Published in final edited form as:

J Assoc Nurses AIDS Care. 2015 ; 26(4): 308–315. doi:10.1016/j.jana.2015.01.005.

Initial Validation of the HIV Treatment Regimen Fatigue Scale for Adults Prescribed Antiretroviral Therapy

Kasey R. Claborn, PhD [Postdoctoral Fellow],

The Center for Alcohol and Addiction Studies, Brown University, Providence, Rhode Island, USA

Mary Beth Miller, MS [Doctoral Candidate], and

Department of Psychology, Oklahoma State University, Stillwater, Oklahoma, USA

Ellen Meier, MS [Doctoral Candidate]

Department of Psychology, Oklahoma State University, Stillwater, Oklahoma, USA

Abstract

Clinical observations have linked antiretroviral non-adherence to treatment regimen fatigue in persons living with HIV (PLWH). Although non-adherence appears to be a consequence of treatment regimen fatigue, little is known about the onset, course, and duration of this construct. Our study developed and evaluated psychometric properties of a measure of treatment regimen fatigue for PLWH. Based on a recent review, the concept was hypothesized to reflect decreased motivation, treatment cynicism, and low self-efficacy to adhere to treatment. Items comprising these factors were generated based on measures of similar constructs in the literature. Exploratory factor analyses suggested a 2-factor solution best fit the data and accounted for 35.8% of the variance. Our study supported a 2-factor model of treatment regimen fatigue consisting of Treatment Cynicism and Self-Efficacy. The scale provides a new tool to assess treatment regimen fatigue in PLWH and can be used to inform and improve treatment of HIV.

Keywords

HIV; psychometrics; scale; treatment regimen fatigue

Clinical observations of patients prescribed long-term treatment protocols suggest that positive attitudes toward treatment, motivation to maintain health, and treatment self-efficacy are components of continuous adherence to treatment. Recent qualitative evidence suggests that these factors may also comprise the construct of treatment regimen fatigue, which has been defined as a “decreased desire and motivation to maintain vigilance in

© 2015 Published by Association of Nurses in AIDS Care.

Corresponding Author: Kasey Claborn: kasey_claborn@brown.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Disclosures

The authors report no real or perceived vested interests that relate to this article that could be construed as a conflict of interest.

adhering to a treatment regimen as prescribed by a provider” (Claborn, Meier, Miller, & Leffingwell, 2014, p. 7) and “a waning commitment to continue with the prescribed treatment” (Crawford, Jewell, Mara, McCatty, & Pelfrey, 2014, p. 1093). Treatment regimen fatigue has recently been identified among several chronic illness populations including diabetes, multiple sclerosis, and HIV (Claborn et al., 2014; Crawford et al., 2014; Pyatak, Florindez, & Weigensberg, 2013).

Treatment Regimen Fatigue in Persons Living with HIV

To date, only three studies have examined treatment regimen fatigue in HIV-infected patients; however, none of these studies measured it quantitatively, and little is known in regard to the onset, course, and duration of treatment regimen fatigue. Of the three studies examining treatment regimen fatigue, two employed qualitative techniques to better understand the concept in children, adolescents, and their caregivers (Merzel, VanDevanter, & Irvine, 2008; Van Dyk, 2010). Treatment regimen fatigue, or “treatment burden,” was identified as a preceptor to medication non-adherence and was reported to occur in children, adolescents, and their caregivers. Another study conducted by Saitoh et al. (2008) examined retrospective data of 72 HIV-infected children who experienced an unstructured treatment interruption. The children’s primary care providers completed a checklist of reasons for treatment interruption, of which almost 70% reported treatment regimen fatigue as the primary cause. Evidence suggests that this phenomenon occurs throughout all developmental stages in children, adolescents, adults, and their caregivers (Merzel et al., 2008; Van Dyk et al., 2010; Miramontes, 2001).

