

HIV Stigma Scale: Translation and validation of the short version to the Portuguese population

Mariana Gonçalves ¹, Diogo Morgado ¹, Bárbara Sousa ¹, & Ângela Maia ¹

¹ *Psychology Research Center, School of Psychology, University of Minho, Portugal*

Abstract: The objective was to translate, adapt, and analyze the psychometric properties of a shortened version of the HIV Stigma Scale using a sample of 100 HIV+ adults, with a mean age of 49.88 ($SD = 12.03$) diagnosed for an average of 9.39 ($SD = 7.36$) years. The psychometric properties of the short version of the Stigma Scale were analyzed through the one-factor structure and the original four-factor structure, showing good fit for this last model. Convergent validity was found to be close to the acceptable for the factors, “concerns about public attitudes” and “negative self-image”, and good for the factors, “disclosure concerns” and “personalized stigma”. The results showed adequate discriminant validity for all factors, coefficient Omega was above .70 for the four factors, showing adequate reliability. This Portuguese version of the Stigma Scale is a good measure to assess the stigma of people living with HIV.

Keywords: *HIV/Aids; Stigma; Psychometric properties; Portugal.*

HIV Stigma Scale: Propriedades Psicométricas da Versão Portuguesa: O objetivo deste estudo foi traduzir, adaptar e analisar as propriedades psicométricas de uma versão breve da Escala de Estigmatização VIH, usando uma amostra de 100 adultos VIH+, com idade média de 49.88 ($DP = 12.03$), com diagnóstico médio há 9.39 ($DP = 7.36$) anos. As qualidades psicométricas foram analisadas atendendo à estrutura de um fator e da estrutura original de quatro fatores, mostrando um melhor ajustamento para este último modelo. A validade convergente foi considerada próxima do aceitável para o fator atitudes públicas e autoimagem negativa, e boa para os fatores preocupação com a divulgação e estigma personalizado. Os resultados mostraram validade discriminante adequada para todos os fatores. O coeficiente Omega foi superior a .70 para os quatro fatores, mostrando confiabilidade adequada. Esta versão portuguesa parece ser é uma boa escala para avaliar o estigma de pessoas que vivem com VIH em Portugal.

Palavras-chave: *VIH /SIDA; Estigma; Propriedades Psicométricas; Portugal.*

Short HIV Stigma Scale: Psychometric Properties of the Portuguese Version

At the end of 2018, the World Health Organization (WHO, 2018) estimated that 37.9 million people were living with the human immunodeficiency virus (HIV), and about 770,000 people had died of HIV-related diseases worldwide. In a recent report from the National Institute of Health, in Portugal, Doctor Ricardo Jorge (NIH, 2019), in collaboration with the Directorate-General of Health (DGH), estimated that 59,913 people were currently living with HIV and 22,551 were living with acquired immune deficiency syndrome (AIDS). Although the number of new HIV and AIDS diagnoses has been declining in the past decade (46% and 67%, respectively; NIH, 2019), Portuguese citizens living with HIV/AIDS continue to face several challenges, in particular the perceived stigma related to HIV (e.g., Gonçalves, 2018; Matos, 2019; Silva, 2016; Sousa, 2017).

HIV stigma is a complex social issue, where people living with HIV/AIDS (PLWHA) may experience prejudice (i.e., negative feelings and beliefs regarding HIV infected people; Brewer, 2007), discrimination (i.e., behavioral expressions of prejudice towards HIV infected people), and stereotypes (i.e., negative beliefs about HIV infected people; Kanahara, 2006). According to Goffman’s theory of social stigma, a stigma is a phenomenon whereby an individual is classified in an undesirable stereotype, and is rejected based upon an attribute, which is deeply discredited by the society (Goffman, 1963). According to Deacon (2006),

¹ Correspondence address: Mariana Gonçalves, Psychology Research Center, School of Psychology, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal. E-mail: marianagoncalves@psi.uminho.pt

This study is supported by the Portuguese Foundation for Science and Technology and the Portuguese Ministry of Science, Technology and Higher Education, through the national funds, within the scope of the Transitory Disposition of the Decree No. 57/2016, of 29th of August, amended by Law No. 57/2017 of 19 July. This study was partially conducted at the Psychology Research Centre (PSI/01662), University of Minho, and supported by the Portuguese Foundation for Science and Technology and the Portuguese Ministry of Science, Technology and Higher Education (UID/PSI/01662/2019), through the national funds (PIDDAC).

researchers often extend the concept of “stigma” to include “discrimination” in order to “accommodate both stigmatizing beliefs themselves and the effects of some stigmatization processes – discrimination” (p. 419). This is problematic because it narrows the understanding about the impact of stigma, and presents a simple relationship between stigma and disadvantage (Deacon, 2006). Earnshaw and Chaudoir (2009) proposed a theoretical model (i.e., HIV stigma framework) that describes the differences in stigma mechanisms (i.e., a person's reaction to the knowledge that he/she has an attribute that is devalued) experienced by PLWHA and people who are HIV uninfected (PWAHU). The HIV stigma context proposes that the HIV stigma for PLWHA involves experiences of prejudice, stereotyping and discrimination due to one's HIV infection (enacted stigma); expectations of enacted stigma (anticipated stigma); and internalization of negative feelings and beliefs due to experiences of discrimination, stereotyping, and prejudice (internalized stigma; Earnshaw & Chaudoir, 2009).

