

THOUGHTS OF DEATH AND SUICIDAL IDEATION IN NONPSYCHIATRIC HUMAN IMMUNODEFICIENCY VIRUS SEROPOSITIVE INDIVIDUALS

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The present study examines the prevalence of death thoughts and suicidality in HIV infection. Subjects (n = 246) were examined for psychiatric morbidity and suicidality. Compared to high risk HIV seronegatives, HIV seropositives (HIV+) had significantly increased frequency and severity of both suicidal ideation and death thoughts. Two-thirds of seropositives had suicidal ideation at some point; half of the seropositives reported suicide plans and one quarter suicide attempts; and third of seropositives reported current suicidal ideation. Suicidal ideation did not increase with advancing disease. The high prevalence of suicidal ideation suggests inclusion of its assessment in HIV treatment regardless of stage.

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A number of clinical investigators have found that psychological distress is significantly increased in HIV+ subjects (Atkinson et al., 1988; Baer, 1989; Jacobsen, Perry, & Hirsch, 1990; Kovner et al., 1989; King, 1989; Massie, Tross, Price, Holland, & Redd, 1987; Miller & Riccio, 1990; Naber et al., 1990; O'Dowd, 1988; Perry, Jacobsberg, Fishman, Frances et al., 1990; Robertson, Wilkins, Robertson, & Hall, 1990; Williams, Rabkin, Remien, Gorman, & Ehrhardt, 1991). Prior to the advent of potent antiretroviral treatment, the most prevalent manifestations of this were increased anxiety and depressive symptoms. Possible etiologies include: 1) multiple psychological stressors, including loss of physical health and well being, social isolation due to death of friends or fear of contagion, societal reaction to the disease, and loss of income due to physical illness; 2) the possibility that persons who are depressed may behave in ways that put them at risk for acquiring HIV; and 3) central nervous system (CNS) effects of HIV (Kalichman et al., 2000).

Among hospitalized patients with AIDS, depression has been shown to be the strongest predictor (23% of the variance) of quality of life (Kempainen, 2001). The most serious complication of depression and anxiety is suicide. Studies have found that between 1.9 and 4.6% of persons in the United States admit having attempted suicide (Kessler et al., 1999; Kuo et al., 2001). HIV infection has been found to be related to suicidal ideation and attempts (Komiti et al., 2001). Further more, a number of other risk factors common among persons with HIV (lack of employment, financial difficulties, substance use, physical and sexual abuse, and social isolation) have been shown to predict suicidality (Brady et al., 2002; Cooperman & Simoni, 2003; Roy, 2003). Therefore, HIV seropositive (HIV+) subjects may be at higher risk of suicide than the general population; however, findings in the literature are unclear concerning the prevalence of suicide in the HIV+ population. Numerous studies indicate this population is at an increased risk of suicidal thoughts and behavior (Cote, Biggar, & Dannenberg, 1992; Gala et al., 1992; Joseph, Caumartin et al., 1990; Marzuk et al., 1988; McKegney & O'Dowd, 1992; Rajs & Fugelstad, 1992; Ritchie, Radke, & Ross, 1992; Schneider, Taylor, Kemeny, & Hammen, 1991). However, there are also studies that suggest that HIV+ individuals are not at higher risk for suicidal ideation

than are their seronegative counterparts (Perry, Jacobsberg, & Fishman, 1990; Schneider et al., 1991).

Stage of disease may be a factor for increasing risk of suicide and thoughts of death. Although thoughts of death and suicidal ideation may occur independent of one another, it might be expected that both would increase with advancing disease stage, as many of the potential etiological factors are exacerbated by declining health. Studies have indicated that people are more likely to have suicidal thoughts when they are depressed and have physical symptoms concomitantly. Bellini and Bruschi (1996) found increased suicidal ideation in the period of testing in both HIV seropositive and seronegative persons. They also found that HIV seropositive persons are particularly susceptible to suicidal ideation during the first three months following diagnosis.

