Validation and Abbreviation of an HIV Stigma Scale in an Adult Spanish-Speaking Population in Urban Peru

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Abstract

The purpose of this study was to validate the Spanish version of the Berger HIV Stigma Scale in an urban Spanish-speaking population in Peru and create a valid and reliable abridged version of the scale. Participants were HIV-infected adults enrolled in an observational study to examine the effectiveness of a community-based antiretroviral therapy adherence intervention. Approximately half of participants were female, and the median age at enrollment was 30.5 years. The Spanish version of the full HIV Stigma Scale was internally reliable, demonstrated good construct validity, and was sensitive to change over time. The full HIV Stigma Scale was abbreviated by removing items that impaired subscale internal reliability, did not correlate with other subscale items, or demonstrated low factor correlations. The resulting abridged scale contained 21 of the 40 original items and revealed properties similar to the full Spanish version.

Keywords

HIV; stigma; scale; Spanish; Peru

INTRODUCTION

HIV-related stigma profoundly affects both individual and public health. Perceived stigma among HIV-infected individuals may result in delayed HIV service utilization (Bharat et al., 2001; Moth et al., 2005; Obermeyer and Osborn, 2007; Wolfe et al., 2006) and suboptimal adherence to antiretroviral therapy (ART) (Diiorio et al., 2007; Kumarasamy et al., 2005; Rao et al., 2007; Rintamaki et al., 2006; Vanable et al., 2006), both of which increase the risk of poor health outcomes among HIV-infected individuals (Bangsberg et al., 2001; García de Olalla et al., 2002; Nachega et al., 2006; Paterson et al., 2000; C.A. Sabin et al.,

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2006; Stringer et al., 2006) . Failure to seek HIV testing or to disclose an HIV diagnosis to one's partner due to HIV-related stigma may prolong high-risk sexual behavior and thereby contribute to ongoing HIV transmission (Allen et al., 1992; King et al., 2008). As HIV services and ART become increasingly available worldwide, there is a clear need for effective stigma reduction strategies that will maximize utilization of HIV services, facilitate ART adherence, and encourage high rates of disclosure. The evaluation of such strategies is predicated on the availability of easily administered, widely validated tools to quantify HIV-related stigma.

A number of instruments designed to measure HIV-related stigma in the general population and among special groups (e.g., healthcare workers) have been developed and validated in multiple languages (Genberg et al., 2007; Kalichman et al., 2005; Stein and Li, 2007; Tanzania Stigma-Indicators Field Test Group, 2005; Van Rie et al., 2008; Zelaya et al., 2007); however, no tool designed to measure HIV-related stigma specifically among persons living with HIV has yet, to the authors' knowledge, been validated and published in Spanish (Berger et al., 2001; Holzemer et al., 2007; Sayles et al., 2008; Tanzania Stigma-Indicators Field Test Group, 2005; Visser et al., 2008). In the United States, Hispanics represent nearly 20% of all people living with AIDS (Centers for Disease Control and Prevention, 2007), and an estimated 1.7 million HIV-infected persons reside in Latin America (Joint United Nations Programme on HIV/AIDS and World Health Organization, 2006), where Spanish is the predominant language.

Berger and colleagues developed the HIV Stigma Scale to assess perceived stigma among HIV-infected individuals and demonstrated the scale's validity and reliability in an adult HIV-infected population in the United States (2001); however, the scale has not been validated in other languages. Furthermore, the length of this instrument (40 items) may be prohibitive for researchers who wish to combine the scale with other survey measures and for patients who may have difficulty enduring a long interview. Bunn and colleagues recently confirmed and refined the HIV Stigma Scale among English-speaking adults (2007); however, the resulting 32-item scale may still be longer than is practical in many settings. The purpose of this study was to validate the Spanish version of the Berger HIV Stigma Scale in an urban Spanish-speaking population in Peru and create a valid and reliable abridged version of the scale.

METHODS

Participants

From November 2005 through March 2007, 131 adult Peruvian patients initiating ART in two health districts in Lima, Peru enrolled in an observational study designed to evaluate the effectiveness of a community-based adherence intervention, which included daily social support. All participants were living in poverty, and enrollment priority was given to women and individuals with tuberculosis disease. At the time of enrollment and after completing twelve months of ART, study participants completed home-based interviews that included questions related to socio-demographics, HIV-related stigma, quality of life and depression. Informed consent was obtained for all participants.

Measures

Field staff initially piloted all data collection instruments with HIV-infected individuals. They then reviewed the instruments with the bilingual study team to ensure that the questions were understood by this population.

HIV Stigma Scale—Berger and colleagues (2001) developed the HIV Stigma Scale to measure perceived stigma among HIV-infected individuals. Using a 4-point likert scale (strongly agree=4, agree=3, disagree=2, strongly disagree=1), respondents indicate their level of agreement with each of the 40 items on the questionnaire. Higher scores reflect greater perceived HIV stigma. The four subscales, Personalized Stigma (renamed Enacted Stigma by Bunn et al., 2007), Disclosure Concerns, Negative Self-Image and Concern with Public Attitudes toward People with HIV, contain between 10 and 20 items, many of which are shared among subscales.

