

Cross-Cultural Adaptation and Psychometric Assessment of an Arabic Version of the Health Care Provider HIV/AIDS Stigma Scale

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Abstract

HIV stigma among health care providers in the Arab world is understudied due to a lack of valid and reliable measures. Data from 352 Egyptian physicians was used to validate an Arabic version of the Health Care Provider HIV/AIDS Stigma Scale (HPASS). Exploratory factor analysis ($n = 194$) suggested a 3-factor structure. Confirmatory factor analysis ($n = 158$) validated the three-factor solution with 18 items, which explained 53.36% of the variance. All items loaded on their designated constructs, which ranged from 0.58 to 0.82 (prejudice) to 0.58 to 0.66 (stereotypes) and 0.52 to 0.91 (discrimination). The prejudice, stereotypes, and discrimination subscales consisted of seven, five, and six items, respectively. The internal consistency ($\alpha = 0.90$) and the test-retest reliability demonstrated ($r = 0.95$) were excellent. The cultural adaptation of the Arabic version of HPASS suggests that it is a suitable scale for assessing HIV stigma among Arab health care providers.

Keywords

HIV stigma, health care professionals, AIDS, Egypt

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Introduction

Since the beginning of the HIV epidemic, stigma and discrimination against people living with HIV (PLHIV) have been recognized as a key obstacle to ending the epidemic.¹ HIV stigma deters uptake of HIV testing, HIV sero-status disclosure, retention in care, and adherence to antiretroviral therapies.^{2,3} In the Arab world, social norms associated with sexuality in general and sexual behaviors of marginalized groups contribute to HIV stigma and possibly compromise the reliability of data on the HIV epidemic.⁴ For example, in Egypt, the General Penalties Laws and laws regulating inappropriate social conduct criminalize commercial sex workers, intravenous drug uses, and men having sex with men.⁵

Stigmatization of PLHIV by health care providers may discourage PLHIV from seeking medical care, especially if they have experienced mistreatment or their confidentiality has been breached.⁶ Furthermore, stigmatization leads to deterioration of PLHIV physical and mental health and overall quality of life.^{2,7,8} Eliminating discrimination against PLHIV in health care settings is considered a key component in the protection of human rights of PLHIV and achieving the sustainable development goals relevant to HIV.^{9,10}

Health care providers (HCPs) are ethically obligated to not discriminate against PLHIV. However, research indicates that they do.^{2,11} In health care settings, HIV stigma takes various forms, from dismissive attitudes to denial of care.¹²⁻¹⁴ Reasons for HCPs' stigmatization and discrimination against PLHIV include insufficient knowledge of HIV, perceived occupational risk of infection, and fear of death.¹⁵ Other factors that might play a role in HCPs' attitudes include unfamiliarity with universal precautions and lack of adequate protective equipment.^{7,13,16} Providers' discrimination against PLHIV has also been attributed to the behaviors believed to have led to infection, such as homosexuality, having multiple sexual partners, and injecting drugs.¹⁷

HCPs' discrimination against PLHIV represents an important impediment to HIV prevention, accuracy of surveillance

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programs, and provision of health care. Over the years, several measures of HIV stigma among HCPs have been developed and used in many countries,¹⁸⁻²⁰ including the United States,^{21,22} China,²³ Ethiopia,²⁴ Zambia, and South Africa.²⁵ However, research on HIV stigma among HCPs in the Arab world is limited due to lack of an HIV-standardized measurement tool with sound psychometric properties. This shortage stifles research on HIV stigma among HCPs and prevents cross-cultural comparative research. To remedy this gap, in the current study we sought to culturally adapt and validate an Arabic version of the Health Care Provider HIV/AIDS Stigma Scale²⁶ (HPASS), using a sample of HCPs in Egypt, to be used in Egypt and other Arabic-speaking countries. Understanding the prevalence rates and the drivers of HIV stigma in health care settings is important in the global efforts to eliminate AIDS as a public threat by 2030.

Methods

Stages of the Study

Permission to translate the HPASS into Arabic and culturally adapt it was obtained from the instrument developer.²⁶ The cross-cultural adaptation of the HPASS was carried out in two stages.

Translation and Cross-Cultural Adaptation of the HPASS.

