

Development and Validation of HIV/AIDS Stigma and Discrimination Scale in Southeast Iran: The General Population Viewpoint

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Abstract

Stigma and discrimination are one of the important challenges in coping with HIV infection. Stigma and discrimination are universal phenomenon for the epidemic of HIV and exposure to people with HIV. The present study aimed to develop and measure psychometrically the HIV/AIDS Stigma and discrimination scale from the general population viewpoint in southeast Iran. Data collection lasted from May to September 2016. The results showed that the “HIV/AIDS Stigma and discrimination scale” had an acceptable internal consistency and stability (Cronbach’s alpha coefficient = 0.69, omega coefficient = 0.7, and $r = 0.57$, $p = 0.001$). The scale had acceptable content and face validities. The Principal Axis Factoring (PAF) with varimax rotation analysis shows that the scale has 4 dimensions: “patient social position” (5 items), “social support” (4 items), “social disease perspective” (7 items), and “social harassment” (2 items). In general, the psychometric properties of “HIV/AIDS Stigma and discrimination scale” are acceptable, and this scale can be used in studies.

Keywords

AIDS, HIV, stigma, validation, psychometrics

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Introduction

Acquired Immunodeficiency Syndrome (AIDS), which source is a viral infection (HIV), was first identified in the United States in 1981 and changed into one of the greatest challenges in the world health.¹ AIDS is now the fourth deadly disease worldwide.² According to WHO data, the prevalence of HIV/AIDS in Iran is increasing.³ The prevalence of HIV/AIDS in the general population of Iran is less than 0.15%, while the prevalence is more than 5% in some high-risk groups, such as people who inject drugs.^{4,5} The Ministry of Health released 28663 HIV cases and 6435 cases of AIDS in Iran in October 2014. 67.2% of HIV patients were infected through injection with discarded needles, 13.9% due to sexual relations, 0.9% by blood transfusion, 3.1% through mother-to-child transmission and 16.7% through unknown reasons.² Even though only 13.9% of people with HIV were sexually infected, the incidence of sexually transmitted HIV is increasing rapidly, reflecting a transition from discarded needles or other drug injection equipment to high-risk sexual behaviors in drug users.⁶

With the onset of the HIV/AIDS epidemic, fear, stigma and discrimination were also identified as important barriers to an

effective response to HIV.⁷ The Joint United Nations Program on HIV/AIDS (UNAIDS)⁸ defines HIV-related stigma as “a process of devaluation of people living with or associating with HIV and AIDS.”⁹ There are 2 types of stigmas: internal stigma refers to the shame and expectation of discrimination that prevents people from talking about their experiences and stops them seeking help. External stigma refers to the experience of unfair treatment by others.¹⁰ At present, scientific literature analyzes the significant and global effects of HIV/AIDS-related stigma on the lives and habits of those living with HIV and shows that such a stigma may lead to a further expansion of the HIV/AIDS epidemic.¹¹ Stigma-related attitudes toward patients

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What Do We Already Know about This Topic?

The evidence suggest that some instruments and questionnaires have been developed in some countries to evaluate stigma and discrimination from the viewpoint of the general population. However, none of them have been passed cross-cultural validity and are not used in different studies with different cultures.

How Does Your Research Contribute to the Field?

The present study showed the development process and the results of the psychometric test of the HIV/AIDS - related stigma-discrimination scale from the viewpoint of the general population.

What Are Your Research's Implications toward Theory, Practice, or Policy?

Considering the psychometric results of the scale, this scale can be used as a valid one for measuring the HIV/AIDS stigma-discrimination from the general population viewpoint.

in health care centers have had a negative impact on access to health services, social interactions, and social support.^{12,13} One of the HIV/AIDS preventive behaviors is a voluntary counseling test but HIV/AIDS-related stigma is a major barrier to it,¹⁴ which may further endanger prevention and treatment.^{12,15,16}