In the era prior to the advent of highly active antiretroviral therapy (HAART), a diagnosis of HIV+ meant the very real possibility of degeneration to a vegetative state, and ultimately death. It is common for individuals afflicted with serious and/or fatal diseases to experience increased thoughts of death, unrelated to suicidal ideation. Thoughts of death (e.g., "life is not worth living"), in addition to suicidality, have been assessed in studies looking at normal elderly populations (Scocco et al., 2001; Scocco & Deleo, 2002). Because increased thoughts of death and dying are natural for individuals coming to terms with a terminal illness, it is important to view these separately from suicidal ideation.

Thoughts of death and death anxiety may be viewed as states of distress accompanied by one's encounter with death or its prospect (Neimeyer et al., 2005). Death related anxiety may involve apprehension of the dying process and pain, doubts/fear of the afterlife, as well as the effects on loved ones. Research findings suggest that older subjects tend to endorse less death thoughts than middle-aged or younger subjects (Neimeyer & Fortner, 1996). Furthermore, within older patients, heightened death anxiety has been found to be correlated with physical health problems, psychological distress, weaker religious beliefs, and low life satisfaction (Fortner & Neimeyer, 1999). Feifel and Branscomb's (1973) study concluded that although the terminally ill think about death more, they do not reveal any deeper anxiety than the healthy person. Although many studies have supported this

conclusion, it seems natural to assume at least some sort of covert anxiety exists. Results from a number of studies on homosexual HIV+ men suggest that they are more afraid of premature death than a healthy individual, and that greater death anxiety was associated with less family support (Catania, Turner, Choi, & Coates, 1992).

Utilizing a well-characterized population, the purpose of the present study was: 1) to assess the prevalence of thoughts about death and suicidal ideation, both current and lifetime, in a heterogeneous sample of well studied HIV+ subjects in the pre-HAART era; 2) to evaluate the effects of elevated levels of thoughts about death and suicidal ideation for individuals at advanced stages of disease progression; 3) and to compare the results to those in high-risk HIV seronegative controls (HIV-). We hypothesized that HIV+ subjects compared to HIV- subjects would have increased thoughts of death and suicidal ideation. We also hypothesized that elevated levels of thoughts about death and suicidal ideation would be present for individuals at advanced stages of disease progression.

Methods

Subjects

Two hundred and forty-six subjects, voluntarily enrolled in longitudinal studies of the effects of HIV on the nervous system (UNC AIDS Neurological Center), completed a protocol that included psychological, neurological, neuropsychological, clinical neurophysiological (EEG and evoked potentials), magnetic resonance imaging/spectroscopy, and laboratory evaluations. Subjects were recruited from infectious disease clinics, hemophilia clinics, statewide support groups and word of mouth; subjects represented a broad range of both sociodemographic and risk factors. No subject was entered into the study specifically due to identified neurological or psychological difficulties. Of note, these subjects were assessed during the pre-HAART era. Fifty-five were high risk HIV seronegative (HIV-) comparison subjects and 191 were HIV seropositive (HIV+). Of the HIV+, 78 (41%) were asymptomatic (ASX, CDC Categories A1-A2), 36 (19%) were symptomatic without AIDS (SX, CDC Categories B1-B2), and 77 (40%) had AIDS (CDC Categories A3, B3, C1-C3). Demographic variables

TABLE 1 Demographic Characteristics by HIV Serostatus

Group	Age (SD)	Education (SD)	White (%)	Homosexual (%)	Male (%)
HIV-	36 (10.5)	15 (2.3)	42 (77)	23 (42)	22 (40)
HIV+	35 (7.9)	13 (2.9)	123 (65)	123 (64)	155 (81)

of the sample are shown Table 1. The risk factors in the HIV+ sample included homosexual contact in 64%, exposure to blood products and sexual contact in 7%, heterosexual contact only in 11%, and intravenous substance abuse and sexual contact in 18% subjects. The HIV- subjects had homosexual contact in 42%, exposure to blood products and sexual contact in 35%, heterosexual contact only in 20%, and intravenous substance abuse and sexual contact in 4% subjects as their primary risk factor.

