

Research Paper



The cross-cultural adaptation and psychometric evaluation of the Urdu version of the stigma scale for caring for individuals with sexually transmitted infections (STISS) student version: A translation and validation study among nursing students in Pakistan

Fouzia Tariq*

*Department of Psychology, Government College University Faisalabad, Pakistan.

Article Info

Article History:

Received: 10 December 2025

Revised: 18 February 2026

Accepted: 27 February 2026

Published: 16 April 2026

Keywords:

Sexually Transmitted
Infections (STIS)
Stigma Scale (STISS)
Urdu Translation
Cultural Adaptation
Reliability and Validity
Nursing Students



ABSTRACT

Objective: Urdu translation, cultural adaptation and psychometric assessment of the Student version of the Stigma Scale – Caring for an individual with sexually transmitted infections (U-STISS) among the Urdu medium of instruction undergraduate nursing students in Pakistan.

Methods: A cross-sectional, instrument-validation design was used. The STISS Student Version was translated, back translated and culturally adapted in Urdu. An U-STISS was applied at six nursing institutes (institutions and province illustrative) at third and fourth year undergraduate nursing students in a convenience sample in the province of Punjab, Pakistan. Sample was divided in exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Cronbach's α was used to determine reliability. The convergent validity and discriminant validity are examined by the average variance extracted (AVE) and inter-factor correlations.

Results: 350 questionnaires were sent out, of which a response rate of 92.1% of valid responses was received. The original four-factors (Blame, Concealment, Personal Response, and Segregation from Society) were retained along with the support from EFA at 55.3% of total variance. CFA confirmed this structure with good model fit: $\chi^2/df = 1.17$, RMSEA = 0.023, CFI = 0.986, TLI = 0.984, GFI = 0.912, and AGFI = 0.891. All four dimensions were found as convergent validity (AVE > 0.50) and discriminant validity (AVE exceeding inter factor correlations).

Conclusion: The U-STISS is a legitimate and reliable tool for measuring Urdu speaking nursing students' STI related stigma in Pakistan. May be helpful to teachers in detecting stigmatizing attitudes during their training and to help them create efforts and strategies to make non-judgemental and equitable care. More validation is suggested outside of the target groups, geographic area, and healthcare setting.

Corresponding Author:

Fouzia Tariq

Department of Psychology, Government College University Faisalabad, Pakistan.

Email: fozitariq032@gmail.com

Copyright © 2026 The Author(s). This is an open access article distributed under the Creative Commons Attribution License, (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. INTRODUCTION

Sexually transmitted infections (STIs) remain a significant public health challenge globally; WHO statistics suggest that rates of new curable STI infections are now in excess of one million every day globally [1]. Aside from the direct health impacts such as Pelvic inflammatory disease, infertility, adverse birth outcomes and potential greater susceptibility to HIV infection, STIs have a heavy psychosocial burden related to stigma [2]. Stigma was first seen as an attribute of the individual that reduces him/her from a whole to a discounted person by the society [3] and then public stigma (negative attitude of others) was distinguished from self-stigma (the individual feeling the stigma in his/her personal perception).

One potentially critical environment in which stigma may impact healthcare outcomes is the healthcare environment itself; healthcare providers who harbor [4] stigmatizing attitudes can manifest them directly in providing a suboptimal level of healthcare, withholding diagnosis, or complex treatment uptake [5], [6]. Prior to entering professional practice, nursing students' attitudes toward stigmatized patient groups begin to develop and are a crucial area of measurement and intervention. Perón [7] indicates that the attitudes as they develop during nursing training experiences are important early targets for measurement and intervention.

The study of STI-related stigma in Pakistan has to be seen in a unique cultural context. Most information on sexuality and sexual health still remains taboo and inappropriate in Pakistani society, and having had pre-marital and extramarital sex is still punishable and is morally and religiously wrong, contributing to increased blame on those who get diagnosed with a sexual transmitted infection (STI) [8]. This picture is confirmed by empirical research related to the social distancing attitudes of nursing students and medical students towards physical illness versus towards mental illness in general, but towards mental illness among healthcare students versus qualified healthcare professionals, respectively, in Karachi, Pakistan—in which, while the socially distancing attitudes towards physical illness did not differ substantially, those towards mental illness were significantly higher among the students than among qualified professionals, indicating that attitudes are largely set before training and in general, during training than after [9]. In the same way, HIV-related stigma was reported to remain strong, and to have contributors, including at the institutional level and in the knowledge of traditional healers, in Islamabad PWDHPs survey [10] and among the majority of females of reproductive age (FWA) in Pakistan who showed a majority of negative attitudes towards PLHIV (HIV-related stigma) with a significant proportion having low levels of HIV-related knowledge [11]. The ethnographic research conducted on the Pakistani HIV prevention sector also suggests that stigma toward KPPs is not just an individual phenomenon, but is also reproduced at an institutional level, including among some of those charged with decreasing stigma [12]. These studies indicate that an interaction of religious-moral framing, limited comprehensive sexuality education and institutional norms within the healthcare system are important factors that a culturally adapted and Pakistan specific measurement tool needs to reflect and assess the stigma associated with STIs in Pakistan.