It is necessary to recognize stigma, discrimination, and their different dimensions well to adopt the best strategy for stigma. For this purpose, various instruments and questionnaires have been designed to assess different aspects of HIV/AIDS- related stigma and discrimination including behavior and attitude.^{17,18} Zelaya et al. in India measured psychometrically stigma from the viewpoint of the general population. Their scale had a very high internal consistency (measured by intra class correlation coefficient (ICC)) and Cronbach alpha coefficient for the total scale was 0.81, and this scale was valid due to being used in India.¹⁹ Ugarte et al. in Nicaragua assessed psychometrically the HIV-related stigma and discrimination from the general population viewpoint and reported internal consistency with Cronbach's alphas of 0.81 and 0.91 for HIV stigma and discrimination, respectively.²⁰

Several scales are available for HIV/AIDS-related stigma and discrimination in the world, however, they are not comprehensive enough, and each one considers only some aspects of HIV/AIDS-related stigma and discrimination in a specific group and a specific geographic area. Some of these instruments cannot be generalized to other communities because of their sampling methods and cultural differences.^{18,21} Furthermore, the viewpoints of HIV people about stigma have been considered in most available instruments, and the general

population viewpoint about HIV-related stigma and discrimination has rarely been addressed.²¹ According to the literature review, no study has systematically appraised the available scales and there is no popular and recommended scale for evaluating HIV/AIDS-related stigma and discrimination from general population viewpoint. In Iran, the literature review show that the related studies have focused on knowledge and attitudes toward HIV/AIDS, rather than developing a valid instrument for HIV/AIDS-related stigma and discrimination.²²⁻²⁴ Regarding the existing limitations, it seems necessary to further study the design of appropriate instruments in this field. Therefore, the current study aimed to design and assess psychometrically the HIV / AIDS-related stigma scale from the viewpoint of the general population in Iran.

Methods

Study Design

This cross-sectional, methodological study was conducted in Kerman, the largest city in the southeast Iran, with a population of 712,000.

Item Generation

Theoretical views related to stigma, the related literature, and related questionnaires were studied to develop the questionnaire. A pool item of 30 was generated in 3 dimensions. Then, the first draft of the questionnaire was provided for a psychologist, a sociologist, an epidemiologist, a medical specialist, and the researcher of HIV/AIDS to discuss their opinions qualitatively. The comprehensiveness of the item, no overlap with other items, usability in the Iranian culture, and simplicity were the most important criteria to evaluate each item. Finally, the consensus was obtained for 19 items. These items were categorized into 3 conceptual dimensions, including 1) negative attitude (8 items), 2) perceived discrimination (7 items), and 3) equity (4 items). Five-point Likert scale was used ranging from 1 to 5 (extremely disagree-extremely agree). The higher the scores, the higher the level of HIV/AIDS stigma and discrimination

Sampling, Data Collection, and Analysis

We used 5 samples to conduct the preliminary validation study presented in this paper. Then, samples, data collection, and analytic approaches were described.

Sample 1

Data collection. The first sample was collected to assess face validity. Fifteen participants from the general population ($n = 15$, 7 males and 8 females aged between 25-50 yr., educational level: 5 under diploma, 2 diploma, and 8 academic educations, occupation: 7 unemployed/housewife/student, 8 employed) were asked to clarify the difficulty and ambiguity of HIV/AIDS stigma and discrimination items. The sampling was convenience. The participants interested in the study were

interviewed regarding the scale items and their suggestions about the items and scale were recorded. Data were collected between May 05, 2016, and May 25, 2016.

Data analysis. Following interviews, the research team analyzed all comments recorded by content analysis. According to the results of content analysis, consensus on any changes to the scale was obtained.

Sample 2

Data collection. The second sample was collected to assess content validity from experts' views. This phase consists of 2 steps. In the first step, 15 experts (3 nursing faculty members, 3 midwifery faculty members, 1 Ph.D. of psychotherapy, 2 social medical specialists, 3 Ph.Ds. of health education and 3 epidemiologists) were asked to write their comments about relevancy, simplicity, and comprehensiveness of each item individually. In addition, they were asked to revise or edit the items that were not properly enough. In the second step, to determine the necessity of each item (content validity ratio = CVR), the experts completed the scale according to 3-point Likert scale (1 = not necessary, 2 = helpful but not necessary, and 3 = necessary). For the relevancy, simplicity, and clarity of each item and the scale (Content validity index = CVI) to be determined, the respondents were required to grade each item according to 4-point Likert scale (for relevancy: 1 = not relevant, 2 = item needs major revision, 3 = relevant but needs minor revision, and 4 = very relevant; for simplicity: 1 = complex, 2 = item needs major revision, 3 = simple but needs minor revision, and 4 = very simple; for clarity: 1 = ambiguous, 2 = item needs major revision, 3 = clear but needs minor revision, and 4 = very clear). The scale was printed and offered to experts in the different faculties of Kerman University of Medical Sciences. This sampling lasted from June 01, 2016 to June 20, 2016.