Translation and cross-cultural adaptation of the HPASS into Arabic was performed based on guidelines for translation and cross-cultural adaptation of instruments in different languages.²⁷ Two forward translations were performed: one by a professional translator and the other by a public health physician. The differences between the two translations were discussed and resolved and a consensus was developed about the Arabic wording of each item. Two back translations were done by two English-Arabic bilingual persons, who were blinded to the original English version. The research team discussed the discrepancies between the original questionnaire and the back-translated versions and agreed on a pre-final Arabic version of the HPASS.

Cognitive Interviews. Cognitive interviews of the self-report translated version were conducted with 10 physicians using the pre-final Arabic version of the HPASS. They were asked to indicate whether they had any difficulty filling the out questionnaire, and to circle sentences or words that they found difficult or not applicable to Egyptian culture. The participants' suggestions were evaluated by the research team in consultation with the original questionnaire developer and were rephrased, keeping the same concepts, in order to be culturally appropriate. A final Arabic version was produced and used in the study after the developer approved all the changes.

Recruitment of Study Participants

Physicians working at Assiut University Hospital, in Assiut, Egypt, were invited to participate in the study. A total of 352 physicians completed the survey online. The first 70

participants were invited to be recontacted to participate in a retest questionnaire. Only 50 participants consented and were recontacted two weeks after their initial participation.

Measures. The study questionnaire was divided into three sections. Section 1 collected the study participants' sociodemographic data, including age, gender, place of residence, marital status, professional qualifications, and years of experience. Section 2 included the translated and validated version of the HPASS scale, one of the newest measures of HIV stigma in health care settings.²⁶ This is a self-report scale consisting of 30 items, rated on a 6-point Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree), with higher scores indicating more stigmatization of HIV patients by HCPs. The HPASS consists of three subscales measuring prejudice (13 items), stereotypes (11 items), and discrimination (6 items). In the original publication the scale explained 53.35% of the variance in the data and its internal reliability was excellent ($\alpha = 0.94$).

Section 3 was the Yemeni AIDS scale,²⁸ used to assess the convergent validity of the HPASS. This is a 10-item scale in Arabic that consists of two subscales with five items each: "rejection" and "shame and blame." All items were rated on a 6-point Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree). The internal reliability of the entire scale in the original study was 0.79. In this study we only used the shame and blame subscale because the rejection subscale contains items that are either out of date or not applicable to HCWs (eg, "It does not bother me if my classmate has AIDS"). In the present study, the five items explained 52.28% of the variance and the internal reliability coefficient was 0.84.

Ethics Approval and Informed Consent

The study was approved by the Research Ethics Committee of Assiut University (approval no. 1 7 3 0 0 5 6 4). The consent form was provided in the introductory part of the online survey. Submission of the survey was considered as consent to participate in the study. Anonymity and confidentiality were assured, and no monetary incentive was given.

Statistical Analysis

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 27, and AMOS SPSS, version 27. Descriptive statistics, reliability tests, correlation analyses, and exploratory factor analysis (EFA) were conducted with SPSS. Confirmatory factor analysis (CFA) was performed using AMOS. Reliability was assessed by determining the intraclass correlation coefficient. The two-way random model of absolute agreement type was used.

There are several recommendations in the literature regarding the appropriate sample size for conducting a factor analysis. We used a 5 : 1 case-to-variable ratio.^{29,30} The entire dataset was randomly split into two subsamples: sample 1 ($n = 194$), used to perform exploratory factor analysis, and sample 2 ($n = 158$), used to conduct confirmatory factor analysis.

We first subjected the 30 items to EFA with principal axis factor analysis with the Promax procedure ($k=4$). Bartlett's test of sphericity and the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy were applied to assess factorability of the data. A KMO value of 0.70 or higher and a significant Bartlett's test are desirable.³¹ The cutoff for rotated factor loading onto a primary factor was set at 0.40 and cross-load of absolute value was not allowed to exceed 0.15 on two or more factors.²⁹ Only factors with a minimum of three items were retained.³² These criteria were used to determine which scale items to retain.