Because no published reports of a Spanish version of this instrument were identified, an individual fluent in both Spanish and English translated the questionnaire, making minor modifications to expressions that did not translate well to Spanish. For example, item 1 was changed from, "In many areas of my life, no one knows I have HIV," to the Spanish equivalent of "In many places that I frequent, no one knows I have HIV." Because some likert-type anchors, such as those used in the HIV Stigma Scale, may lack a meaningful counterpart in Spanish (Lange, 2002), the anchors were altered to reflect frequency, rather than agreement level. Respondents were asked to specify how often each item was true for them (almost always=4; sometimes=3; rarely=2; almost never=1). After initial translation, another bilingual individual back translated the questionnaire to English, and a panel of researchers and clinicians resolved discrepancies between the original and back translated versions. The final Spanish translation was then reviewed by Peruvian health providers and lay individuals to ensure that the conceptual meaning of each question was preserved in the Peruvian-Spanish version (Appendix).

Depression—The Hopkins Symptom Checklist-15 (HSCL) (Derogatis et al., 1974a; Derogatis et al., 1974b) was used to evaluate depression. This questionnaire has demonstrated adequate performance in assessing depression in HIV-infected individuals (Joseph et al., 1990; Kaaya et al., 2002; Lackner et al., 1993; Weiss et al., 2003) and in Latino and Spanish-speaking populations (Cepeda-Benito and Gleaves, 2000; Sabin et al., 2003; M. Sabin et al., 2006); however, one study from Tanzania found that the scale had limited ability to distinguish between severity of symptoms (Kaaya et al., 2002). Questions are scored on a severity scale from 1 to 4, with a higher score indicating more depressive symptoms. It was hypothesized that depression scores would correlate positively with HIV stigma scores.

Quality of Life—The Medical Outcomes Study HIV Health Survey (MOS-HIV) was used to assess quality of life (Wu et al., 1991; Wu et al., 1997). This is a 35-item questionnaire designed to measure 10 dimensions: general health perceptions, pain, physical functioning, role functioning, social functioning, cognitive functioning, mental health, energy/fatigue, health distress and quality of life. Raw subscale and summary scores are transformed

to a 0-100 point scale, with higher scores indicating better health. This instrument has demonstrated internal consistency, construct validity, and responsiveness to change over time in a variety of HIV-infected populations (Clayson et al., 2006; Wu et al., 2007) including Spanish-speaking populations (Badia et al., 1999; Badia et al., 2000). It was anticipated that quality of life scores would correlate negatively with HIV stigma scores.

Data Analysis

Data analyses to assess the psychometric properties of both the full and abridged scale consisted of three components: internal reliability, construct validity and sensitivity to change. To assess internal reliability (i.e., how consistently individuals responded to items within the scales), Cronbach's alpha coefficients were calculated for the total scale and subscales (Nunnally, 1978). Construct validity, or the degree to which the scale assesses the concept it purports to measure, was evaluated by calculating Pearson correlation coefficients for scores from the HIV Stigma Scale and scores from instruments that assessed related domains: quality of life (MOS-HIV summary scores), mental and physical health (MOS-HIV subscores) and depression (HSCL) (Nunnally, 1978). Sensitivity to change (i.e., the ability to detect changes in perceived HIV-related stigma levels over time) was assessed among patients receiving at least twelve months of the community-based adherence intervention by calculating changes in stigma scores between the time of study enrollment and twelve months after ART initiation. It was hypothesized that, among this group, HIV-related stigma would decrease with time on ART. Normality was assessed using normal probability plots and the Shapiro-Wilk W test, and hypothesis testing for the sensitivity to change analysis was conducted using the Wilcoxon signed-rank test for paired measurements.

To identify candidate items for the abridged scale, an iterated principal factor analysis was conducted using an oblique rotation method (promax), which allows for correlation among the factors. The number of factors was pre-specified to four to correspond to the number of factors retained in both the original and refined HIV Stigma Scales (Berger et al., 2001; Bunn et al., 2007). Candidate items for the abridged HIV Stigma Scale met two criteria. First, in order to ensure that the abridged scale was consistent with the full scale, candidate items were required to have a principal loading on a subscale to which the item was assigned on the original HIV Stigma Scale. Second, items were required to correlate with the factor on which they had their principal loading with a coefficient .30. Items that did not meet this criterion would share less than 10% of their variance with the factor and therefore may be less useful for factor interpretation (Comrey and Lee, 1992). Once candidate items were identified, variables were excluded if they weakened subscale internal reliability (as indicated by a higher Cronbach's alpha coefficient upon removal) or did not correlate with other subscale items (correlation coefficient <.1). Last, in order to improve content validity, the factor analysis was re-conducted with the remaining items, and variables were removed if they had a low correlation (<.45) with the factor on which they demonstrated their principal loading. The goal was to include at least five items per subscale (Comrey and Lee, 1992).

RESULTS

Completeness of Data

Of the 131 questionnaires completed upon enrollment, 119 (90.8%) contained no missing responses to the HIV Stigma Scale. Only one person was missing responses to more than three HIV stigma questions; this person was excluded from the analysis. For the remaining 11 individuals, item means were imputed to the missing scale values.