Data analysis. The research team analyzed all experts' written comments by using content analysis. According to the results of content analysis, consensus on any changes to the scale was obtained. Content validity ratio (CVR), and content validity index (CVI) were used to quantify agreement on the scale content. Both indices allow for item-level assessment and are easy to interpret. The CVI also provided the scale-level assessment. Following formula was used to calculate CVR for each item;

$$CVR = \frac{nE - \frac{N}{2}}{\frac{N}{2}}$$

(nE = number of experts who select the necessary option, N = the total number of experts).

According to Lawshe table, when the total number of the experts is 15, the cut-point value will be 0.49. It means that each item with CVR value less than 0.49 can be a candidate for the omission. The number of experts with a rating of either 3 or 4 was divided by the total number of experts to calculate CVI for each item (Item-CVI). I-CVI was calculated regarding relevancy, simplicity, and clarity separately, and then the mean of these 3 was considered as I-CVI value of each item. The

accepted standard for an I-CVI is 0.9.²⁵ A value of 0.80 or higher is considered acceptable for S-CVI (Scale-CVI).²⁵

Sample 3

Data collection. The third sample (pilot study) was collected to calculate internal consistency and repeatability. Thirty participants from the general populations of Kerman city, Iran completed the scale twice (at 2-week interval). The participants were older than 18 years. Sixty percent of participants were employed males with diploma or academic education. The sampling was convenience. The people interested in the study were interviewed. They were required to complete the scale according to the 5-point Likert scale (from strongly disagree to strongly agree). Data collection lasted from June 25, 2016 to July 18, 2016.

Data analysis. Internal consistency was assessed in this study by Cronbach's alpha coefficient. The coefficient varied from 0 to 1; a coefficient value more than 0.7 is considered acceptable. In addition, item-total correlation was assessed; correlation values >0.20 were considered satisfactory.²⁶ The Spearman correlation coefficient was used to evaluate the repeatability.

Sample 4

Data collection. The fourth sample was collected to calculate construct validity and internal consistency of the scale. People older than 18 years were eligible to participate in the study. Nine hundred subjects (700 subjects for exploratory factor analysis and 200 subjects for confirmatory factor analysis) were selected using random cluster sampling. Kerman city was divided into 4 clusters according to the municipality. Socio-demographic data, such as age, gender, marital status, education level, and occupational status were collected. Interviews were used for illiterate individuals instead of the self-administered method. Data collection lasted from July 22, 2016 to September 21, 2016.

Data analysis. Exploratory factor analysis (EFA) was conducted to verify the factorial design of HIV/AIDS stigma and discrimination scale by using Principal Axis Factoring (PAF) with Varimax rotation.^{27,28} The following criteria were used to determine the number of factors in the scales: eigenvalues >1, scree plots, and items with loadings of 0.3 or greater on each factor.²⁹ The correlation between the score of each subscale and scale score was assessed by using Spearman correlation coefficient.

We use confirmatory factor analysis (CFA) to test the construct validity of the HIV/AIDS stigma and discrimination scale. The adequacy of the model was evaluated by the chi-squared test. Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), Non-Normed Fit Index (NNFI), Root Mean Squared Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR) were the main indices used to determine the fit of the model. The acceptable fit of the model was indicated by $\chi^2/d.f. < 3.0$,

RMSEA <0.08, and SRMR <0.05. The values of the GFI, AGFI, CFI, IFI, and NNFI indices were 0.9 or higher.³⁰ In addition, internal consistency was re-assessed with Cronbach's alpha and the omega coefficients for the total sample. The coefficient value ≥ 0.7 was considered acceptable.^{26,31} In this study, all analyses were performed using SPSS version 18.0 (Statistical Package for the Social Sciences, SPSS, Chicago, IL, USA) and Lisrel version 8.7.