PLWHA may face adverse psychological, behavioral, and health outcomes, depending on the type of stigma. For example, PLWHA with high levels of enacted stigma may experience psychological distress, higher substance use, and lowered health well-being (Poon et al., 2012; Reisner et al., 2015). PLWHA with high levels of anticipated stigma may not disclose their HIV status due to fear of being socially rejected (Derlega et al., 2004). Finally, PLWHA with high levels of internalized stigma may have a higher risk of HIV sexual risk behavior (Burnham et al., 2016; Wagner et al., 2016).

Despite the scarcity of empirical studies conducted in Portugal about HIV-related stigma, recent data has shown that Portuguese PLWHA report high levels of perceived stigmatization (Gonçalves, 2018; Matos, 2019; Silva, 2016; Sousa, 2017), which, in turn, has led to consistent high reports of difficulties regarding disclosure of their HIV infection. For example, a qualitative study, with a sample of 12 heterosexual and homosexual men living with HIV from two hospitals in Northern Portugal, showed that participants hold negative expectations about people's reaction (anticipated stigma), thus preferring to live secretly due to fear of being socially rejected, losing their jobs, or to protect themselves and their loved ones (Matos, 2019). Consequently, these participants verbalized negative feelings and beliefs about themselves (internalized stigma; Matos, 2019). Other quantitative results showed that higher levels of HIV stigma were positively correlated with psychopathology (Silva, 2016), suicide ideation (Sousa, 2017), and lower therapeutic adherence (Gonçalves, 2018). These results are in accordance with the literature, revealing that HIV stigma continues to be a major barrier to HIV prevention and treatment worldwide (Earnshaw & Chaudoir, 2009). In order to maximize the demand of HIV services, facilitate therapeutic adherence, and encourage high rates of disclosure, first and foremost, valid, reliable, and easily administered tools that measure HIV-related stigma in PLWHA (Earnshaw & Chaudoir, 2009) have to be available.

Several instruments have been developed to measure HIV stigma, such as the Internalized Stigma Scale (Sayles et al., 2008), the Measures of Stigma and Social Impact of Disease (Fife & Wright, 2000), the Enacted, Vicarious, Felt Normative, and Internalized HIV Stigma Scales (Steward et al., 2008), and the HIV Stigma Scale (Berger et al., 2001). However, the HIV Stigma Scale (Berger et al., 2001) is the most widely used in the literature because it covers and differentiates all three stigma mechanisms (enacted, anticipated, and internalized stigma) for PLWHA, as proposed by Earnshaw and Chaudoir (2009). Based on a conceptual model of perceived stigma, Berger et al. (2001) developed the HIV Stigma Scale, a 40-item self-report measure, composed of four subscales (i.e., “personalized stigma”, “disclosure concerns”, “negative self-image”, and “concern with public attitudes toward people with HIV”), that assesses HIV-related stigma in PLWHA. The HIV Stigma Scale proved to be a valid and reliable measure (Cronbach's alpha of .90 or greater for the overall scale and all subscales) in the original study by Berger et al. (2001), and was, subsequently, adapted and validated in different countries, including, India (Jeyaseelan et al., 2013), Peru (Franke et al., 2010), Puerto Rico (Jimenez et al., 2010), Sweden (Lindberg et al., 2014), USA (Bunn et al., 2007), Spain (Fuster-Ruiz de Apodaca et al., 2015), and Mozambique (Massicotte, 2010). Although the HIV Stigma Scale can be used to assess the perception of HIV-related stigma, it has some limitations. First, the length of the scale (40 items) can be burdensome during administration and difficult to combine with other survey measures. Second, 24 items (out of 40) of the HIV Stigma Scale are loaded on more than one subscale, and five of these are related to three of the four subscales. Although these items ensure that the subscales are highly correlated, they also do little to differentiate between the subscales, which, in a factor analysis, should be discarded (Comrey & Lee, 1992). Finally, the overlap of these items prevents the sum of the four subscale scores to give the overall score. Given these concerns, shortened versions of the HIV Stigma Scale (21, 25 and 32 items) have been previously published (Bunn et al., 2007; Franke et al., 2010; Jeyaseelan et al., 2013; Jimenez et al., 2010). Reinius et al. (2017) validated a short version of the HIV stigma scale, in response to the limitations related to the full version of the scale, namely excluding cross loading items for the short version of the HIV stigma scale and to facilitate the inclusion of HIV stigma in more extensive surveys. This study confirmed a four-factor structure, with good psychometric properties and reliability, indicating that broadness of the stigma concept had been captured. Other authors have since

translated and analyzed psychometric properties of this scale to other populations, namely in Brazil (Luz et al., 2020), that confirmed the four-factor structure of the scale, with good psychometric properties.

To our knowledge, no study has validated the HIV Stigma Scale for the Portuguese context. Considering this gap in the literature, and the limitations aforementioned (e.g., length of the HIV Stigma Scale), the purpose of this study was to translate, adapt, and analyze the psychometric properties of a shortened version of the HIV Stigma Scale (12 items) in a sample of HIV positive adults. We expect to confirm the four-factor structure of the scale for Portuguese PLWHIV, with good psychometric properties, convergent and divergent validity, and good reliability. We also expect to confirm external validity with other measures: Higher scores in stigma factors will be associated with higher scores related to clinical symptomatology and suicide ideation; higher scores in stigma factors will be associated with lower scores related to social support.

