

## The Reliability and Validity of The Turkish Form of Berger HIV Stigma Scale

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### ABSTRACT

**Objective:** HIV-related stigma towards people living with HIV/AIDS (PLWHA) creates a barrier in access to quality health care, affects mental health and leads to poor treatment adherence. Assessment of different components of HIV-related stigma is needed to develop appropriate strategies for prevention and intervention. The aim of this study was to translate and adapt Berger HIV Stigma Scale to Turkish and assess its reliability and validity.

**Method:** The Turkish version of the 40 item, 4-point Likert-type self-report HIV Stigma Scale, as well as Beck Depression Inventory (BDI), Rosenberg Self-Esteem Scale (RSES) and sociodemographic data form were administered to 95 PLWHA.

**Results:** The items of the scale whose face validity was found to be sufficient, were loaded on four factors in the explanatory factor analysis: Internalised Stigmatization (16 items); Concerns with Public Attitudes

(12 items); Negative Self Image (9 items); and Disclosure Concerns (8 items). This structure explained 46.71% of the variance after an item was removed based on the analysis. All subscales had acceptable internal consistency with Cronbach's alpha coefficients .802-.934. BDE scores had moderate positive correlations with Internalized Stigmatization; Concerns with Public Attitudes; Disclosure Concerns subscale scores ( $r_s=0.214$ ,  $p=0.047$ ;  $r_s=0.295$ ,  $p=0.006$ ;  $r_s=0.353$ ,  $p=0.001$ ), and strong positive correlations with Negative Self Image score ( $r_s=0.617$ ,  $p<0.001$ ). A moderate positive correlation was found between RSES and Negative Self Image subscale score ( $r_s=0.434$ ;  $p<0.001$ ).

**Conclusion:** Our findings showed that the Turkish form of Berger HIV Stigma Scale is a reliable and valid tool for measuring HIV-related stigma in PLWHA.

**Keywords:** HIV, AIDS, stigma, Berger, validity, reliability

**Cite this article as:** Yıldız Mİ, Başar K, Karadağ Çaman Ö, İnkaya AÇ. The Reliability and Validity of The Turkish Form of Berger HIV Stigma Scale. Arch Neuropsychiatry 2021;58:292–299.

### INTRODUCTION

Human immunodeficiency virus (HIV) infection and acquired immune deficiency syndrome (AIDS) continue to be major public health problems in Turkey and the rest of the world despite many efforts for the prevention and treatment thereof. The number of people living with HIV/AIDS in the world has grown rapidly over the years, reaching 37.9 million in 2018 (1). The number of individuals infected with HIV in Turkey was reported to be 21,520 as of 31 December 2018 (2). The stigma and discrimination related to HIV/AIDS, which constitute an obstacle for accessing health services related to diagnosis and treatment are among the factors that contribute to the high prevalence of the infection (3).

'Stigma' is the assumption that all the individuals belonging to a group possessing certain common characteristics have all the positive (or more often negative) features attributed to the group (4). In fact, these features are not valid for all members of the group, and sometimes they are not a feature of the group and they are only attributions related to prejudices.

The evaluation of individuals who are stigmatized by other members of the society (with some negative stereotypes associated with the group that they belong to) may cause their other characteristics to be ignored and considered only with the negative characteristics attributed to the group and to be devalued in the eyes of the society and sometimes in their own eyes (4).

In addition to stigmatizing individuals, this process makes it possible (and legitimate discrimination) to adopt a different attitude towards stigmatized people from that towards other people who do not have the characteristic attributes of the stigmatized group (5).

Misinformation about the transmission route of HIV/AIDS, the effectiveness of its treatment, and the prejudices about the identity characteristics of individuals living with HIV/AIDS contribute to the formation of stigma and discrimination related to this disease. Considering the negative feelings and thoughts—caused by the stigmatizing and discriminatory attitudes of others—in individuals living with HIV, the latter may be exposed to different types of stigma (6). Perceived stigma is negative attitudes that an individual living with HIV/AIDS feels directed by other members of the society. Enacted stigma is the attitudes and behaviors related to discrimination, alienation, and devaluation to which a person is evidently exposed in society owing to their HIV status. Internalized stigma is the adoption and internalization (by individuals living with HIV) of common negative beliefs and attitudes associated with HIV/AIDS (7).

HIV-related stigma and discrimination have negative effects both on individuals living with HIV and on public health. Feelings of stigmatization caused by the society in which people living with HIV/AIDS (PLWHA) live

prevent them from using HIV treatment services effectively and cause nonadherence to antiretroviral treatment, which worsens treatment outcomes (8, 9, 10). Additionally, these feelings cause people to refrain from getting tested for HIV and from coming out about their HIV status to their partners. Thus, they may maintain their risky sexual behaviors and consequently cause an increase in HIV transmission (12).

The stigma perceived by PLWHA negatively affects their self-esteem and causes an increase in the prevalence of various mental illnesses, especially depression (13, 14, 15).

It is important to reduce HIV-related stigma in the society to ensure effective usage of HIV-related diagnostic, treatment services, and compliance with treatment, and to reduce the prevalence of mental disorders and high-risk behaviors in terms of transmission.