Ethics and Consent

Kerman University of Medical Sciences (KUMS) approved this project (Reference number: IR.KMU.REC.1395.140). After approval of KUMS and coordination with Kerman University of Medical Sciences (KUMS), we provided information for the subjects. The information addressed the objectives of the study, the confidentiality of the data, and the participants would be anonymous and were free to withdraw from the study at any time. Then the informed consent was obtained verbally.

Results

Face Validity

According to 4 interviewees, 10% of questions were difficult according to 5 interviewees, 38% of questions were not appropriate and 10% of questions were vague based 1 interviewee. Therefore, concerning opinions and suggestions of interviewees, the research team decided to integrate 2 following items: "people with HIV will be rejected by their families in our society," and "people with HIV will be forgotten by their families in our society."

Content Validity

Qualitative content validity: the questionnaire was revised regarding comments of specialists about content support, proper grammar, application of proper expressions, and proper place of items. Based on the opinions of specialists, 7 items were commented (38.88% of questions), and as a result, 100% consensus was obtained about the items.

Quantitative content validity: 15 specialists determined content validity (CVI and CVR). Based on the results, the CVR of 5 scale items was lower than 0.49. The amount of CVI of all items of the scale was higher than 0.8 (between 0.85-1). In addition, the validity index of total stigma questionnaire was 0.96.

Pilot Study: Studying Internal Consistency and Stability

For assessing the internal consistency, the scale was provided for 30 individuals, and internal consistency of the questionnaire was determined by calculating the coefficient of Cronbach's alpha. Alpha coefficient of the total questionnaire was 0.58. The item-total correlation varies from -0.149 to 0.578 and item-total correlation of 11 items was more than 0.2. Concerning the item-total correlation of the item 14, this item was

omitted from the questionnaire, and Cronbach's alpha coefficient was 0.67. In addition, the repeatability of stigma scale was studied after 2 weeks. Results indicated that among 19 items, the correlation coefficients of 15 items were significant. Furthermore, the correlation coefficient of the total score of the scale was 0.57 ($p = 0.001$). Although the correlation coefficients of 4 items were low ($r < 0.3$), as the items were important from the research team viewpoint, they decided to keep these 4 items for the next stage, i.e. factor analysis (Table 1). Finally, the scale contained 18 items.

Construct Validity

Demographic characteristics. Totally 900 individuals participated in the study. Mean age of individuals under study was 35.89 ± 12.0 years old. Half of the samples were males. Most of the individuals were married ($n = 559$, 62.8%), and their degrees were higher than a diploma ($n = 809$, 90.3%). 3.2% of individuals under study were working in healthcare centers. Table 2 shows how individuals answered the HIV/AIDS stigma and discrimination scale.

Construct validity. For construct validity, HIV/AIDS stigma and discrimination scale was examined by running Principal Axis Factoring (PAF) with varimax rotation. First, Bartlett's test of sphericity was used to determine if the sample size was appropriate for factor analysis and to determine whether the data were collected from a sample with normally distributed population. This test showed statistical significance ($\chi^2 = 3165.81$, d.f. = 171, $p < 0.001$). In addition to Bartlett's test, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was examined. In the present study, the KMO coefficient was 0.81, confirming factorability of the correlation matrix of the HIV/AIDS stigma and discrimination scale. PAF with varimax rotation was conducted, and a 5-factor solution with an eigenvalue > 1 was retrieved. The total variance explained by these 5 factors was 55.89%. It is noteworthy that the scree plot begins to level off after the fourth factor with a decrease of the eigenvalues from 1.22 to 1.02. Therefore, we preferred the PAF by limiting the extraction to the 4-factor solution. These 4 factors had an eigenvalue (% variance explained) of 3.90 (21.69%), 2.41 (13.41%), 1.50 (8.34%), 1.22 (6.75%) which together accounted for 50.19% of total variance (Table 3). In addition, the correlation between HIV/AIDS stigma and discrimination scale score and each dimension varies from 0.22 to 0.78 and correlation of each dimension with other dimensions was between 0.04 and 0.47. It should be noted that missing responses were replaced with medians to calculate the factor analysis.

