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STIGMA, SOCIAL SUPPORT, AND TREATMENT ADHERENCE AMONG HIV-POSITIVE PATIENTS IN CHIANG MAI, THAILAND

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Abstract

Our study assessed the influence of HIV-related stigma on treatment adherence among people living with HIV in Chiang Mai, Thailand, and whether social support had a moderating effect on this relationship. We recruited 128 patients living with HIV from Sansai Hospital, a community hospital in Chiang Mai, Thailand, and collected data through structured interviews. All forms of HIV-related stigma considered in this study (personalized experience, disclosure, negative self-image, and public attitudes) were negatively correlated with adherence to anti-retroviral regimens. Multiple linear regression indicated that total HIV-related stigma was more predictive of treatment adherence than any individual stigma type, after adjusting for socio-demographic and health characteristics. Tests of interaction showed that social support did not appear to moderate the association between HIV stigma and treatment adherence. Our findings suggest that community and government efforts to improve public perceptions about people living with HIV might promote treatment adherence behaviors among HIV-positive patients.

The Joint United Nations Programme on HIV and AIDS (UNAIDS) estimates that 490,000 people in Thailand were living with HIV in 2010, with a prevalence of 1.1% among adults aged 15–49, the highest in continental Asia (UNAIDS, 2013). Since its implementation of the National Strategic Plan in 1992, Thailand has experienced a drop in HIV incidence from over 350 infections per 100,000 persons to less than 14 new infections per 100,000 persons (UNAIDS, 2012, 2013). And although UNAIDS (2012, 2013) reports that 225,272 persons living with HIV (PLWH) had access to antiretroviral (ARV) therapy in 2011, this only met 65% of the demand for coverage. Furthermore, ARV retention rates remained at about 80% from 2009 to 2011 (UNAIDS, 2012).

By suppressing the HIV viral load of PLWH and consequently increasing CD4 levels, ARVs help patients maintain functional immune systems. ARVs have also been clinically shown to reduce the transmissibility of HIV by reducing viral load in bodily fluids known to carry the virus (Cohen et al., 2011). Pharmacological advances have improved the long-term survival rates and immunological functioning of PLWH; however, for these medications to be effective, patients must maintain rigid treatment regimens (Rintamaki, Davis, Skripkauskas, Bennett, & Wolf, 2006). Should patients truncate or deviate from their regimens, ARVs might fail to effectively inhibit viral replication and accelerate HIV resistance to treatment (Harrigan et al., 2005). For these reasons, exploring and identifying factors that influence treatment adherence is important for improving health outcomes for PLWH, reducing ARV treatment resistance, and preventing new infections.

HIV-RELATED STIGMA, SOCIAL SUPPORT, AND TREATMENT ADHERENCE

In general, the extant literature on PLWH contains robust investigations into patient-regimen characteristics and poor HIV treatment adherence, though stigma and social support are often overlooked as potential influences on ARV treatment fidelity (Rintamaki et al., 2006). Research based on U.S. samples indicate that HIV-related stigma is negatively associated with HIV treatment adherence among PLWH (Rao et al., 2012; Sayles, Wong, Kinsler, Martins, & Cunningham, 2009; Venable, Carey, Blair, & Littlewood, 2006). However, it is important to acknowledge that stigma and its effects are shaped by its cultural context (Genberg et al., 2008; Parker & Aggleton, 2003), and understanding how it operates in different cultural settings is important for improving health outcomes of PLWH in those settings (Jeyaseelan et al., 2013). In their comparative study, Genberg and colleagues (2008) discuss the multidimensional nature by which HIV stigma differs between Thailand and Zimbabwe. Namely, individuals from Thailand appeared to express more negative attitudes against PLWH but perceived that there was less discrimination against PLWH. The authors further assert that there is no generalized relationship between HIV stigma and resulting behaviors because HIV stigma manifests differently across cultural contexts.