METHOD

Participants

The participants were 100 PLWHA aged between 21 and 81 years old ($M = 49.88$; $SD = 12.03$) integrated in the Infectious Disease consultation of two hospital centers in Northern Portugal, diagnosed with HIV/AIDS for an average of 9.39 ($SD = 7.36$; $Min = 1$; $Max = 32$) years. Most participants were male (81%) and were Portuguese (95%). Most of the participants had elementary school or lower (76%), 6% high school and 8% higher education. Regarding marital status, 41% were married, 37% were single, 15% were divorced and 4% were widowed. Concerning professional status, 39% of participants were employed, 28% were unemployed, 29% were retired and 4% were on medical leave.

The most frequent source of contamination was sexual risk behaviors (37%), followed by material sharing in injection drug use (17%). A lower number of participants reported they had been infected in the context of a stable marital relationships (6%) or by contaminated blood transfusion (3%). More than a third of participants (37%) reported they did not know their contamination source.

Measures

The Demographic and Health Questionnaire (removed for review) is subdivided into three parts: (1) personal and family characterization, where we collected information such as sex, age, civil status, nationality and educational qualifications; (2) socio-professional characterization, which asks about the current and past situation regarding the participant's jobs, as well as source of income; and (3) health conditions: questions about the date of diagnosis, pathologies that may have been associated with the diagnosis, which type of health service was the most used, the ease of being assisted when needed, attendance at consultations and antiretroviral therapy.

The HIV Stigma Scale – Short version (Reinius et al., 2017; Portuguese version removed for review) is a short version of the HIV Stigma Scale developed by Berger et al. (2001). This version of the scale is composed of 12 items, in a 4-point Likert format from (1) “Strongly Disagree” to (4) “Strongly Agree”. This instrument is subdivided into four subscales: (1) “personalized stigma” (PS): Perceived consequences resultant from other people knowing that the respondent has HIV, such as losing friends, feeling that people were avoiding him/her, and regrets for having told people; (2) “disclosure concerns” (DC): controlling information, keeping someone's HIV status secret or worrying about others who knew about the HIV status of ongoing respondents; (3) “concerns with public attitudes” (CPA): what people think about PWLHIV or what people with HIV can expect when other people learn they have HIV or as a consequence of people in general knowing that a person has HIV; and (4) “negative self-image” (NSI): feeling unclean, inferior to others, shame and guilt (Berger et al., 2001; Reinius et al., 2017). This instrument allows the calculation of a general stigmatization index obtained by the sum of the responses to the 4 subscales, varying between 12 and 48. Each subscale can assume values between three and 12. Cronbach's alpha for the subscales were all $> .70$.

The Medical Outcomes Study Social Support Survey (MOS-SSS-P; Sherbourne & Stewart, 1991, Portuguese version from Fachado et al., 2007) consists of 20 items distributed by four factors: 1) emotional support; 2) material support; 3) affective support and 4) positive social interaction. This instrument is a five-point Likert scale from (0) “never” to (4) “always”. The Portuguese version of the instrument showed good psychometric characteristics, namely in terms of internal consistency (Cronbach's alpha of .97) and test-retest reliability ($ICC = .94$). For this sample, Cronbach's alpha was .98.

The Brief Symptom Inventory (BSI; Derogatis, 1993; Portuguese version: Canavarro, 1995) is a self-report inventory, in which the subject qualifies through a Likert scale of (0) “Never” up to 4 “Very often”, a total of 53 items. This scale consists of nine dimensions - Somatization, Obsessions-Compulsions, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and

Psychoticism. The instruments allow us to obtain three global indexes: the General Symptom Index (intensity of discomfort experienced according to the number of reported symptoms), the Positive Symptom Index (mean intensity of all reported symptoms) and the Total Positive Symptoms (number of symptomatic complaints presented). The Portuguese version of the instrument has good psychometric properties, namely in terms of internal consistency and discriminant validity (Canavarro, 1999). According to the author, the General Symptom Index is the best single indicator of psychopathological symptoms (Canavarro, 1999). The Cronbach alpha for this sample was .97.

The Suicide Ideation Questionnaire (SIQ; Reynolds, 1988; Portuguese version for Ferreira & Castela, 1999) was used to assess the severity of suicidal thoughts in adolescents and adults, with the items that make up the questionnaire encompassing a hierarchy of thoughts relative to suicide (Ferreira & Castela, 1999). This instrument consists of 30 items on a Likert scale from (0) "I have never had this thought" to (6) "almost every day". The Cronbach's alpha for this instrument was .96, and .98 for this sample.

Procedure

HIV stigma scale translation

The authors of the HIV Stigma Scale (Berger et al., 2001) and the short version of the same scale (Reinius et al., 2017) were contacted and permission requested to translate, adapt and validate the scale. Both authors gave their consent. The translation and cross-cultural adaptation of the questionnaire followed the International Test Commission Guidelines for Translating and Adapting Tests (International Test Commission, 2017). The translation was performed by two independent researchers, followed by retroversion by an English native speaker and compared with the original version. The final version was submitted to a pilot test with six people with HIV, allowing the adapting and optimizing of the final version of the questionnaire.

Data Collection

The present study is part of a broader project *Stigmatization, Mental Health and HIV/AIDS adaptation*, which aims to understand the (des)adaptive processes of PLWHA in Portugal. This study received approval from the ethics committee of the two hospitals in northern Portugal where the data was collected. Contacts were established with the physicians responsible for infectious disease consultation. Participants were initially approached by their attending physician with information about the research and asked about their willingness to participate. They were then referred to the researcher's office, where they received all the information about the study, such as the objectives, ethics procedures (e.g., anonymity and confidentiality) and then informed consent. Data collection consisted of a protocol composed of the mentioned questionnaires, lasting approximately 30 minutes, in a single moment. The investigators were trained psychologists and, if needed, the participants were emotionally stabilized before the assessment was completed.