Patient Characteristics

The final sample consisted of 130 HIV-infected adults of Peruvian ethnicity. Table I displays socio-demographic characteristics of study participants, by gender, at the time of enrollment. Over half of participants were women (53.8%), and the median age was 30.5 years (interquartile range [IQR]: 26-37). The median time since first testing positive for HIV was 5.2 months (IQR: 2.7-13.6). Most patients (89.1%) had at least a primary school education; however, one in four lacked running water, electricity and/or plumbing in the home. Men were more likely than women to be single, abuse substances, and have a diagnosis of active tuberculosis disease. Men also tended to demonstrate more advanced HIV-disease, as indicated by lower CD4 cell counts and higher viral loads at enrollment.

Revision of the 40-Item Scale

Thirty seven of the 40 full scale items had principal factor loadings on a factor corresponding to a subscale to which it was originally assigned and demonstrated a correlation .30 with the factor. Of these, four items were removed because they either weakened subscale internal reliability or did not correlate with other subscale items. When the factor analysis was re-conducted with the remaining 33 items, those items that did not demonstrate a correlation coefficient .45 on any factor were excluded. The resulting Disclosure Concerns, Negative Self-Image and Concerns with Public Attitudes subscales each contained 5 or 6 items; however the Enacted Stigma subscale still contained 14 items. For parsimony, the items with the lowest correlations with this subscale were removed. The final version of the abridged scale contained 21 items, which are shown in Table II with factor correlations and factor loadings. Each item in the abridged scale was unique to a subscale.

Original and Abridged Scale Scores

Summary and subscale scores for the full HIV Stigma Scale were derived according to methods described by Berger and colleagues (2001). For the abridged version, subscale scores were calculated by summing the values corresponding to each response. Subscale scores were then added to derive the total score. Because the scores for several subscales were not normally distributed, medians and interquartile ranges (IQR) were used to describe the distribution of scores for the full and abridged scales (Table III). The median score for the full HIV Stigma Scale (96) fell just below the midpoint of possible scores (100) while the median score for the abridged scale (56) was slightly elevated relative to the midpoint (52.5). Median Enacted Stigma scores and Negative Self-Image scores fell below the theoretical midpoint for both the full and abridged scales while median Disclosure

Concerns scores consistently fell above the midpoint. In contrast, the median score for the Concerns with Public Attitudes subscale fell at the midpoint for the full scale but well above the midpoint for the abridged scale. This discrepancy was likely due to the removal of several items with low mean scores and low factor correlations.

Internal Reliability

The Spanish version of the original HIV Stigma Scale was internally reliable, as indicated by a Cronbach's alpha coefficient of .89 for the overall scale. Internal reliability remained high (coefficients .80 or greater) for the Enacted Stigma and Concerns with Public Attitudes subscales while alpha coefficients for the Disclosure Concerns (.68) and Negative Self-Image subscales (.70) were lower. Overall internal reliability of the abridged scale was also good (.84), and subscale Cronbach's alpha coefficients were comparable to those of the full scale (Table III). Internal reliability was generally similar among men and women; however, coefficients tended to be higher among women (Table III).

Construct Validity

Both the full HIV Stigma Scale and the abridged version demonstrated moderate negative correlations with quality of life (MOS-HIV summary score) and mental health (MOS-HIV mental health subscore) and positive correlations with depression (HSCL score) (Table IV). The Negative Self-Image subscore from both scales also moderately correlated with depression, quality of life, and mental health scores. While correlations were largely consistent between the full and abridged scales, the correlations for the Enacted Stigma and Concerns with Public Attitudes subscales and depression score were notably lower for the abridged scale than for the full scale.

Correlation between and among Full and Abridged Scales

Correlations between scores derived from the full and abridged scales were high, with a correlation coefficient of .94 for total score (Table III). The lowest correlation coefficient was observed for the Concerns with Public Attitudes subscale (.70). Table V displays subscale correlation coefficients, which ranged from .38 – .86 for the full scale and 0.22 – 0.40 for the abridged scale. The attenuated correlation coefficients in the abridged scale, relative to full scale, reflect the removal of items common to multiple subscales.

Sensitivity to Change

Seventy-six of 130 participants (58.5%) had received at least one year of the daily social and adherence support intervention by April 2008. Among this group, HIV stigma scores decreased after twelve months. The median change in total HIV stigma score was a decrease of 13 points [IQR: −22 to −2.5] (Wilcoxon signed-rank p-value: <0.01), and the median percentage change was −12.2% [IQR: −20.3% to −3.0%]. Scores from the abridged scale also decreased over time with a median decrease of 8 points [IQR: −14 to −2.5] (Wilcoxon signed-rank p-value: <0.01), and a median percentage change of −14.0% [IQR: −22.2% to −4.1%] (Table VI). Statistically significant decreases were observed for all subscales on the full and abridged versions, with the exception of the Concerns with Public Attitudes

subscale, which demonstrated a statistically significant decrease on the full scale and not the abridged scale.

DISCUSSION

This is the first published analysis of the validity and reliability of the Berger HIV Stigma Scale in a Spanish-speaking population. These findings suggest that both the 40-item HIV Stigma Scale and the 21-item abridged scale proposed here are valid and reliable tools for measuring HIV-related stigma in urban Latin-American populations. The abridged scale contains just over half of the initial items and therefore offers the benefit of reduced administration time. Similar to the refined scale proposed by Bunn and colleagues (2007), this abridged scale does not contain overlapping subscale items; therefore, more distinct domains are reflected by each subscale. The attenuated correlations among subscales in the abridged version relative to the full version lend support in favor of subscale distinctiveness.