In addition to showing developmental effects, treatment regimen fatigue appears to occur episodically throughout the course of treatment and varies in intensity and severity, which may serve as a potential mechanism to changes in adherence over time (Claborn et al., 2014). Unfortunately, this barrier to adherence has received minimal attention in the literature; therefore, additional research regarding its etiology, symptomatology, maintenance, and potential mechanisms of intervention and prevention is warranted. A significant limitation to investigating this construct has been the lack of a psychometrically sound instrument to assess treatment regimen fatigue.

The HIV-Related Fatigue Scale

Only one instrument has been developed to measure fatigue in people living with HIV (PLWH). The HIV-Related Fatigue Scale (HRFS; Barroso & Lynn, 2002) is a 56-item measure designed to examine the intensity and consequences of fatigue (e.g., impairment in cognitive functioning or activities of daily living) and the circumstances surrounding fatigue. Although this scale has demonstrated strong psychometric properties (Pence, Barroso, Leserman, Harmon, & Salahuddin, 2008), it measures a different aspect of treatment fatigue than previously defined. The HRFS examines the physiological construct of fatigue as a secondary effect of HIV disease. Although this is a necessary and comprehensive tool, it is limited in its utility to assess treatment regimen fatigue that develops as a result of long-term treatment protocols. A thorough review of the literature

revealed that no measure currently exists to assess the presence of treatment regimen fatigue in the HIV or other chronic illness literature.

This is a significant limitation, as psychometrically sound instruments are required to examine and understand psychological constructs and their impact on patient outcomes. We aimed to develop and test the psychometric properties of a new scale to assess treatment regimen fatigue in PLWH who have been prescribed antiretroviral therapy (ART). We also aimed to examine potential moderators of the relationship between treatment regimen fatigue and nonadherence to treatment protocols (i.e., quality of life, depression, and substance abuse). Understanding patients' psychological responses to treatment is expected to enhance knowledge of the mechanisms that decrease treatment adherence over time and to promote development of new interventions that improve quality of life and treatment outcomes.

Method

Participants

Our study was conducted in an outpatient community health center that primarily served PLWH. Eligible participants were (a) infected with HIV, (b) over the age of 18 years, and (c) had been prescribed an ART regimen for at least 6 months. Patients who were actively psychotic (e.g., experiencing hallucinations or delusions) or unable to read English were excluded from the study. The Oklahoma State University Center for Health Sciences institutional review board approved the study, and informed consent was obtained.

Scale Development

We conducted a thorough literature review to ascertain potential factors related to the etiology, symptomatology, and consequences of treatment regimen fatigue in HIV-infected adults (see Claborn et al., 2014). An initial pool of 22-items was developed from this qualitative review that reflected hypothesized constructs of treatment regimen fatigue, which included: (a) treatment motivation, (b) treatment cynicism, and (c) treatment self-efficacy (burden/doubt).

Measures

Participants ($N = 96$) completed a battery of measures assessing: (a) demographic data; (b) treatment adherence over the previous 4 days (AACTG Medication Adherence Questionnaire; Chesney et al., 2000); (c) self-efficacy to adhere to medication regimens (HIV Treatment Adherence Self-Efficacy Scale; Johnson et al., 2007); (d) existential quality of life (McGill Quality of Life questionnaire; Cohen, Hassan, Lapointe, & Mount, 1996); (e) frequency and quantity of alcohol use in the previous month (Frequency-Quantity Questionnaire; Dimeff, Baer, Kivlahan, & Marlatt, 1999); (f) severity of physiological fatigue over the previous week (The Fatigue Severity Scale; Krupp, LaRocca, Muir-Nash, & Steinberg, 1989); (g) presence and severity of symptoms of depression (Center for Epidemiologic Studies Depression Scale; Radloff, 1977); and (h) burnout, as measured by physical, emotional, and mental exhaustion (Burnout Measure-Short Form; Malach-Pines, 2005). Participants also completed the Treatment Regimen Fatigue Scale, which is a 22-item

measure of mental fatigue, cynicism, and self-efficacy to adhere to treatment developed by the authors for the purpose of this study. Responses ranged from -3 (*strongly disagree*) to $+3$ (*strongly agree*), with higher scores indicating higher levels of treatment regimen fatigue.