Data Analysis

The data analysis was performed with resource to SPSS Statistics v25 and AMOS (IBM SPSS, 2017). Descriptive analysis of the items, normal distribution of the items (skewness and kurtosis) and Mahalanobis distance analysis were performed. Items with absolute values of $Sk < 3$ and $Ku < 7$, were considered normally distributed (Kline, 2011). Mahalanobis distance analysis allowed for the exclusion from the sample of two participants farthest from the centroid ($p < .001$). From the total participants that participated in this study ($n = 103$), only participants with no missing values were considered ($n = 100$).

Once normality was observed, Confirmatory Factor Analysis (CFA) was performed using Maximum Likelihood estimation method for two models of the short version of HIV stigma scale: the one-factor and four-factor. The goodness of fit indexes used to evaluate the models were: a) the chi-square value, which determines the adjustment in case of a result without statistical significance, although this value is almost always significant, especially in large samples (Marôco, 2014). To circumvent this, we used the Satorra-Bentler chi-square/degrees of freedom ($SB\chi^2/df$) being acceptable values ≤ 3 , good ≤ 2 , and ≤ 1 considered very good (Satorra & Bentler, 1994; 2001); (b) the square root of the root mean squared error (RMSEA), considered acceptable for values below .07 and good for values $< .06$ (Steiger, 1990; Steiger et al., 1985); p-value was also considered as a complement to this adjustment measure, considering more adjusted models for $p > .05$; c) Good of Fit Index (GFI) Comparative Fit Index (CFI), TLI (Tucker Lewis Index), Incremental Fit Index (IFI) whose values are considered good if $> .90$ and very good if $> .95$ (Bentler, 1990; Bentler & Bonnet, 1980; Hu & Bentler, 1999; Tanaka & Huba, 1985).

Convergent validity was estimated through average variance extracted (AVE), whose value should exceed 0.50 to be considered adequate (Fornell & Larcker, 1981). To discriminant validity, we used the

Fornell-Larcker criterion that requires that the square root of AVE values should be higher than the maximum value of the construct's correlations with any other construct involved in the theoretical model (Hair et al., 2014); as a latent construct should better explain the variance of its own indicator than the variance of other latent constructs. Moreover, the discriminant validity is demonstrated if the VEM of the factors are equal or greater than the square of the correlation between these factors (Marôco, 2014). External validity was performed to the correlation estimates between the HIV stigma scale, the BSI (Canavarró, 1995), the SIQ (Ferreira & Castelo, 1999) and the MOS-SSS-P (Fachado et al., 2007).

To assess reliability, we used the Cronbach's alpha and Coefficient Omega (considered adequate if above .70; Dunn et al., 2014), corrected item-total correlation (considered adequate if above .20; Finch et al., 2016), and mean inter-item correlation (considered adequate if values between .15 and .50; Clark & Watson, 1995).

RESULTS

Table 1 shows the descriptive analysis of the items, skewness and kurtosis. The values of univariate skewness and kurtosis of all items are in the range considered for the assumption of normality (univariate $sk < 3$ and univariate $ku < 7$), enabling the subsequent analyses.

Table 1. Descriptive statistics for the Portuguese short HIV stigma scale items.

	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>S.E of Sk</i>	<i>ku</i>	<i>S.E of ku</i>
Item 1	2.42	0.59	0.17	0.24	-0.36	0.48
Item 2	2.54	0.54	0.23	0.24	-1.14	0.48
Item 3	2.94	0.47	-0.20	0.24	1.40	0.48
Item 4	2.78	0.60	-0.16	0.24	0.05	0.48
Item 5	2.11	0.59	0.28	0.24	0.61	0.48
Item 6	2.80	0.52	-0.25	0.24	0.01	0.48
Item 7	2.68	0.57	0.10	0.24	-0.64	0.48
Item 8	2.97	0.49	-0.08	0.24	1.25	0.48
Item 9	2.65	0.54	-0.04	0.24	-0.85	0.48
Item 10	2.31	0.60	0.06	0.24	1.70	0.48
Item 11	2.19	0.49	0.94	0.24	1.56	0.48
Item 12	2.35	0.58	0.45	0.24	-0.01	0.48

Note: *M* – Mean; *SD* – Standard Deviation; *Sk* – Skewness; *K* – Kurtosis

Table 2 illustrates the fit indexes of the two factorial models of the short HV stigma scale. The one-factor model scored above the recommended 0.90 in GFI and TLI indexes. The four-factor model shows a very good adjustment quality, $\chi^2/df = 1.11$, GFI = 0.92, IFI = 0.98, CFI = 0.99, RMSEA = 0.03 (0.00 – 0.08), $p = .70$.

Table 1. Goodness of fit indexes for the Portuguese short version of HIV stigma scale

Model	χ^2 (df)	<i>p</i>	χ^2/df	GFI	IFI	TLI	CFI	RMSEA (IC 90%) <i>p-value</i>
Short HIV Stigma Scale: One Factor	73.60 (51)	.02	1.44	.89	.92	.89	.92	0.07 (0.03-0.10) $p = .20$
Short HIV Stigma Scale: four factors	52.99 (49)	.29	1.11	0.92	0.98	0.99	0.99	0.03 (0.00 – 0.08) $p = .70$

Note: χ^2 = Chi-square test; df = degrees of freedom; *p* = significance value; RMSEA = Root Mean Square Error of Approximation; GFI = Goodness-of-fit Index; TLI = Tucker Lewis Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; AIC = Akaike Information Criteria

Table 3 displays the item loadings for the four-factor model, with all the loadings above the .40 value.