Internal reliability of the original and abridged scales was acceptable, although reliability coefficients were smaller than those previously reported (Berger et al., 2001; Bunn et al, 2007). Differences in local constructs of HIV-related stigma among Peruvians and/or Latino populations or a lack of familiarity with standardized response formats (Lange, 2002) could have contributed to lower reliability coefficients. The selection criteria for the study intervention also resulted in a larger proportion of women in this cohort relative to previous studies examining HIV Stigma Scale psychometric properties (Berger et al., 2001; Bunn et al., 2007). While internal reliability was generally comparable across genders; the reliability coefficient dropped below .70 for men on several subscales. The men included in this analysis differed from the women in a number of ways that may have influenced the ways in which they relate their experiences of HIV stigma: men tended be single, have more advanced HIV-disease, have tuberculosis disease, and abuse drugs and/or alcohol. These differences, or other unmeasured differences, may have contributed to lower internal reliability coefficients among men.

Both the full and abridged scales demonstrated good construct validity: HIV-related stigma was positively correlated with depression, and negatively correlated with quality of life, particularly the mental health dimension. Although the present analysis included different psychosocial measures to examine construct validity than were used by Berger et al. (2001) and Bunn et al. (2007); similar patterns emerged. First, the Disclosure Concerns subscale was weakly correlated or uncorrelated with the scores from other psychosocial measures, indicating that, while contributing importantly to overall perceived HIV-related stigma, it was not strongly associated with quality of life or depression. This finding is consistent with the weak correlation between Disclosure Concerns and two other psychosocial indicators, self-esteem and discrimination, observed by Bunn et al. (2007). Second, both Bunn et al. (2007) and Berger et al. (2001) reported moderate to strong inverse correlations between Negative Self-Image scores and self-esteem, an important component of mental health (MacDonald, 1994). Similarly, one of the strongest correlations observed in the present analysis was between Negative Self-Image scores and the MOS-HIV mental health scores.

The consistent decrease in overall and subscale HIV stigma scores on both the full and abridged scales provides evidence of the scales' sensitivity to change in HIV stigma levels over time. For the Concerns with Public Attitudes subscale; however, a statistically significant decrease was observed for the original, but not the abridged scale. This inconsistency may be due to the removal of several items from the abridged scale whose scores changed substantially over time but that demonstrated lower correlations with the subscale.

Several potential limitations to this analysis merit further discussion. First, it is possible that the observed changes in HIV stigma scores represent a lack of test-retest reliability, rather than true change over time; however, true change may be more likely given that the study intervention aimed to increase social support, and inverse associations between social support and both HIV stigma and disclosure have been reported previously (Emlet, 2006; Kalichman et al., 2003; Van Rie et al., 2008). Second, the present cohort is distinct in that most study participants were living in poverty. If factors associated with poverty influence the ways in which patients relate their experiences of HIV stigma, these findings might not be generalizeable to wealthier populations. Nonetheless, these results would still be broadly generalizeable given that regions demonstrating a high burden of HIV-infection tend to be among the world's most indigent (United Nations, 2006).

Together, these findings lend further support to the cross-cultural validity and utility of the Berger HIV Stigma Scale. The validated Spanish HIV Stigma Scale, in complete and abridged forms, may serve as a practical tool for those interested in studying the burden of HIV-related stigma among HIV-infected Spanish-speaking populations.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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REFERENCES

Allen S, Tice J, Van de Perre P, Serufilira A, Hudes E, Nsengumuremyi F, Bogaerts J, Lindan C, and Hulley S (1992). Effect of serotesting with counselling on condom use and seroconversion among HIV discordant couples in Africa. British Medical Journal, 304, 1605–1609. [PubMed: 1628088]

Badia X, Podzamczer D, Garcia M, López-Lavid CC, and Consiglio E (1999). A randomized study comparing instruments for measuring health-related quality of life in HIV-infected patients. Spanish MOS-HIV and MQOL-HIV Validation Group. Medical Outcomes Study HIV Health Survey. AIDS, 13(13), 1727–1735. [PubMed: 10509575]

Badia X, Podzamczer D, Casado A, Lopez-Lavid C, and Garcia M (2000). Evaluating changes in health status in HIV-infected patients: Medical Outcomes Study-HIV and Multidimensional Quality of Life-HIV quality of life questionnaires. Spanish MOS-HIV and MQOL-HIV Validation Group. AIDS, 14(10), 1439–1447. [PubMed: 10930160]

Bangsberg DR, Perry S, Charlebois ED, Clark RA, Roberston M, Zolopa AR, and Moss A (2001). Non-adherence to highly active antiretroviral therapy predicts progression to AIDS. AIDS, 15(9), 1181–3. [PubMed: 11416722]

Berger BE, Ferrans CE, and Lashley FR (2001). Measuring stigma in people with HIV: psychometric assessment of the HIV stigma scale. Research in Nursing and Health, 24(6), 518–29. [PubMed: 11746080]