Results

Data Analysis

Data were analyzed using SPSS 20.0. Exploratory analyses using principal axis factoring with oblique rotation were conducted to determine the factor structure of the Treatment Regimen Fatigue Scale.

Sample Characteristics

Ninety-six participants (85.4% male, 62.5% gay/lesbian) who had been prescribed ART, on average, for 10.12 years ($SD = 7.86$, range < 1 to 43 years, median = 9 years, mode = 2 years) completed the study. They reported the following ethnicities: 65.6% White, 15.6% African American, 5.2% American Indian, 4.2% Hispanic/Latino, and 3.1% Biracial/Mixed. Fewer than one third of participants (28.1%) were fully employed, with 11.0% reporting part-time employment, 19.6% reporting unemployment (10.4% currently seeking employment), and 33.0% reporting disability. Collectively, participants' self-reported current level of treatment regimen fatigue was low ($M_{\text{total score}} = -41.28$, $SD = 21.08$; range = -66 to 24).

Factor Analysis

Examination of the scree plot for the Treatment Regimen Fatigue Scale suggested a 2-factor solution that accounted for 35.8% of the variance, with no additional factor accounting for more than 7.0% of the total variance. Both the Kaiser-Meyer-Olkin statistic ($KMO = .81$) and Bartlett's test of sphericity ($\chi^2 = 882.55$, $p < .001$) indicated sampling adequacy and reliability of relationships between variables. Fifteen items, which seemed to reflect cynicism toward one's treatment, loaded on the first factor with coefficients of .42 or greater. Seven items, which seemed to reflect treatment self-efficacy, loaded on the second factor with coefficients of .37 or greater. The two factors, titled Treatment Cynicism and Self-Efficacy, respectively, were moderately and negatively correlated ($r = -.45$, $p < .001$). Structure coefficients, pattern coefficients, communalities, and reliabilities from the final analysis are presented in Table 1.

Convergent Validity

Participants' total scores on the Treatment Regimen Fatigue Scale significantly predicted higher scores on the Fatigue Severity Scale, $\beta = .34$, $t(60) = 7.81$, $r(60) = .34$, $p = .007$, Adj. $R^2 = 0.10$; higher scores on the Burnout Measure Short Form, $\beta = .61$, $t(60) = 35.23$, $r(60) = .61$, $p < .001$, Adj. $R^2 = 0.36$; and lower scores on the HIV Treatment Adherence Self-Efficacy Scale, $\beta = -.61$, $t(62) = 36.60$, $r(62) = -.61$, $p < .001$, Adj. $R^2 = 0.36$.

Predictive Validity

Treatment regimen fatigue was unrelated to self-reported medication adherence in the previous 4 days, $\beta = .18$, $t(56) = 1.95$, $p = .17$, Adj. $R^2 = 0.02$, or frequency and quantity of alcohol consumption in the previous month, $\beta = -.03$, $t(87) = 0.08$, $p = .78$, Adj. $R^2 = -0.01$. However, higher levels of treatment regimen fatigue significantly predicted lower existential quality of life, $\beta = -.41$, $t(60) = 12.37$, $p = .001$, Adj. $R^2 = 0.16$, and higher levels of depression, $\beta = .58$, $t(60) = 30.67$, $p < .001$, Adj. $R^2 = 0.33$. Notably, self-reported medication adherence was unrelated to any of these outcomes ($r_{\text{quality of life}} = -0.08$, $p = .55$; $r_{\text{depression}} = .13$, $p = .35$; $r_{\text{alcohol use}} = .17$, $p = .20$).

Predictors of Treatment Regimen Fatigue

Year of diagnosis was a significant predictor of treatment regimen fatigue, $\beta = -.36$, $t(92) = 13.24$, $p < .001$, Adj. $R^2 = 0.12$, with individuals diagnosed at earlier years reporting higher levels of treatment regimen fatigue. Total months of ART prescription was also a significant predictor of treatment regimen fatigue, $\beta = .21$, $t(91) = 4.34$, $p = .04$, Adj. $R^2 = 0.04$, with individuals reporting longer durations of prescriptions reporting higher levels of treatment regimen fatigue.