The pervasiveness of HIV stigma in Thailand poses challenges to promoting health among PLWH. It has been suggested that HIV stigma is compounded by the marginalization of groups at high risk of HIV in Thailand, which include injection drug users and men who have sex with men (Genberg et al., 2008). Research on PLWH has built a strong case that perceived stigma can deter disclosure of one's status and is associated with depression, other psychological problems, and substance use (Lee, Li, Iamsirithaworn, & Khumton, 2013; Li, Lee, Thammawijaya, Jiraphongsa, & Rotheram-Borus, 2009; Tangmunkongvorakul et al., 2013). The negative implications of HIV stigma extend to prevention efforts in Thailand as well. The Pre-exposure Prophylaxis (PrEP) Initiative study of HIV-negative men who have sex with men (MSM) in Chiang Mai, Thailand revealed that participants held positive attitudes toward PrEP, but expressed concerns that taking the regimen could arouse outside suspicions that they are HIV-positive or have sex with other men (Rongkavilit et al., 2010). It stands to reason that in Thailand, HIV stigma could also fetter adherence among PLWH given the reservations that arise in HIV-negative persons around PrEP usage.

Social support has also been explored for its influence on HIV treatment adherence in PLWH. In general, research findings indicate that access to social support promotes adherence to ARV regimens in PLWH (Altice, Mostashari, & Friedland, 2001; Lehavot et al., 2011; Ruanjahn, Roberts, & Monterosso, 2010), though some findings have been mixed (Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000). When accounting for its interaction with HIV stigma, social support has been shown to buffer the negative impact of HIV stigma on coping behaviors and daily functioning in PLWH (Colbert, Kim, Sereika, & Erlen, 2010; Larios, Davis, Gallo, Heinrich, & Talavera, 2009; Li et al., 2009; Muze, 2009). Therefore, our study sought to determine whether HIV-related stigma is associated with treatment adherence among PLWH in Chiang Mai, Thailand, and whether social support exhibited moderator effects on this association. We predicted that experience of HIV-related stigma would be inversely associated with self-reported treatment adherence among PLWH and that social support would buffer this association.

METHODS

STUDY DESIGN

The study employed a cross-sectional design in which PLWH in the district of Chiang Mai, Thailand were recruited from Sansai Hospital, a government-operated community hospital in Chiang Mai which provides public-coverage for ARVs. Patients received toiletries as incentives for their participation and provided their informed consent before completing structured interviews with the researchers. Use of structured interviews rather than self-administered questionnaires was necessary to accommodate participants who had limited literacy skills. The informed consent form and questionnaire were written in Thai. Any items in the questionnaire that were adapted from English language instruments were translated into Thai and back-translated into English by the researchers. Key informants from Sansai Hospital and the researchers' medical institution were also interviewed using these study instruments and were involved in their back-translation. No official identifying information was connected to participant data. We aimed to recruit a minimum number of 81 participants in order to detect a small effect size of 0.1 ($\alpha = 0.05$, $1 - \beta = 0.80$; Cohen, 1992), and obtained a sample of 128 participants. All study procedures were approved by the Institutional Review Boards (IRB) at the authors' home institutions.

MEASURES

Sample Characteristics—The socio-demographics section of the questionnaire elicited information from the participant regarding age, ethnic/cultural background, relationship status, sexual orientation, level of education, financial status, and employment status. The questionnaire queried participants about their general health status, general health problems, physical functionality, lifetime history of substance use, length of time the patient had been using ARVs, and most recent CD4 count within the past 12 months.

HIV-Related Stigma (Main Effects Variable)—HIV-related stigma was measured using a Thai translation of the condensed Berger Stigma Scale (Berger, Ferrans, & Lashley, 2001; Wright, Naar-King, Lam, Templin, & Frey, 2007). We chose this scale in order to explore four distinct facets of perceived HIV-related stigma—personalized experience,

disclosure, negative self-image, and public attitudes (Berger et al., 2001; Wright et al., 2007). The revised scale was comprised of 10 items and was compartmentalized into four subscales, each of which performed with high levels of internal consistency: (a) personalized experience (Cronbach's $\alpha = 0.75$), (b) disclosure (Cronbach's $\alpha = 0.73$), (c) negative self-image (Cronbach's $\alpha = 0.84$), and (d) public attitudes (Cronbach's $\alpha = 0.72$). Each item was measured on a 4-point scale ranging from (1) Strongly Agree to (4) Strongly Disagree to statements like "Having HIV makes me feel unclean."