Bharat S, Aggleton P, and Tyrer P (2001). India: HIV and AIDS-related Discrimination, Stigmatisation and Denial. UNAIDS Best Practice Collection. Geneva: UNAIDS. Retrieved 8 12, 2008, from http://data.unaids.org/Publications/IRC-pub02/JC587-India_en.pdf

Bunn JY, Solomon SE, Miller C, and Forehand R (2007). Measurement of stigma in people with HIV: a reexamination of the HIV Stigma Scale. AIDS Education and Prevention, 19(3), 198–208. [PubMed: 17563274]

Centers for Disease Control and Prevention. (2007). HIV/AIDS Surveillance Report, 2005. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved 7 29, 2008, from http://www.cdc.gov/hiv/topics/surveillance/resources/reports/2005report/pdf/2005SurveillanceReport.pdf

Cepeda-Benito A, and Gleaves DH (2000). Cross-ethnic equivalence of the Hopkins Symptom Checklist-21 in European American, African American, and Latino college students. Cultural Diversity and Ethnic Minority Psychology, 6(3), 297–308. [PubMed: 10938637]

Clayson DJ, Wild DJ, Quarterman P, Duprat-Lomon I, Kubin M, and Coons SJ (2006). A comparative review of health-related quality-of-life measures for use in HIV/AIDS clinical trials. Pharmacoeconomics, 24, 751–765. [PubMed: 16898846]

Comrey AL, and Lee HB (1992). A First Course in Factor Analysis. Hillsdale, NJ: Laurence Erlbaum Associates.

Derogatis LR, Lipman RS, Rickels K, Uhlenhuth EH, and Covi L (1974a). The Hopkins Symptom Checklist (HSCL): A measure of primary symptom dimensions. Modern Problems of Pharmacopsychiatry, 7, 79–110. [PubMed: 4607278]

Derogatis LR, Lipman RS, Rickels K, Uhlenhuth EH, and Covi L (1974b). The Hopkins Symptom Checklist (HSCL): a self-report symptom inventory. Behavioral Science, 19, 1–15. [PubMed: 4808738]

Diiorio C, McCarty F, Depadilla L, Resnicow K, Holstad MM, Yeager K, Sharma SM, Morisky DE, and Lundberg B (2007). Adherence to Antiretroviral Medication Regimens: A Test of a Psychosocial Model. AIDS and Behavior, in press. Epub ahead of print. Retrieved 8 12, 2008, from http://www.springerlink.com/content/1182m00w61427h86/?p=d2e7797084be4a10b99b4f52c5048bdb&pi=80

Emlet CA (2006). An examination of the social networks and social isolation in older and younger adults living with HIV/AIDS. Health and Social Work, 31(4), 299–308. [PubMed: 17176977]

García de Olalla P, Knobel H, Carmona A, Guelar A, López-Colomés JL, and Caylà JA (2002). Impact of adherence and highly active antiretroviral therapy on survival in HIV-infected patients. Journal of Acquired Immune Deficiency Syndrome, 30, 1105–1110.

Genberg BL, Kawichai S, Chingono A, Sendah M, Chariyalertsak S, Konda KA, and Celentano DD (2007). Assessing HIV/AIDS Stigma and Discrimination in Developing Countries. AIDS and Behavior, in press. Epub ahead of print. Retrieved 8 12, 2008, from http://www.springerlink.com/content/d374717030488713/?p=cc941d31ff1342659621c7b85d981ee2&pi=63

Holzemer WL, Uys LR, Chirwa ML, Greeff M, Makoae LN, Kohi TW, Dlamini PS, Stewart AL, Mullan J, Phetlhu RD, Wantland D, and Durrheim K (2007). Validation of the HIV/AIDS Stigma Instrument - PLWA (HASI-P). AIDS Care, 19(8), 1002–12. [PubMed: 17851997]

Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO). (2006). 2006 AIDS Epidemic Update. Geneva: UNAIDS. Retrieved 12 22, 2007 from http://data.unaids.org/pub/EpiReport/2006/08-latin_america_2006_epiupdate_eng.pdf

Joseph JG, Caumartin SM, Tal M, Kirscht JP, Kessler RC, Ostrow DG, and Wortman CB (1990). Psychological functioning in a cohort of gay men at risk for AIDS. A three-year descriptive study. Journal of Nervous and Mental Disease, 178, 607–615.

Kaaya SF, Fawzi MC, Mbwambo JK, Lee B, Msamanga GI, and Fawzi W (2002). Validity of the Hopkins Symptom Checklist-25 amongst HIV-positive pregnant women in Tanzania. Acta Psychiatrica Scandinavica, 106, 9–19. [PubMed: 12100343]

Kalichman SC, DiMarco M, Austin J, Luke W, and DiFonzo K (2003). Stress, social support, and HIV-status disclosure to family and friends among HIV-positive men and women. Journal of Behavioral Medicine, 26(4), 315–32. [PubMed: 12921006]

Kalichman SC, Simbayi LC, Jooste S, Toefy Y, Cain D, Cherry C, and Kagee A (2005). Development of a brief scale to measure AIDS-related stigma in South Africa. AIDS and Behavior, 9(2), 135–43. [PubMed: 15933833]

King R, Katuntu D, Lifshay J, Packel L, Batamwita R, Nakayiwa S, Abang B, Babirye F, Lindkvist P, Johansson E, Mermin J, Bunnell R (2008). Processes and outcomes of HIV serostatus disclosure to sexual partners among people living with HIV in Uganda. AIDS and Behavior, 12(2), 232–43. [PubMed: 17828450]