Instruments

Subjects were administered the following: a semi-structured interview; the National Institutes of Mental Health (NIMH) Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, Williams, & Spitzer, 1985); the Minnesota Multiphasic Personality Inventory 2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989); and the Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982). The MMPI-2 is a well standardized self-report instrument consisting of 13 basic scales: ten clinical scales (Hypochondriasis, Depression, Hysteria, Psychopathic Deviate, Masculinity-Femininity, Paranoia, Psychasthenia, Schizophrenia, Hypomania, Social Introversion) and three validity scales (Lie, Infrequency and Correction). Four items from the MMPI-2 were specific to the aims of the study: item 303 "Most of the time I wish I were dead;" item 506 "I have recently considered killing myself;" item 520 "Lately I have thought a lot about killing myself" and item 524 "No one knows it but I have tried to kill myself." These items were coded dichotomously as true/false. The BSI is a self-report instrument measuring nine factors: Somatization, Obsessiveness, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism. Three global measures of psychological functioning are derived from the BSI: Positive Symptom Total, Positive Symptom Distress Index and the Global

Severity Index. Two items from the BSI were specific to the aims of the study: item 9 "Thoughts of ending your life" and item 39 "Thoughts of death or dying;" each is coded on a 5 point scale of never, a little bit, moderately, quite a bit and extremely. The three items from the semi-structured interview were "Have you thought about harming yourself," "Did you have a plan about how to do this," and "Did you attempt to follow through with this." These items were dichotomously coded as yes/no. The structured interview utilized was the National Institutes of Mental Health (NIMH) Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, Williams, & Spitzer, 1985). The DIS has been widely used in the NIMH Epidemiological Catchment Area Program (Reiger et al., 1984), and studies have demonstrated adequate reliability and validity (Burke, 1986). The four items from the DIS were "Has there ever been a period of two weeks or more when you thought a lot about death-either your own, someone else's or death in general," "Have you felt like you wanted to die," "Have you felt so low you thought of committing suicide," and "Have you ever attempted suicide." These items were dichotomously coded as yes/no.

Procedure

Subjects' recruitment and interviews occurred between September 1988 and June 1998. Upon entry into the study, a clinical psychologist or a predoctoral clinical psychology student administered the DIS. The interview consisted of unstructured and structured segments requiring durations of one to two and a half hours. Subjects then completed the self-report instruments. Subjects were admitted as inpatients to the NIH General Clinical Research Center at the University of North Carolina at Chapel Hill, and all interviews were conducted in the privacy of the patient's room.

Data Analyses

Current items were derived from the BSI (which measures symptoms within the past week) and the MMPI-2 items with "recent" item content. The remaining items were labeled lifetime and refer to meeting criteria at some point in life. To compare the rates found in the HIV+ and HIV- subjects, Chi square statistics were

computed with 2×2 design [group (HIV- /HIV+) and suicide item response (presence/absence)]. The frequency of suicide related variables across stage of disease classification was compared through computation of Chi square statistics with a 3×2 design [disease (ASX, SX, AIDS) and suicide item response (presence/absence)]. Chi square statistics were computed with 2×2 design [disease(HIV-/HIV+) and suicide item response (presence/absence)]. Power and effect sizes were assessed with alpha set at .05, beta at .20, power (1-beta) at .80. A large effect size (.5) was chosen so that differences would be clinically meaningful. The available sample sizes exceeded those specified by the power analyses: with $df = 1$ (2×2 tables), $n = 31$ was required; for $df = 2$ (3×2), $n = 39$ was required. Measures of association were also computed using Spearman or Pearson product moment correlations where appropriate. To measure severity of suicidal ideation, analyses of variance between groups (HIV-/HIV+; ASX/SX/AIDS) with dependent variables of raw BSI items were calculated. Analysis of variance between groups (suicidal/nonsuicidal) with the dependent variable of the MMPI-2 Depression score was calculated. To control for error associated with multiple statistical comparisons, the False Discovery Rate (FDR) procedure was used to adjust significance levels across the study (Benjamini & Hochberg, 1995; Williams, Jones, & Tukey, 1994). The FDR is a sequential step up procedure utilized to adjust alpha for excessive power and reduce Type I errors when performing multiple comparisons. All analyses were completed with SAS.

Results

The frequency of positive responses to the thoughts about death and suicide variables by HIV serostatus and disease stage is shown in Table 2. HIV+ subjects reported significantly increased current and lifetime thoughts about death when compared to HIV- subjects. Current and lifetime suicidal ideation was also significantly increased in the HIV+ subjects when compared to the HIV- subjects. No significant differences were found in suicide attempts, although a trend for increased attempts was noted for the HIV+ subjects.