The factor structure of the HPASS obtained via FA was subjected to confirmatory factor analysis (CFA) using AMOS with maximum likelihood (ML) estimation. The model fit was evaluated by goodness of fit (GFI), adjusted goodness of fit (AGFI), the comparative fit index (CFI), Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). GFI, AGFI, TLI, and CFI greater than 0.90 and a RMSEA value of < 0.08 are considered acceptable.^{33,34} Cronbach's alpha coefficients were used to assess the internal consistency of the scales and values between 0.08 and 0.90 were considered very good.³⁵ To determine the convergent validity of the HPASS we computed its correlation coefficient with the Yemeni AIDS scale. Construct validity was also tested by conducting a factor analysis of the HPASS. Statistical significance was defined as a p-value less than 0.05 for all statistical tests.

Results

Characteristics of Participants. Table 1 shows the characteristics of the study participants. They had a mean age of 32.05 ± 4.24 years. There were slightly more females than males (54% and 46%, respectively). Most of the participants (92.5%) were

Table 1. Demographic Information for Total Sample.

Characteristics	N (%)
Age	
Mean \pm SD (Range)	32.05 ± 4.24 (25-52)
Gender	
Male	162 (46.0)
Female	190 (54.0)
Residence	
Urban	326 (92.5)
Rural	26 (7.4)
Marital status	
Married	220 (62.5)
Single	132 (37.5)
Qualification	
Bachelor's degree of Medicine	115 (32.7)
MD	187 (53.1)
PhD	50 (14.2)
Years of experience	
Mean \pm SD (Range)	7.01 ± 4.25 (1-26)

urban residents and about two-thirds (62.5%) were married. They had various degrees of professional qualifications, with a mean number of years of experience of 7.01 ± 4.25 .

Cultural Equivalence Phase. Almost all phrases of the English questionnaire were easily translated into Arabic. However, some words were replaced by words perceived to be easier to understand, in colloquial Egyptian Arabic dialect, without changing the conceptual meaning of the items. Specifically, we changed "acquired the virus" in item 1 to "got infected," "procedures" in item 8 to "medical procedures," "act responsibly" in item 9 to "act cautiously," "get blood work done" in item 23 to "perform blood investigations," and "universal precautions" in item 25 to "general protective measures." Back translations were very similar to the original questionnaire despite rephrasing some of the items. The minor discrepancies in translation were identified and discussed and a consensus Arabic version emerged after discussion by the research committee.

Cognitive Interviews. The most frequent suggestions made by the 10 physicians were related to rephrasing items 4 and 18. They suggested rephrasing "if they had sex with fewer people" in item 4 to "if they didn't have multiple sexual partners." Most interviewees said that item 18, "I would rather see an HIV-negative patient than see an HIV-positive patient with non-HIV-related concerns" was ambiguous. They suggested that this be rewritten as "I would not like to see an HIV patient even with non-HIV-related concerns." We obtained the instrument developers' approval for these changes.

Factor Analysis

Exploratory Factor Analysis. We used 55% of the dataset ($n=194$) to conduct EFA to examine the factor structure of the HPASS. The proportion of female physicians was slightly higher than males (51% and 49%, respectively). Most of the participants were married (61.9%) and had an average of 7.18 ± 4.34 years of experience.

The determinant of the matrix was not zero, the KMO measure of sampling adequacy was 0.91, and Bartlett's test of sphericity was significant ($\chi^2 [435] 3125.99, p < .001$). A six-factor solution was obtained, which explained 54.41% of the variance. Applying the criteria for retaining items, we ended up with 25 items in the first round. Next, we ran EFA and ended up with five factors. After deleting item 9 because it loaded below 0.40 and items 5 and 6 and 27 and 29 because they loaded on only one factor, we ended up with 20 items. Subsequently, we ran EFA and found that items 21 and 28 violated the criterion for cross-loading. Table 2 shows the final version of the HPASS, consisting of 18 items that explained 53.36% of the variance. The alpha reliability coefficient for the entire scale was 0.91. All the items loaded on their designated constructs, which ranged from 0.52 to 0.77 (prejudice), 0.51 to 0.81 (stereotypes), and 0.52 to 0.77 (discrimination). The prejudice subscale consisted of seven items (20, 22, 23, 24, 25, 26, and 30) that explained 37.19% of the variance and Cronbach's alpha

Table 2. Exploratory Factor Analysis Rotated Pattern Matrix and Alphas of HPASS.