Kumarasamy N, Safren SA, Raminani SR, Pickard R, James R, Krishnan AK, Solomon S, and Mayer KH (2005). Barriers and facilitators to antiretroviral medication adherence among patients with HIV in Chennai, India: a qualitative study. AIDS Patient Care and STDs, 19(8), 526–537. [PubMed: 16124847]

Lackner JB, Joseph JG, Ostrow DG, and Eshleman S (1993). The effects of social support on Hopkins Symptom Checklist-assessed depression and distress in a cohort of human immunodeficiency virus-positive and -negative gay men. A longitudinal study at six time points. Journal of Nervous and Mental Disease, 181, 632–638.

Lange JW (2002). Methodological concerns for non-Hispanic investigators conducting research with Hispanic Americans. Research in Nursing and Health, 25(5), 411–9. [PubMed: 12221694]

Macdonald G (1994). Self esteem and the promotion of mental health. In Trent D and Reed C (Eds.), Promotion of Mental Health vol. 3 (pp. 19–20). Avebury: Aldershot.

Moth IA, Ayayo AB, and Kaseje DO (2005). Assessment of utilisation of PMTCT services at Nyanza Provincial Hospital, Kenya. Journal of Social Aspects of HIV/AIDS Research Alliance, 2(2), 244–250.

Nachega JB, Hislop M, Dowdy DW, Lo M, Omer SB, Regensberg L, Chaisson RE, and Maartens G (2006). Adherence to highly active antiretroviral therapy assessed by pharmacy claims predicts survival in HIV-infected South African adults. Journal of Acquired Immune Deficiency Syndrome, 43(1), 78–84.

Nunnally JC (1978). Psychometric Theory. New York: McGraw-Hill.

Obermeyer CM, and Osborn M (2007). The utilization of testing and counseling for HIV: a review of the social and behavioral evidence. American Journal of Public Health, 97(10), 1762–1774. [PubMed: 17761565]

Paterson DL, Swindells S, and Mohr J (2000). Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. Annals of Internal Medicine, 133(1), 21–30. [PubMed: 10877736]

Rao D, Kekwaletswe TC, Hosek S, Martinez J, and Rodriguez F (2007). Stigma and social barriers to medication adherence with urban youth living with HIV. AIDS Care, 19(1), 28–33. [PubMed: 17129855]

Rintamaki LS, Davis TC, Skripkauskas S, Bennett CL, and Wolf MS Social stigma concerns and HIV medication adherence. (2006). AIDS Patient Care and STDs, 20(5), 359–368. [PubMed: 16706710]

Sabin CA, Smith CJ, Youle M, Lampe FC, Bell DR, Puradiredja D, Lipman MC, Bhagani S, Phillips AN, Johnson MA (2006). Deaths in the era of HAART: contribution of late presentation, treatment exposure, resistance and abnormal laboratory markers. AIDS, 20(1), 67–71. [PubMed: 16327321]

Sabin M, Lopes Cardozo B, Nackerud L, Kaiser R, and Varese L (2003). Factors associated with poor mental health among Guatemalan refugees living in Mexico 20 years after conflict. Journal of the American Medical Association, 290(5), 635–42. [PubMed: 12902367]

Sabin M, Sabin K, Kim HY, Vergara M, and Varese L (2006). The mental health status of Mayan refugees after repatriation to Guatemala. Revista Panamericana de Salud Pública, 19(3), 163–171. [PubMed: 16640845]

Sayles JN, Hays RD, Sarkisian CA, Mahajan AP, Spritzer KL, and Cunningham WE (2008). Development and psychometric assessment of a multidimensional measure of internalized HIV stigma in a sample of HIV-positive adults. AIDS and Behavior, in press. Epub ahead of print. Retrieved 8 12, 2008, from http://www.springerlink.com/content/j73t710555685j65/?p=d7ba35d0e0d44d8ca86b852f882c50dd&pi=44

Stein JA, and Li L (2007). Measuring HIV-related Stigma Among Chinese Service Providers: Confirmatory Factor Analysis of a Multidimensional Scale. AIDS and Behavior, in press. Epub ahead of print. Retrieved 8 12, 2008, from http://www.springerlink.com/content/26135316v1331460/?p=d4bddb9ac08e4d40912aba3c3db05671&pi=71

Stringer JS, Zulu I, Levy J, Stringer EM, Mwango A, Chi BH, Mtonga V, Reid S, Cantrell RA, Bulterys M, Saag MS, Marlink RG, Mwinga A, Ellerbrock TV, and Sinkala M (2006). Rapid scale-up of antiretroviral therapy at primary care sites in Zambia: feasibility and early outcomes. Journal of the American Medical Association, 296(7), 782–793. [PubMed: 16905784]

Tanzania Stigma-Indicators Field Test Group. (2005). Measuring HIV stigma: results of a field test in Tanzania (Working Report). Washington D.C.: Synergy. Retrieved 7 29, 2008 from http://www.icrw.org/docs/2005-StigmaIndicatorsReport.pdf