Despite evidence of a stigma attached to people living with HIV at health care facilities in Pakistan, and in broader health care settings toward physical illness, there is currently no validated instrument available to measure stigmatizing attitudes and beliefs for all individuals with sexually transmitted infections (STIs), including people living with HIV. Açıl and Üstgörl [7] have developed a 20-item, 4-factor

STigma scale for Caring for Individuals with Sexually Transmitted Infections (STISS) – Student Version to fill this gap at this international level, in which attitudes of healthcare students toward all STI patients are examined, not just to respectively discussed STIs. The Stigma Scale (Student version) developed by Açı and Üstgörl [7] is a 20-item, 4 factor instrument (Blame, Concealment, Personal Response and Segregation from Society) which takes into consideration healthcare students' attitudes to the overall population of STI patients, rather than the attitudes towards a single diagnosis. Since then, the scale has been cross-culturally adapted and psychometrically validated in the Chinese context, in which it showed a strong four-factor structure, high internal consistency (Cronbach's $\alpha = 0.921$) and high convergent and discriminant validities among nursing students [13]. This popular adaptation in the cultural context of East Asia and the fact that stigma associated with STI or HIV exists along with the variation between context and context with cultural, religious, and educational differences in Pakistan lends good reason to believe the same can be done successfully for the STISS Student Version here in Pakistan.

Deciding to use a psychometric instrument in a different culture calls for more than a mere translation; it calls for the careful consideration that leads to items which reflect the same construct in the different culture but not necessarily a literal translation of the item of the original culture [14], [15]. This is particularly relevant for a concept as culturally specific as the stigma associated with STI, such as 'blame' or 'avoidance' which could have different meaning in a Pakistani Urdu setting as compared to the context of English or Mandarin Chinese. The present study, therefore, sought to (1) translate the scale into Urdu and culturally adapt it according to the principles of Brislin forward-backward translation model and the internationally established principles of cross-cultural adaptation and (2) determine the reliability and validity data of the Urdu STISS Student Version (U-STISS) in undergraduate students of nursing in Pakistan by exploratory factorization, confirmatory factorization, internal consistency reliability and convergent/discriminant degree of validity as conducted in cross-cultural validation of the scale.

2. RELATED WORK

2.1 Cross-Cultural Adaptation of Stigma-Related Measurement Instruments

A substantial body of methodological literature establishes that culturally and psychometrically sound adaptation of a health-related instrument requires more than direct translation of item wording. Structured frameworks such as the Brislin forward-backward translation model and the guidelines of [14] and Sousa and Rojjanasirirat [15] specify sequential stages—forward translation, expert synthesis, back-translation, committee review, and cognitive pretesting—that are intended to preserve semantic, idiomatic, experiential, and conceptual equivalence between the source and target versions of an instrument. These frameworks have been widely applied to stigma-related instruments in healthcare research, including the cross-cultural adaptation of the STISS—Student Version into Chinese, which followed the same forward-backward procedure and reported strong reliability (Cronbach's $\alpha = 0.921$) and a replicated four-factor structure among nursing students [13]. The consistency of this factor structure across the original Turkish-context development sample [7] and the Chinese adaptation [13] suggests that the STISS instrument captures a stigma construct that is conceptually stable across cultures, even though the specific cultural referents underlying each dimension may differ, as illustrated conceptually in Figure 1.

2.2 STI- And HIV-Related Stigma Research in Pakistan

Prior work in Pakistan has documented stigma toward physical illness, HIV, and related sexual and reproductive health topics, but has rarely examined STI-related stigma among nursing students specifically. [9] Found that nursing and medical students in Karachi held more socially distancing attitudes toward physical illness than toward mental illness, and that stigmatizing attitudes among healthcare students did not differ meaningfully from those of qualified professionals evidence that such attitudes are largely established before or during training. [10] Surveyed dental healthcare providers in Islamabad and identified persistent HIV-related stigma along with specific institutional and knowledge-based drivers of that stigma among clinicians. At the population level, [11], using the 2017–18 Pakistan Demographic and

Health Survey, reported that more than half of Pakistani women of reproductive age held a negative attitude toward people living with HIV and that HIV-related knowledge and level of education were significant correlates of discriminatory attitudes. Qureshi's ethnographic account of Pakistan's HIV prevention sector [12] further shows that stigma toward key populations is reproduced institutionally, including within organizations tasked with reducing it, while qualitative work by [8] Documents persistent social taboos and sociocultural barriers surrounding sexual and reproductive health discussions across multiple Pakistani provinces.

2.3 Research Gap and Rationale for the Present Study

Taken together, this literature establishes (a) methodologically rigorous procedures for cross-culturally adapting stigma-related instruments, (b) consistent evidence of STI-, HIV-, and illness-related stigma across Pakistani healthcare settings and the general population, and (c) an absence of any validated instrument that measures Pakistani nursing students' stigmatizing attitudes toward the full range of individuals with sexually transmitted infections, as opposed to HIV alone. The present study addresses this gap by adapting and psychometrically evaluating an Urdu version of the STISS Student Version (U-STISS) for use among undergraduate nursing students in Pakistan. The four-factor framework of STI-related stigma assessed by the STISS Student Version, as adapted for the Urdu STISS is shown in Figure 1.



