

Turkish Validity and Reliability Study of the “Sexual Healthcare Questionnaire” for Nursing Students

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Background and Purpose: This study aimed to determine the reliability and validity of the Turkish version of the Knowledge of Sexual Healthcare (KSH), Attitude to Sexual Healthcare (ASH), and Self-Efficacy for Sexual Healthcare (SESH) scales of the Sexual Healthcare Questionnaire. **Methods:** This study included 381 participants who were second- and third-year Turkish nursing students. We analyzed the construct validity, test–retest reliability, and internal consistency of the scales. **Results:** Kuder–Richardson-20 (KR-20) reliability coefficient of the 31-item KSH scale was .99 and consisted of three sub-dimensions. The confirmatory factor analysis supported the three-factor structure of the ASH scale consisting of 18 items. The final version of the 22-item SESH scale includes 15 items. **Conclusions:** The use of scales to determine Turkish nursing students’ knowledge, attitudes, and self-efficacy toward sexual health services was encouraged.

Keywords: nursing education; nursing students; psychometrics; sexuality; sexual health; validation study

Sexuality is an essential part of being human, affecting the entire life of individuals. To support the quality of life of individuals with sexual health problems, it is necessary to provide sexual healthcare (Lu et al., 2024; Sung et al., 2015). The provision of services by nurses on issues related to sexuality is an important professional responsibility to provide holistic care, in addition to their unique position in the field of practice to provide sexual healthcare (Sung et al., 2015). For nurses to meet individuals’ needs related to sexual health, their knowledge, attitudes, skills, and self-sufficiency levels are very crucial (Areskoug-Josefsson et al., 2016). Therefore, nursing students should be provided with knowledge and skills about sexual healthcare. They should also develop positive attitudes toward providing sexual healthcare to improve their willingness to evaluate the sexuality of healthy individuals and patients (Sung et al., 2015).

BACKGROUND AND CONCEPTUAL FRAMEWORK

Valid and reliable scales should be used to measure the knowledge, attitudes, and self-efficacy of nursing students toward providing sexual healthcare services. In 2011, Sung analyzed the validity and reliability of the Knowledge of Sexual Healthcare (KSH), Attitude to Sexual Healthcare (ASH), and Self-Efficacy for Sexual Healthcare (SESH) scales in the Sexual Healthcare Questionnaire with the participation of 60 nursing students in Taiwan. In this pilot study, we analyzed the content validity, construct validity, and test–retest reliability of the scales. For content validity, the KSH, ASH, and SESH were .83, .96, and .92, respectively. For the test–retest reliability using the intra-class correlation coefficient (ICC) with a 2-week interval, the KSH, ASH, and SESH were .73, .91, and .94, respectively. Although Sung’s study did not use large samples for the factor analysis of the scales, it provided initial evidence that these scales are valid and applicable in educational settings. These scales are important for determining the potential of nursing students to provide sexual health services (Sung, 2011). Subsequent studies, including those with larger sample sizes, have further confirmed the validity and reliability of these scales (Lu et al., 2024; Sung et al., 2015, 2016; Sung & Lin, 2013).

In Turkey, although there are tests to determine sexual health knowledge (Evcili & Gölbaşı, 2017; Tuğut & Gölbaşı, 2013) and scales adapted to determine attitudes toward sexual health (Ayhan et al., 2010; Turan

et al., 2021), there is no instrument to evaluate the sexual healthcare self-efficacy of nursing students. However, the sexual health knowledge test (Tuğut & Gölbaşı, 2013) and scales related to sexual health attitudes (Ayhan et al., 2010; Turan et al., 2021) do not address sexual violence, which leads to significant psychological, sexual, and gynecological health problems (LoGiudice & Douglas, 2016). The other sexual knowledge test (Evcili & Gölbaşı, 2017) does not include any questions on sexuality and communication assessment. The adaptation of the scales in the Sexual Healthcare Questionnaire into Turkish will contribute to the comprehensive evaluation and development of sexual healthcare competence in nursing education in Turkey. This study aimed to determine the reliability and validity of the Turkish version of the KSH, ASH, and SESH scales in the Sexual Healthcare Questionnaire.

METHODS

Study Design

The study was conducted "methodologically" to adapt the KSH, ASH, and SESH scales in the "Sexual Healthcare Questionnaire" into Turkish and to determine their reliability and validity.