Discussion

The Treatment Regimen Fatigue Scale appears to be a brief and valid self-report measure of increased treatment cynicism/negativity and low treatment self-efficacy in patients prescribed long-term antiretroviral medication regimens. The measure demonstrated excellent convergent validity and predictive utility. Specifically, individuals reporting higher levels of treatment regimen fatigue reported lower quality of life and higher levels of depression, and treatment regimen fatigue increased with time since diagnosis and medication prescription. Based on findings that self-reported medication adherence was unrelated to these outcomes, the Treatment Regimen Fatigue Scale may be useful in identifying patients at risk of treatment failure and in need of increased support.

The Treatment Regimen Fatigue Scale was designed to appraise the psychological burden that seems to accompany adherence to a lifelong treatment protocol. Our results suggest that the thought patterns related to decreased quality of life and increased feelings of depression may be best described in the context of two factors: treatment cynicism and self-efficacy. Based on the construct's relationship with depression and quality of life, it seems that social support may serve as a protective factor against these forms of psychological fatigue. Therefore, future studies should assess the importance of social support in preventing and predicting treatment regimen fatigue.

Two primary methodological issues were raised in evaluation of the Treatment Regimen Fatigue Scale. The first concern was raised when it was noted that two items demonstrated particularly weak correlations with the rest of the items in their factor. These items included, *I am skeptical of the benefits I get from taking my medications*, and, *I can find ways to take my pills on time and get to my medical appointments when something unexpected comes up*. It is possible that terms such as "skeptical" were not readily understood or represented a

different meaning for patients; future studies should use cognitive interviews to help delineate proper terminology for future versions of this measure. Similarly, it was likely that responses to the latter of these items varied because participants were responding to different parts of the item (e.g., *I can find ways to take my pills on time*, and, *I can find ways to get to my medical appointments when something unexpected comes up*). Therefore, it is recommended that the content of this particular item be separated in future applications. A second methodological issue was the loading of all reverse-scored items on a separate factor. While common in factor analysis research, the separation of reverse-scored items leads to uncertainty regarding the 2-factor nature of the scale. It is possible that one factor may best fit the data if related filler items, rather than true scale items, were used to avoid response sets.

This is the first study to develop and test the psychometric properties of a scale to measure treatment regimen fatigue. It is a vital first step toward increasing empirical knowledge in regard to the etiology, maintenance, and consequences of the construct. Development of a psychometrically valid scale allows future researchers to examine mechanisms and pathways that lead to treatment regimen fatigue and to develop methods of prevention and intervention. Further, as a clinical tool, the scale has multiple purposes such as assessment of treatment regimen fatigue at initiation of treatment and monitoring the course of treatment regimen fatigue over time and with subsequent regimens. Additionally, it will help health care providers identify patients at risk for decreased adherence and those who may need additional psychosocial support.

Although our study contributes to the understanding of treatment regimen fatigue in PLWH, it was limited in several ways. First, the small sample size could limit statistical power and external validity of results. However, our sample closely matched recommended standards (Gorsuch, 1997); the majority of items were highly correlated, indicating stronger reliability of factors; and Bartlett's significance test indicated that the sample size was adequate for the number of factors tested. Therefore, our results are considered reliable to assess the preliminary psychometric properties of this new measure. Second, although theoretical, this instrument should generalize to patients with other chronic conditions who are prescribed long-term treatment regimens (e.g., diabetes, oncology, schizophrenia). However, our study only sampled PLWH; therefore, the ability to generalize the findings is unclear. Third, according to the new measure, our study's sample self-reported low levels of treatment regimen fatigue. Future research is needed to determine the predictive and convergent validity of this measure in patients experiencing high levels of treatment regimen fatigue. Fourth, we only used a 4-day recall adherence measure. Although this measure has been widely used in HIV clinical trials (Simoni et al., 2014) and correlated *moderately* to *highly* with more objective measures (e.g., MEMS, viral load) of adherence (Shi et al., 2010; Simoni et al., 2006), results may vary with other self-reported measures of adherence, particularly those with a longer time frame. Although continued data collection is planned, these limitations warrant interpretation of current findings as exploratory.