Across the stages of HIV disease (ASX, SX, AIDS), no significant differences were found for the current or lifetime suicidal

TABLE 2 Thoughts of Death and Suicide Items by HIV Serostatus (%)

	HIV-	HIV+	χ^2 , p<	ASX	SX	AIDS	χ^2 , p<
Death current							
Thoughts of death or dying	31	51	6.8, .01	47	67	47	4.5, ns
Death lifetime							
Thought a lot about death	36	75	29.4, .001	79	83	68	4.4, ns
Suicide current							
Thoughts of ending your life	5	27	11.7, .001	26	33	26	.8, ns
I have recently considered killing myself	0	22	4.8, <.05	17	28	26	1.2, ns
Lately I have thought a lot about killing myself	0	13	2.6, ns	11	11	17	.6, ns
Suicide lifetime							
Most of the time I wish I were dead	0	10	2.0, ns	8	11	13	.4, ns
No one knows it but I have tried to kill myself	6	13	.8, ns	19	11	4	2.9, ns
Have you thought about harming yourself	35	56	7.5, .005	60	58	49	2.0, ns
Did you have a plan about how to do this	22	35	3.2, ns	40	28	32	1.8, ns
Did you attempt to follow through with this	9	20	3.7, <.05	19	25	19	.6, ns
Felt like you wanted to die	16	48	17.3, .001	55	47	40	3.4, ns
Felt so low you thought of committing suicide	29	57	12.9, .001	64	50	52	3.1, ns
Have you ever attempted suicide	16	22	.89, ns	25	19	21	.5, ns

Note. Chi square statistics and associated p values in bold are significant when adjusted by the FDR procedure.

ideation items. A trend for increased current thoughts about death was found in the SX subjects.

For current suicidal ideation (BSI, "thoughts of ending your life"), significant differences in severity were found between HIV- and HIV+ subjects ($F(1, 243) = 10.43, p < .005$; HIV- = .05, HIV+ = .47); although no significant differences in severity of suicidal ideation were found across disease stage ($F(2, 187) = .26, p = ns$; ASX = .51, SX = .50, AIDS = .41). Significant differences in severity of current thoughts about death (BSI) were found between HIV- and HIV+ ($F(1, 243) = 14.51, p < .001$; HIV- = .36, HIV+ = 1.07) with no significant differences found across disease stage ($F(2, 187) = 1.02, p = ns$; ASX = .95, SX = 1.33, AIDS = 1.07). As expected, significant increases in MMPI-2 Depression scale scores were found for those with positive responses to "Most of the time I wish I were dead" ($F(1, 94) = 38.23, p < .0001$), "I have recently considered killing myself" ($F(1, 94) = 12.29, p < .001$), and "Lately I have thought about killing myself" ($F(1, 89) = 11.59, p < .001$).

Discussion

The present study supports the initial hypothesis that both suicidal ideation and thoughts about death are significantly increased in HIV+ subjects when compared to high risk seronegative comparison subjects. As might be expected in a life-threatening illness, thoughts of death were even more frequent than suicidal ideation in the HIV+ subjects. Sixty-three percent reported current thoughts about death compared to 20% in the BSI normative sample (BSI, Derogatis & Spencer, 1982). Eighty-nine percent reported lifetime thoughts about death. In addition, 68% of the group reported lifetime and 35% reported current suicidal ideation. This frequency is much higher than that found in the BSI normative sample (Derogatis & Spencer, 1982), where 3% reported current suicidal ideation. Attempted suicide in the group was relatively frequent (25% in lifetime). Successful suicide, however, was uncommon. Only one subject was known to have completed suicide, and another death was considered a possible suicide.