Following the identification of a 4-factor solution using EFA, CFA was performed to test further the factor model that emerged from EFA. The first-order confirmatory factor analysis models were used. In the first-order model, we assumed that HIV/AIDS stigma and discrimination scale composed of 4 separate correlated dimensions. Goodness-of-fit indices were examined to determine the degree of fit between the data and

Table 1. Internal Consistency and Correlation Coefficient of Items of HIV/AIDS Stigma-Discrimination Scale ($n = 30$).

Items	Corrected item-total correlation	Cronbach's Alpha if item deleted	Spearman Correlation coefficient	p-value
1. The individual with HIV will be ashamed of his disease.	0.355	0.538	0.64	<0.001
2. All individuals with HIV are guilty.	0.074	0.583	0.62	<0.001
3. Individuals with HIV are disgusting.	0.224	0.567	0.57	0.003
4. Only those who have high risk sexual relationship are affected by HIV/AIDS not normal individuals.	0.312	0.557	0.56	0.001
5. Individual with HIV should be punished.	0.091	0.582	0.44	0.014
6. Affection to HIV/AIDS is a punishment as a result of individual behaviors in the past.	0.197	0.571	0.46	0.011
7. Quarantine of affected individuals is the best method for prevention of HIV/AIDS.	0.314	0.558	0.62	<0.001
8. The family of patient with HIV is ashamed of having such family member.	0.295	0.555	0.56	0.001
9. People with HIV are rejected and forgotten by their families in our society.	0.122	0.581	0.28	0.14
10. People with HIV are rejected and forgotten by their close friends in our society.	0.199	0.570	0.07	0.696
11. People with HIV will lose their respect and place in the society.	0.184	0.572	0.38	0.04
12. People with HIV will be annoyed verbally in our society.	-0.035	0.601	0.36	0.047
13. People with HIV will be physically hurt in our society.	-0.026	0.600	0.56	0.001
14. People with HIV should not be as free as normal people. ^a	-0.149	0.672	-	-
15. It is accepted that employer fires the individual with HIV.	0.578	0.524	0.28	0.14
16. We should not buy fruits and vegetables from the greengrocer with HIV.	0.388	0.545	0.66	<0.001
17. Doctors, nurses and other care providers should behave patients with HIV like other patients.	0.319	0.547	0.19	0.34
18. People with HIV should be allowed to have freely social Participation.	0.238	0.563	0.57	0.001
19. People with HIV should be allowed to work and cooperate with others.	0.371	0.554	0.63	<0.001
20. People with HIV should be behaved like other people.	0.494	0.546	0.46	0.013

^aThe item 14 was omitted from the scale before checking the repeatability.

the results of the hypothesized model. The loadings of items were statistically significant at the 0.05 level (T values >1.96) except for the item 12. The χ^2 -associated p -value was 0.079 ($\chi^2 = 152.26$, d.f. = 129). All of the fit indices reached acceptable levels (Table 4). Consequently, based on these models, we could confirm the structure resulting from the exploratory factor analysis.

Reliability (Internal Consistency)

For reliability to be calculated, the missing values were replaced with the median. The Cronbach's alpha and the omega coefficients for total sample size ($n = 900$) were assessed. The value of Cronbach's alpha and the omega coefficient for the total scale were 0.69 and 0.7 respectively. The values of Cronbach's alpha were 0.83, 0.67, 0.55, and 0.51 for the first, second, third and fourth subscales, respectively. The values of the omega coefficients were 0.81, 0.71, 0.54, and 0.75 for the first, second, third and fourth subscales, respectively.

Final Scale

The scale of HIV/AIDS-related stigma and discrimination from the general population viewpoint has 18 items with 4 subscales: "Patient social position" (5 items), "Social support" (4 items), "Social disease perspective" (7 items), and "Social harassment" (2 items). This scale is scored based on the 5-point Likert scale (totally disagree = 1, disagree = 2, no idea = 3, agree = 4, and totally agree = 5). Accordingly, the range of scores obtained from this scale varies from 18 to 90.

