

Abstract

Adherence to highly active antiretroviral therapy (HAART) is critical to the effectiveness of HIV/AIDS treatments, yet measurement of adherence has lacked an agreed-upon standard. A number of self-report measures have been developed to address this deficiency, but their accuracy has not been evaluated fully. This research compares two widely-used self-report measures of adherence to HAART: the Stages of Change for Adherence with Medication Regimens (SOC; Willey et al., 2000) and self-report of non-adherence items developed by Wagner and colleagues (2001). Findings suggested that the two measures were not significantly correlated. Implications of these findings and suggestions for future research are discussed.

Introduction

Highly active antiretroviral therapy (HAART) has improved the medical management of HIV/AIDS (Lewis & Abell, 2002; Wood et al., 2003) and is considered to be largely responsible for lower levels of disease comorbidity and death (Catz et al., 2000; Hinkin et al., 2004; Stone, 2001; Weaver et al., 2005). Despite the effectiveness of HAART, high levels of patient non-adherence have been reported, especially in individuals who are chronically ill (Willey et al., 2000). An adherence level of approximately 95% is deemed satisfactory for reducing the patient's viral load (Hinkin et al., 2004) but adherence levels below this benchmark are pervasive (Catz et al., 2000; Stone, 2001). As a consequence, indicators of successful HIV/AIDS management do not reach desired levels (e.g., undetectable viral load and/or increased CD4 count) for some proportion of treated patients (Weaver et al., 2005). In addition, patients who fail to adhere to the treatment regimen realize higher mortality rates than their compliant counterparts (Wood et al., 2003). Regimen complexity has been found to be a factor in poor adherence (Chesney, Morin, & Sherr, 2000) and it is common for a course of HAART to include numerous pills on a daily basis (Weaver et al., 2005). In addition, psychological and physiological side effects have been found to contribute to low levels of adherence (Chesney et al., 2000; Lewis & Abell, 2002; Max & Sherer, 2000; Stone, 2001).

Adherence to HAART is a crucial component of a successful treatment regimen, but there is no gold standard of measurement for evaluating adherence to HAART (Chesney et al., 2000; Tsasis, 2001). The lack of standardization exacerbates the difficulty in critically evaluating patient adherence to HAART regimens by complicating comparisons across studies and treatments. A variety of assessment methods have been used to evaluate treatment adherence, including several brief, self-report scales (Wagner et al., 2001). Self-report measures have been found to discriminate between adherent and non-adherent individuals. Stone (2001) suggested that self-reported adherence has been found to be a reasonably valid assessment tool. Self-report measures have been shown to be highly correlated with key clinical indicators, such as viral load, current alcohol consumption, substance use, and depression. Unfortunately, these self-report measures have also been found to be imprecise (Wagner et al., 2001). Willey and colleagues (2000) found differences in self-reported frequency of missed doses as a function of Stage of Change (SOC), concluding that the SOC for Adherence with Medication Regimens was a valid measure of adherence. Wagner and colleagues noted that self-report of adherence provides a valid evaluation, but it is less accurate than self-report of non adherence.

Method

Participants

A total of 76 individuals with HIV/AIDS were recruited to the study. Sixty participants (79%) completed all relevant items. The sample was racially/ethnically diverse (55% White/Caucasian; 35% Black/African American), with a mean age of 42 ($SD = 9.3$). Males represented 62% of the sample and 55% described themselves as heterosexual. Table 1 describes the sample in greater detail.

Table 1: Demographic Characteristics of Sample (N = 60)

Demographic characteristic	n	%
Gender		
Male	37	61.7
Female	22	36.7
Transgender	1	1.7
Race/ethnicity		
Caucasian/White	33	55.0
African American/Black	21	35.0
Hispanic/Latino/Latina	3	5.0
Native American/Alaska Native	1	1.7
Other	2	3.3
Sexual Orientation		
Heterosexual/straight	33	55.0
Homosexual/gay	20	33.3
Bisexual	5	8.3
Missing	2	3.3
Education		
Less than 12 years	10	16.7
12 years or equivalent	35	58.3
Technical/trade diploma	5	8.3
Two year degree	5	8.3
Four year degree	3	5.0
Advanced degree	2	3.3
Monthly income		
Less than \$1,000.	34	56.7
\$1,000 - \$1,999	17	28.3
Greater than \$2,000.	7	11.7
Missing	2	3.3
HIV status		
HIV+ asymptomatic	19	31.7
HIV+ symptomatic	11	18.3
AIDS diagnosis	28	46.7
Missing	2	3.3

Procedure

Following IRB approval, a convenience sample of participants with HIV/AIDS was recruited through community-based AIDS service organizations via referrals, announcements, and flyers. Participants completed written informed consent and a packet that included two standardized self-report measures of medication adherence. Participation was anonymous and voluntary.