Although there is a great deal of literature on HIV and suicidal ideation, reporting of death thoughts (e.g., BSI Item 39 "Thoughts of death or dying") and death wishes (e.g., MMPI-2 Item 303 "Most of the time I wish I were dead") are frequently

underreported. The rationale for this remains unclear. Skoog et al. (1996) found a prevalence of 6.7% of male participants proffering "death thoughts," compared to 7.7% reporting "death wishes." As Scocco and De Leo (2002) point out, this may be because thoughts of death are presented separately from beliefs related to the value of life. So, while an individual may entertain thoughts of death, that same individual may value life and reject suicidal thoughts. Scocco and De Leo contend that while elderly persons deny suicidal ideation, they may have increased death thoughts due to unhappiness about the aging-related restrictions placed upon their ability to live their lives in a manner that reflects their values and expectations. This may help explain our findings that: 1) death thoughts are significantly greater in HIV+ subjects when compared to high risk seronegative comparison subjects; and 2) that death thoughts were even more frequent than suicidal ideation in the HIV+ subjects. Like Scocco and De Leo's elderly sample, HIV+ persons may have increased death thoughts as they face restrictions to their independence and quality of life.

Results did not support the second hypothesis that both suicidal ideation and thoughts of death and dying would increase with disease progression. Disease stage did not significantly influence suicidal ideation; ASX, SX and AIDS subjects reported similar current and lifetime frequencies. There was a trend for increased current thoughts about death or dying in the SX subjects, but no lifetime differences were found. This may be due to the role of an adaptive process that decreases death thought accessibility after acknowledgement of disease status. Although some studies have concluded that disease factors are related to suicidal ideation, others suggest that over time, some HIV seropositive persons develop increased adaptive coping strategies that help them deal with thoughts of death. O'Dowd et al. (1993) found that persons with AIDS tend to have less suicidal ideation than persons with asymptomatic or symptomatic HIV. On initial confrontation with a diagnosis of HIV persons may experience increased death thoughts; however, over time they may also develop adaptive strategies to the new reality, which limits a corresponding increase in thoughts of death.

In HIV+ individuals, major peaks in psychological distress appear to occur post testing positive, at the onset of the first symptoms of illness (SX) and at the first AIDS defining illness (O'Dowd, 1988; Robertson et al., 1990). Increases in death thoughts may

occur in parallel with peaks in psychological distress. On historical clinical interview, subjects in the present sample very often reported having thoughts of death immediately after testing HIV+. This comes at a time when the individual is severely threatened and in psychological shock, which may overwhelm available coping resources. These early thoughts of death may reflect anxieties related to thoughts of a painful death, afterlife concerns, or a realization that one's hopes and dreams will not be fulfilled. It was also common for subjects in the asymptomatic phase of the disease to relate that they had plans to commit suicide when severe medical illness began to manifest itself. This could be regarded as plans for bringing an end to severe pain, lost functioning, or other severe decrement in quality of life. However, in individuals with AIDS-defining illnesses in this sample, no significant increases in suicidal ideation or attempts were found. Like the persons with increased adaptive coping in the study performed by O'Dowd et al. (1993), individuals at this stage have generally had more time to adjust to the illness, marshaled effective coping resources, and have more acceptance of the death process. In some, the "wait" is over, providing relief from the catastrophic fears of the unknown. Others are preoccupied with the daily challenges of fighting the disease. It may also be that, as death comes closer, life becomes more precious.

It is important to note that these data were collected during the pre-HAART era. Given the advent of potent antiretroviral therapy, there is a definite shift in what it means to be HIV+. Prior to potent therapy, a diagnosis of HIV+ meant the very real possibility of severe loss of independence and ultimately death. It may be argued that advances in treatment may have affected people's orientation to the disease and the ways in which this affected their thoughts of death and suicidal ideation. Future research assessing the prevalence of thoughts about death and suicidal ideation in HIV+ persons should compare results from both the pre-HAART and HAART eras.