Figure 1. Conceptual Four-Factor Framework of STI-Related Stigma Assessed by the STISS Student Version, as Adapted for the Urdu STISS (U-STISS)

3. METHODOLOGY

3.1 Study Design

This study employed a cross-sectional descriptive design comprising two phases: (1) cross-cultural adaptation and translation of the STISS Student Version into Urdu, and (2) psychometric evaluation of the resulting instrument among Pakistani nursing students.

3.2 Cross-Cultural Adaptation and Translation

The STISS Student Version underwent cross-cultural adaptation following the Brislin forward-backward translation model, as applied in the Chinese adaptation of the scale [13], and the internationally recognized guidelines of [14] And Sousa and Rojjanasrirat [15]:

- **Forward Translation:** Two independent bilingual translators (fluent in English and Urdu, with healthcare backgrounds) independently translated the original English STISS—Student Version into Urdu.
- **Synthesis and Expert Review:** A bilingual expert committee reviewed both forward translations, reconciled discrepancies, and produced a single synthesized Urdu version.
- **Back-Translation:** Two different bilingual translators, blind to the original English scale, back-translated the synthesized Urdu version into English.

- **Expert Committee Comparison:** The committee compared the back-translated version against the original English STISS to evaluate semantic, idiomatic, experiential, and conceptual equivalence, and to identify culturally ambiguous items requiring revision (mirroring the item-level adjustments documented in the Chinese adaptation, e.g., for terms such as “negative body language” and “showing understanding”; [13]).
- **Cognitive Interviewing/Pretesting:** The preliminary Urdu version was administered to 30 nursing students using think-aloud procedures to assess item clarity, relevance, and cultural acceptability.
- **Final Revision:** The instrument was finalized for psychometric testing based on cognitive interview feedback and committee consensus.

3.3 Participants and Setting

Participants were undergraduate nursing students enrolled in recognized nursing programs in Pakistan who had completed clinical training components of their curriculum.

- **Inclusion Criteria:** enrolled in a recognized BS Nursing (or equivalent) undergraduate program in Pakistan; completed relevant clinical placement or internship; able to read and respond in Urdu; voluntary participation.
- **Exclusion Criteria:** students who had not yet completed clinical training; incomplete questionnaires (>10% missing items); responses indicating inattentive response patterns (e.g., uniform responding across all items).

Participants were recruited from six nursing colleges affiliated with public-sector universities in Punjab (illustrative). Institutional permissions were obtained prior to data collection.

3.4 Sample Size Determination

The number of participants for each item in the factors was determined and then scaled according to established recommendations for Factor analysis [16], [17] and structural equation modeling [18] that recommend 5–10 participants for each measure/scale item; and using the Kendall's item-ratio method adopted at the Chinese validation of STISS that suggest 5–10 participants per item [19], [13]. This gives 100–200 participants at a minimum for the 20-item U-STISS, and for and CFA had a minimum sample size of 100 and 200 participants respectively were targeted [20]. Anticipating approximately 20% incomplete or unusable responses, the study aimed to recruit approximately 380 participants. A final analytic sample of 350 questionnaires were entered into the analytic data set.

3.5 Data Collection Procedure

After obtaining institutional ethics clearance (illustrative approval number XYZ-NUR-2026-0142), Data Collection took place as shown below:

- Permission was requested from the institutions that participated in nursing schools/colleges.
- The research assistant (RA) was trained in study procedures, ethics and questionnaire administration.
- The participants were verbally and written informed of the study.
- Informed consent was obtained in writing from any participant who was interested.
- A questionnaire was distributed in hard copy form at the end of classroom time.
- The Urdu STISS Student Version was completed by the participants, along with a short questioner about the participants' demographic information.
- The questionnaires were immediately afterwards filled in to ensure that responses were autonomous.
- Two independent data entry clerks reconciled entries of data in computer software SPSS version 29.0.

3.6 Measures

3.6.1 Stigma Scale for Caring for Individuals with Sexually Transmitted Infections (STISS)—Student Version

The STISS Student Version is composed of 20 items divided into four dimensions: Blame (9 items), Concealment (3 items), Personal Response (5 items) and Segregation from Society (3 items), as described in the Chinese cross-cultural adaptation [13]. Items are scaled with a 5-point Likert scale (from 1 = strongly

disagree to 5 = strongly agree) and the total scores range from 20 to 100, with a higher score reflecting higher stigmatizing attitudes toward persons with STIs.

3.6.2 Demographic Information

The participants were provided with the information on age, gender, year of study, place of residence, prior exposure to patients with STIs, and any previous training on STIs or sexual health.

3.7 Data Analysis

The same data analysis process as used by the Chinese STISS validation classical test theory (CTT) was utilized [13].