Discussion

The present study showed the design process and the results of the psychometric tests of the HIV/AIDS-related stigma and discrimination scale from the viewpoint of the general population in Iran. To the best of our knowledge, few studies in the world have evaluated psychometrically HIV/AIDS stigma and discrimination scale from the general population viewpoint.^{14,20} Zelaya et al. evaluated 4 dimensions of stigma from

Table 2. The Participants' Response to HIV/AIDS Stigma and Discrimination Scale.

Items	Missing value	Mean/SD	Responses (%)					Extremely agree
			Extremely disagree	Disagree	No idea	Agree		
1. The individual with HIV will be ashamed of his disease.	0	4.08 ± 1.14	27 (3.9)	59 (8.4)	91 (13)	175 (25)	348 (49.7)	
2. All individuals with HIV are guilty.	0	1.49 ± 0.72	437 (62.4)	200 (28.6)	51 (7.3)	10 (1.4)	2 (0.3)	
3. Individuals with HIV are disgusting.	2	2.04 ± 0.69	128 (18.4)	432 (61.9)	123 (17.6)	10 (1.4)	5 (0.7)	
4. Only those who have high risk sexual relationship are affected by HIV/AIDS not normal individuals.	4	2.15 ± 0.95	188 (27)	278 (39.9)	181 (26)	33 (4.7)	16 (2.4)	
5. Individual with HIV should be punished.	3	1.99 ± 0.79	196 (28.1)	334 (47.9)	151 (21.6)	12 (1.8)	4 (0.6)	
6. Affection to HIV/AIDS is a punishment as a result of individual behaviors in the past.	3	2.33 ± 0.92	131 (18.8)	277 (39.7)	227 (32.6)	49 (7)	13 (1.9)	
7. Quarantine of affected individuals is the best method for prevention of HIV/AIDS.	0	2.32 ± 0.99	154 (22)	259 (37)	216 (30.9)	52 (7.4)	19 (2.7)	
8. The family of patient with HIV is ashamed of having such family member.	0	2.9 ± 1.13	73 (10.4)	208 (29.7)	189 (27)	174 (24.9)	56 (8)	
9. People with HIV are rejected and forgotten by their families in our society.	2	3.11 ± 1.18	66 (9.4)	161 (23.1)	198 (28.4)	178 (25.5)	95 (13.6)	
10. People with HIV are rejected and forgotten by their close friends in our society.	0	3.36 ± 1.14	43 (6.1)	133 (19)	165 (23.6)	249 (35.6)	110 (15.7)	
11. People with HIV will lose their respect and place in the society.	1	3.43 ± 1.16	40 (5.7)	133 (19)	143 (20.5)	251 (35.9)	132 (18.9)	
12. People with HIV will be annoyed verbally in our society.	0	3.41 ± 1.16	51 (7.3)	108 (15.4)	169 (24.1)	244 (34.9)	128 (18.3)	
13. People with HIV will be physically hurt in our society.	1	2.65 ± 1.14	124 (17.7)	203 (29)	212 (30.3)	114 (16.4)	46 (6.6)	
14. It is accepted that employer fires the individual with HIV.	1	1.98 ± 1.02	280 (40.1)	222 (31.8)	141 (20.2)	40 (5.7)	16 (2.3)	
15. We should not buy fruits and vegetables from the greengrocer with HIV.	3	2.25 ± 0.95	183 (26.3)	212 (30.4)	264 (37.9)	24 (3.4)	14 (2)	
16. Doctors, nurses and other care providers should behave patients with HIV like other patients.	0	2.06 ± 0.94	17 (2.4)	35 (5)	123 (17.6)	322 (46)	203 (29)	
17. People with HIV should be allowed to have freely social Participation.	1	1.88 ± 0.91	9 (1.3)	37 (5.4)	87 (12.4)	296 (42.3)	270 (38.6)	
18. People with HIV should be allowed to work and cooperate with others.	1	1.72 ± 0.81	5 (0.7)	18 (2.6)	77 (11)	276 (39.5)	323 (46.2)	
19. People with HIV should be behaved like other people.	2	1.63 ± 0.7	1 (0.1)	9 (1.3)	59 (8.5)	290 (41.5)	339 (48.6)	