To formulate strategies to prevent stigmatization and its negative effects, easy-to-apply, valid and reliable instruments that measure stigmatization are needed. Various instruments have been developed to measure HIV-related stigma and are increasingly used in research. The features of these scales were reviewed and discussed in detail by Earnshaw et al. (6). In the literature, the most widely used scale in studies on HIV/AIDS-related stigma is the Berger HIV Stigma Scale (16). This self-report scale has a four-factor structure (personalized stigma, disclosure concerns, negative self-image, concern with public attitudes toward people with HIV) and consists of 40 items. The superiority of the scale to other scales developed to measure HIV-related stigma is that it measures different types of stigmatization experienced by PLWHA. The Berger HIV-Related Stigma Scale has been translated from English into many languages, adapted to different cultures (17, 18, 19, 20), and has been used in many studies investigating the stigmatization levels and psychosocial and clinical characteristics of individuals living with HIV (21, 22, 23, 24). Short versions of this scale were developed in English and Swedish for use with young children and adolescents (25, 26), and the English form was later adapted for use in adults (27). Neither has there been any stigma scale related to HIV/AIDS adapted to Turkish nor any validity and reliability study conducted to date.

In this study, the aim was to adapt the 40-item version of the Berger HIV Stigma Scale, which is widely used in the world and developed to measure the level of stigma perceived by individuals living with HIV, and to examine the validity and reliability of its Turkish form.

## METHOD

### Translation

After receiving permission from the authors who developed the Berger HIV Stigma Scale, the scale was translated into Turkish by three physicians, whose native language was Turkish and who had advanced professional English. Alternative translations for all items were reviewed and agreed upon for comprehensibility of the questions, word structure, and cultural appropriateness. The final version was formed by working on the scale draft with healthcare professionals and PLWHA. After back translation to English by two physicians who have mastered English at the near-native-speaker level, the researchers made some corrections by comparing the reversed scale with the original scale, and the final form was obtained.

### Face Validity

To assess the face validity of the scale, 15 healthcare professionals working in the field of infectious diseases and mental health were asked to rate each item in terms of their capability for measuring the experiences, feelings, and thoughts of PLWHA, ranging from 'absolutely cannot measure' (1) to 'definitely can measure' (5). The average measurement degree of all items was determined as 4.37 (3.73–4.80).

## Participants

The patients who applied to the outpatient clinic between June and October 2013 and consented to participate in the study were included. The study was conducted with the approval of the Hacettepe University Non-Interventional Clinical Studies Ethics Committee (Date: 24.04.2013, number: GO 13 / 267–32). Those who were under the age of eighteen, illiterate, and received a diagnosis of HIV infection less than three months earlier were not included in the study. It was thought that the experience of living with HIV should be at least three months to obtain information on the experience of different types of stigma assessed by the scale. Of the 104 participants who accepted to participate in the study, 95 of them were evaluated after those who did not complete the forms were excluded. Of the entire sample, 16.8% were female whose mean age was  $39.0 \pm 10.7$  and years of education were  $12.5 \pm 4.9$ . In the study sample, the frequency of those who continued their work/education was 67.4%, and of those with a past or current marriage history, it was 41.1%. Only 22.3% of the participants were living alone. Although the route of HIV transmission was not known precisely, 77.9% of the participants had a history of risky sexual intercourse. Of all the participants, 69% declared their sexual orientation as heterosexual. The proportion of people diagnosed with HIV less than a year ago was 40.4% and the proportion of those diagnosed more than 10 years ago was 21.3%.

## Data Collection Tools

**Berger HIV Stigma Scale:** The "HIV Stigma Scale" developed by Berger et al. (16) aims to measure the level of HIV-related stigma perceived by HIV-positive individuals. While the researchers were developing the scale, the perceived stigma associated with HIV was conceptualized as real and potential social negative qualifications (rejection or non-acceptance), limitation or denial of opportunities, and negative change in social identity in the context of stigmatization models related to HIV.

The questionnaire consisting of 184 items developed by the researchers was evaluated by an expert panel and reduced to 101 items. While 58 of the items were related to the person's experience of living with HIV, the remainder was about the reaction of others or that people living with HIV saw as likely to be given by others if they had this information.

The directive of the second part was that "if others don't know you are living with HIV, code the items into imagining that they do and what they would feel if they did." In the Turkish version of the scale, this order and instruction were adhered to. Therefore, this scale was expected to be able to measure the stigmatization experiences of individuals whose HIV positivity status was known or unknown to others. The final 40-item form of the scale was obtained by excluding items that were deemed inadequate to load into the factors after explanatory factor analysis using alpha extraction and oblimin rotation on the data of 318 people living with HIV.

**Beck Depression Inventory (BDI):** This is a self-report scale consisting of 21 items in which physical, emotional, and cognitive symptoms observed in depression are evaluated. Each item was answered between 0 and 3 so that the increasing values corresponded to increasing severity (28). The validity and reliability study of the Turkish version of the scale has been conducted (29), and Somatic and Cognitive-Affective subscale scores could be calculated based on factor models related to BDI (30).

**Rosenberg Self-Esteem Scale (RSES):** The first 10 items of the scale, which was developed by Rosenberg (31), were used to evaluate self-esteem. The validity and reliability study of the Turkish version was then conducted (32). If the total score of the scale was 0–1, self-esteem was considered high, 2–4 was medium, 5–6 was considered low; an increasing score reflected low self-esteem.