It has been widely suggested that HAART has resulted in improved physical health, increased perceptions that HIV/AIDS is less threatening, increased perceptions of control over health, decreased fear of HIV/AIDS, and decreased need for avoidant coping strategies. Future studies should examine the ways in which health appraisals, life stressors, and coping strategies differ among

persons living with HIV/AIDS in the HAART era compared to persons in the pre-HAART era. Further, future research should assess thoughts regarding death in greater detail so as to be able to sort out the different implications of what it means for a person infected with HIV to be concerned about death. As Neimeyer, Stewart, and Anderson (2005) have illustrated, thoughts of death are complex ideational material that may encompass a host of multifarious fears and anxieties (e.g., dying painfully, afterlife concerns, unfulfilled life purposes, and impact upon loved ones), as well as positive forms of life review in the face of anticipated mortality, and making practical preparations for one's estate or medical care in light of the HIV diagnoses. Hence, future research should find ways to elicit a significant sample of death-relevant constructs (e.g., painful vs. painless, familiar vs. unfamiliar, and meaningful vs. meaningless) from the respondent to reveal the HIV infected person's views on death (Neimeyer, 1994a; Neimeyer, 1994b).

In summary, HIV infection is a protracted and stigmatizing illness which can lead to the loss of both physical and cognitive functioning. Thoughts of death in HIV infection have obvious important implications for clinicians and their patients, and for general health care policy. Although there is controversy in the literature addressing psychological status at HIV testing and over the subsequent disease course, it is clear that there is great potential for psychological distress and the possible need for psychological intervention. Given this and the high prevalence of death thoughts shown in our sample as well as in studies cited above, the possibility of suicide should not be overlooked in the treatment of HIV+ individuals, regardless of disease stage.

References

- Atkinson, J., Grant, I., Kennedy, C., Richman, D., Spector, S., & McCutchan, J. (1988). Prevalence of psychiatric disorders among patients infected with HIV. *Archives of General Psychiatry*, *45*, 859–864.
- Baer, J. (1989). Study of 60 patients with AIDS or AIDS Related complex requiring psychiatric hospitalization. *American Journal of Psychiatry*, *147*, 1285–1288.
- Barry, N., Robertson, K. R., Wilkins, J. W., Robertson, W. T., & Hall, C. D. (1990, April). *Convergent construct validity of the Diagnostic Interview Schedule*. Paper presented at the meeting of the Southeastern Psychological Association, Atlanta.

- Bellini, M. & Bruschi, C. (1996). HIV infection and suicidality. *Journal of Affective Disorders, 38*, 153–164.
- Benjamini, Y. & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, B, 57*(1), 289–300.
- Bivens, A. J., Neimeyer, R. A., Kirchberg, T. M., & Moore, M. K. (1994). Death concern and religious belief among gays and bisexuals of variable proximity to AIDS. *Omega, 30*, 105–120.
- Brady, S., Gallagher, D., Berger, J., & Vega, M. (2002). Physical and sexual abuse in the lives of HIV– positive women enrolled in a primary medicine health maintenance organization. *AIDS Patient Care and STDs, 16*(3), 121–125.
- Burke, J. D. (1986). Diagnostic categorization by the Diagnostic Interview Schedule: A comparison with other methods of assessment. In J. Barrett & L. Rose, (Eds.), *Mental disorders in the community* (pp. 225–285). New York: Guilford Press.
- Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Minnesota multiphasic personality inventory-2*. Minneapolis, MN: University of Minnesota Press.
- Catania, J. A., Turner, H. A., Choi, K.-H., & Coates, T. J. (1992). Coping with death anxiety: Help-seeking and social support among gay men with various HIV diagnoses. *AIDS, 6*, 999–1005.
- Cooperman, N. & Simoni, J. (2003). Abuse, social support, and depression among heterosexual, bisexual, and lesbian HIV+ women. *Journal of Lesbian Studies, 7*, 49–66.
- Cote, T. R., Biggar, R. J., & Dannenberg, A. L. (1992). Risk of suicide among persons with AIDS. A national assessment. *Journal of the American Medical Association, 268*(15), 2066–18.
- Derogatis, L. R. & Spencer, P. M. (1982). *The brief symptom inventory: administration, scoring, and procedures manual*. Baltimore: Clinical Psychometrics Research.
- Feifel, H. & Branscomb, A. (1973). Who's afraid of death? *Journal of Abnormal Psychology, 81*, 38–45.
- Fortner, B. V. & Neimeyer, R. A. (1999). Death anxiety in older adults: A quantitative review. *Death Studies, 23*, 387–411.
- Gala, C., Pergami, A., Catalan, J., Riccio, M., Durbano, F., Musicco, M., Baldeweg, T., & Invernizzi, G. (1992). Risk of deliberate self-harm and factors associated with suicidal behaviour among asymptomatic individuals with HIV infection. *Acta Psychiatrica Scandinavica, 86*, 70–75.
- Jacobsen, P., Perry, S., & Hirsch, D. (1990). Behavioral and psychological responses to HIV antibody testing. *Journal of Consulting and Clinical Psychology, 58*, 31–37.
- Joseph, J. G., Caumartin, S. M., Tal, M., Kirscht, J. P., Kessler, R. C., Ostrow, D. G., & Wortman, C. B. (1990). Psychological functioning in a cohort of gay men at risk for AIDS. A three year descriptive study. *Journal of Nervous and Mental Diseases, 178*, 607–615.
- Kalichman, S. C., Heckman, T., Kochman, A., Sikkema, K., & Bergholte, J. (2000). Depression and thoughts of suicide among middle-aged and older persons living with HIV– AIDS. *Psychiatric Services, 51*, 903–907.