Participants

The study was conducted with students of the nursing department of a state university in Turkey. The study included second- and third-year nursing students who did not have psychiatric illness and volunteered to participate in the study, and data were collected between April and May 2023. No student was excluded from the study due to a diagnosis of psychiatric disease. Among the second- and third-year nursing students, 101 students did not participate in the study because they did not volunteer to participate. Therefore, the data of 381 students (79%) were analyzed. In scale studies, the sample size should be 5–10 times the number of items (Devellis, 2017, pp. 156–158). The sample size was calculated to be 10 times the KSH scale (at least 310 students), which has the highest number of items among the scales included in the questionnaire with 31 items. To evaluate the test–retest reliability, the scales were reapplied 4 weeks after the first measurement to 163 students in the sample.

Data Collection Instruments

Data were collected through the online "Sexual Healthcare Questionnaire" created using Google Forms. The researcher explained the study to students who met the inclusion criteria, and an online survey link was sent to those who approved. Participants completed the data collection form after reading and approving the "Informed Consent Form."

Sexual Healthcare Questionnaire. This questionnaire includes three different scales: the KSH, ASH, and SESH scales. The questionnaire's original language is Chinese (Sung, 2011). In our study, it took approximately 15–25 minutes to complete the questionnaire.

Demographic Information. This section collected data on the age, gender, religion, marital status, family structure, and parent–child relationship of the participants. In addition, specific sexual-related data including experience of the sex/gender education course, dating behavior, falling in love, commitment to the boy–girl relationship, sexual behaviors, and sexual harassment were collected (Sung & Lin, 2013).

The Knowledge of Sexual Healthcare Scale. The scale was designed to measure the knowledge of nursing students about disease, the effects of medical treatment on sexual problems, interventions that improve sexuality, sexual assessment, communication about sexual healthcare, and approaches in cases of sexual violence. The scale consists of three sections: sexual medicine and nursing (items 1–18), sexual assessment (items 19–26), and sexual assault and harassment (items 27–31), adding up to a total of 31 items. Each item is graded as "yes," "no," and "do not know." The correct answer is given 1 point, while the wrong and "do not know" answers are given 0 points. Total obtainable scores are between 0 and 31. The higher the score on the scale, the higher the level of knowledge about sexual healthcare (Sung, 2011). Cronbach's alpha was determined as .91 (Lu et al., 2024).

The Attitude to Sexual Healthcare Scale. The scale determines the attitudes of nursing students toward sexual health services, their professional roles, and their attitudes toward providing information on sexual health issues. The scale consists of three sub-dimensions (perceived comfort [items 1–6], providing information [items 9, 10, 11, 12, 17, and 18], and professional role [items 7, 8, 13, 14, 15, and 16]), adding up to a total of 18 questions. There are six items in each sub-dimension. Each item is a 5-point Likert scale, where 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree. The total obtainable scores from the scale

range between 18 and 90. A high score indicates a positive attitude toward sexual health services. Cronbach's alpha was .89 (Sung, 2011).

The Self-Efficacy for Sexual Healthcare Scale. The scale represents the self-beliefs of nursing students about their ability to provide sexual healthcare, maintain sexual health well-being, provide support and information, self-manage discomfort, and seek help for sexual healthcare when needed. The scale assesses the self-confidence of nursing students in discussing and managing sexual health problems, whether while helping a patient or addressing their own issues. The scale consists of three sub-dimensions: confidence in discussing sexual matters (communication skill; items 1–5, 8–12, 15, 16, and 18), confidence in providing support and information (providing support and information; items 17, 19, 20, 21, and 22), and self-adjustment of uncomfortable feeling and help-seeking (self-management; items 6, 7, 13, and 14), adding up to a total of 22 items. Self-management for sexual health is about the ability of nursing students to care for themselves. Each item is graded on a 5-point Likert scale ranging from 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The total obtainable scores range from 22 to 110 points. A higher score indicates a higher level of confidence in providing sexual healthcare. The Cronbach's alpha of the scale was .89 (Sung, 2011).

Procedure

Instrument Translation. The forward–backward translation procedure was used to ensure the linguistic validation of the scales (Brislin, 1970). Translators were determined both from the site of study and through the translating agency. First, the scales were translated from Chinese to English separately by two independent English-speaking nurse academicians whose mother tongues are Chinese and one translator. The researcher combined the three English translations into a single translation. The English translation was then translated into Turkish by two independent nurse academicians who are fluent in English and Turkish and one translator and combined into a single translation by the researcher. The Turkish translation was finally translated back into Chinese by a professional Turkish translator who had lived in China for 7 years. It was determined that there were no major meaning differences between the two translations and minor corrections were made.