**Sociodemographic and clinical data form:** This consisted of questions about sociodemographic and HIV diagnosis and treatment-related clinical characteristics of the participants, such as the time elapsed since diagnosis.

### Statistical Analysis

SPSS 17.0 package program was used to evaluate the data. All the data were evaluated in terms of a normal distribution by Kolmogorov-Smirnov test. Descriptive statistics were presented with mean, standard deviation (SD), minimum-maximum values, and percentages according to the characteristics of the variable. The Spearman test was used for correlation analysis. The Cronbach's alpha coefficient was calculated for determining the internal consistency of the scales. To evaluate the reliability of the scale, the reliability of split-half (two-half tests) was tested. At the time of this study, there was no other scale in Turkish that measured HIV-related stigma. Therefore construct validity of the scale was assessed by correlation coefficients between the Berger HIV Stigma scale and RBSS and BDI, which measure concepts similar to those covered by HIV Stigma Scale. An explanatory and confirmatory factor analysis was also performed to evaluate the construct validity. For the level of statistical significance, a value of  $p < 0.05$  was set.

## RESULTS

### Validity

#### Factor analysis

Factor loadings were obtained by using the alpha extraction and oblimin rotation method for explanatory factor analysis. This rotation method was preferred when an item was likely to explain more than one scale, and it was the method chosen in the study where the original form of the scale was developed (16). The suitability of the data for factor analysis was examined by the Kaiser-Meyer-Olkin (KMO) coefficient and the Bartlett Sphericity test. Since the KMO value obtained by the KMO test was 0.795, and the  $p$  value was  $< 0.001$  in Bartlett sphericity test, it was decided that the study sample was adequate for analysis. When the scree plot was examined, the 3-factor solution was appropriate, and 10 factors were obtained with an Eigen value above one. However, in this study, there was a preference for adhering to the 4-factor structure of the original scale. According to this factor model, six items loaded on more than one factor (Table 1). The four-factor model explained 45.91% of the variance. Four sub-scales were formed by evaluating the conceptual equivalents of the items loaded on the factors; F1: Internalized Stigma (IS); F2: Concerns with Public Attitudes (CPA); F3: Negative Self-Image (NSI); F4: Disclosure Concerns (DC). It was decided to include the items in the calculation of the subscale scores if the items loaded on a factor with a factor load of more than 0.32, similar to a validity study conducted on the scale (20). In the factor analysis, two items did not load to any factor with a factor load  $> 0.32$ . It was therefore decided that the item "In many areas of my life, no one knows that I have HIV (such as family, friends, workplace/school)" should not be included in the subscale calculations, considering that it contained an expression that reflected the personal disclosure experience rather than being an item that could be answered on a Likert-type scale. The item "I never feel ashamed of having HIV" (item 8), which had a similar loading pattern, was thought to be suitable for both NSI and DC in terms of meaning. Although relatively low values were found when the item-total score correlations were examined (0.22 and 0.46, respectively), it was thought that it would be more appropriate to decide whether this item would be excluded from the scale by testing it in studies with larger samples. After doing so, the decision was made to include it in the calculations of the NSI and DC subscales.

Although the subscales on which the items loaded were largely similar to the original scale (Table 1), it was decided that the subscales on which

some items loaded in the Turkish form were different, considering the loading coefficients and the content integrity. While some items loaded on a single factor in the original form of the scale, they loaded on more than one factor in the Turkish version. For example, although the item "People's attitudes about HIV make me feel worse about myself" loaded on the NSI in the original form, in this study, loaded on both the NSI and DCI subscales to a similar degree. As this item was appropriate for both subscales considering content integrity, it was included in both.

Some items in the Turkish form loaded on factors that were different from those of the original form. For example, while the item "I am very careful who I tell that I have HIV" loaded on the DC in the original scale, it was included in the CPA subscale because it loaded significantly on this factor in the Turkish version. In the study in which the scale was developed, some items loaded on more than one subscale were included in the appropriate subscale in the Turkish version when they had a loading pattern that differed significantly from that of the original in this study sample. For example, the item "I work hard to keep my HIV a secret" loaded on both the DC and NSI subscales in the original form, but in this sample, loaded on the DC subscale where it was semantically more appropriate.

In confirmatory factor analysis, different goodness-of-fit indexes were used to evaluate the fit to the 4-factor model and the stability model of the data: root mean square error of approximation (RMSEA), comparative fit index (CFI),  $\chi^2/df$  index (relative Chi-square index), goodness-of-fit Index (GFI), and Tucker-Lewis index (TLI). A RMSEA value of less than 0.05 indicates a good fit with the data, between 0.05 and 0.08, an acceptable fit, between 0.08 and 0.1 a poor fit, and greater than 0.1, an unacceptable fit. An RMR value between 0.05 and 0.10 indicates an acceptable fit. The CFI value can range from 0 to 1 and must be greater than 0.9.  $\chi^2/df$  value less than 2 indicates a perfect fit.

Thus, the CFI value was calculated as 0.801, the  $\chi^2/df$  value as 1.545, the RMR value as 0.099, the RMSEA value as 0.076, the GFI value as 0.656, and the TLI value as 0.786 for the model constructed according to the 4-dimensional structure of the Berger HIV Stigma Scale.  $\chi^2/df$ , RMR, and RMSEA indexes show that the fit of the model was sufficient while CFI, GFI, and TLI index values were below the recommended threshold values.