- Kemppainen, J. K. (2001). Predictors of quality of life in AIDS patients. *Journal of the Association of Nurses in AIDS Care*, 12, 61–70.
- Kessler, R., Borges, G., & Walters, E. (1999). Prevalence and risk factors for lifetime suicide attempts in the national comorbidity survey. *Archives of General Psychiatry*, 56, 617–626.
- King, M. (1989). Psychosocial status of 192 outpatients with HIV infection and AIDS. *British Journal of Psychiatry*, 154, 237–242.
- Komiti, A., Judd, F., Grech, P., Mijch, A., Hoy, J., Lloyd, J., & Street, A. (2001). Suicidal behavior in people with HIV/AIDS: A review. *The Australian and New Zealand Journal of Psychiatry*, 35, 747–757.
- Kovner, R., Perelman, E., Lazar, W., Hainline, B., Kaplan, M. H., Lesser, M., & Beresford, R. (1989). Relation of personality and attentional factors to cognitive deficits in Human Immunodeficiency Virus-infected subjects. *Archives of Neurology*, 46, 274–277.
- Kuo, W., Gallo, J., & Tien, A. (2001). Incidence of suicide ideation and attempts in adults: The 13-year follow-up of a community sample in Baltimore, Maryland. *Psychological Medicine*, 31, 1181–1191.
- McKegney, F. P. & O'Dowd, M. A. (1992). Suicidality and HIV status. *American Journal of Psychiatry*, 149(3), 396–398.
- Marzuk, P., Tierney, H., Tardiff, K., Gross, E., Morgan, E., Hsu, M., & Mann, J. (1988). Increased risk of suicide in persons with AIDS. *Journal of the American Medical Association*, 259, 1333–1337.
- Miller, D. & Riccio, M. (1990). Non-organic psychiatric and psychosocial syndromes associated with HIV-1 infection and disease. *AIDS*, 4, 318–388.
- Myers, J., Weissman, M., Tischler, G., Holzer, C., Leaf, P., Ovrvaschel, H., Anthony, J., Boyd, J., Burke, J., Kramer, M., & Stoltzman, R. (1982). Six-month prevalence of psychiatric disorders in three communities. *Archives of General Psychiatry*, 41, 959–970.
- Naber, D., Perro, C., Schick, U., Schmauss, M., Erfurth, A., Bove, D., Goebel, F., & Hippus, H. (1990). Psychiatric symptoms and neuropsychological deficits in HIV infection. *Neuropsychopharmacology*, 60, 745–755.
- Neimeyer, R. A. (Ed.). (1994a). *Death anxiety handbook: Research, instrumentation, and application*. New York: Taylor & Francis.
- Neimeyer, R. A. (1994b). The Threat Index and related methods. In R. A. Neimeyer (Ed.), *Death anxiety handbook* (pp. 61–101). New York: Taylor & Francis.
- Neimeyer, R. A. & Fortner, B. (1996). Death anxiety in the elderly. In G. Maddox, (Ed.), *The Encyclopedia of Aging* (pp. 252–253). New York: Springer.
- Neimeyer, R. A., Stewart, A. E., & Anderson, J. R. (2005). AIDS-related death anxiety: A research review and clinical recommendations. In H. Gendelman, I. Grant, I. Everall, S. Lipton, & S. Swindells (Eds.), *The neurology of AIDS* (2nd ed., pp. 785–797). Oxford, UK: Oxford University Press.
- O'Dowd, M. (1988). Psychosocial issues in HIV infection. *AIDS*, 2, s201–s205.
- O'Dowd, M., Binderman, D., & McKegney, F. (1993). Incidence of suicidality in AIDS and HIV-positive patients attending a psychiatry outpatient program. *Psychosomatics*, 34, 33–40.
- Perry, S., Jacobsberg, L., & Fishman, B. (1990). Suicidal ideation and HIV testing. *Journal of the American Medical Association*, 263, 679–682.