Content Validity. The content validity of the scales was performed using the technique developed by Davis (1992). In this technique, expert opinions are classified as (a) appropriate, (b) little correction, (c) many corrections, and (d) unsuitable. The content validity index is obtained by dividing the number of experts who selected the “appropriate” and “little correction” options by the total number of experts. A content validity index (CVI) of .80 and above indicates that it is acceptable. In order to determine the content validity of the items of the scales, the opinions of 1 specialist physician and 16 faculty members specialized in the field of nursing were obtained. The CVI was calculated as .88, .92, and .95 for the KSH, ASH, and SESH, respectively. Since the CVI values were greater than .80 for each scale, each scale was thus considered sufficient in terms of content validity (Polit et al., 2007). The necessary revisions were made by the researchers in line with the experts' opinions.

To evaluate the comprehensibility of the items on the scales, a pilot study was conducted with 10 nursing students. Feedback was obtained from these participants on their understanding and potential problems. A few semantic corrections were made in the translation in line with the students' feedback. These participants were not included in the completed study. Thus, process validity was completed.

Statistical Analysis

The data of 381 students were analyzed with IBM SPSS 23, IBM SPSS AMOS 23, and Winsteps application programs. Categorical variables were presented as frequency, while descriptive statistics was used for numerical variables. A p value of $\leq .05$ was considered statistically significant. The ICC was used to measure the test–retest reliability of each scale. Rasch analysis was used to evaluate the internal construct validity of the KSH scale, as it is a dichotomous scale. The fit index was calculated for each item in the Rasch model to estimate the construct validity of the scale. Person and item separation indices were calculated for reliability. The confirmatory factor analysis (CFA) was used to estimate the validity of the ASH scale, while the exploratory factor analysis (EFA) and CFA were used for the validity of the SESH scale. The Cronbach's alpha value was used for estimating the reliability. The result of the CFA conducted for the SESH scale led to a decision to re-evaluate the scale structure because of the low fit values. First, the EFA was applied, and the preferred factor extraction methods “principal components method” and “Varimax rotation” were used. The CFA was then performed. Su-Ching Sung's approval was obtained by sending an e-mail to Su-Ching Sung for the final structure of the Turkish versions of the scales.

Ethics

The original “Sexual Healthcare Questionnaire” was requested from Su-Ching Sung via e-mail, and the necessary permission was obtained to study its Turkish validity and reliability. The research was conducted in accordance with the Principles of the Declaration of Helsinki. Approval was obtained from Marmara University Faculty of Health Sciences Ethics Committee for the implementation of the study (Date: 30.06.2022 No: 70). Before the study commencement, written permission was obtained from the institution where the study was conducted. Consents were obtained from the participants online. To ensure confidentiality, the participants remained anonymous or used a pseudonym of their choice while filling out the surveys.

RESULTS

Demographic Characteristics

The mean age of the 381 students who participated in the study is 20.76 ± 1.29 , and the majority (294; 77.2%) is female; 178 (46.7%) of the students are second-year students, and 203 (53.3%) were third-year students. Almost all of the students are single (379; 99.5%) and believe in Islam (362; 95%). The majority of the students perceive their relationship with their mother as very good (41.7%) and their relationship with their father as good (33.9%). Approximately 86% of the students stated that they came from a nuclear family, 91% stated that they had never taken a sexuality/gender course, 74% stated that they had a dating experience, 64% stated that they had an experience of falling in love, 73% stated that they had a boyfriend/girlfriend, 87% stated that they had never had a sexual experience, and 90% stated that they had never been sexually harassed.

The Knowledge of Sexual Healthcare Scale Validity and Reliability Findings

In the Rasch analysis, fit statistics are reported using mean square statistics and standardized z statistics (Wright & Linacre, 1994). The Rasch analysis provides two types of mean square fit statistics: infit and outfit (Ayala, 2009; Wright & Linacre, 1994). The findings obtained from the Rasch analysis for the KSH scale are presented in Table 1.

Following the reliability analysis of the KSH scale, the item separation index of the scale was 10.16, and the item reliability was .99. The person separation value of the scale was 2.27, and the person reliability value was .84. Following the ICC analysis, the first ($r = .732$), second ($r = .405$), third sub-dimensions ($r = .311$), and the total scale ($r = .629$) scores were determined.