When appropriate error corrections were made in the model, it was observed that all the standardized regression coefficients were above 0.30, so it was not necessary to reconstruct the model by removing items. The fit of the Berger HIV Stigma Scale to the four-factor model would need to be retested in studies with larger samples. Figure 1 shows the model in which 8 items were included in the 4th Factor.

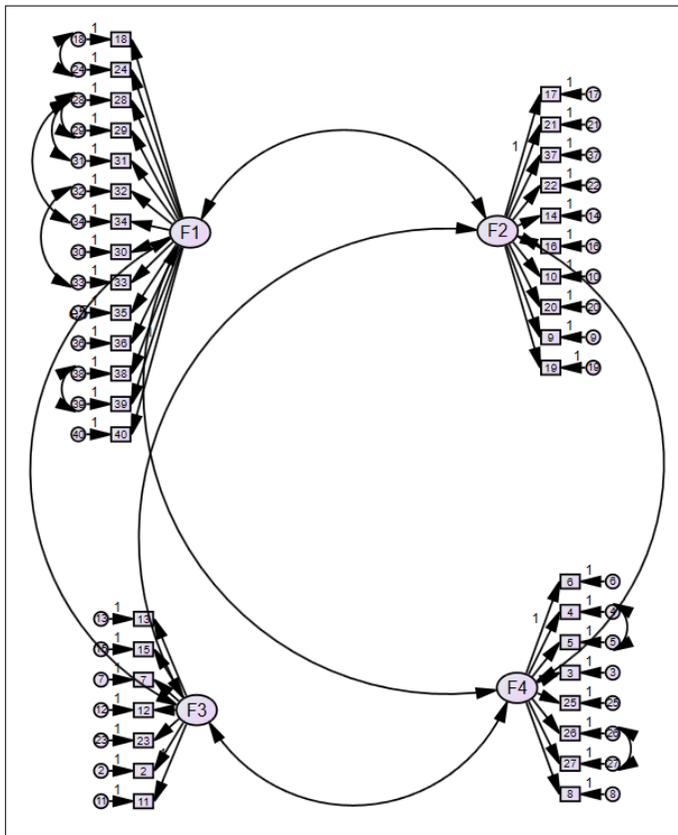
The final version of the scale consisted of 39 items and 4 subscales. Internalized Stigma subscale (16 items) could be scored between 16 and 64, Concerns with Public Attitudes subscale (12 items) between 12 and 48, Negative Self-Image subscale (9 items) between 9 and 36, and Disclosure Concerns subscale (8 items) between 8 and 32 points. The total scale score was calculated by the method of summing the scores obtained from each item, and a total score between 39 and 156 could be obtained. Factor analysis was repeated after removing the item "In many areas of my life, no one knows that I have HIV." The factors obtained in the final 39-item form of the scale explained 46.71% of the total variance.

### Construct validity

The participants' Berger HIV Stigma Scale, RSES, and BDI scores are shown in Table 2. Correlation of scores obtained from RSES score, BDI total score, BDI Cognitive-Affective and Somatic Subscale scores, and

**Table 1.** Factor loads obtained for 40 Items as a result of Explanatory Factor Analysis and subscales to which items are assigned (in order of factors) (n=95)