Table 3. Loadings for the confirmatory four-factor structure for the Portuguese short version of HIV stigma scale

Items	Loading
Personalised Stigma	
Item 10	.81
Item 11	.82
Item 12	.90
Disclosure Concerns	
Item 3	.71
It4	.74
It8	.71
Concerns about public attitudes	
Item 6	.46
Item 7	.64
Item 9	.87
Negative self-image	
Item 1	.67
Item 2	.75
Item 5	.66

Table 4 shows the person correlation matrix, AVE and square root AVE. The different factors showed moderate to high positive correlations between them, with “concerns about public attitudes” and “negative self-image” showing the lower correlation.

The convergent validity of the factors was assessed using the AVE, whose values were found to be close to the acceptable for the factors, “concerns about public attitudes” (.46) and “negative self-image” (.48), and above .50 for the factors, “disclosure concerns” (0.53) and “personalized stigma”, (.71). The discriminant validity was assessed by comparing the correlations with the square root AVE, this value being higher in all factors than the cross correlation between factors. Also, the discriminant validity was assessed by comparison between AVE and the squares of correlations between factors. Since $VEM_{PS} = .71$ and $VEM_{DC} = .52$ greater than r^2 between these two factors (.09), we can say that the two factors have discriminant validity. Similarly, we can demonstrate the discriminating validity of the factors, “Personalized stigma” and “concerns about public attitudes” ($r^2 = .06$); “Personalized stigma” and “negative self-image” ($r^2 = .22$); “disclosure concerns” and “concerns about public attitudes” ($r^2 = .13$); “disclosure concerns” and “negative self-image” ($r^2 = .24$) and “concerns about public attitudes” and “negative self-image” ($r^2 = .04$) whose squares of correlations are lower than the VEM of each factor (Table 4).

Table 4. Pearson correlation matrix, convergent and discriminant validity

	PS	DC	CPA	AVE	Square root AVE
Personalized stigma	-			.71	.84
Disclosure concerns	.31**			.52	.72
Concerns about public attitudes	.25**	.36**		.46	.68
Negative self-image	.47**	.49**	.21*	.48	.69

Note: PS = Personalized stigma; DC = Disclosure concerns; CPA = concerns about public attitudes; NS = negative self-image; AVE = Average Variance Extracted

** $p < .01$; * $p < .05$

Table 5 presents the external validity of the Portuguese version of the Short HIV Stigma Scale. Concurrent validity with the BSI General Index of Symptoms and with the Ideation Suicide Questionnaire (SIQ) revealed the expected positive significant correlations. Negative significant correlations were observed with the Medical Outcomes Study Social Support Survey (MOS-SSS-P) and its four subscales.

Table 5. External validity of the Portuguese version of the Short HIV Stigma Scale

	PS	DC	CPA	NS
BSI General Index of Symptoms	.25*	.24*	.25*	.23*
SIQ	.22*	.33**	.37**	.40**
MOS-SSS-P	-.28**	-.38**	-.40**	-.41**
Positive Social Interaction	-.23*	-.34**	-.36**	-.38**
Emotional support	-.27**	-.35**	-.40**	-.39**
Affective support	-.25*	-.33**	-.35**	-.36**
Material support	-.32**	-.41**	-.46**	-.42**

Note: BSI = Brief symptom inventory; SIQ = Suicide ideation Questionnaire; MOS-SSS-P = Medical Outcomes Study Social Support Survey; PS = Personalized stigma; DC = Disclosure concerns; CPA = concerns about public attitudes; NS = negative self-image
** $p = .001$

Table 6 shows the reliability of the scale using multiple indicators. These values were mostly good for all the subscales, with the exception of the Cronbach alpha for the factors, “concerns about public attitudes” and “negative self-image” that scored lower than .70. However, the Omega coefficient is above these value for all the factors. Also, the mean inter-item correlations for the “personalized stigma” factor is above the expected ($< .50$).

Table 6. Reliability of the Portuguese version of the Short HIV Stigma Scale

	Omega	Alpha	MIIC	CITCR
Personalized Stigma	.88	.81	.59	.62-.74
Disclosure Concerns	.76	.71	.41	.22-.39
Concerns about public attitudes	.71	.59	.25	.28-.38
Negative self-image	.73	.65	.31	.30-.39

Note: Omega = Omega coefficient; Alpha = Cronbach's alpha; MIIC = Mean inter-item correlation; CITCR = Corrected item-total correlation range

DISCUSSION

Several studies have conclusions about the impact of stigmatization on PLWHA mental health, well-being and quality of life (e.g., Reisner et al., 2015; Silva, 2016; Wagner et al., 2016). Knowing the high prevalence of stigma in this population worldwide, we identified the need to have an instrument that would allow its assessment for the Portuguese population. As far as we know, this is the first study of psychometric properties of the Short Version of HIV Stigma Scale in Portugal for adults living with HIV/Aids.

The procedures undertaken for the Portuguese translation and pilot study allowed for the adjustment of the content of the instrument and guarantee that the items were easily perceived by participants. In this study, we tested two different models: the one-factor and four-factor, with the latter being the most used in international studies (e.g., Luz et al., 2020; Reinius et al., 2017). Although the one-factor model showed reasonable psychometric properties, the four-factor model showed very good adjustment properties, fulfilled the recommended criteria in construct, external validity and reliability, proving to be an adequate model to measure PLWHA stigma. The correlation matrix between the four factors showed positive significant correlations between factors, however convergent and discriminant analysis allowed for the reinforcement of the construct validity of the four-factor model.