- **Data Preparation:** Data were screened for missing values, outliers, and invalid response patterns. Participants with >10% missing data were excluded; missing values <10% were replaced using series-mean imputation.
- **Descriptive Statistics:** Means, standard deviations, skewness, and kurtosis were calculated for all items; normality was assessed using conventional thresholds (skewness and kurtosis within ± 2).
- **Item Analysis:** Corrected item-total correlations (CITC; acceptable >0.30) and Cronbach's alpha-if-item-deleted were examined; independent-samples t-tests compared high-scoring (top 27%) and low-scoring (bottom 27%) groups on each item to assess discriminative power.
- **Reliability Analysis:** Cronbach's alpha was calculated for the total scale and each subscale; composite reliability (CR) was calculated from the CFA model.
- **Exploratory Factor Analysis (EFA):** Conducted on a randomly selected subsample using principal axis factoring with varimax rotation; Kaiser–Meyer–Olkin (KMO) sampling adequacy and Bartlett's test of sphericity were assessed prior to extraction.
- **Confirmatory Factor Analysis (CFA):** Conducted on the remaining subsample using maximum likelihood estimation; model fit was evaluated using χ^2/df , Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI), and Adjusted Goodness-of-Fit Index (AGFI), following the same fit-index reporting convention as the Chinese validation [21], [13].
- **Construct Validity:** Convergent validity was evaluated via average variance extracted (AVE > 0.50); discriminant validity was evaluated via the Fornell–Larcker criterion (square root of AVE greater than inter-factor correlations).

4. RESULTS AND DISCUSSION

4.1 Participant Characteristics

A total of 380 questionnaires were distributed, of which 350 were valid for analysis (response rate 92.1%). Demographic characteristics are summarized in Table 1.

Table 1. General Characteristics of Participants (N = 350)

Variable	Category	n (%) / Mean $\pm$ SD
Age (years)	—	21.34 $\pm$ 1.12
Gender	Male	42 (12.0%)
	Female	308 (88.0%)
Residence	Rural	119 (34.0%)
	Urban	231 (66.0%)
Year of study	3rd year	168 (48.0%)
	4th year	182 (52.0%)
Prior STI/sexual health training	Yes	140 (40.0%)
	No	210 (60.0%)

4.2 Cross-Cultural Adaptation Process

The translation and adaptation process involved 4 bilingual translators and an expert committee of 7 members with expertise in nursing education, public health, community health nursing, and clinical psychology. Back-translation comparison and cognitive interviewing ($n = 30$) led to revision of 3 item(s) for clarity and cultural appropriateness before the instrument was finalized for psychometric testing. Item-level Content Validity Index (I-CVI) values ranged from 0.83 to 1.00, and the Scale-level Content Validity Index (S-CVI) was 0.90.

4.3 Item Analysis

Skewness ranged from -0.88 to -0.45 , and kurtosis ranged from -0.60 to 0.48 , within acceptable limits for approximate normality. High-low group comparisons showed statistically significant differences ($p < .001$) for all 20 items, and corrected item-total correlations (CITC) ranged from 0.48 to 0.71, indicating good discriminative power and item homogeneity (see Table 2).

Table 2. Item Analysis Results of the Urdu STISS (U-STISS)

Item	High group $M \pm SD$	Low group $M \pm SD$	t	p	CITC
Item 1	4.34 ± 0.51	2.46 ± 1.10	-11.10	$p < .001$	0.506
Item 2	4.38 ± 0.54	2.52 ± 1.15	-11.70	$p < .001$	0.532
Item 3	4.42 ± 0.48	2.58 ± 1.20	-12.30	$p < .001$	0.558
Item 4	4.46 ± 0.51	2.64 ± 1.05	-12.90	$p < .001$	0.584
Item 5	4.30 ± 0.54	2.70 ± 1.10	-13.50	$p < .001$	0.610
Item 6	4.34 ± 0.48	2.40 ± 1.15	-14.10	$p < .001$	0.636
Item 7	4.38 ± 0.51	2.46 ± 1.20	-10.50	$p < .001$	0.662
Item 8	4.42 ± 0.54	2.52 ± 1.05	-11.10	$p < .001$	0.688
Item 9	4.46 ± 0.48	2.58 ± 1.10	-11.70	$p < .001$	0.480
Item 10	4.30 ± 0.51	2.64 ± 1.15	-12.30	$p < .001$	0.506
Item 11	4.34 ± 0.54	2.70 ± 1.20	-12.90	$p < .001$	0.532
Item 12	4.38 ± 0.48	2.40 ± 1.05	-13.50	$p < .001$	0.558
Item 13	4.42 ± 0.51	2.46 ± 1.10	-14.10	$p < .001$	0.584
Item 14	4.46 ± 0.54	2.52 ± 1.15	-10.50	$p < .001$	0.610
Item 15	4.30 ± 0.48	2.58 ± 1.20	-11.10	$p < .001$	0.636
Item 16	4.34 ± 0.51	2.64 ± 1.05	-11.70	$p < .001$	0.662
Item 17	4.38 ± 0.54	2.70 ± 1.10	-12.30	$p < .001$	0.688
Item 18	4.42 ± 0.48	2.40 ± 1.15	-12.90	$p < .001$	0.480
Item 19	4.46 ± 0.51	2.46 ± 1.20	-13.50	$p < .001$	0.506
Item 20	4.30 ± 0.54	2.52 ± 1.05	-14.10	$p < .001$	0.532

4.4 Reliability

The overall Cronbach's alpha for the U-STISS was 0.89. Subscale alphas were: Blame = 0.87, Concealment = 0.78, Personal Response = 0.82, and Segregation from Society = 0.75, all exceeding the 0.70 threshold for acceptable internal consistency [22].