HPASS Item	Prejudice	Stereotype	Discrimination
I worry about contracting HIV from HIV + patients [20]	0.740		
HIV + patients make me uncomfortable [22]	0.631		
I would be hesitant to send HIV + patients to perform blood investigations due to my fear of others' safety [23]	0.520		
It is a little scary to think I have touched HIV + patients [24]	0.760		
I worry that general protective measures are not good enough to protect me from HIV + patients [25]	0.701		
I would feel uncomfortable knowing one of my colleagues is HIV + [26]	0.767		
It would be hard to react calmly if a patient tells me he or she is HIV + [30]	0.557		
I believe most HIV + patients got infected through risky behavior [1]		0.506	
I think HIV + patients have engaged in risky activities despite knowing these risks [2]		0.560	
I think people would not get HIV if they didn't have multiple sexual partners [4]		0.806	
HIV + patients tend to have numerous sexual partners [10]		0.689	
HIV + patients should accept responsibility for acquiring the virus [19]		0.537	
I believe I have the right to refuse to treat HIV + patients for the safety of other patients [3]			0.771
I believe I have the right to refuse to treat HIV + patients if other staff members are concerned about safety [7]			0.864
I would avoid conducting certain medical procedures on HIV + patients [8]			0.485
I believe I have the right to refuse to treat HIV + patients if I feel uncomfortable [11]			0.808
I believe I have the right to refuse to treat HIV + patients to protect myself [14]			0.835
I believe I have the right to refuse to treat HIV + patients if I am concerned about legal liability [17]			0.652
Percentage variance (%)	37.19	9.82	6.35
Alpha coefficients	0.88	0.78	0.89

was 0.88. The stereotypes subscale consisted of five items (1, 2, 4, 10, and 19) that explained 6.35% of the variance and the Cronbach's alpha was 0.78. The discrimination subscale consisted of six items (3, 7, 8, 11, 14, and 17) that explained 9.82% of the variance with a Cronbach's alpha of 0.89.

Confirmatory Factor Analysis. The remaining 45% of the data ($n = 158$) was used to perform CFA. Of the respondents, 55.7% were males and 44.3% were females. On average the respondents had 6.54 ± 4.05 years of health care experience.

We performed CFA to confirm the three-factor structure model obtained earlier through EFA. All items loaded significantly on their hypothesized three latent factors. The fit indices were acceptable (GFI = 0.87; AGFI = 0.83; TLI = 0.93; CFI = 0.94; RMSEA = 0.07). As shown in Figure 1, all factor loadings were significant ($p < .05$) and ranged from 0.58 to 0.82 (prejudice), 0.58 to 0.66 (stereotypes) and 0.52 to 0.91 (discrimination). An inspection of modification indices suggested a minor improvement in the model fit by allowing correlation of the error terms for some items. The internal consistency of the HPASS was 0.90 and the alphas for prejudice, stereotypes, and discrimination were 0.87, 0.77 and 0.89, respectively.

Construct Validity, Convergent Validity, and Reliability Estimation.

We used the entire sample ($n = 352$) to examine the behavior of the HPASS and its subscales in relation to participants' demographic background. Table 3 presents the means and standard deviations for the total and subscale scores of the HPASS by gender, residence, and marital status. It also shows the correlations between total and subscale scores of

the HPASS, age, and experience and the Yemeni AIDS Scale. Independent t-tests revealed that male physicians scored higher than their female counterparts on the stereotypes subscale ($P < .05$). Married physicians scored higher than those who were single on the HPASS ($P < .05$) and discrimination subscale ($P < .01$). Age and years of experience were only related to the discrimination subscale ($P < .01$). Finally, the Yemeni AIDS Scale was significantly positively correlated with the HPASS and all its subscales.

Construct validity of the Arabic 18-item scale was demonstrated by CFA as reported above. Our results support the three-factor solution (ie, prejudice, stereotypes, and discrimination) reported in the original study. To assess the convergent validity of the 18-item HPASS, we correlated it with the five items taken from the Yemeni AIDS Scale. The Pearson correlation coefficient was 0.42 ($p < .05$), indicating that the HPASS is a valid measure for its intended purpose (Table 3).