Social Support (Moderator)—We measured social support using the Thai version of the Multidimensional Scale of Perceived Social Support (MSPSS; Cronbach's $\alpha = 0.91$; Wongpakaran, Wongpakaran, & Ruktrakul, 2011; Zimet, Dahlem, Zimet, & Farley, 1988). The scale consisted of 12 items, each measured on a 7-point scale ranging from (1) Very strongly disagree to (7) Very strongly agree to statements such as "I can talk about my problems with my family." Four items were appended to the scale to reflect social support for receiving HIV treatment. The 16 items were summed to create a composite score that ranged from 16 to 112.

HIV Treatment Adherence (Outcome Variable)—Our study captured multidimensional aspects of HIV treatment adherence, including using recommended doses, adjusting to side-effects, adhering to regular ARV regimen schedules, and remembering when to take their ARVs (Morisky, Ang, Krousel-Wood, & Ward, 2008; Morisky, Green, & Levine, 1986; Sakthong, Chabunthom, & Charoenvisuthiwongs, 2009). HIV treatment adherence was measured using an eight-item version of the Morisky Medication-Taking Adherence Scale (MMAS) that was translated into the Thai language (Cronbach's $\alpha = 0.61$), (Morisky et al., 2008; Morisky et al., 1986; Sakthong et al., 2009). Responses to the first seven items were dichotomous—(1) Yes or (0) No—to questions like "Did you take your HIV medicine yesterday?" The eighth item was on a 5-point scale ranging from Never to Always. The eight items were summed to make a composite score ranging from 0 to 8. Treatment adherence scores of 8 indicated high adherence, 6 to 7 indicated medium adherence, and 5 or less indicated low adherence.

ANALYSES

We performed all statistical analyses using Statistical Package for the Social Sciences, Version 20 (IBM, 2011). Means and standard deviations were calculated for socio-demographic and health characteristics measured on continuous scales, as well as frequencies and percentages for those with ordinal and nominal levels of measurement. We also calculated means and standard deviations for the composite scores corresponding to HIV-related stigma, social support, and HIV treatment adherence.

We conducted Spearman's rank correlation tests between total HIV-related stigma and HIV treatment adherence, as well as between each stigma subscale and HIV treatment adherence. Testing association between social support and treatment adherence also involved using Spearman's rank correlation. Univariate analyses of treatment adherence on nominal control variables called for conducting difference tests—independent samples *t*-test and Analyses of

Variance (ANOVA)—while treatment adherence on ordinal and continuous control variables required Spearman's correlation tests.

Only predictors that were associated with HIV-treatment adherence at the univariate level ($p < 0.05$) were considered in multivariate analyses. We performed stepwise multiple linear regression of HIV treatment adherence on total HIV stigma and its subscales, as well as socio-demographic and health characteristics. We also tested social support for moderator effects on the association between stigma and treatment adherence by entering interaction terms of HIV-related stigma variables $\times$ social support variables. Stepwise selection removed variables from the final linear model that exceeded a p -value of 0.10. We also computed variance inflation factors and tolerance levels of our predictors to assess for multicollinearity between study constructs.

RESULTS

PARTICIPANT CHARACTERISTICS

Table 1 displays the participant socio-demographic characteristics. The sample of participants ($n = 128$) consisted of 52 males (40.6%) and 76 females (59.4%), with a mean age of 45 years. The vast majority of the sample reported being of Thai ethnicity (98.4%), while the remainder of participants (1.6%), were of other ethnicity. Most of the participants identified as heterosexual (88.3%), while the 11.7% identified as other (nonheterosexual) sexual orientation. Regarding relationship status, 18.8% were single, 37.5% married, 14.8% in a steady relationship, 3.9% divorced, and 25.0% widowed. Last, slightly more than half of the sample reported insufficient finances—22.7% with debt and 29.7% without debt—while 34.4% reported sufficient finances and 13.3% reported sufficient finances with savings.

Health characteristics of the sample are presented in Table 1. Participants began HIV treatment an average of 6.5 years before their participation in the study. The majority of participants perceived their own health within the past month to be good or better—26.6% good, 35.2% very good, and 10.2% excellent—while 26.6% reported fair health and 1.6% felt they were in poor health. Over 22% of participants reported never having physical problems in the past month, while 29.7% rarely, 37.5% sometimes, 7.0% often, and 3.1% always had physical problems. When asked to report their problems with routine activities in the past month, 44.5% reported Never, 22.7% reported Rarely, 27.3% reported Sometimes, 3.9% reported Often, and 1.6% reported Always. Most participants had a CD4 count of over 400 cells/mL or more—800 or more (7.8%), 600–799 (14.1%), 400–599 (36.7%)—whereas 35.9% had 200–399 CD4 cells/mL and 5.5% had less than 200 CD4 cells/mL. No participants reported any history of substance use.