Adhering to a lifelong treatment regimen is a challenge for some patients, resulting in decreased adherence and poorer clinical outcomes. While the occurrence of treatment regimen fatigue has been discussed in qualitative research (Davies, Whitsett, Bruce, &

McCarthy, 2002; Gibson et al., 2005), existing studies are severely limited by the lack of quantitative measurement. Our study fills this gap by providing a reliable, objective measure of treatment regimen fatigue that demonstrated preliminary levels of construct validity. Increased awareness and identification of treatment regimen fatigue is expected to assist health care professionals in aiding patients at risk for non-adherence. Moreover, increased understanding of this phenomenon will provide valuable information for targeted treatment adherence interventions and is likely to improve patient outcomes and quality of life.

Acknowledgements

Contributions to this manuscript were supported in part by grant number T32 AA07459 from the National Institute on Alcohol Abuse and Alcoholism at the National Institute of Health. The contents of this manuscript are those of the authors and do not necessarily represent the views of the National Institute on Alcohol Abuse and Alcoholism.

References

- Barroso J, Lynn M. Psychometric properties of the HIV-Related Fatigue Scale. *Journal of the Association of Nurses in AIDS Care*. 2002; 13:66–75. [PubMed: 11828861]
- Chesney MA, Ickovics JR, Chambers DB, Gifford AL, Neidig J, Zwickl B, Wu AW. Self-reported adherence to antiretroviral medications among participants in HIV clinical trials: The AACTG Adherence Instruments. *AIDS Care*. 2000; 12:255–266. [PubMed: 10928201]
- Claborn KR, Meier E, Miller MB, Leffingwell TR. A systematic review of treatment fatigue among HIV-infected patients prescribed antiretroviral therapy. *Psychology, Health, & Medicine*. 2014;1–11.
- Cohen S, Hassan S, Lapointe B, Mount B. Quality of life in HIV disease as measured by the McGill Quality of Life Questionnaire. *AIDS*. 1996; 10(12):1421–1427. [PubMed: 8902073]
- Crawford A, Jewell S, Mara H, McCatty L, Pelfrey R. Managing treatment fatigue in patients with multiple sclerosis on long-term therapy: The role of multiple sclerosis nurses. *Patient Preference and Adherence*. 2014; 8:1093–1099. [PubMed: 25170254]
- Davies B, Whitsett SF, Bruce A, McCarthy P. A typology of fatigue in children with cancer. *Journal of Pediatric Oncology Nursing*. 2002; 19:12–21. [PubMed: 11813137]
- Dimeff, LA.; Baer, JS.; Kivlahan, DR.; Marlatt, GA. Brief alcohol screening and intervention for college students: A harm reduction approach. New York, NY: Guilford Press; 1999.
- Gibson F, Mulhall AB, Richardson A, Edwards JL, Ream E, Sepion BJ. A phenomenologic study of fatigue in adolescents receiving treatment for cancer. *Oncology Nursing Forum*. 2005; 32:651–660. [PubMed: 15897939]
- Gorsuch RL. Exploratory factor analysis: Its role in item analysis. *Journal of Personality Assessment*. 1997; 68:532–560. [PubMed: 16372866]
- Johnson MO, Neilands TB, Dilworth SE, Morin SF, Remien RH, Chesney MA. The role of self-efficacy in HIV treatment adherence: Validation of the HIV Treatment Adherence Self-Efficacy Scale (HIV-ASES). *Journal of Behavioral Medicine*. 2007; 30:359–370. [PubMed: 17588200]
- Krupp L, LaRocca N, Muir-Nash J, Steinberg A. The Fatigue Severity Scale. Application to patients with multiple sclerosis and systemic lupus erythematosus. *Archives of Neurology*. 1989; 46:1121–1123. [PubMed: 2803071]
- Malach-Pines A. The Burnout Measure, Short Version. *International Journal of Stress Management*. 2005; 12:78–88.
- Merzel C, VanDevanter N, Irvine M. Adherence to antiretroviral therapy among older children and adolescents with HIV: A qualitative study of psychosocial contexts. *AIDS Patient Care and STDs*. 2008; 22:977–987. [PubMed: 19072104]
- Miramontes H. Treatment fatigue. *The Journal of the Association of Nurses in AIDS Care*. 2001; 12S: 90–92. [PubMed: 11563246]