The internal consistency of the HPASS was 0.90 and the alphas for prejudice, stereotypes, and discrimination were 0.87, 0.77, and 0.89, respectively. The test-retest reliability on the final 18-item composite scale was calculated using data from 50 participants who completed the original 30-item HPASS, two weeks apart. The test-retest reliability demonstrated strong temporal stability ($r = 0.95$). The intraclass correlation coefficients for prejudice, stereotypes, and discrimination were $r = 0.93, 0.93, \text{ and } 0.96$, respectively.

Discussion

Calls for creating a supportive stigma-free healthcare environment have produced several de-stigmatizing care and treatment

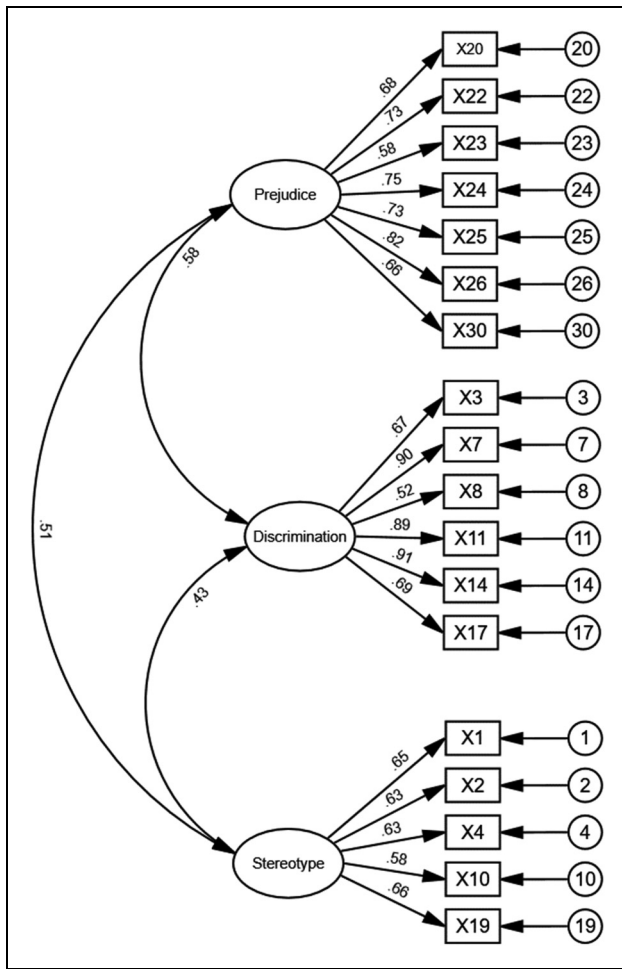


Figure 1. Confirmatory factor analysis of HPASS with standardized factor loadings.

services and assessment tools.^{36,37} The HPASS was chosen to be validated in this study as it works to address enhancing quality of care for PLWH by providing an accurate picture of the attitudes and beliefs held by health care providers.²⁶ This scale has been also previously translated and validated in China.³⁸

In this study, we examined the structure, validity, and reliability of the HPASS in two studies using a sample of Egyptian physicians. The original HPASS, consisting of 30 items divided into three subscales for prejudice, stereotypes, and discrimination, was developed in Canada²⁶ in 2014 using medical and nursing students.

The results of our EFA analysis suggested a three-factor solution with 18 items. The three-factor structure reported here and in the Chinese version of the HPASS provides strong cross-cultural support for the factorial structure of the HPASS. The 18 items we retained (Cronbach’s alpha = 0.91), which explained 54.41% of the variance, were distributed over three subscales. Although the Arabic version of the HPASS had 18 items, the distribution of the items over the three subscales was similar to the 16-item Chinese version. Specifically, in the Arabic version the prejudice subscale (alpha = 0.88) had seven items (20, 22, 23, 24, 25, 26, and 30), whereas the Chinese version had the same items except for item 23. This additional item in the Arabic version, “I would be hesitant to send HIV + patients to perform blood investigations due to my fear for others’ safety,” expressed unrealistic concerns about others’ safety, an exaggerate perception of risk of HIV infection among HCPs in many developing countries.³⁹

Our stereotypes subscale (alpha = 0.78) had five items (1, 2, 4, 10, and 19). The Chinese version had the same number of items but slightly different ones (1, 4, 9, 10, and 21). Finally, the discrimination subscale (alpha = 0.89) consisted of six

Table 3. Association Between the Total and Subscale Scores of Arabic Version of HPASS with Demographic Characteristics and Yemeni Scale.