DESCRIPTIVE STATISTICS

The descriptive statistics for HIV treatment adherence, HIV-related stigma, and social support are displayed in Table 2. The majority of participants reported medium HIV treatment adherence (76.6%), while 20.3% reported high adherence and 3.1% reported low adherence as defined by the MMAS (Morisky et al., 2008). The mean total score for HIV-related stigma was 21.12, while the mean total score for social support was 82.27, both of

which performed with high internal consistency (Cronbach's $\alpha = 0.864$ and 0.899 , respectively).

UNIVARIATE STATISTICS

Table 3 displays the univariate statistics for participant characteristics, HIV-related stigma, and social support on HIV treatment adherence. Age was positively correlated with treatment adherence ($p < 0.05$), as was participant perception of health ($p < 0.05$). Difference tests of participant characteristics on treatment adherence revealed that those of Thai ethnicity reported higher treatment adherence than those of other ethnicity ($p < 0.05$). No other participant characteristics were significantly associated with HIV treatment adherence.

Total HIV-related stigma ($p < 0.001$) as well as its subscales—personalized experience ($p < 0.001$), disclosure ($p < 0.01$), negative self-image ($p < 0.01$), and public attitudes ($p < 0.001$)—were negatively correlated with treatment adherence. None of the social support variables were significantly correlated with treatment adherence.

MULTIPLE LINEAR REGRESSION MODEL

The final linear regression model, shown in Table 4, was found to be significant overall ($F = 9.119$, $p < 0.001$), and 18.1% of the variance in HIV treatment adherence was attributed to its included predictors (R -squared = 0.181). While adjusting for age and perceived health, total HIV-related stigma was negatively associated with HIV treatment adherence (standardized $\beta = -0.328$, $p < 0.001$). Specifically, a standard deviation increase in HIV stigma was met with a 0.328 standard deviation decrease in HIV treatment adherence in terms of their respective scales. Social support did not show significant moderator effects on this association, as no interaction terms for HIV stigma $\times$ social support were retained in the model during stepwise selection. Furthermore, stepwise selection excluded any subscales pertaining to HIV-related stigma (personalized experience, disclosure, negative self-image, and public attitudes). Tolerance was greater than 0.90 and the VIF was less than 1.1, so there did not appear to be signs of excessive multicollinearity.

DISCUSSION

The purpose of this study was to determine whether HIV-related stigma was associated with HIV treatment adherence among PLWH in Chiang Mai, Thailand. We hypothesized that HIV-related stigma would be associated with HIV treatment adherence, and that social support would have a moderating effect on this association. Some of our findings confirmed our predictions. Univariate analyses indicated that all HIV-related stigma subscales—personalized experience, disclosure, negative self-image, and public attitudes—and total HIV-related stigma were significantly correlated with HIV treatment adherence. After adjusting for socio-demographic and health characteristics during multiple linear regression, total HIV-related stigma maintained the strongest association with treatment adherence.

This seems to suggest that the culmination of the various types of HIV-related stigma is a stronger predictor of treatment adherence than any individual type of stigma alone. It has been suggested that some of the stigma against PLWH in Thailand can be attributed to

existing negative attitudes against groups such as men who have sex with men (MSM) and injection drugs users, who are at high risk of HIV (Genberg et al., 2008). Considering that our sample was heavily represented by heterosexuals and females, all with no history of substance use, our findings might suggest that an association exists between HIV stigma and treatment adherence in Thailand even without the conflation of homosexual and drug-related stigma.

While our study confirmed other research findings linking HIV stigma with treatment adherence, the exact mechanisms which produce poor treatment adherence in stigmatized PLWH are still not fully understood (Vanable et al., 2006). Qualitative research has revealed that PLWH who experience stigma might feel less inclined to seek or use treatment because they fear disclosing their statuses. In a study of 47 PLWH in Vietnam, focus groups indicated that fear of exposing HIV status was a barrier to treatment adherence, not forgetfulness (Tam, Pharris, Thorson, Alfven, & Larsson, 2011). Another qualitative study of 25 young PLWH aged 17–25 in the United States presented similar findings—informants reported struggling with HIV-related stigma to the extent that they omitted doses of their medication because they feared revealing their statuses to the people in their lives (Rao, Kekwaletswe, Hosek, Martinez, & Rodriguez, 2007). Furthermore, it is conceivable that PLWH who experience stigma might avoid treatment because they are emotionally unprepared to confront the social and logistical challenges of living with HIV (Li et al., 2009).