- Pence B, Barroso J, Leserman J, Harmon J, Salahuddin N. Measuring fatigue in people living with HIV/AIDS: Psychometric characteristics of the HIV-Related Fatigue Scale. *AIDS Care*. 2008; 20:829–837. [PubMed: 18608084]
- Pyatak EA, Florindez D, Weigensberg MJ. Adherence decision making in the everyday lives of emerging adults with type 1 diabetes. *Patient Preference and Adherence*. 2013; 7:709–718. [PubMed: 23935361]
- Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385–401.
- Saitoh A, Foca M, Viani RM, Heffernan-Vacca S, Vaida F, Lujan-Zilbermann J, Spector SA. Clinical outcomes after an unstructured treatment interruption in children and adolescents with perinatally acquired HIV infection. *Pediatrics*. 2008; 121:e513–e521. [PubMed: 18310171]
- Shi L, Liu J, Koleva Y, Fonseca V, Kalsekar A, Pawaskar M. Concordance of adherence measurement using self-reported adherence questionnaires and medication monitoring devices. *Pharmacoeconomics*. 2010; 28(12):1097–1107. [PubMed: 21080735]
- Simoni J, Huh D, Wang Y, Wilson I, Reynolds N, Remien R, Liu H. The validity of self-reported medication adherence as an outcome in clinical trials of adherence-promotion interventions: Findings from the MACH14 Study. *AIDS & Behavior*. 2014; 18(12):2285–2290. [PubMed: 25280447]
- Simoni J, Kurth A, Pearson C, Pantalone D, Merrill J, Frick P. Self-report measures of antiretroviral therapy adherence: A review with recommendations for HIV research and clinical management. *AIDS & Behavior*. 2006; 10(3):227–245. [PubMed: 16783535]
- Van Dyk AC. Treatment adherence following national antiretroviral rollout in South Africa. *African Journal of AIDS Research*. 2010; 9:235–247. [PubMed: 25860628]

Appendix A

Treatment Regimen Fatigue Scale

Directions: This questionnaire consists of 22 statements people have used to describe themselves. Please read each statement carefully and then circle the appropriate number to the right of the statement to indicate how you generally feel.

	Strongly disagree	Mostly disagree	Somewhat disagree	Somewhat agree	Mostly agree	Strongly agree
1. I find it difficult to adhere to my treatment regimen all the time.	–3	–2	–1	1	2	3
2. My motivation to take my medications has decreased over time.	–3	–2	–1	1	2	3
3. I doubt taking my medications is really that important.	–3	–2	–1	1	2	3
4. I feel emotionally drained from my treatment regimen.	–3	–2	–1	1	2	3

	Strongly disagree	Mostly disagree	Somewhat disagree	Somewhat agree	Mostly agree	Strongly agree
5. I feel that, over time, I have become more confident in my ability to stick to my medication regimen.	-3	-2	-1	1	2	3
6. My treatment regimen improves my life.	-3	-2	-1	1	2	3
7. The longer I have been on my treatment regimen, the more difficult it is for me.	-3	-2	-1	1	2	3
8. I am skeptical of the benefits I get from taking my medications.	-3	-2	-1	1	2	3
9. I can find ways to take my pills on time and get to my medical appointments when something unexpected comes up.	-3	-2	-1	1	2	3
10. Maintaining my treatment regimen as prescribed by my doctor is really a strain for me.	-3	-2	-1	1	2	3
11. Sometimes I don't think my doctors and nurses actually know what's best for me.	-3	-2	-1	1	2	3
12. I feel that I cannot manage my treatment on my own and have to rely on others for help.	-3	-2	-1	1	2	3
13. Even though my treatment regimen is demanding, it is worth it overall.	-3	-2	-1	1	2	3
14. My treatment gets in the way of my daily life.	-3	-2	-1	1	2	3
15. I find it difficult or bothersome to do all of my	-3	-2	-1	1	2	3