Item	F1	F2	F3	F4	Subscale	Subscale (Berger et al., 2001)
18. Some people who know I have HIV have grown more distant	0.572	007	-0.040	-0.130	1	1
24. I have been hurt by how people reacted to learning I have HIV	0.545	133	0.055	-0.279	1	1
28. Some people avoid touching me once they know I have HIV	0.712	-115	0.025	0.184	1	1, 2
29. People I care about stopped calling after learning I have HIV	0.658	-0.097	0.103	-0.058	1	1
30. People have told me that getting HIV is what I deserve for how I lived my life	0.423	0.089	0.290	0.097	1	1, 2
31. Some people close to me are afraid others will reject them if it becomes known that I have HIV	0.540	0.000	0.069	-0.149	1	1
32. People don't want me around their children once they know I have HIV	0.839	-0.021	-0.127	-0.034	1	1, 2
33. People have physically backed away from me when they learn I have HIV	0.854	0.044	-.067	-0.097	1	1, 2
34. Some people act as though it's my fault I have HIV	0.593	0.138	0.187	-0.217	1	1, 2
35. I have stopped socializing with some people because of their reactions to my having HIV	0.750	-0.056	0.022	-0.024	1	1
36. I have lost friends by telling them I have HIV	0.804	-0.032	-0.159	-0.003	1	1
38. People who know I have HIV tend to ignore my good points	0.733	-0.110	0.062	0.047	1	1, 3, 2
39. People seem afraid of me once they learn I have HIV	0.792	-0.043	0.056	0.159	1	1, 2, 3
40. When people learn you have HIV, they look for flaws in your character	0.738	-0.077	0.109	0.238	1	2, 1
26. I regret having told some people that I have HIV	0.355	0.054	0.168	-0.455	1, 4	1
27. As a rule, telling others that I have HIV has been a mistake	0.427	0.114	0.249	-0.326	1, 4	1, 2, 3
9. People with HIV are treated like outcasts	0.073	-0.401	-0.029	-0.269	2	2
10. Most people believe that a person who has HIV is dirty	0.027	-0.505	-0.070	-0.289	2	2
14. Most people think that a person with HIV is disgusting	0.072	-0.592	-0.089	-0.118	2	2
16. Most people with HIV are rejected when others find out	0.190	-0.592	-0.089	-0.118	2	2,1
17. I am very careful who I tell that I have HIV	-0.162	-0.611	0.155	0.065	2	4
19. Since learning I have HIV, I worry about people discriminating against me	0.064	-0.485	0.275	-0.245	2	2, 4
20. Most people are uncomfortable around someone with HIV	0.123	-0.637	0.066	-0.011	2	2
21. I never feel the need to hide the fact that I have HIV (R)	0.029	0.634	0.108	-0.137	2	4
22. I worry that people may judge me when they learn I have HIV	0.114	-0.523	-0.009	0.044	2	4, 2
37. I have told people close to me to keep the fact that I have HIV a secret	-0.022	-0.397	0.024	-0.250	2	4
4. Telling someone I have HIV is risky	-0.102	-0.455	0.079	-0.379	2, 4	4, 2
5. People with HIV lose their jobs when their employers find out	-0.251	-0.341	0.273	-0.393	2, 4	2
2. I feel guilty because I have HIV	-0.072	-0.071	0.499	-0.170	3	3
7. I feel I am not as good a person as others because I have HIV	-0.012	0.030	0.657	-0.040	3	3
11. It is easier to avoid new friendships than worry about telling someone that I have HIV	0.183	0.051	0.572	0.080	3	3, 4, 2
12. Having HIV makes me feel unclean	0.135	0.005	0.655	-0.212	3	3
13. Since learning I have HIV, I feel set apart and isolated from the rest of the world	0.212	-0.245	0.604	0.088	3	1, 3, 2
15. Having HIV makes me feel that I'm a bad person	-0.043	0.088	0.736	0.060	3	3
23. Having HIV in my body is disgusting to m	-0.002	-0.280	0.537	0.120	3	3
3. People's attitudes about HIV make me feel worse about myself	0.154	-0.082	0.367	-0.393	3, 4	3
8. I never feel ashamed of having HIV (R)	-0.154	-0.190	0.186	0.283	3, 4	3
6. I work hard to keep my HIV a secret	0.137	-0.282	0.032	-0.598	4	4, 3
25. I worry that people who know I have HIV will tell others	0.334	0.101	0.145	-0.406	4	4
1. In many areas of my life, no one knows that I have HIV	0.235	-0.132	-0.131	-0.178		4



**Figure 1.** Confirmatory Factor Analysis Diagram (4 Factor Structure with 8 items in Factor 4)

items questioning sleep and weight loss with Berger HIV Stigma subscale scores were examined (Table 3).

The mean RSES score of the participants was 1.28±0.82, and when the total scores obtained were evaluated categorically, 82.6% of the respondents of the sample had high self-esteem, 16.3% had moderate self-esteem, and 1.2% had low self-esteem. A positive correlation was found between the RSES score and the NSI subscale score ( $r_s=0.434, p<0.001$ ). A correlation was found between the BDI score and the scores of the CPA, NSI, and DC subscales ( $r_s=0.295, p=0.006$ ;  $r_s=0.617, p<0.001$ ; and  $r_s=0.353, p=0.001$ , respectively). A low degree of correlation was found between the Somatic subscale score of BDI and the scores of the CPA and DC subscales ( $r_s=0.247, p=0.018$  and  $r_s=0.249, p=0.018$ , respectively), and a moderate correlation was found with the NSI subscale score ( $r_s=0.440, p<0.001$ ). The correlation of the Cognitive-Affective subscale score with the NSI subscale was moderate ( $r_s=0.581, p<0.001$ ) and low with the others (IS:  $r_s=0.236, p=0.027$ ; CPA:  $r_s=0.274, p=0.010$ ; DC:  $r_s=0.294, p=0.005$ ).

**Reliability**

To evaluate the internal consistency of the scale, a Cronbach’s alpha coefficient was calculated for each subscale. The coefficients were determined as 0.934 for the IS subscale, 0.862 for the CPA subscale, 0.805 for the NSI subscale, and 0.802 for the DC subscale. The Cronbach’s alpha value for the whole scale (39 items) was 0.928. When the item-total score correlations within each subscale were examined, the values were 0.48–0.83 for the IS subscale; 0.53–0.74 for the CPA subscale; 0.22–0.77 for the NSI subscale; and 0.46–0.75 for the DC subscale.

The item “I never feel ashamed of having HIV” belonging to the Negative Self-Image subscale had the lowest item-total score correlation coefficient (0.22). The split-half reliability coefficients (Spearman-Brown) obtained from the split-half reliability test ranged from 0.742 to 0.870 (Internalized Stigma:  $r=0.870$ ; Concerns with Public Attitudes:  $r=0.791$ ; Negative Self-Image:  $r=0.815$ ; Disclosure Concerns:  $r=0.742$ ; and total score  $r=0.764$ ). As a result of the split-half reliability analysis, it was concluded that all items in the scale measured the same structure.