Given that our measure of social support, the MSPSS, did not exhibit significant moderator effects in our final model, it might be important to distinguish explicit from implicit forms of social support in the context of PLWH in Thailand. The MSPSS measures explicit forms of social support, where a person discloses one's problems and seeks direct assistance in the form of tangible, emotional, and informational support (Wongpakaran et al., 2011; Zimet et al., 1988). However, Kim, Sherman, and Taylor (2008) contend that implicit social support—emotional or unconditional forms of support that do not require disclosure or direct acknowledgement of one's problems—might be utilized more highly than explicit social support in Asian cultures. Uchino (2006) also mentions that explicit social support measures do not capture the co-occurring negative feelings associated with close relationships. For example, it is conceivable that a person can receive tangible or informational social support from someone who hold stigmatizing attitudes against PLWH. For these reasons, implicit social support might offer greater relevance to our target population.

LIMITATIONS

We cannot necessarily infer that the relationship between HIV-related stigma and treatment adherence is causal due to the cross-sectional design of the study. Additionally, it is important to consider that our sample was obtained from one public community hospital, so our findings might only generalize to the local community served by Sansai Hospital. In 2011, 46.5% of PLWH were women, and 60% of PLWH report being heterosexual (United Nations Program on HIV/AIDS, 2012, 2013). This varies somewhat from our sample, which was 59.4% female and 88.3% heterosexual, though, and the prevalence of HIV among MSM is lower in Chiang Mai than in the general Thai population (United Nations Program on

HIV/AIDS, 2012). It has also been found that many MSM in Thailand self-identify as heterosexual or have female sexual partners (Sirivongrangson et al., 2012). Therefore, it is possible that some of the self-identified heterosexual males in our sample had past or concurrent sexual experiences with men. Lastly, participant history of substance use might have been subject to reporting bias. No participants disclosed having a history of substance use, though they might have withheld this information due to Thailand's harsh penalties for drug-related offenses, which can include incarceration, compulsory treatment, and even capital punishment (Leechaianan & Longmire, 2013).

CONCLUSIONS

Our findings suggest that the experience of stigma could hold meaningful implications for treatment adherence among PLWH in Chiang Mai, Thailand. Addressing HIV-related stigma on a community level would help to promote treatment adherence by ensuring a healthy and supportive social environment for PLWH. In Thailand, evaluation of the HIV stigma intervention, Positive Partnership Project, indicated that people who were exposed to at least three of its four activities: (1) monthly banking days; (2) HIV campaigns; (3) information, education and communications materials; and (4) "Funfair" events—demonstrated significant changes in HIV transmission knowledge, fear of HIV infection, and shame from having HIV from baseline after exposure (Jain et al., 2013). This reinforces the importance of intervening at multiple levels in order to effectively address the different facets and impacts of HIV stigma in Thailand and other settings.

As discussed earlier, finding novel ways to promote treatment adherence has long-term health benefits to PLWH in addition to preventive benefits for HIV transmission. Development of successful programs would require enhancing our understanding of HIV-related stigma in Thailand and its influence on treatment adherence in PLWH through formative research. Exploring the role of implicit social support and its interaction with these constructs might provide insight into the positive social forces that attenuate stigma and promote healthy behaviors. Potentially, qualitative study designs could help to capture the complex mechanisms by which stigma, social support, and treatment adherence interact in PLWH, as well as how the nuances of Thai culture and life context shape these constructs. Future research on this topic might benefit from adopting a community-based participatory research model, as partnering with community members might serve to improve study instruments and steer the development of effective interventions for PLWH in Thailand. Public health agencies in Thailand should also collaborate with spiritual leaders in the community (United Nations Children's Fund, 2003), health educators, and non-governmental organizations in educating the public about the realities of living with HIV, thereby benefiting the social environment and health outcomes of PLWH in Thailand.