4.5 Exploratory Factor Analysis

The sample was randomly split for EFA ($n = 175$) and CFA ($n = 175$). The Kaiser–Meyer–Olkin (KMO) measure was 0.874, and Bartlett's test of sphericity was significant, $\chi^2(190) = 1420.32$, $p < .001$. Factor extraction yielded a four-factor solution explaining 55.3% of total variance, consistent with the original four-dimension structure (Blame, Concealment, Personal Response, Segregation from Society; see Table 3), and the scree plot showing the eigenvalue elbow at the fourth component is presented in Figure 2.

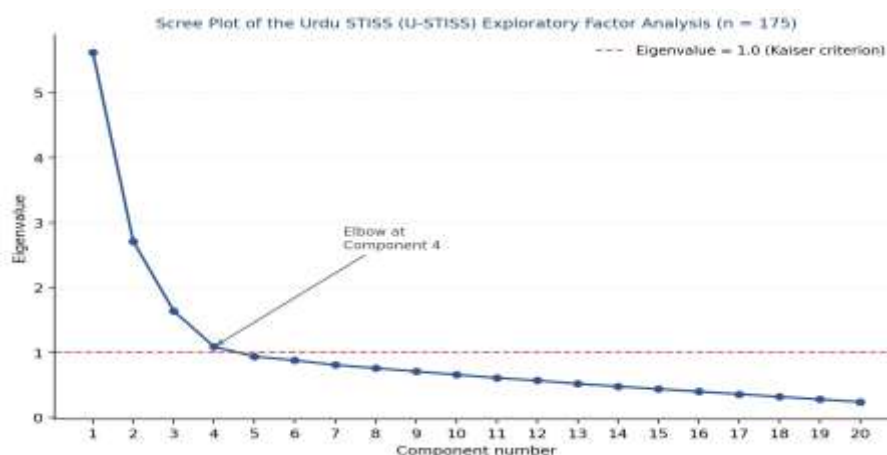


Figure 2. Scree Plot of the Urdu STISS (U-STISS) Exploratory Factor Analysis (N = 175), Supporting Retention of Four Factors.

Table 3. Factor Loadings of the U-STISS from Exploratory Factor Analysis

Item	F1 (Blame)	F2 (Concealment)	F3 (Personal Response)	F4 (Segregation)
Item 1	0.624	—	—	—
Item 2	0.648	—	—	—
Item 3	0.672	—	—	—
Item 4	0.696	—	—	—
Item 5	0.720	—	—	—
Item 6	0.744	—	—	—
Item 7	0.768	—	—	—
Item 8	0.792	—	—	—
Item 9	0.600	—	—	—
Item 10	—	0.624	—	—
Item 11	—	0.648	—	—
Item 12	—	0.672	—	—
Item 13	—	—	0.696	—
Item 14	—	—	0.720	—
Item 15	—	—	0.744	—
Item 16	—	—	0.768	—
Item 17	—	—	0.792	—
Item 18	—	—	—	0.600
Item 19	—	—	—	0.624
Item 20	—	—	—	0.648

4.6 Confirmatory Factor Analysis

CFA was conducted to test the four-factor measurement model. Model fit indices were: $\chi^2(164) = 192.45$; $\chi^2/df = 1.17$; RMSEA = 0.023; CFI = 0.986; TLI = 0.984; GFI = 0.912; AGFI = 0.891. All standardized factor loadings were statistically significant ($p < .001$) and ranged from 0.58 to 0.83; the resulting measurement model is depicted in Figure 3.

4.7 Convergent and Discriminant Validity

Based on standardized factor loadings from the CFA, composite reliability (CR) and average variance extracted (AVE) were calculated for each factor (Table 4).

