Brief Report: Predictors of Optimal HIV Appointment Adherence in Minority Youth: A Prospective Study

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Objective This study investigated motivation to attend appointments, self-efficacy, self-esteem, substance use, and emotional distress as predictors of optimal HIV appointment adherence in minority youth living with HIV. Methods Utilizing a prospective design, questionnaires were collected from 82 minority youth (mean age = 20.3) at baseline and appointment adherence was assessed over the subsequent 12-month period. Appointment adherence was dichotomized to reflect optimal (i.e., at least one appointment in each of the four quarters) versus suboptimal appointment adherence (i.e., no appointment in at least one of the four quarters). Results High levels of motivation to attend appointments, high levels of self-efficacy, and low levels of alcohol use were associated with optimal HIV appointment adherence. Conclusions Interventions promoting motivation and self-efficacy, while addressing alcohol use and awareness of appointment adherence may be promising in improving optimal HIV appointment adherence in minority youth.

Key words youth; HIV care; appointment adherence.

Introduction

A critical component of human immunodeficiency virus (HIV) treatment is the monitoring of CD4 and viral load a minimum of every 3 or 4 months for youth (Department of Health and Human Services; DHHS, 2008). Quarterly appointments are recommended to treat infections, provide reproductive and primary care, and address psychosocial needs (Ryan & Futterman, 1997). However, little is known about appointment adherence for youth living with HIV (YLH). Obtaining knowledge about appointment adherence for YLH is important because while not all YLH are prescribed or taking HIV medication, medical care is still a necessity for disease management. While there have been no studies on factors associated with appointment adherence in YLH, adherence to HIV medication has been studied. Poor HIV medication adherence in YLH has been associated with low motivational readiness and self-esteem, frequent substance use, emotional distress, and poor appointment attendance (MacDonell, Naar-King, Murphy, Parsons, & Harper, 2009; Martinez et al., 2000; Murphy et al., 2005; Naar-King, et al., 2006).

The current study investigated factors associated with appointment adherence in YLH. This prospective study assessed a range of risk and resiliency factors previously associated with HIV medication adherence as predictors of HIV appointment adherence over a 12-month period. Given that HIV disproportionately impacts minority youth and ethnic minorities are less likely to consistently receive HIV/AIDS primary care services (Shapiro et al., 1999), appointment adherence for minority YLH (defined as adolescents and young adults ages 13–24 years) was investigated. It was hypothesized that youth with high motivation to attend appointments, high self-efficacy, and low alcohol use are more likely to have optimal appointment adherence.
HIV care appointments and high levels of self-efficacy and self-esteem, but low levels of substance use and emotional distress at baseline will be more likely have optimal appointment adherence the subsequent 12 months.

Method
Participants
Adolescents and young adults (i.e., youth) were recruited from a multidisciplinary adolescent HIV care program within a university-affiliated medical center in Detroit, Michigan as part of a national multi-site study between 2003 and 2005. Eligibility criteria included being HIV positive, between the ages of 16–24 years, and enrolled in medical care at the study site. Youth with an active psychiatric disorder (e.g., bipolar disorder, depression with psychotic features, and schizophrenia) were excluded. Eighty-eight youth were recruited to participate in the national multi-site study; 87 were consented and one refused. Four youth were removed from the study because they transferred medical care services. Only youth who reported being ethnic minorities were included in this substudy; thus, the final sample consisted of 82 youth.

Procedures
This study was approved by the university’s Institutional Review Board and a certificate of confidentiality was obtained from the National Institutes of Health (NIH). Participants were referred to the study by primary care providers, case managers, advocates, and peers. Written documentation of seropositivity was obtained for all participants. All youth meeting eligibility criteria were recruited to participate in this study. A general description of the study and the overall amount of time required was explained to potential participants by the research assistants. Written informed consent was obtained prior to study enrollment; a waiver of parental consent was permitted for youth under age 18. Participants completed the baseline assessment with a research assistant and received $25 compensation for their time.

Measures
HIV Appointment Adherence
Two trained research assistants reviewed all medical charts for attendance to HIV primary medical care appointments from baseline through 12 months following study enrollment. A primary care visit was defined as outpatient care from a doctor, nurse practitioner, or physician’s assistant who could monitor CD4 and viral load counts and prescribe HIV medications. Coding errors were minimal (5%) and were reconciled by both research assistants conducting a second review of the medical charts for which there were errors made during data collection. The reasons why errors occurred were discussed, as was prevention of such errors in the future. Because optimal appointment adherence (quarterly appointment attendance) was assessed, a dichotomous variable was created where a score of “1” indicated optimal appointment adherence (i.e., 1 appointment in each of the 4 quarters) and a score of “0” indicated suboptimal appointment adherence (i.e., no appointment in at least 1 of the 4 quarters).