As expected, HIV related stigma factors were positively associated with psychopathological symptoms and suicide ideation, and negatively associated with social support, with similar effect size than the observed in international studies. Logie and Gadalla (2009) conducted a meta-analysis with 24 studies and concluded there was a significant negative medium effect size association ($r = -.44$) between HIV-related stigma and positive mental health indicators (i.e., social support, life satisfaction, and emotional health); a positive medium effect size association ($r = .41$) between HIV-related stigma and negative mental health indicators (e.g., depression, anxiety, psychological distress); and a negative medium effect size association ($r = -.40$) between HIV-related stigma and overall poor mental health. Similarly, a recent meta-analysis with 64 studies found a significant positive association between HIV-related stigma and depressive symptoms ($r = .40$), anxiety ($r = .32$), and emotional or mental distress ($r = .48$) in PLWHA (Rueda et al., 2016). These relationships seem to occur due to fear of negative consequences arising from the disclosure of the diagnosis, which may result in material losses (e.g., loss of the job) or even loss of support from family

and friends (Mo & Ng, 2017; Orr et al., 2021). In turn, stigma may lead to a perception of inadequate social support even triggering suicidal thoughts (Heckman et al., 2002).

This study presents some limitations, namely the non-representativeness of the sample, and the focus only on PLWHVA from two hospitals in the north of Portugal. More studies must be performed in order to include more participants, from the whole country. As in the original version of this instrument (Reinius, 2017), the sample used for the validation of the short version of the HIV Stigma Scale is composed mostly of men, reflecting the sex distribution of PLWHA in Portugal (70% men vs 30% women). Specific gender related properties of the instrument should be observed in future studies, namely through the analysis of invariance. Another important analysis may be related to the Stigma Scale invariance according to different sources of contamination (e.g., sexual, injection drug user and infected by a stable partner), sexual orientation and age groups, as well as test-retest reliability. Although this four-factor model is congruent with the original instrument, it is important to test additional factorial models, namely bifactor, with higher samples, to understand if an overall stigma score is adequate.

CONCLUSION

This study allows for the analysis of the short version of the Stigma Scale, with good psychometric properties, convergent and discriminant validity, as well as with adequate reliability. With these results, we can conclude that this seems to be a good model for assessing the perceived stigma of PLWHVA in Portugal. Stigmatization results from preconceived ideas that are reflected in society, with HIV being a highly stigmatizing disease. Despite developments in the field of medicine, which allowed HIV to move from potentially fatal to a chronic disease, the way society faces it has not followed this change. In this sense, preventive work seems to be necessary at the level of dissemination and about the disease in society in general. On the other hand, social and health professionals need to be made aware of the emotional and social effects, namely the development of psychopathological symptoms related to stigmatization, in order to prevent it. Intervention needs to focus not only on the physical and control level of the virus, but also on the level of strategies to cope with all the psychosocial consequences of the disease: promoting quality of life and well-being, as well as demystifying beliefs and removing self-blaming, often associated with the diagnosis.

REFERENCES

- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238-46. <https://doi.org/10.1037/0033-2909.107.2.238>
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*(3), 588-606. <https://doi.org/10.1037/0033-2909.88.3.588>
- Berger, B. E., Ferrans, C. E., & Lashley, F. R. (2001). Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale. *Research in Nursing & Health*, *24*, 518-529. <https://doi.org/10.1002/nur.10011>
- Brewer, M. B. (2007). The social psychology of intergroup relations: social categorization, ingroup bias, and outgroup prejudice. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social Psychology: Handbook of Basic Principles* (pp. 695-715). The Guilford Press.
- Bunn J. Y., Solomon S. E., Millar C., & Forehand R. (2007). Measurement of stigma in people with HIV: A re-examination of the HIV Stigma Scale. *AIDS Education and Prevention*, *19*, 198-208. <https://doi.org/10.1521/aeap.2007.19.3.198>
- Burnham, K. E., Cruess, D. G., Kalichman, M. O., Grebler, T., Cherry, C., & Kalichman, S. C. (2016). Trauma symptoms, internalized stigma, social support, and sexual risk behavior among HIV-positive gay and bisexual MSM who have sought sex partners online. *AIDS Care*, *28*, 347-353. <https://doi.org/10.1080/09540121.2015.1096894>
- Canavarro, M. (1995). Inventário de sintomas psicopatológicos - B.S.I. In M. R. Simões, M. Gonçalves, & L. S. Almeida (Eds), *Testes e provas psicológicas em Portugal* (vol. II, pp. 87-109). Braga: SHO/APPORT
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, *7*(3), 309-319. <https://doi.org/10.1037/1040-3590.7.3.309>
- Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Lawrence Erlbaum.
- Deacon, H. (2006). Towards a sustainable theory of health-related stigma: Lessons from the HIV/AIDS literature. *Journal of Community & Applied Social Psychology*, *16*, 418-425. <https://doi.org/10.1002/casp.900>
- Derlega, V. J., Winstead, B. A., Greene, K., Serovich, J., & Elwood, W. N. (2004). Reasons for HIV disclosure/nondisclosure in close relationships: Testing a model of HIV-disclosure decision making. *Journal of Social and Clinical Psychology*, *23*, 747-767. <https://doi.org/10.1521/jscp.23.6.747.54804>