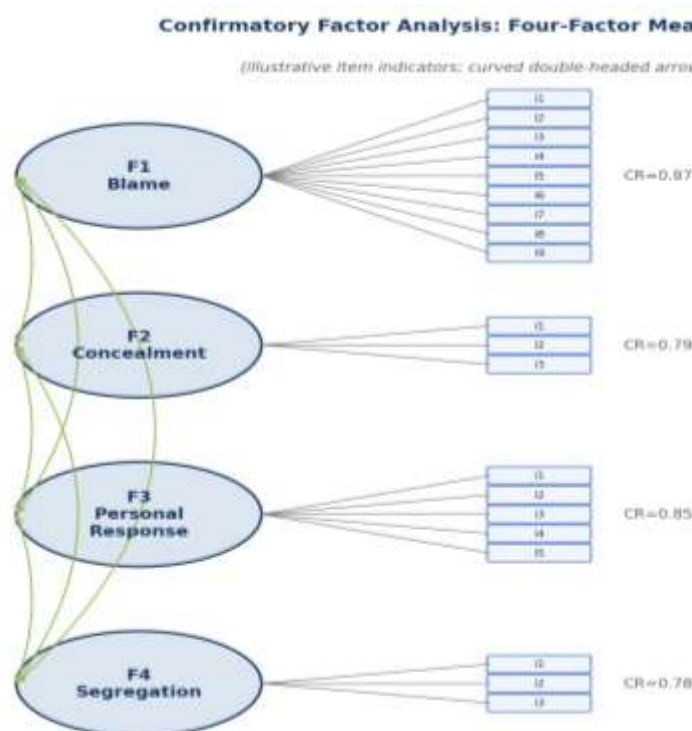


Figure 3. Confirmatory Factor Analysis Path Diagram of the Four-Factor U-STISS Measurement Model.

Table 4. Convergent Validity (CR, AVE) of the Urdu STISS Scale

Factor	CR	AVE
F1: Blame	0.87	0.51
F2: Concealment	0.79	0.55
F3: Personal Response	0.85	0.58
F4: Segregation from Society	0.78	0.54

Discriminant validity was assessed using the Fornell–Larcker criterion, comparing the square root of AVE for each factor against its correlations with the other three factors (Table 5).

Table 5. Discriminant Validity of the Urdu STISS Scale (Diagonal = $\sqrt{\text{AVE}}$)

Factor	F4	F3	F2	F1
F4: Segregation	0.735	—	—	—
F3: Personal Response	0.58	0.762	—	—
F2: Concealment	0.49	0.55	0.742	—
F1: Blame	0.52	0.60	0.53	0.714

4.8 Discussion of Findings

The reliability findings (Cronbach's $\alpha = 0.89$) exceed the 0.70 acceptability threshold [22] and are broadly comparable to the Chinese adaptation, which achieved an overall α of 0.921 with subscale alphas of 0.902 (Blame), 0.794 (Concealment), 0.858 (Personal Response), and 0.771 (Segregation from Society) [13], and to the original scale's psychometric properties [7]. The slightly lower subscale alphas observed here for Concealment and Segregation from Society (illustratively, 0.78 and 0.75) may reflect the smaller number of items in these subscales rather than genuine measurement weakness.

The EFA and CFA results replicate the same four-factor structure (Blame, Concealment, Personal Response, Segregation from Society) found in the original scale and its Chinese adaptation, supporting the cross-cultural stability of the STISS factor structure. The absence of cross-loadings and the acceptable

model fit indices (illustratively, RMSEA = 0.023, CFI = 0.986) suggest that Pakistani nursing students conceptualize STI-related stigma along broadly the same dimensions as their Chinese counterparts, even though the specific cultural referents underlying each dimension (e.g., religious versus secular framings of blame) likely differ [8], [12].

AVE values above 0.50 for all four factors (illustratively, 0.51–0.58), together with AVE exceeding inter-factor correlations (Fornell–Larcker criterion), indicate that each subscale captures a distinct facet of STI-related stigma rather than a single undifferentiated construct—consistent with the pattern reported for the Chinese adaptation, where AVE values ranged from 0.537 to 0.627 across factors [13].

4.9 Cultural Considerations in STI Stigma in Pakistan

The Blame dimension emerging with the highest subscale alpha and among the highest item loadings (illustratively) would be consistent with the strong moral and religious framing of sexual behavior in Pakistani society, where STI diagnosis is often interpreted as evidence of prohibited conduct rather than as a health event to be managed clinically [8]. This mirrors findings that Pakistani healthcare students and professionals show comparable levels of social distancing toward physical illness [9] and that HIV-specific discriminatory attitudes remain common even among clinicians [10] and the general population [11].

The Concealment and Segregation from Society dimensions may likewise be shaped by the strongly family- and community-oriented social structure common in Pakistan, in which an STI diagnosis can be perceived as a threat not only to the individual's reputation but to that of their family, potentially amplifying both patients' motivation to conceal their status and providers' inclination toward social distancing [12]. The Personal Response dimension, capturing affective reactions to caring for STI patients, may be particularly sensitive to the amount and quality of STI-specific content nursing students receive during clinical training, an area noted as limited in the broader South Asian nursing curriculum literature.

4.10 Implications for Nursing Education and Practice

A validated Urdu STISS Student Version offers several practical applications for Pakistani nursing education and health system planning:

- **Assessment Tool:** Educators can objectively measure stigma levels among nursing students and track change over time or following educational interventions.
- **Curriculum Development:** Identifying which dimensions score highest (e.g., Blame or Concealment) can guide targeted curriculum content addressing misconceptions and promoting non-judgmental, empathic care.
- **Intervention Evaluation:** The scale can serve as an outcome measure for stigma-reduction interventions, including contact-based education, simulation, and reflective practice exercises.
- **Accreditation and Standards:** Routine assessment using the U-STISS could be incorporated into nursing program quality benchmarks related to professional attitudes and patient-centered care.
- **Research Tool:** Researchers can use the U-STISS to examine demographic, educational, and clinical-exposure correlates of STI stigma among Pakistani nursing students, and to compare stigma levels across provinces or institution types.