general population view, including (a) fear of transmission and disease, (b) association with shame, blame and judgment, (c) personal support of discriminatory actions and policies, (d) perceived community social support of discriminatory actions and policies.¹⁴ Ugarte et al. designed the stigma and discrimination scales separately. The stigma scale has 5 dimensions: (a) fear of transmission and refusal of contact with PLHIV; (b) shame, (c) blame, (d) judgment, and (e) disclosure. The scale of discrimination has 4 dimensions, including (a) physical and social isolation of PLHIV, (b) verbal stigma toward PLHIV, (c) inaccessibility of PLHIV to resources, and (d) inaccessibility of PLHIV to services.²⁰ In the present study, while our scale is shorter than other previous scales,^{14,20} the most important aspects of stigma and discrimination have been addressed, including social harassment, improper judgments, shame, blame, isolation of PLHIV and ignorance of the social rights of people. The above studies dealt with fear of transmission and refusal of contact with PLHIV, which have not been addressed directly in the present study. However, we included the item “quarantine of affected individuals is the best method

for prevention of HIV/AIDS,” which is about transmission and refusal of contact with PLHIV.

Our scale contains 2 items, including “the family of a patient with HIV is ashamed of having such a family member” and “people with HIV will be physically hurt in our society,” which are less considered in the previous scales of HIV/AIDS-related stigma and discrimination from general population viewpoint.^{14,18,20} Family is one important aspect of personal life and the family stigmatization may affect the family function and interactions. Patients with HIV, in addition to their stress related to their disease had to be worried about their family stigmatizations family.³² On the other hand, people with HIV may perceive less level of stigma if their families support them.³³ However, if the family function and interactions were impaired due to HIV/AIDS-related stigma and discrimination, they would fail to support their members.^{32,33} Therefore, family stigmatization related to HIV infection of the family member can be important in measuring HIV/AIDS-related stigma and discrimination.

The design and psychometrics of instruments have different stages, one of which is to examine the face and content

Table 3. Exploratory Factor Analysis of HIV/AIDS Stigma and Discrimination Scale.

Items	Factor			
	Patient social position	Social support	Social disease perspective	Social harassment
1. The individual with HIV will be ashamed of his disease.	0.476			
8. The family of a patient with HIV is ashamed of having such a family member.	0.621		0.366	
9. People with HIV are rejected and forgotten by their families in our society.	0.737			
10. People with HIV are rejected and forgotten by their close friends in our society.	0.800			
11. People with HIV will lose their respect and place in society.	0.789			
16. Doctors, nurses, and other care providers should behave patients with HIV like other patients.		0.469		
17. People with HIV should be allowed to have freely social participation.		0.787		
18. People with HIV should be allowed to work and cooperate with others.		0.708		
19. People with HIV should be behaved like other people.		0.433		
2. All individuals with HIV are guilty.			0.354	
3. Individuals with HIV are disgusting.			0.390	
4. Only those who have a high-risk sexual relationship are affected by HIV/AIDS, not normal individuals.			0.356	
5. Individual with HIV/AIDS should be punished.			0.369	
6. Affection to HIV/AIDS is a punishment as a result of individual behaviors in the past.			0.450	
7. Quarantine of affected individuals is the best method for prevention of HIV/AIDS.			0.476	
15. We should not buy fruits and vegetables from the greengrocer with HIV.			0.323	
12. In our society, people with HIV will be annoyed verbally.	0.677			0.382
13. People with HIV will be physically hurt in our society.				0.617
Eigen value	3.9	2.41	1.50	1.22
Percent of explained variance	21.69	13.41	8.34	6.75

Table 4. The Fit Indexes of HIV/AIDS Stigma and Discrimination Scale.