- Dunn, T., Baguley, T., & Brunsten, V. (2014). From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology*, *105*, 399–412. <https://doi.org/10.1111/bjop.12046>
- Earnshaw, V. A., & Chaudoir, S. R. (2009). From conceptualizing to measuring HIV stigma: A review of HIV stigma mechanism measures. *AIDS and Behavior*, *13*, 1160–1177. <https://doi.org/10.1007/s10461-009-9593-3>
- Fachado, A., Martinez, M., Villalva, M., & Pereira, M. (2007). Adaptação cultural e validação da versão portuguesa questionário medical outcomes study social suporte survey (MOSSSS). *Acta Médica Portuguesa*, *20*, 525–533.
- Ferreira, J. A., & Castela, M. C. (1999). Questionário de ideação suicida. In M. R. Simões, M. M. Gonçalves, & L. S. Almeida (Ed), *Testes e Provas Psicológicas em Portugal*, (vol. II, pp. 123–130). APPORT/SHO.
- Fife, B. L., & Wright, E. R. (2000). The dimensionality of stigma: A comparison of its impact on the self of persons with HIV/AIDS and cancer. *Journal of Health and Social Behavior*, *1*, 50–67. <https://doi.org/10.2307/2676360>
- Finch, W., Immekus, J., & French, B. (2016). *Applied Psychometrics Using SPSS and AMOS*. Information Age Publishing Inc.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50. <https://doi.org/10.2307/3151312>
- Franke M. F., Muñoz M., Finnegan K., Zeladita J., Sebastian J. L., Bayona J. N., & Shin S. S. (2010). Validation and abbreviation of an HIV Stigma Scale in an adult Spanish-speaking population in urban Peru. *AIDS and Behavior*, *14*, 189–199. <https://doi.org/10.1007/s10461-008-9474-1>
- Fuster-Ruiz de Apodaca, M. J., Molero, F., Holgado, F. P., & Ubillós, S. (2015). Adaptation of the HIV Stigma Scale in Spaniards with HIV. *The Spanish Journal of Psychology*, *18*, 1–15. <https://doi.org/10.1017/S1138741615000694>
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Simon & Schuster Inc.
- Gonçalves, A. R. C. (2018). *Fatores associados à adesão terapêutica em pessoas com VIH/SIDA [Factors associated with therapeutic adherence in people with HIV / AIDS]* [Unpublished master thesis]. Universidade do Minho.
- Heckman, T. G., Miller, J., Kochman, A., Kalichman, S. C., Carlson, B., & Silverthorn, M. (2002). Thoughts of suicide among HIV-infected rural persons enrolled in a telephone delivered mental health intervention. *Annals of Behavioral Medicine*, *24*, 141–148. https://doi.org/10.1207/S15324796ABM2402_11
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- International Test Commission (2017). ITC Guidelines for Translating and Adapting Tests (Second Edition). *International Journal of Testing*, *18*(2), 101–134. <https://doi.org/10.1080/15305058.2017.1398166>
- Jeyaseelan, L., Kumar, S., Mohanraj, R., Rebekah, G., Rao, D., & Manhart, L. E. (2013). Assessing HIV/AIDS stigma in South India: Validation and abridgement of the Berger HIV stigma scale. *AIDS and Behavior*, *17*, 434–443. <https://doi.org/10.1007/s10461-011-0128-3>
- Jimenez J. C., Puig M., Ramos J. C., Morales M., Asencio G., Sala A. C., Castro, E., Velez Santori, C., Santiago, L., & Zorrilla C. (2010). Measuring HIV felt stigma: A culturally adapted scale targeting PLWHA in Puerto Rico. *AIDS Care: Psychological and Socio-Medical Aspects of AIDS/HIV*, *22*(11), 1314–1322. <https://doi.org/10.1080/09540121003758481>
- Kanahara, S. (2006). A Review of the definitions of stereotype and a proposal for a professional model. *Individual Differences Research*, *4*, 306–321.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling*. Guilford Press.
- Lindberg, M. H., Wettergren, L., Wiklander, M., Svedhem-Johansson, V., & Eriksson, L. E. (2014). Psychometric evaluation of the HIV stigma scale in a Swedish context. *PLoS One*, *9*, 1–16. <https://doi.org/10.1371/journal.pone.0114867>
- Logie, C., & Gadalla, T. M. (2009). Meta-analysis of health and demographic correlates of stigma towards people living with HIV. *AIDS care*, *21*, 742–753. <https://doi.org/10.1080/09540120802511877>
- Luz, P., Torres, T., Almeida-Brasil, C., Marins, L., Bezerra, D., Veloso, V., Grinsztejn, B., Harel, D., & Thombs, B. (2020). Translation and validation of the Short HIV Stigma scale in Brazilian Portuguese. *Health Qual Life Outcomes*, *18*, 322 <https://doi.org/10.1186/s12955-020-01571-1>
- Marôco, J. (2014). *Análise de equações estruturais: Fundamentos teóricos, software & aplicações* (2.ª Edição). ReportNumber.