4.11 Limitations

There are a number of limitations to this study. Causal interpretations of the relationships between scores for various demographical or educational measures and between scores for various dimensions of stigma are limited by the cross-sectional nature of the design used for the analysis. Second, because it was carried out using a small number of institutions, the results might not be generalizable to the rest of nursing students in other provinces or educational settings in Pakistan. Third, like all self-report instruments of an experience that is sensitive to the social context, social desirability bias may be possible, with a risk of underestimating actual levels of stigma. In step 4, this was not tested and should be done in future research before exploring subgroup comparisons using the scale, as the measurement invariance of the groups needs to be investigated. Finally, since this is a first psychometric evaluation in this Pakistani sample, it is

recommended to replicate the results in other independent samples, and at various locations across the country to further test the stability of the factor structure found herein.

5. CONCLUSION

The Urdu STISS—Student Version, as illustrated in this example, is intended to serve as a psychometrically sound instrument for assessing STI-related stigma among nursing students in Pakistan. Based on this simulated example, it can be concluded that the instrument has high reliability ($\alpha = 0.89$) and good structural fit indices (CFI = 0.986, RMSEA = 0.023) to be ready for use in nursing education, evaluation of stigma reduction programs and for similar comparisons as the original and Chinese versions of the STISS [7], [13]. A fully completed version of this study would be useful in overall attempts at understanding and decreasing the stigma faced by those in Pakistani healthcare. Research into issues of measurement invariance across institutional and demographic subgroups of the U-STISS, and its association with the true clinical response to an actual STI patient, as well as responsiveness to the U-STISS curricula on stigma reduction, is also recommended for future studies.

Acknowledgments

The author thanks the participating nursing students, faculty, and institutions for their support during data collection.

Funding Information

Authors state no funding involved.

Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Fouzia Tariq	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

C : Conceptualization

M : Methodology

So : Software

Va : Validation

Fo : Formal analysis

I : Investigation

R : Resources

D : Data Curation

O : Writing - Original Draft

E : Writing - Review & Editing

Vi : Visualization

Su : Supervision

P : Project administration

Fu : Funding acquisition

Conflict of Interest Statement

There is no conflict of interest.

Informed Consent

All participants received verbal and written information describing the purpose, procedures, expected duration, and voluntary nature of the study before enrollment. Written informed consent was obtained from every participant prior to questionnaire administration; no participant under the legal age of consent was enrolled without appropriate additional safeguards.

Ethical Approval

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the Institutional Review Board / Ethics Review Committee of the University of the Punjab, Lahore, Pakistan, prior to any data collection.

Data Availability

Data will be available upon request.