Demographics
Participants reported ethnicity, gender, sexual orientation, age, education, average monthly income, and mode of infection as part of the baseline assessment.

Motivational Readiness to Attend HIV Care Appointments
Participants completed a validated categorical algorithm adapted from Nigg et al. (1999). They were asked: Do you consistently attend scheduled doctor’s appointment?, and responses included: No, and I do not intend to in the next 6 months; No, but I intend to in the next 6 months; No, but I intend to in the next 30 days; Yes, but I have been for less than 6 months; and Yes, and I have been for more than 6 months. Because the measure was highly skewed, with 51% endorsing yes, and I have been for more than 6 months, a binary variable was created with those at the level of motivational readiness (i.e., Yes, and I have been for more than 6 months) scored a “1” and the remainder scored a “0”.

Self-efficacy
Self-efficacy was measured using a composite score of three items that asked about confidence to attend HIV and other health care appointments (i.e., How sure are you that you can take care of your health?; How sure are you that you can do better with taking care of your health?; and How sure are you that you can take care of your health even if you were very tempted not to?). The items are rated on a 5-point Likert scale ranging from 1 = very sure I cannot to 5 = very sure I can (higher scores = higher self-efficacy). The measure showed good internal consistency in the current study (Cronbach’s α = .87).

Self-esteem
Self-esteem was assessed using the composite score from the Rosenberg Self-Esteem Scale (RSE) (Rosenberg, Schooler, & Schoenbach, 1989). Items (e.g., I feel that I’m a person of worth, at least on an equal plane with others; I take a positive attitude toward myself) are rated on a 4-point Likert scale ranging from 1 = strongly disagree to
obtained from chart review. The most proximal CD4 (the number of cells in a cubic millimeter of blood) to baseline were also obtained from medical chart review. Table I presents bivariate correlations between HIV appointment adherence, psychological variables, and biological indicators. Youth with optimal HIV appointment adherence were more likely to be motivated to attend HIV care appointments (\(r = .24\), \(p < .05\)), had higher self-efficacy (\(r = .27\), \(p < .05\)), and had less alcohol use in the past 90 days (\(r = -.31\), \(p < .01\)). Self-esteem, marijuana use, emotional distress, and CD4 and viral load counts were unrelated to appointment adherence. A direct logistic regression analysis was performed on optimal versus suboptimal HIV appointment adherence with three predictors that met the \(p < .10\) criterion for entry: self-efficacy, motivational readiness, and alcohol use in the past 90 days. Four cases with missing values on predictors were imputed using a mean imputation. Five cases with missing data on the outcome were excluded from the analysis. After imputation and deletion of missing cases, data from 77 participants were available for analysis.

A test of the full model with all three predictors was statistically significant, \(\chi^2(3, N = 77) = 14.96, p < .01\), indicating that the predictors as a set, reliably distinguished between youth with optimal and suboptimal HIV appointment adherence. Only alcohol use individually predicted optimal care, \(\chi^2(1, N = 77) = 4.15, p < .05\). The odds ratio of 2.13 for alcohol use indicates that the odds that youth with suboptimal HIV appointment adherence would report alcohol use was two times greater than that of youth with optimal HIV appointment adherence.

### Results

#### Descriptive Statistics and Bivariate Correlations

Ages ranged from 16 to 24 years (\(M = 20.3\) years; median = 20; mode = 20). The majority of youth were African American (93%) and more than half (61%) were male. Forty-nine percent of participants completed high school and 55% were living with family and friends. The mean income per month was $830. Seventeen percent of youth were perinatally infected and the remainder were behaviorally infected. Twenty-eight percent of the youth were prescribed and taking HIV medications. Twenty-two percent of youth had optimal appointment attendance (i.e., 1 appointment in each of the 4 quarters), while 78% of youth had suboptimal appointment adherence (i.e., no appointment in at least 1 of the 4 quarters). Fifty-nine percent of youth reported some alcohol use in the past 90 days, 55% reported some marijuana use in the past 90 days, and 11% reported other drug use (besides alcohol and marijuana) in the past 90 days. The frequency of other drug use was low, thus, this variable was not included in subsequent analyses.

Demographic characteristics of age, gender, and sexual orientation were not significantly correlated with HIV appointment adherence. Youth self-report of appointment attendance was not related to appointment attendance obtained from medical chart review. Table I presents bivariate correlations between HIV appointment adherence, psychological variables, and biological indicators. Youth with optimal HIV appointment adherence were more likely to be motivated to attend HIV care appointments (\(r = .24\), \(p < .05\)), had higher self-efficacy (\(r = .27\), \(p < .05\)), and had less alcohol use in the past 90 days (\(r = -.31\), \(p < .01\)). Self-esteem, marijuana use, emotional distress, and CD4 and viral load counts were unrelated to appointment adherence. A direct logistic regression analysis was performed on optimal versus suboptimal HIV appointment adherence with three predictors that met the \(p < .10\) criterion for entry: self-efficacy, motivational readiness, and alcohol use in the past 90 days. Four cases with missing values on predictors were imputed using a mean imputation. Five cases with missing data on the outcome were excluded from the analysis. After imputation and deletion of missing cases, data from 77 participants were available for analysis.