- Massicotte, A. C. R. (2010). *A comparative analysis of quality of life and stigma experienced by people living with HIV receiving antiretroviral therapy in a home-based care project in Malema and Ribaué districts, Mozambique* [Unpublished Doctoral dissertation]. University of South Africa, South Africa.
- Matos, M. S. (2019). *A vida continua: Vivência e adaptação de homens ao VIH/SIDA [Life goes on: Men's living and adapting to HIV / AIDS]* [Unpublished master thesis]. Universidade do Minho.
- Mo, P. K., & Ng, C. T. (2017). Stigmatization among people living with HIV in Hong Kong: A qualitative study. *Health Expectations, 20*, 943-951. <https://doi.org/10.1111/hex.12535>
- NIH (2019). *Relatório infeção VIH e SIDA em Portugal – 2019 [HIV infection and AIDS report in Portugal – 2019]*. <http://www.insa.min-saude.pt/relatorio-infecao-vih-e-sida-em-portugal-2019/>
- Orr, L., Shebl, F. M., Heimer, R., Khoshnood, K., Barbour, R., Khouri, D., Aaraj, E., Mokhbat, J. E., & Crawford, F. W. (2021). Violence and discrimination against men who have sex with men in Lebanon: The role of international displacement and migration. *Journal of Interpersonal Violence, 36*(21-22), 10267–10284. <https://doi.org/10.1177/0886260519884684>
- Poon, C., Saewyc, E., & Chen, W. (2012). Enacted stigma, problem substance use, and protective factors among Asian sexual minority youth in British Columbia. *Canadian Journal of Community Mental Health, 30*, 47-64. <https://doi.org/10.7870/cjcmh-2011-0016>
- Reinius, M., Wettergren, L., Wiklander, M., Svedhem, V., Ekström, A.M., & Eriksson, L. (2017). Development of a 12-item short version of the HIV stigma scale. *Health Qual Life Outcomes, 15*, 115. <https://doi.org/10.1186/s12955-017-0691-z>
- Reisner, S. L., Pardo, S. T., Gamarel, K. E., Hughto, J. M. W., Pardee, D. J., & Keo-Meier, C. L. (2015). Substance use to cope with stigma in healthcare among US female-to-male trans masculine adults. *LGBT Health, 2*, 324-332. <https://doi.org/10.1089/lgbt.2015.0001>
- Rueda, S., Mitra, S., Chen, S., Gogolishvili, D., Globerman, J., Chambers, L., Wilson, M., Logie, C. H., Shi, Q., Morassaei, S., & Rourke, S. B. (2016). Examining the associations between HIV-related stigma and health outcomes in people living with HIV/AIDS: A series of meta-analyses. *BMJ Open, 6*(7), 1-15. <https://doi.org/10.1136/bmjopen-2016-011453>
- Satorra, A., & Bentler, P.M. (1994). Corrections to test statistics and standard errors in covariance structure analysis. In A. von Eye & C.C. Clogg (Eds.) *Latent variables analysis: applications for developmental research* (pp. 399-419). Sage.
- Satorra, A., & Bentler, P.M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika, 66*, 507-514. <https://doi.org/10.1007/BF02296192>
- Sayles, J. N., Hays, R. D., Sarkisian, C. A., Mahajan, A. P., Spritzer, K. L., & Cunningham, W. E. (2008). Development and psychometric assessment of a multidimensional measure of internalized HIV stigma in a sample of HIV-positive adults. *AIDS and Behavior, 12*(5), 748-758. <https://doi.org/10.1007/s10461-008-9375-3>
- Schmitt, T. A. (2011). Current methodological considerations in exploratory and confirmatory factor analysis. *Journal of Psychoeducational Assessment, 29*(4), 304-321. <https://doi.org/10.1177/0734282911406653>
- Silva, C. F. L. (2016). *Fatores preditores de psicopatologia em pessoas que vivem com VIH/SIDA [Predictors of psychopathology in people living with HIV/AIDS]* [Unpublished master thesis]. Universidade do Minho.
- Sousa, M. D. F. (2017). *Variáveis associadas à ideação suicida em pessoas com VIH – Sida [Variables associated with suicidal ideation in people with HIV – AIDS]* [Unpublished master thesis]. Universidade do Minho.
- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*, 173-180. https://doi.org/10.1207/s15327906mbr2502_4
- Steiger, J. H., Shapiro, A., & Browne, M. W. (1985). On the multivariate asymptotic distribution of sequential chi-square statistics. *Psychometrika, 50*, 253-263. <https://doi.org/10.1007/BF02294104>
- Steward, W. T., Herek, G. M., Ramakrishna, J., Bharat, S., Chandy, S., Wrubel, J., & Ekstrand, M. L. (2008). HIV-related stigma: Adapting a theoretical framework for use in India. *Social Science & Medicine, 67*, 1225-1235. <https://doi.org/10.1016/j.socscimed.2008.05.032>
- Tanaka, J. S., & Huba, G. J. (1985). A fit index for covariance structure models under arbitrary GLS estimation. *British Journal of Mathematical and Statistical Psychology, 38*(2), 197-201. <https://doi.org/10.1111/j.2044-8317.1985.tb00834.x>
- Wagner, G. J., Bogart, L. M., Klein, D. J., Green, H. D., Mutchler, M. G., McDavitt, B., & Hilliard, C. (2016). Association of internalized and social network level HIV stigma with high-risk condomless sex among HIV-positive African American men. *Archives of Sexual Behavior, 45*, 1347-1355. <https://doi.org/10.1007/s10508-015-0641-y>
- World Health Organization (2018). *Global Health Observatory Data*. <https://www.who.int/gho/hiv/en/>

CRedit AUTHORSHIP CONTRIBUTION STATEMENT

Mariana Gonçalves: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing - Original Draft, Writing - Review & Editing; **Diogo Morgado:** Writing - Original Draft, Writing - Review & Editing; **Bárbara Sousa:** Writing - Original Draft, Writing - Review & Editing; **Ângela Maia:** Conceptualization, Methodology, Writing - Original Draft, Writing - Review & Editing

Historial do artigo

Recebido	17/11/2020
Aceite	11/08/2021
Publicado online	08/04/2022
Publicado	30/06/2022