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TABLE 1

Participant Characteristics

	$\bar{x}$	<i>SD</i>
Age (years)	44.87	9.00
Initiation of HIV treatment (months ago)	79.01	37.19
	<i>f</i>	%
Gender		
Male	52	40.6
Female	76	59.4
Ethnicity		
Thai	126	98.4
Other	2	1.6
Relationship status		
Single	24	18.8
Married (and still together)	48	37.5
Steady relationship	19	14.8
Divorced	5	3.9
Widowed	32	25.0
Sexual orientation		
Heterosexual	113	88.3
Other (nonheterosexual)	15	11.7
Education		
Never attended school	4	3.1
Primary school	85	66.4
Secondary school	19	14.8
High school	13	10.2
Some college or higher	6	4.7
Undergraduate degree or higher	1	.8
Financial status		
Sufficient (with savings)	17	13.3
Sufficient (without savings)	44	34.4
Insufficient (without debt)	38	29.7
Insufficient (with debt)	29	22.7
Overall health		
Excellent	13	10.2
Very good	45	35.2
Good	34	26.6
Fair	34	26.6
Poor	2	1.6
Physical problems		
Never	29	22.7
Rarely	38	29.7

	$\bar{x}$	<i>SD</i>
Sometimes	48	37.5
Often	9	7.0
Always	4	3.1
Problems with routine activities		
Never	57	44.5
Rarely	29	22.7
Sometimes	35	27.3
Often	5	3.9
Always	2	1.6
CD4 count (cells/mL)		
Fewer than 200	7	5.5
200–399	46	35.9
400–599	47	36.7
600–799	18	14.1
800 or more	10	7.8

TABLE 2
Descriptive Statistics for HIV-Related Stigma, Social Support, and HIV Treatment Adherence

	Cronbach's α	Min. Possible Score	Max Possible Score	$\bar{x}$	SD
HIV-related stigma (total)	0.864	10	40	21.12	5.00
Personalized		3	12	6.37	1.92
Disclosure		2	8	5.26	1.57
Negative self-image		3	12	5.12	1.60
Public attitudes		2	8	4.37	1.29
Social support (total)	0.889	16	112	82.27	16.03
Significant other		4	28	18.75	6.14
Family		4	28	23.98	4.26
Friends		4	28	19.59	5.04
HIV treatment		4	28	19.95	6.93
	<i>f</i>	%			
HIV treatment adherence					
Low	4	3.1			
Medium	98	76.6			
High	26	20.3			

TABLE 3

HIV Treatment Adherences on Participant Characteristics, HIV-Related Stigma, and Social Support

	HIV treatment adherence		
	χ^2	<i>t</i>	<i>p</i>
Gender		0.105	0.916
Male	6.23		
Female	6.21		
Ethnicity		2.359	0.020
Thai	6.22		
Other	6.00		
Sexual orientation		1.241	0.232
Heterosexual	6.27		
Other (nonheterosexual)	5.87		
	χ^2	<i>F</i>	<i>p</i>
Relationship status		1.670	0.161
Single	5.96		
Married (and still together)	6.46		
Steady relationship	5.84		
Divorced	6.20		
Widowed	6.28		
	<i>rs</i>	<i>p</i>	
Age	0.199	0.024	
Level of education	0.035	0.695	
Financial status	0.086	0.334	
Perception of health	0.225	0.011	
Physical problems	−0.082	0.357	
Problems with routine activities	−0.072	0.418	
Began HIC medication	0.112	0.212	
CD4 count	−0.013	0.884	
HIV-related stigma (total)	−0.377	< 0.001	
Personalized	−0.346	< 0.001	
Disclosure	−0.233	0.008	
Negative self-image	−0.243	0.006	
Public attitudes	−0.328	< 0.001	
Social support (total)	0.066	0.461	
Significant other	0.046	0.606	
Family	0.127	0.153	
Friends	0.139	0.117	
HIV-related	−0.059	0.511	

TABLE 4
Adjusted Linear Regression Model of HIV Treatment Adherence on HIV-Related Stigma

Predictors	Unstandardized β	Standardized α	SE	p	Collinearity Statistics	
					Tolerance	VIF
Intercept	7.215		0.603	< 0.001		
Age	0.018	0.155	0.010	0.062	0.982	1.019
Perceived health	0.168	-0.162	0.086	0.054	0.959	1.043
HIV-related stigma (total)	-0.069	-0.328	0.017	< 0.001	0.958	1.044

Note. R-squared = 0.181.