	χ^2/df	RMSEA	SRMR	GFI	AGFI	CFI	IFI	NNFI
First order CFA model	1.18	0.03	0.05	0.92	0.90	0.97	0.97	0.97

RMSEA: Root Mean Square Error of Approximation, SRMR: GFI: Goodness of Fit Index, AGFI: Adjusted Goodness of Fit Index, CFI: Comparative Fit Index, IFI: Incremental Fit Index, NNFI: Non-Normed Fit Index.

validities. In the present study, the face validity was measured in the first stage by using the item impact factor. Devellis suggests that the face validity has disadvantages and cannot be a valuable criterion for validation of an instrument.³⁴ Given the limitations of face validity in this study, only 2 items of “people living with HIV are rejected by their families,” and “people living with HIV are forgotten by their families” had unacceptable item impact scores. Nevertheless, the research team preferred to merge these items, and only the appearance of the items was corrected at this stage according to the respondents’ suggestions. In any case, the face validity is considered as the complementary stage of content validity, and it can even be considered as a limited aspect of content validity.²⁵ In the present study, in addition to a qualitative review of experts’ views, content validity index, and content validity ratio were used to quantify experts’ opinions. In the present study, the

CVR, CVI-I, and CVI-S indices of “HIV/AIDS stigma and discrimination from the general population viewpoint” were acceptable. Therefore, this scale had suitable content validity. The face validity has not been reported in Zelaya et al. study and content validity has been performed qualitatively.¹⁴ The face and content validities have not been reported in the Ugarte et al. study.²⁰ However, the present study has investigated these 2 indices, so it can be concluded that the present scale has a higher content validity than the above studies.

The present study examined the factor structure of “HIV/AIDS stigma and discrimination from the general population viewpoint” using the exploratory factor analysis. Considering the main purpose of exploratory factor analysis, which is to achieve the minimum factors with the highest explained variance, the appropriate number of factors is very important. In the present study, although the 4 factors of “HIV/AIDS

stigma and discrimination from the general population viewpoint" explained 50.19% of the shared variance, this amount was more than unexplained shared variance. In addition, the correlation of each dimension of the present scale with the total score of the scale was between 0.22 and 0.78, while the correlation of each dimension with other dimensions was between 0.04 and 0.47, indicating that the scale of "HIV/AIDS discrimination and stigma from the general population viewpoint" has a good construct validity. The studies show the harmony between the Persian version and other studies.^{14,18,20} The test-retest reliability of the present scale was calculated with spearman correlation coefficient. In other words, the test score correlates moderately with the re-test score. Therefore, it can be concluded that the present study, like other studies^{14,20} has acceptable stability.

The study has some limitations. Since the subscale of "Social disease perspective" failed to achieve an acceptable internal consistency, use of this subscale as a distinct scale should be done with cautions. In our study, items related to fear of transmission and avoidance did not include in the scale. Therefore, it is suggested to consider such items in future studies with the same scale. The study was conducted only in Kerman, and the results cannot be generalized to the entire country. As the design of the study was cross-sectional, and the data were collected using a self-administered scale, the recall, nonresponse and social desirability biases may influence data quality.

Despite these limitations, the results of this study provide a new comprehensive scale for measuring HIV/AIDS-related stigma and discrimination from the general population viewpoint in Iran. The present short scale can be a base for developing community-based and contextual scales in this area in Iran. In addition, the amount of HIV/AIDS-related stigma and discrimination in this project has been reported elsewhere.⁹ The future study is suggested to assess the validity and reliability of the scale in different samples. Research is also required to develop and validate stigmatizing and discriminatory attitudes of community toward family with a positive HIV-member.

Conclusion

The scale of "HIV/AIDS stigma-discrimination" has an acceptable internal consistency and stability (Cronbach's alpha = 0.69, omega coefficient = 0.7, and Spearman correlation coefficient = 0.57, $p < 0.001$). The scale had acceptable face and content validities. The construct validity showed that this scale had 4 dimensions: "Patient social position" (5 items), "Social support" (4 items), "Social disease perspective" (7 items), and "Social harassment" (2 items). The confirmatory factor analysis showed that the 4-dimension stigma scale had suitable fit indices. Therefore, considering the psychometric results of the scale, it seems that this scale can be used as a valid one for measuring the HIV/AIDS-related stigma and discrimination from the general population viewpoint. Further studies are suggested to examine other validity indexes such as convergent, divergent and predictive validities for the instrument

validation, as well as further studies in other communities to determine the generalizability of the scale.

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