United Nations, Department of Economic and Social Affairs, Population Division. (2005). Population, Development and HIV/AIDS with Particular Emphasis on Poverty. New York: United Nations. Retrieved 2 26, 2008 from http://www.un.org/esa/population/publications/concise2005/PopdevHIVAIDS.pdf

Van Rie A, Sengupta S, Pungrassami P, Balthip Q, Choonuan S, Kasetjaroen Y, Strauss RP, and Chongsuvivatwong V (2008). Measuring stigma associated with tuberculosis and HIV/AIDS in southern Thailand: exploratory and confirmatory factor analyses of two new scales. Tropical Medicine and International Health, 13(1), 21–30. [PubMed: 18290998]

Vanable PA, Carey MP, Blair DC, and Littlewood RA (2006). Impact of HIV-related stigma on health behaviors and psychological adjustment among HIV-positive men and women. AIDS and Behavior, 10(5), 473–82. [PubMed: 16604295]

Visser MJ, Kershaw T, Makin JD, Forsyth BW (2008). Development of Parallel Scales to Measure HIV-Related Stigma. AIDS and Behavior, in press. Epub ahead of print. Retrieved 8 12, 2008, from http://www.springerlink.com/content/1250223437141362/?p=cccd7832de444358bb45ad20df27626a&pi=53

Wolfe WR, Weiser SD, Bangsberg DR, Thior I, Makhema JM, Dickinson DB, Mompati KF, and Marlink RG (2006). Effects of HIV-related stigma among an early sample of patients receiving antiretroviral therapy in Botswana. AIDS Care, 18(8), 931–933. [PubMed: 17012082]

Weiss JJ, Mulder CL, Antoni MH, de Vroome EM, Garssen B, and Goodkin K (2003). Effects of a supportive-expressive group intervention on long-term psychosocial adjustment in HIV-infected gay men. Psychotherapy and Psychosomatics, 72, 132–140. [PubMed: 12707480]

Wu AW, Rubin HR, Mathews WC, Ware JE Jr., Brysk LT, Hardy WD, Bozzette SA, Spector SA, and Richman DD (1991). A health status questionnaire using 30 items from the Medical Outcomes Study. Preliminary validation in persons with early HIV infection. Medical Care, 29, 786–798. [PubMed: 1875745]

Wu AW, Revicki DA, Jacobson D, Malitz FE (1997). Evidence for reliability, validity and usefulness of the Medical Outcomes Study HIV Health Survey (MOS-HIV). Quality of Life Research, 6(6), 481–93. [PubMed: 9330549]

Zelaya CE, Sivaram S, Johnson SC, Srikrishnan AK, Solomon S, and Celentano DD (2007). HIV/AIDS Stigma: Reliability and Validity of a New Measurement Instrument in Chennai, India. AIDS and Behavior, in press. Epub ahead of print. Retrieved 8 12, 2008, from http://www.springerlink.com/content/h078g464280v02h4/?p=d4bddb9ac08e4d40912aba3c3db05671&pi=73

Table I.

Baseline Socio-demographic Characteristics of 130[a] Peruvian Patients

Variable	Women (N=70) N (%)	Men (N=60) N (%)
Age[b] (years)	30 (25 - 36)	31.5 (26.5 - 38)
Have spouse or partner (N=129)	35 (50.7)	17 (28.3)
Low education level (primary school only or illiterate) (N=129)	10 (14.3)	4 (6.8)
Unemployed (N=127)	52 (74.3)	41 (71.9)
Lack of basic services (water, electricity and/or plumbing)	19 (27.1)	13 (21.7)
Physician-diagnosed drug abuse/dependence	4 (5.7)	7 (11.7)
Physician-diagnosed alcohol abuse/dependence	8 (11.4)	24 (40.0)
Tuberculosis disease	20 (28.6)	54 (90.0)
Time since HIV diagnosis[b] (months) (N=119)	5.0 (2.7 - 14.6)	5.5 (2.8 - 12.8)
CD4 count at antiretroviral therapy start[b] (cells/mm^3) (N=123)	178 (80 - 258)	66 (21 - 142)
Viral load at antiretroviral therapy start[b] (copies/ml) (N=117)	60,574 (13,970 - 194,527)	150,000 (57,087 - 320,000)

[a]N=130 unless otherwise noted

[b]Continuous variable, median (interquartile range) presented

Table II.

Factor Correlations and Loadings for the 21 Abridged Scale Items

Original Item #[a]	Original subscale assignment	Factor correlations[b]				Factor loading[c]
		Enacted Stigma (1)	Disclosure Concerns (2)	Negative Self-Image (3)	Concern with Public Attitudes (4)	
39	People seem afraid of me because I have HIV	1,4,3	0.67				.63
18	Some people who know have grown more distant	1	0.63				.61
26	I regret having told some people that I have HIV	1	0.82				.82
34	Some people act as though it's my fault I have HIV	1,4	0.68				.62
27	As a rule telling others has been a mistake	1,4,3	0.82				.87
25	I worry people who know I have HIV will tell others	2		0.52			.45
17	I am very careful whom I tell that I have HIV	2		0.60			.65
6	I work hard to keep my HIV a secret	2,3		0.54			.45
4	Telling someone I have HIV is risky	2,4		0.60			.62
22	I worry that people may judge me when they learn	2,4		0.53			.44
13	I feel set apart, isolated from the rest of the world	1,3,4			0.52		.44
15	Having HIV makes me feel I'm a bad person	3			0.47		.43
7	I feel I'm not as good as others because I have HIV	3			0.59		.56
12	Having HIV makes me feel unclean	3			0.58		.63
23	Having HIV in my body is disgusting to me	3			0.53		.49
2	I feel guilty because I have HIV	3			0.47		.38
14	Most people think that a person with HIV is disgusting	4				0.61	.60
16	Most with HIV are rejected when others learn	4,1				0.67	.64
10	Most people believe a person who has HIV is dirty	4				0.69	.73
20	Most people are uncomfortable around someone with HIV	4				0.64	.61
9	People with HIV are treated like outcasts	4				0.75	.72