- Perry, S., Jacobsberg, L., Fishman, B., Weiler, P., Gold, J., & Frances, A. (1990). Psychological responses to serological testing for HIV. *AIDS*, *4*, 145–152.
- Reiger, D., Boyd, J., Burke, J., Rae, D., Myers, J., Kramer, M., Robins, L., George, L., Karno, M., & Locke, B. (1988). One-month prevalence of mental disorders in the United States based on five Epidemiological Catchment Area sites. *Archives of General Psychiatry*, *45*, 977–986.
- Reiger, D., Myers, J., Kramer, M., Robins, L., Blazer, D., Hough, R., Eaton, W., & Locke, B. (1984). The NIMH Epidemiological Catchment Area (ECA) program: Historical context, major objectives, and study population characteristics. *Archives of General Psychiatry*, *41*, 934–941.
- Ritchie, E. C., Radke, A. Q., & Ross, B. (1992). Depression and social support systems in male army HIV+ patients. *Military Medicine*, *157*(7), 345–9.
- Robertson, K. R., Wilkins, J. W., Robertson, W. T., & Hall, C. D. (1990, April). *Psychological symptoms in a sample of Human Immunodeficiency Virus infected patients*. Paper presented at the meeting of the Southeastern Psychological Association, Atlanta.
- Robertson, K. R., Wilkins, Robertson, W. T., van der Horst, C., & Hall, C. D. (1990, June). *Relationship of psychological status to disease stage in HIV+ subjects*. Paper presented at Neurological and Neuropsychological Complications of HIV Infection, Monterey, CA.
- Robins, L., Helzer, J., Croughan, J., & Ratcliff, K. (1981). The NIMH diagnostic interview schedule: Its history, characteristics, and validity. *Archives of General Psychiatry*, *38*, 381–389.
- Robins, L., Helzer, J., Croughan, J., Williams, J., & Spitzer, R. (1985). *NIMH diagnostic interview schedule*. Rockville, M.D.: National Institute of Mental Health.
- Roy, A. (2003). Characteristics of HIV patients who attempt suicide. *Acta Psychiatrica Scandinavica*, *107*, 41–44.
- Schneider, S. G., Taylor, S. E., Kemeny, M. E., & Hammen, C. (1991). AIDS-related factors predictive of suicidal ideation of low and high intent among gay and bisexual men. *Suicide and Life Threatening Behavior*, *21*, 313–328.
- Socco, P. & De Leo, D. (2002). One-year prevalence of death thoughts, suicide ideation and behaviours in an elderly population. *International Journal of Geriatric Psychiatry*, *17*, 842–846.
- Socco, P., Meneghel, G., Caon, F., Dello, M., & De Leo, D. (2001). Death ideation and its correlates: survey of an over-65-year-old population. *The Journal of Nervous and Mental Disease*, *189*, 210–218.
- Skoog, I., Aevansson, O., Beskow, J., et al. (1996). Suicidal feelings in a population sample of nondemented 85-years-olds. *American Journal of Psychiatry*, *153*, 1015–1020.
- Williams, B., Rabkin, J., Remien, R., Gorman, J., & Ehrhardt, A. (1991). Multidisciplinary baseline assessment of homosexual men with and without Human Immunodeficiency Virus infection. *Archives of General Psychiatry*, *48*, 124–130.
- Williams, V., Jones, L., & Tukey, J. (1994). Controlling error in multiple comparisons, with special attention to the National Assessment of Educational Progress. *National Institute of Statistical Sciences, Technical report 33*.