risk of survival. Consistent with past studies, other factors associated with survival or survival duration were age, CD4 count, years HIV positive, and lower alcohol use. Of these, age and years HIV positive are not amenable to intervention after diagnosis, and CD4 count is managed medically. However, alcohol use and the provision of psychological counseling are psychosocial variables amenable to intervention.

The effect of alcohol use on mortality appears less studied than injection drug use or other drug use. Recent studies suggest there may be complex relationships between alcohol use, emotional status, medication adherence, homelessness, or possibly direct detrimental physiological effects on the body (Molina, Lang, McNurlan, Bagby, & Nelson, 2008; Quatch et al., 2008; Walley et al., 2008). The current study adds to the literature indicating that assessment of alcohol use and interventions for heavy use may increase survival in the era of HAART.

The finding that professional counseling may have an effect on survival and survival duration even when other variables are controlled for is significant and offers a potential path to further improving the length of life for both men and women living with HIV. Previous research indicates there is already ample justification to screen for and treat psychological distress among people living with HIV/AIDS. Rates of depression are higher than in community samples (Cook et al., 2004; Leserman et al., 2007), rates of lifetime exposure to trauma are high (Mugavero et al.,

2007), and HIV/AIDS-related bereavement may involve multiple losses (Sikkema, Hansen, Meade, Kochman, & Lee, 2005). Further, HIV/AIDS is a life-threatening, chronic, and stigmatized disease that often affects people already marginalized by poverty, ethnicity, and sexual orientation. Even if only quality of life improved, counseling would seem to have much to offer people living with HIV/AIDS. However, depression and lifetime exposure to trauma are also associated with shorter life spans in cohort studies (Cook et al., 2004; Mugavero et al., 2007). A handful of studies have indicated that cognitive behavioral interventions or processing can improve health and immune functioning, at least in the short term, among persons with HIV/AIDS who have suffered bereavement (Bower et al., 1998; Sikkema et al., 2005).

Given the exploratory nature of this study, many questions about the association between counseling and survival remain unanswered. We do not know if the timing of the counseling is important. Further, counseling could focus on past trauma, on coping with a stressful addition to an already stress-filled life, or on adjustment to increasingly severe health limitations in the end stage of the disease. We do not know if the duration of counseling makes a difference or if a short-term problem-solving focus is as effective as an individual psychodynamic approach.

STRENGTHS AND LIMITATIONS OF THE STUDY

Strengths of this study include a sample population that was diverse in age, gender, ethnicity, and socioeconomic status. In the community where the study took place, most individuals get a similar level of care. Further, the follow-up interval was sufficiently long (about 7 years) and the access to national death records remedied the problem of any loss to follow-up. Further, the initial data collection included many demographic, medical and psychosocial variables to examine for associations with death and survival duration.

These findings have limitations due to the small sample size, potentially reducing the ability to detect some associations and reducing the ability to generalize results. Significance levels were set more liberally for this reason and the study must be considered as exploratory. Furthermore, to the degree that participants do not represent the population of interest, results may not be characteristic of the overall HIV-positive population in the area. Because of the nature of the data, we are not able to make cause and effect statements about the associations. For example, we cannot assume that receiving psychological counseling brings about better health outcomes. Finally, assessment of the predictor variables, such as professional counseling, was conducted only once, 7 years prior to the ascertainment of death status. We do not know if counseling continued throughout

the 7-year period. Longitudinal studies that repeat measures would be valuable in capturing the dynamic relationships between predictors and outcomes.

RECOMMENDATIONS

This study indicates that further research into the effect of professional counseling on immune functioning and survival for people living with HIV/AIDS should be conducted. It may be possible to utilize an experimental design, or at least a prospective study which could document the timing, duration, focus, and type of counseling that people living with HIV disease receive. Preexisting concerns like trauma prior to diagnosis should be determined as part of the study. Concomitant measures of immune functioning could reveal more about when counseling is most effective, what type of counseling is most effective, and to what extent background issues like age or gender, or personal history of trauma impact effectiveness.

The potential that psychological counseling has to improve quality of life, and potentially improve length of life, is a compelling argument to recommend routine screening for emotional distress and offering counseling as part of treatment for HIV/AIDS. With the long-term and chronic nature of HIV disease at this time, screening must be done periodically. The challenges and stresses of one stage of HIV disease in one stage of life may not be the same as in later disease and life stages.

CONCLUSIONS

HAART has ushered in an era where HIV/AIDS is considered a chronic disease. However, the current study suggests that differential effects of, access to, or usage of anti-retroviral medications, those with limited resources, and biological variables are not the only factors affecting survival. With the dramatic medical advances in the management of HIV disease we need to continue to drawn attention to identification of and intervention for psychosocial variables that may be associated with further opportunities to extend life, as well as improve quality of life.

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