**Relationship between stigma and other variables**

There was no difference between gender groups in terms of the Berger HIV Stigma subscale scores (IS:  $p=0.933$ ; CPA:  $p=0.99$ ; NSI:  $p=0.423$ ; DC:  $p=0.858$ ). The age variable at the time of assessment was negatively correlated with all subscales (IS  $r_s=0.520, p=0.614$ ; CPA  $r_s=-0.265, p=0.009$ ; NSI  $r_s=-0.254, p=0.013$ ; DC  $r_s=-0.233, p=0.023$ ). No correlation was found between the Berger-HIDS subscale scores and the time elapsed since the detection of HIV infection (IS  $r_s=0.025, p=0.810$ ; CPA  $r_s=-0.142, p=0.172$ ; NSI  $r_s=-0.167, p=0.107$ ; DC  $r_s=-0.096, p=0.356$ ).

**Table 2.** Scores of Berger HIV Stigma Scale, Rosenberg Self Esteem Scale, Beck Depression Inventory (n = 95)

	Mean± SD	Min - Max
Berger-HIV Stigma Scale		
Total	102.0±19.6	48-150
Internalized Stigma (F1)	28.6±11.9	16-64
Concerns with Public Attitudes (F2)	37.9±6.9	15-48
Negative Self Image (F3)	20.9±6.0	9-36
Disclosure Concerns (F4)	23.1±5.2	8-32
BDI	12.9±10.9	0-61
RSES	1.28±0.82	0.25-4.08

BDI: Beck Depression Inventory; RSES: Rosenberg Self Esteem Scale; SD: standart deviation; Min: minimum Max: maximum

**Table 3.** Correlations of Berger HIV Stigma Scale Scores with Beck Depression Inventory and Rosenberg Self Esteem Scale Scores (n = 95)

rs (p)	Berger HIV Stigma Scale				Total
	F1	F2	F3	F4	
RSES	0.162 (0.137)	-0.026 (0.812)	0.434 (<0.001)	0.103 (0.346)	0.233 (0.031)
BDI	0.214 (0.047)	0.295 (0.006)	0.617 (<0.001)	0.353 (0.001)	0.437 (0.000)
BDI- S	0.169 (0.111)	0.247 (0.018)	0.440 (<0.001)	0.249 (0.018)	0.332 (0.001)
BDI- KA	0.236 (0.027)	0.274 (0.010)	0.581 (<0.001)	0.294 (0.005)	0.447 (0.000)
BDI- sleep	0.335 (0.102)	0.305 (0.109)	0.192 (0.068)	0.028 (0.793)	0.163 (0.122)
BDE- weight	-0.067 (0.526)	0.188 (0.073)	0.187(0.075)	0.176 (0.093)	0.106 (0.314)

BDI: Beck Depression Inventory; BDI-sleep; BDI- weight; F1: Internalized Stigma; F2: Concerns with Public Attitudes; F3: Negative Self Image; F4: Disclosure Concerns; RSES: Rosenberg Self Esteem Scale; rs : Spearman correlation coefficient

## DISCUSSION

The validity and reliability of the translated and adapted version of the Berger HIV-Related Stigma Scale into Turkish were examined in a clinical sample of people living with HIV, and supportive findings were obtained. Like the original form of the scale, with the exploratory factor analysis, the total variability can be explained significantly by using the four-factor model (16). The fit indexes obtained by confirmatory factor analysis show that the scale had an acceptable fit to the four-factor model. Since indexes with values below the threshold for adequate fit were also determined, the fit of the scale with the four-factor model should be retested in studies with larger samples. The Turkish version of the Berger HIV Stigma Scale also consisted of four subscales, in which some items were included in more than one subscale: "Internalized Stigma," "Concerns with Public Attitudes," "Negative Self-Image," "Disclosure Concerns." The internal consistency validity coefficients calculated for each subscale were in the range that indicates the validity of the subscales. The Turkish form, which was finalized by removing one item owing to both the inappropriateness of the content and the weak factor loading, consisted of a total of 39 items. The current findings show that the reliability of the final form of the Turkish version of the Berger HIV Stigma Scale was sufficient.

Since, at the time of this study, there was no other scale for evaluating stigma in people living with HIV, Turkish Convergent and convergent validity, which were the components of the scale's construct validity, were evaluated over the relationship of the Berger HIV Stigma Scale scores with the measurements of constructs related to stigma, such as self-esteem and depression, parallel to the method of the study in which the scale was developed (16) and the Tamil adaptation study (17). In other studies in which the scale was adapted, features, such as quality of life, self-efficacy in coping with stigma, and disclosure about HIV status, were evaluated for similar purposes (19, 20).

The relationship between stigma and depression in people living with HIV has been revealed by many studies in the literature (13, 14). As expected, a statistically significant correlation was found between the Berger HIV Stigma subscale scores and the severity of depressive symptoms measured by the total score of BDI. The fact that the severity of depressive symptoms was associated with the level of stigma was an expected finding since the scope of some items of these scales overlapped. The relationship between symptom clusters and subscale scores of depression was examined to show that, on the whole, the structure measured by the Berger HIV Stigma Scale overlapped not with depression but with the components of depression related to stigmatization. The first method applied for this purpose was to evaluate the somatic symptoms and cognitive-affective symptoms of depression separately.