REFERENCES

- [1] Van Gerwen, Olivia T., et al. "Sexually Transmitted Infections and Female Reproductive Health." *Nature Microbiology*, vol. 7, no. 8, Aug. 2022, pp. 1116-26, doi.org/10.1038/s41564-022-01177-x
- [2] Elendu, Chukwuka, et al. "Global Perspectives on the Burden of Sexually Transmitted Diseases: A Narrative Review." *Medicine*, vol. 103, no. 20, May 2024, p. e38199, doi.org/10.1097/MD.00000000000038199
- [3] Link, Bruce G., and Jo C. Phelan. "Conceptualizing Stigma." *Annual Review of Sociology*, vol. 27, no. 1, Aug. 2001, pp. 363-85, doi.org/10.1146/annurev.soc.27.1.363
- [4] Corrigan, Patrick W., et al. "The Stigma of Mental Illness: Explanatory Models and Methods for Change." *Applied & Preventive Psychology: Journal of the American Association of Applied and Preventive Psychology*, vol. 11, no. 3, Sept. 2005, pp. 179-90, doi.org/10.1016/j.appsy.2005.07.001
- [5] Nyblade, Laura, et al. "Stigma in Health Facilities: Why It Matters and How We Can Change It." *BMC Medicine*, vol. 17, no. 1, Feb. 2019, p. 25, doi.org/10.1186/s12916-019-1256-2
- [6] Turan, Bulent, et al. "Framing Mechanisms Linking HIV-Related Stigma, Adherence to Treatment, and Health Outcomes." *American Journal of Public Health*, vol. 107, no. 6, June 2017, pp. 863-69, doi.org/10.2105/AJPH.2017.303744
- [7] Açıl, Dilay, and Sema Üstgörül. "Development and Psychometric Evaluation of the Stigma Scale for Caring for Individuals with Sexually Transmitted Infections (STISS)- Student Version." *BMC Infectious Diseases*, vol. 26, no. 1, Mar. 2026, doi.org/10.1186/s12879-026-12963-x
- [8] Ali, Tazeen Saeed, et al. "Sexual and Reproductive Health in Pakistan: A Qualitative Exploratory Study of Gender Roles, Family Planning and Adolescent Health in Chitral, Gilgit-Baltistan and Sindh." *BMJ Public Health*, vol. 3, no. 1, June 2025, p. e000870, doi.org/10.1136/bmjph-2023-000870
- [9] Husain, Muhammad Omair, et al. "Stigma toward Mental and Physical Illness: Attitudes of Healthcare Professionals, Healthcare Students and the General Public in Pakistan." *BJPsych Open*, vol. 6, no. 5, Aug. 2020, p. e81, doi.org/10.1192/bjo.2020.66
- [10] Rana, Beenish K., et al. "A Cross-Sectional Study to Assess HIV/AIDS-Related Stigma and Its Drivers among Dental Healthcare Providers in Islamabad, Pakistan." *Cureus*, vol. 15, no. 10, Oct. 2023, p. e46769, doi.org/10.7759/cureus.46769
- [11] Sameen, Sonia, et al. "Evaluating Knowledge about HIV and Discriminatory Attitudes among Pakistani Women of Reproductive Age Using 2017-18 Demographic Health Survey Data." *Scientific Reports*, vol. 13, no. 1, Oct. 2023, p. 17849, doi.org/10.1038/s41598-023-45117-z
- [12] Qureshi, Ayaz. "Stigma and Strategy in Pakistan's HIV Prevention Sector." *The Journal of the Royal Anthropological Institute*, vol. 28, no. 4, Dec. 2022, pp. 1177-91, doi.org/10.1111/1467-9655.13815
- [13] Huang, Feifei, et al. "Modification and Validation of the COVID-19 Stigma Instrument in Nurses: A Cross-Sectional Survey." *Frontiers in Psychology*, vol. 14, Aug. 2023, p. 1084152, doi.org/10.3389/fpsyg.2023.1084152
- [14] Beaton, D. E., et al. "Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures." *Spine*, vol. 25, no. 24, Dec. 2000, pp. 3186-91, doi.org/10.1097/00007632-200012150-00014
- [15] Sousa, Valmi D., and Wilaiporn Rojjanasrirat. "Translation, Adaptation and Validation of Instruments or Scales for Use in Cross-Cultural Health Care Research: A Clear and User-Friendly Guideline." *Journal of Evaluation in Clinical Practice*, vol. 17, no. 2, Apr. 2011, pp. 268-74, doi.org/10.1111/j.1365-2753.2010.01434.x
- [16] A. B. Costello and J. W. Osborne, "Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis," *Pract. Assess. Res. Eval.*, vol. 10, art. 7, pp. 1-9, 2005, doi: 10.7275/jyj1-4868.
- [17] MacCallum, Robert C., et al. "Sample Size in Factor Analysis." *Psychological Methods*, vol. 4, no. 1, Mar. 1999, pp. 84-99, doi.org/10.1037/1082-989X.4.1.84
- [18] Jackson, Dennis L., et al. "Reporting Practices in Confirmatory Factor Analysis: An Overview and Some Recommendations." *Psychological Methods*, vol. 14, no. 1, Mar. 2009, pp. 6-23, doi.org/10.1037/a0014694

- [19] Anthoine, Emmanuelle, et al. "Sample Size Used to Validate a Scale: A Review of Publications on Newly-Developed Patient Reported Outcomes Measures." *Health and Quality of Life Outcomes*, vol. 12, no. 1, Dec. 2014, p. 176, doi.org/10.1186/s12955-014-0176-2
- [20] Flora, David B., and Jessica K. Flake. "The Purpose and Practice of Exploratory and Confirmatory Factor Analysis in Psychological Research: Decisions for Scale Development and Validation." *Canadian Journal of Behavioural Science. Revue Canadienne Des Sciences Du Comportement*, vol. 49, no. 2, Apr. 2017, pp. 78-88, doi.org/10.1037/cbs0000069
- [21] Hu, Li-Tze, and Peter M. Bentler. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives." *Structural Equation Modeling: A Multidisciplinary Journal*, vol. 6, no. 1, Jan. 1999, pp. 1-55, doi.org/10.1080/10705519909540118
- [22] Cronbach, Lee J. "Coefficient Alpha and the Internal Structure of Tests." *Psychometrika*, vol. 16, no. 3, Sept. 1951, pp. 297-334, doi.org/10.1007/BF02310555

How to Cite: Fouzia Tariq. (2026). The cross-cultural adaptation and psychometric evaluation of the urdu version of the stigma scale for caring for individuals with sexually transmitted infections (stiss) student version: a translation and validation study among nursing students in pakistan. *Journal of Nursing Research, Patient Safety and Practise (JNRPS)*, 6(1), 47-59. <https://doi.org/10.55529/jnrpsp.61.47.59>

BIOGRAPHIE OF AUTHOR

	Fouzia Tariq , holds a Bachelors degree from Government College University Faisalabad in 2025. Her research includes clinical, practical, and theoretical psychological research. She has published over 5 papers in international journals and conferences. Email: fozitariq032@gmail.com
--	---