Measures

The Stages of Change for Adherence with Medication Regimens includes two items that categorize individuals into one of five stages of change based on the transtheoretical model of behavior change. Evidence for the validity of the scale is available (Willey et al., 2000).

A measure assessing recent, self-reported frequency of missed doses contains three likert-type items assessing self-reported adherence over the previous four days, categorizing adherence as perfect, intermediate, or poor. Evidence for the validity of the items is available (Wagner et al., 2001).

Results

Somewhat different patterns emerged for SOC for Adherence with Medication Regimens and self-reported frequency of missed doses. Scores for the SOC for Adherence with Medication Regimens were collapsed so as to combine the stages of change into the following three groups: precontemplation/contemplation, preparation/action, and maintenance. The majority of participants (71.7%) were in the maintenance stage, while 21.7% were in the preparation and action stages, and 6.7% were in the precontemplation and contemplation stages. Concerning self-reported frequency of missed doses, the majority (68.3%) of respondents were classified with intermediate adherence, while 30.0% and 1.7% were categorized as perfect and poor adherence, respectively.

Nonparametric correlation analysis revealed there was no significant relationship between SOC for Adherence with Medication Regimens and patients' self-reported frequency of missed doses.

As expected, participant whose scores on the SOC for Adherence with Medication Regimens were classified as precontemplation and contemplation were also classified as poor/intermediate adherence via self-reported frequency of missed doses. Participants with SOC for Adherence with Medication Regimens scores in the preparation and action stages were predominantly classified as intermediate (67%) with respect to their self-reported frequency of missed doses. However, less than one third of the participants in the maintenance stage (33%) reported perfect adherence over the previous four days. A t-test comparing participants with perfect to those with imperfect adherence on mean SOC for Adherence with Medication Regimens revealed that the SOC scores were not significantly different between participants with perfect adherence over the past 4 days ($M = 3.78$, $SD = 1.13$, $n = 42$) and participants with imperfect adherence ($M = 3.38$, $SD = 0.43$, $n = 18$), $t(58) = -1.45$, $p = .15$. Table 2 displays the cross-tabulation of scores on both measures.



Table 2: Cross-tabulation of Scores on Self-Report Measures of Adherence (N = 60)

	Precontemplation/ Contemplation	Preparation/ Action	Maintenance	Total
	n (%)	n (%)	n (%)	n (%)
Universally poor adherence	1 (25.0%)	0 (0.0%)	0 (0.0%)	1 (1.7%)
Intermediate adherence	3 (75.0%)	9 (69.2%)	29 (67.4%)	41 (68.3%)
Perfect adherence	0 (0.0%)	4 (30.8%)	14 (32.6%)	18 (30.0%)
Total	4 (6.7%)	13 (21.7%)	43 (71.7%)	60 (100%)

Discussion

Unfortunately, the results of the present study do not add support to the validity of the two self-report measurement strategies that were examined. The measures were uncorrelated and there were not significant SOC score differences between participants with perfect adherence and those with imperfect adherence. These findings are not entirely surprising. Self-report measurement is known to be subject to error as a function of a number of factors, such as memory, bias, and demand. It is no surprise that self-report of adherence is subject to error. However, measurement of adherence is important because of the strong relationship between adherence and the efficacy of HAART.

Adherence levels fluctuate, and this cross sectional study provided a synopsis of the patient adherence at a specific time interval. Consequently, this design was unable to provide a more comprehensive perspective of patient behavior. Future research may benefit from consideration of additional variables, such as treatment regimen, psychosocial characteristics, patient-provider relationship, and coping strategies.



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