[a] Berger et al, 2001. Copyright 2001 *Research in Nursing & Health*. Scale items reprinted with permission of John Wiley & Sons, Inc.

[b] Correlations < .45 not shown

[c] Pattern matrix subscale factor loadings

Table III.

Properties of the Full and Abridged Spanish HIV Stigma Scale (N=130)[a]

	40-Item					21-Item					
	Median (IQR)	Range of possible scores	Alpha coefficient all	Alpha coefficient men (N=60)	Alpha coefficient women (N=70)	Median (IQR)	Range of possible scores	Alpha coefficient all	Alpha coefficient men (N=60)	Alpha coefficient women (N=70)	Correlation between full and abridged scales[b]
Enacted Stigma	30.5 (26-42)	18-72	.89	.87	.90	8 (5-12)	5-20	.84	.83	.86	.91
Disclosure Concerns	33 (30-35)	10-40	.68	.60	.73	18 (15-20)	5-20	.68	.65	.70	.87
Negative Self-Image	29 (25-33)	13-52	.70	.70	.70	13 (10-17)	6-24	.70	.66	.73	.84
Concern with Public Attitudes	49 (44-59)	20-80	.85	.84	.86	17 (14-19)	5-20	.80	.75	.83	.70
HIV Stigma Scale	96 (85-110)	40-160	.89	.87	.90	56 (48-63)	21-84	.84	.82	.86	.94

[a] Unless otherwise noted

[b] All p<.01

Table IV.

Correlations between HIV Stigma Scales and Other Psychosocial Measures

40-Item Scale	Enacted Stigma	Disclosure Concerns	Negative Self-Image	Concern with Public Attitudes	HIV Stigma Scale
Quality of Life (MOS-HIV) (N=127)					
Summary score	-.29 **	-.23 **	-.35 **	-.29 **	-.37 **
Physical health score	-.18 *	-.13	-.17	-.16	-.20 *
Mental health score	-.33 **	-.27 **	-.43 **	-.34 **	-.44 **
Depression (HSCL) (N=130)	.34 **	.24 **	.45 **	.36 **	.44 **
21-Item Scale					
Quality of Life (MOS-HIV) (N=127)					
Summary score	-.24 **	-.18 *	-.46 **	-.25 **	-.41 **
Physical health score	-.15	-.10	-.25 **	-.10	-.22 *
Mental health score	-.26 **	-.21 *	-.53 **	-.32 **	-.48 **
Depression (HSCL) (N=130)	.24 **	.22 *	.59 **	.25 **	.48 **

*
p<.05

**
p<.01

Table V.

Correlations between HIV Stigma Subscales (N=130)

40-Item Scale	Enacted Stigma	Disclosure Concerns	Negative Self-Image	Concern with Public Attitudes
Enacted Stigma	1.00	.38[**]	.72[**]	.86[**]
Disclosure Concerns		1.00	.53[**]	.63[**]
Negative Self-Image			1.00	.73[**]
Concern with Public Attitudes				1.00
21-Item Scale				
Enacted Stigma	1.00	0.29[**]	0.40[**]	0.22[*]
Disclosure Concerns		1.00	0.34[**]	0.38[**]
Negative Self-Image			1.00	0.28[**]
Concern with Public Attitudes				1.00

[*] p<.05

[**] p<.01

Table VI.

Sensitivity to Change in Perceived HIV Stigma Levels Over Time (N=76)

	40-Item Scale				21-Item Scale			
	Median absolute change	IQR	Median percentage change	IQR	Median absolute change	IQR	Median percentage change	IQR
Enacted Stigma	-6**	(-10.5, -1)	-18.5	(-28.8, -3.6)	-1.5**	(-5.5, 0)	-16.7	(-45.4, 0.0)
Disclosure Concerns	-1.5*	(-5, 2.5)	-5.0	(-15.1, 7.9)	-1*	(-3, 1)	-5.0	(-15.0, 5.7)
Negative Self-Image	-7**	(-12, -2.5)	-26.4	(-36.5, -9.2)	-4**	(-8, -1)	-31.7	(-47.3, -7.7)
Concerns with Public Attitudes	-5**	(-11, 1)	-10.5	(-19.6, 1.9)	0	(-3, 3)	0	(-15.8, 17.6)
HIV Stigma Scale	-13**	(-22, -2.5)	-12.2	(-20.3, -3.0)	-8**	(-14, -2.5)	-14.0	(-22.2, -4.1)

*
Wilcoxon signed-rank p-value <.05

**
Wilcoxon signed-rank p-value <.01