The BDI Cognitive-Affective subscale score was associated with all HIV Stigma Scale subscales as expected. However, the score of the Somatic subscale of BDI was also associated with subscales except internalized stigma although the correlation coefficients were lower than those of the Cognitive-Affective subscale. The second evaluation was made over the relationship of HIV Stigma subscale scores with items of BDI that questioned sleep and weight-change symptoms that were not directly related to stigma. The finding that these symptoms were not associated with any stigma subscale supports the fact that the scope of the two scales overlapped only on the basis of the stigma structure. In the original study in which the scale was developed, scales measuring similar constructs (depression, self-esteem, perception of social support) were applied to assess construct validity, and it was stated that the correlation of depression severity assessed with BDI and stigma scale scores support the construct validity of the scale (16). Negative self-image was closely related to the concept of decreased self-esteem, one of the diagnostic criteria of depression. The highest correlation with both total score of BDI

and scores of Cognitive-Affective and Somatic subscales was found with the Negative Self-Image subscale of the Berger HIV Stigma Scale. This finding supports convergent validity, which was a dimension of construct validity. It was observed that the level of self-esteem of the participants was inversely related to the Berger HIV Stigma Scale total score and the Negative Self-Image subscale score. Negative self-image was the person's negative feelings and thoughts about themselves, and it is experienced as feelings of guilt, shame, or dirtiness in individuals living with HIV as in other stigma-related conditions (4, 16). Rosenberg defined the concept of self-esteem as the self-worth that is formed as a result of positive and negative evaluations of one's self, and stated that it is related to the self-esteem and self-acceptance of the individual (31). In the original scale study, a relationship was found between all subscales and self-esteem, and the strongest relationship was found with Negative Self-Image (16). Considering that the concept of self-esteem and negative self-image are opposite concepts in terms of meaning, the reverse relationship found in this study supports discriminant validity, a dimension of construct validity, of the Turkish version of the Berger HIV Stigma Scale. Further, although the total mean score obtained from the RSES was low, when the scores of the participants were evaluated categorically, 82.6% of the respondents of the sample had high self-esteem, 16.3% had moderate self-esteem, and 1.2% had low self-esteem. As can be seen, the participants consisted of people with different levels of self-esteem. Correlation analysis demonstrates that (Table 3) individuals with higher stigmatization scores also had higher RSES score indicating lower self-esteem. It is thought that individuals affected by stigma in terms of self-esteem might not be homogeneous; there might be psychological resilience factors that mediate the direction and severity of these effects, and it would be possible to examine these with further studies in which this scale would also be used.

The Internalized Stigma subscale evaluates stigma (7), which is defined as the internalization of the society's negative attitudes and judgments about HIV. This subscale score was associated with depression symptom severity. Aligned with the expectation that internalized stigma would be more closely related to the cognitive and affective components of depression related to self-worth, the correlation determined with the scores obtained from this symptom cluster was not shown with the scores related to the somatic symptoms of depression.

The scores of the other two subscales of the Berger HIV Stigma Scale were found to be related to the severity of depression symptoms. The first of these was the Disclosure Concerns subscale. Negative experiences and related concerns about stigma and discrimination could prevent people living with HIV from coming out about their situation. Most people may prefer to keep this situation a secret or to tell a limited number of people (4, 6). Another subscale, Concerns with Public Attitude subscale was associated with concerns about losing one's job and support system, being excluded from society, and being discriminated against (4).

As in studies where the scale was adapted to other languages and cultures (17, 18, 20), the items forming the subscales in the Turkish version differed from those of the original scale. While 16 items were included in more than one subscale in the original scale (16), only six items were included in more than one subscale in the Turkish version. Other items loaded significantly on a single factor. Similarly, in the study in which the scale was adapted into Swedish, the subscales were differentiated to a great extent, as in the present study, and only 5 items were included in more than one subscale (20). While different types of stigmatization in general and regarding HIV/AIDS had quite different characteristics, they also contained common features related to certain thoughts, attitudes and behaviors. For this reason, the attitudes/behaviors and thoughts represented in some items had a semantic relationship with more than one type of stigma. For this reason, it was thought that it would be appropriate to include some items loaded on more than one factor in the

calculation of the scores of both subscales corresponding to the relevant factors for the scope of stigma—that each subscale aimed to measure—to be sufficient. The inclusion of an item in more than one subscale in the study in which the scale was developed (16) and in the study of adaptation to the Swedish (20) shared the same aim.

In the study in which the original scale was developed, it was reported that the sum of the scores obtained from all items would constitute the total score of the scale (16). As in other adaptation studies of the scale, the number of items in each subscale and the lowest and highest scores that could be obtained from each subscale differed from each other in the present study (17, 20). For this reason, and because some items were included in more than one subscale, it was decided that it would not be appropriate to calculate a total scale score by aggregating the scores obtained from the subscales. Although the total score of the scale could be calculated by aggregating the scores of the items in the scale, the subscales represented different types of stigma. When clinicians aim to evaluate the different and unique stigma experiences that individuals living with HIV may experience and to develop protective strategies specific to the type of stigma, in studies on stigma related to HIV, the score from each subscale instead of the total score should be prioritized.