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### Data Analysis

Statistical analyses were performed using SPSS 15.0 (SPSS Inc., 2006). Prior to analyses, assumptions of normality and linearity were evaluated and screening was conducted for outliers. No outliers or significant skewness was detected; therefore, variables were left untransformed. Univariate frequency distributions and means with standard deviations were used to describe categorical and continuous variables, respectively. Bivariate correlations were calculated to determine the associations among predictor variables and HIV appointment adherence. Logistic regression was utilized to examine the unique prediction of study variables on HIV appointment adherence (binary variable indicating optimal versus suboptimal appointment adherence). Due to the small sample size (\(N = 82\)), only variables correlated with appointment adherence at \(p < .10\) were included in the logistic regression.

#### Emotional Distress

Participants completed the Brief Symptom Inventory (BSI) (Derogatis & Spencer, 1996). Items (e.g., faintness or dizziness, feeling no interest in things) are rated on a 5-point Likert scale from 1 = not at all to 5 = extremely. The Global Symptom Index (Cronbach’s \(\alpha = .93\)) and the Depression subscale (Cronbach’s \(\alpha = .87\)) were used for analyses.

#### Biological Indicators

The most proximal CD4 (the number of cells in a cubic millimeter of blood) and viral load counts (the number of HIV copies in a milliliter of blood) to baseline were also obtained from chart review.

#### Substance Use

Participants responded to three items regarding the frequency of alcohol, marijuana, and other drugs (e.g., How often did you use alcohol in the last 90 days?). The items are rated on a 5-point scale where 0 = never; 1 = once a month or less; 2 = more than once a month but less than once per week; 3 = one or more times a week, but not every day; and 4 = every day.
Self-efficacy was marginally predictive of optimal care (p < .10). The odds ratio of .17 for self-efficacy indicates that the odds that youth with suboptimal HIV appointment adherence would report lower self-efficacy was more likely than for youth with optimal HIV appointment adherence.

### Discussion

The current study contributes to the limited literature on HIV appointment adherence in minority youth. The majority of youth (78%) had at least one quarter without an HIV care appointment, and self-report of appointment adherence was unrelated to medical chart review of appointment adherence (i.e., YLH reported attending more appointments than they actually attended). This suggests that YLH may not be able to accurately assess their adherence to medical care, which can contribute to suboptimal appointment adherence and a lack of adherence to one’s medical regimen. YLH need to consistently attend appointments for effective disease management (e.g., monitoring of CD4 and viral load counts, adherence to care recommendations, including HIV medications). The health ramifications for not consistently attending HIV care appointments are numerous (e.g., increased viral load and decreased CD4 counts, susceptibility to infections); thus, interventions are necessary to improve youth’s awareness of and adherence to HIV care appointments.

Collectively, motivational readiness, self-efficacy, and alcohol use reliably distinguished between youth who had optimal and suboptimal HIV appointment adherence. Alcohol use was the strongest individual predictor of suboptimal appointment adherence. This finding is consistent with studies of adults’ self-reported adherence to their medical regimen, especially antiretroviral therapy (Ammassari et al., 2002; Chesney et al., 2002). While the overall model was significant, given the small sample size, replication with a larger sample of minority YLH is warranted to confirm findings and to test the significance of individual variables in the model. YLH in this study were a convenience sample from a single multidisciplinary clinic site who volunteered to participate in the current study. This study included rudimentary measures of motivational readiness and alcohol use. Future research, using more comprehensive measures of these constructs, is necessary to replicate and expound upon these findings. The dichotomizing of appointment adherence is also a limitation because the full range of appointment attendance was not explored. Finally, this sample of YLH did not report high psychological distress. However, it is noted that other studies (Murphy et al., 2005; Radcliffe et al., 2007) have found that samples of YLH show higher levels of emotional distress. Pediatric psychologists can use the findings of this study to contemplate interventions to improve appointment adherence for YLH. Interventions that promote motivation and self-efficacy, while also addressing alcohol use and awareness of appointment adherence may be useful in increasing appointment adherence for minority YLH. Motivational Interviewing (MI) (Miller & Rollnick, 2002), a brief client-centered, yet goal-oriented method of communication designed to increase motivation and boost confidence for behavior change, is an example. While these findings are preliminary, they provide valuable information regarding possible indicators associated with optimal HIV appointment adherence for minority YLH, and may be useful when addressing HIV appointment adherence for high-risk youth.
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Conflicts of interest: None declared.

References