	Prejudice	Stereotypes	Discrimination	HPASS
Characteristics	Mean ± SD			
Gender				
Male	24.78 ± 7.64	15.33 ± 4.78*	18.30 ± 7.32	58.43 ± 16.08
Female	25.81 ± 7.54	14.10 ± 4.47	18.91 ± 6.64	58.82 ± 15.51
Residence				
Urban	25.20 ± 7.61	14.56 ± 4.64	18.58 ± 6.81	58.34 ± 15.56
Rural	27.03 ± 7.34	16.03 ± 4.75	19.27 ± 8.73	62.34 ± 17.87
Marital status				
Married	25.70 ± 7.62	14.79 ± 4.72	19.59 ± 7.03**	60.10 ± 15.73*
Single	24.72 ± 7.53	14.46 ± 4.54	17.03 ± 6.56	56.21 ± 15.54
	Pearson Correlation Coefficient			
Age	-0.03	0.04	0.18**	0.08
Years of experience	-0.00	-0.02	0.17**	0.07
Yemeni scale score	0.46***	0.47***	0.29***	0.43***

Note. HPASS = Health Care Provider HIV/AIDS Stigma Scale. N = 352.

*P < .05.

**P < .01.

***P < .001.

items (3, 7, 8, 11, 14, and 17) while the Chinese version had the same first five items (3, 7, 8, 11, and 14). The additional item in the Arabic version, “I believe I have the right to refuse to treat HIV + patients if I am concerned about legal liability,” represents an important concern of HCPs in Egypt when working with HIV patients due to laws criminalizing sexual relations that may cause HIV infection.^{5,40}

We also conducted CFA using structural equation modeling. The model fits from the CFA provided further evidence that HIV stigma encompassed three latent factors, as theorized by the developers of the HPASS. The convergent validity of the HPASS was demonstrated through its significant positive correlation with the “shame and blame” domain of the Yemeni AIDS Stigma Scale. This domain explored negative feelings toward people with AIDS and the belief that people with HIV/AIDS are blameworthy and deserve their illness. This perspective is very similar in the conservative Egyptian culture, given the extreme taboo nature of sex in Arab societies and the fact that sex is the main route through which HIV is transmitted. Negative images of immoral and illegal behavior of PLHIV have been embedded in people’s minds as “social evils.”⁴¹ When the majority of people, even health workers, have prejudices against “social evils” and fear of infection, PLHIV are forced to hide their status and feel ashamed.⁴²

The Arabic version of the HPASS also demonstrated excellent internal consistency ($\alpha = 0.90$) for the entire scale and its subscales and stable test–retest reliability ($r = 0.95$).

This study has some limitations that future research should strive to overcome. The first limitation is related to the participants’ profession. We validated the HPASS with a sample of physicians from one part of Egypt. Future research should validate the scale in other parts of Egypt and among other health care providers, such as nurses. We also recommend further validation of the HPASS scale in other Arab countries. This would help in cross-national studies in the Arab world.

Implications of the Study

The availability of a culturally adapted and validated Arabic tool for measuring HIV stigma among HCPs has many potential implications for future research in the Arab world. It can be used in future studies to assess the impact of stigmatizing attitudes on service delivery, the doctor–patient relationship, and the accuracy of surveillance programs. Furthermore, the Arabic version of HPASS can be used to assess the potential impact of HIV stigma reduction interventions geared toward health professionals in targeted trainings.

Conclusion

The goal of the study reported here was to translate and culturally adapt an Arabic version of the HPASS. The results showed that it has excellent psychometric qualities for assessing HIV stigma among physicians in Egypt. The availability of such an instrument is critical for developing HIV stigma-reduction programs targeting HCPs.

Ethics Approval

The study was approved by the Research Ethics Committee of Assiut University (approval no. 17300564). The consent form was provided at the introductory part of the online form for data collection and submitting the form was conclusive of the participants’ consent to participate.

Availability of Data

The data that support the findings of this study are available from the corresponding author upon reasonable request.


Declaration of Conflicting Interests

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