Individuals with frequently stigmatized characteristics, such as being HIV-positive developed an expectation that they would be stigmatized and discriminated against through the stigmatization experience of other people with similar characteristics, and that expectation was an important and destructive component of stigma. When the instruction of the scale was examined, it was noticed that it could be applied to both groups whose HIV-positive status was known or unknown by others. If the respondent's HIV-positive status was unknown to others, the respondent was asked to answer questions according to their predictions about how they would feel if others knew. For this reason, this scale was expected to be able to measure the stigmatization experiences of individuals whose HIV positivity status was known or unknown to others. However, whether there was a difference between the stigmatization levels of groups whose HIV-positive characteristics were known or unknown to others could be examined with larger sample studies by using the Turkish version of the Berger HIV Stigma Scale.

It was also expected that the HIV-related stigma experienced by people living with HIV would interact with the experience of stigma before they were HIV positive, associated with some identity characteristics or with features, such as substance use and mental illness. This interaction was an important research topic. The screening and evaluation of these areas by the HIV-related stigma scale alone would not be possible without simultaneous measurements of other stigma experiences.

In this sample, the Turkish version of the Berger HIV Stigma Scale was found to be within acceptable limits in terms of validity and reliability. However, this study has some limitations. The sample group consisted of individuals living with HIV and who applied to the clinic. People who, for various reasons, could not access treatment, especially stigma experience and anxiety about stigma, were not included in the study. Similar limitations regarding sampling are also valid in studies in which the scale was adapted into Chinese and Swedish (33, 20). It was estimated that the stigma experiences of patients who could not access treatment might differ from those who could. In the study in which the scale was developed (16) and in the one in which it was adapted to Tamil (17), this limitation was overcome through social support groups in the community and non-governmental organizations working with individuals living with HIV. Although this situation made it difficult to generalize the findings about the level of stigma to all individuals living with HIV, it did not cause a significant problem regarding the validity and reliability analyses of the scale. However, it would be appropriate to repeat the analyses with

samples created to represent the universe in the future. The creation of our study sample was affected by the difficulty of reaching people living with HIV. This situation also led to small sample size, which is another limitation. A larger sample is recommended to test the validity and reliability of a scale consisting of forty items. Larger sample sizes could be obtained in studies that followed different methods of reaching patients (16, 17). Although this limitation is considered acceptable to some extent in hard-to-reach populations, it would be appropriate to test validity and reliability in larger groups. Despite these limitations, statistics related to the factor analysis conducted to evaluate the validity of the scale also support the adequacy of the sample size.

Individuals living with HIV form a heterogeneous population in terms of sociodemographic and clinical characteristics that may determine stigma, such as HIV transmission route, gender, and sexual orientation. In almost all the studies in which the scale was developed, adapted to different languages and cultures, and tested for validity and reliability, limitations regarding the representation of the universe have been reported (16, 17, 19, 20, 33). Considering that the majority of the sample was male, those who report being heterosexual and whose possible HIV transmission route was thought to be sexual intercourse, the validity of this scale should be tested in larger and more heterogeneous samples in terms of these characteristics in the future studies.

An important limitation of reliability analyses is that test-retest reliability was not evaluated. Considering that the structures measured by such scales may change over time with the experience of the infection process and life events, it is appropriate that the time chosen for re-administration of the scale to the participants for the measurement of test-retest reliability should not be too long, but that sufficient time should be left between the two tests. In the study in which the scale was developed and in those in which it was adapted to different languages, periods between 2 and 3 weeks were chosen (16, 17, 20). Since a significant part of the people participating in the study were living outside the city and referred to our infection clinic, it was not possible for them to come to the hospital where the research was conducted for the second time and to be evaluated in terms of test-retest reliability.

## CONCLUSION

The Turkish version of the Berger HIV Stigma Scale was found to be within acceptable limits in terms of validity and reliability. It is known that stigma related to HIV affects self-esteem negatively, as shown in this study, and paves the way for the development of many mental illnesses, especially depression. Additionally, stigma also has negative consequences, such as not being able to access to the diagnosis and treatment opportunities, fear of rejection and discrimination, and not being able to receive social support because it makes it difficult for someone to come out about their HIV status. We hope that the Turkish version of the Berger HIV Stigma Scale, which measures various components of stigma, will contribute to the research efforts of clinicians and researchers working with people living with HIV for evaluating various aspects of stigma, for developing preventive strategies, taking protective measures and developing new intervention methods.

**Ethics Committee Approval:** The study was conducted with the approval of the Hacettepe University Non-Interventional Clinical Studies Ethics Committee (Date: 24.04.2013, number: GO 13 / 267-32).

**Informed Consent:** The patients who applied to the outpatient clinic between June and October 2013 and consented to participate in the study were included.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept- MİY, KB, ÖKÇ, AÇİ; Design- MİY, KB, ÖKÇ, AÇİ; Supervision- MİY, KB, ÖKÇ; Resource- MİY, KB, ÖKÇ, AÇİ; Materials- MİY, AÇİ; Data

Collection and/or Processing- MİY, KB, ÖKÇ, AÇİ; Analysis and/or Interpretation- MİY, KB, ÖKÇ, AÇİ; Literature Search- MİY, KB, ÖKÇ; Writing- MİY, KB, ÖKÇ, AÇİ; Critical Reviews- MİY, KB, ÖKÇ, AÇİ.

**Conflict of Interest:** None.

**Financial Disclosure:** This study has received no direct or indirect financial support.

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