	Strongly disagree	Mostly disagree	Somewhat disagree	Somewhat agree	Mostly agree	Strongly agree
treatment-related tasks (e.g., take pills, go to doctor's appointments, get refills on time, etc.).						
16. I get discouraged when I think about having to take my medications and go to doctor's appointments regularly for the rest of my life.	-3	-2	-1	1	2	3
17. I am tired of having to go to my doctor's appointments and getting labs (i.e., blood work) taken.	-3	-2	-1	1	2	3
18. In my opinion, I am good at adhering to my treatment regimen.	-3	-2	-1	1	2	3
19. Many times it seems pointless to even try to take all of my medications.	-3	-2	-1	1	2	3
20. I am able to incorporate my treatment regimen into my daily routine.	-3	-2	-1	1	2	3
21. Having to take my medications everyday wears me out.	-3	-2	-1	1	2	3
22. I feel that over time I have developed a good routine for keeping up with my treatment regimen.	-3	-2	-1	1	2	3

[Items 5, 6, 9, 13, 18, 20, and 22 are reverse-scored.]

Key Considerations

- Clinical observations indicate that treatment regimen fatigue contributes to non-adherence to antiretroviral therapy among persons living with HIV.
- Treatment regimen fatigue is characterized by cynicism toward treatment and low self-efficacy to adhere to treatment as prescribed. Identification of patients experiencing treatment regimen fatigue may allow for skill development and management of fatigue symptoms.
- The Treatment Regimen Fatigue Scale may help to identify patients at risk for decreased adherence and those in need of additional support.

Table 1

Patterns and Structure Coefficients, Communalities, Reliabilities, and Sums of Squared Loadings for Each Factor of the Treatment Regimen Fatigue Scale Among HIV-Infected Patients Taking ART Medications ($N = 96$)

Item	Factor 1: Treatment Cynicism	Factor 2: Self- Efficacy	h^2
	S (P)	S (P)	
1. Difficult to adhere	.56 (.57)	.19 (−.02)	.32
2. Motivation decreased	.66 (.67)	.21 (−.04)	.43
3. Doubt	.50 (.49)	.21 (.02)	.25
4. Emotionally drained	.70 (.67)	.35 (.10)	.50
7. The longer, the more difficult	.65 (.64)	.27 (.03)	.42
8. Skeptical	.42 (.44)	.09 (−.07)	.18
10. Maintaining is really a strain	.74 (.73)	.31 (.04)	.55
11. Doctors and nurses don't know what's best	.51 (.55)	.11 (−.10)	.27
12. Cannot manage on my own; have to rely on others	.46 (.43)	.24 (.08)	.22
14. Treatment gets in way of daily life	.66 (.59)	.41 (.19)	.47
15. Difficult or bothersome	.70 (.64)	.38 (.14)	.50
16. Discouraged	.69 (.73)	.18 (−.09)	.49
17. Tired	.58 (.58)	.22 (.00)	.33
19. Seems pointless	.72 (.74)	.21 (−.06)	.52
21. Wears me out	.57 (.52)	.33 (.14)	.35
5. Over time, more confident	.13 (−.06)	.48 (.51)	.24
6. Improves my life	.24 (−.02)	.69 (.70)	.48
9. Can find ways	.14 (.00)	.37 (.37)	.14
13. Demanding but worth it	.17 (.00)	.47 (.47)	.22
18. I'm good at adhering	.26 (.02)	.65 (.64)	.42
20. Able to incorporate into daily routine	.21 (.03)	.49 (.48)	.24
22. Over time, developed a good routine	.34 (.13)	.60 (.55)	.38
Cronbach's α	.89	.72	
Eigenvalues	6.84	2.29	
SSL	6.25	1.63	7.88
% of covariance	79.3	20.7	100

Note. h^2 = communalities; P = pattern coefficients; S = structure coefficients; SSL = rotated sums of squared loadings; ART = antiretroviral therapy. Coefficients used in interpretation of factors are displayed in bold.