The Attitude to Sexual Healthcare Scale Validity and Reliability Findings

A first-order model was initially created for CFA (Figure 1; Hair et al., 2005, p. 791). Second, improvements were made in the fit indices by using the maximum likelihood method. The fit values (CMIN/df [$\chi^2/df = 3.077$], incremental fit index [IFI = .906], comparative fit index [CFI = .905], root mean square error of approximation [RMSEA = .074], and standardized root mean residual [SRMR = .061]) obtained from the scale were determined.

The item–total correlation coefficients in this study ranged between .353 and .535. The Cronbach’s alpha values for the whole scale and the three factors were .864, .838, .780, and .783, respectively. The ICC analysis was used to determine the first ($r = .807$), second ($r = .740$), and third sub-dimensions ($r = .768$), as well as the total scale ($r = .832$) scores.

The Self-Efficacy for Sexual Healthcare Scale Validity and Reliability Findings

The EFA and CFA can be used together in adaptation studies if the factor structures of the original scale and the culturally adapted scale are not similar (Kılıç & Koyuncu, 2017). Therefore, the EFA and CFA were applied together in the SESH scale. First, the EFA was applied, and the “Principal Component Method” was preferred as the factor extraction method. The data had a Kaiser–Meyer–Olkin (KMO) value of .896 and a significant Bartlett’s sphericity test ($p = .000$), indicating factorability. Items with factor loadings below .5 were removed from the scale. Following the factor analysis, the number of items decreased from 22 to 15. The explanation ratio, distribution of items, and factor loadings of these three factors are given in Table 2. The SESH scale explains 61.65% of the total variance. Eigenvalues are the sum of the squares of factor loadings. The fact that these sums are greater than 1 for each dimension indicates that the questions collected under this dimension are sufficient to collectively explain this dimension.

While applying CFA, the same analyses as in the ASH scale were applied. The first-order CFA model is shown in Figure 2. The fit values [χ^2/df (3,455), GFI (.913), TLI (.900), IFI (.922), CFI (.922), RMSEA (.080), and SRMR (.056)] obtained from the scale were determined.

The item–total correlation coefficients of the 15-item SESH scale ranged between .477 and .689. The Cronbach’s alpha values for the whole scale and the three factors were .902, .872, .807, and .795, respectively.

TABLE 1. RASH Analysis Item-Fit Statistics Values for KSH Scale

FACTORS	ITEM NUMBER	b	SE	INFIT		OUTFIT		OBSERVED PMC	EXPECTE D PMC	OBSERVED FIT	EXPECTED FIT
				MNSQ	ZSTD	MNSQ	ZSTD				
F1: Sexual medicine and nursing	KSH 1	-1.71	0.13	0.87	-2	0.77	-2.2	.59	.5	80.5	77.9
	KSH 2	-1.51	0.13	1.33	4.8	1.52	4.8	.26	.49	67.8	75.6
	KSH 3	0.31	0.12	1.08	1.8	1.15	1.6	.33	.39	68.6	70.4
	KSH 4	-1.18	0.12	1.21	3.8	1.27	3.2	.33	.48	64.1	72.3
	KSH 5	0.15	0.12	0.95	-1.2	0.87	-1.5	.45	.4	70.8	69.3
	KSH 6	0.45	0.12	1.08	1.6	1.09	0.9	.32	.38	71.9	71.8
	KSH 7	-0.4	0.12	0.95	-1.1	0.92	-1.2	.48	.44	67.8	67.8
	KSH 8	0.14	0.12	0.98	-0.5	0.96	-0.5	.42	.4	70	69.2
	KSH 9	0.56	0.12	1.22	3.9	1.47	3.8	.19	.37	66.8	72.9
	KSH 10	2.32	0.2	1.09	0.6	1.33	1.1	.15	.22	91.6	92
	KSH 11	0.18	0.12	0.9	-2.3	0.82	-2.1	.48	.4	73	69.4
	KSH 12	-1.16	0.12	0.84	-3.2	0.78	-2.9	.59	.48	77.3	72.2
	KSH 13	-0.52	0.12	0.82	-4.5	0.76	-3.9	.58	.45	77.3	68.1
	KSH 14	1.8	0.17	1.06	0.5	1.29	1.3	.2	.26	87.6	87.8
	KSH 15	0.98	0.13	1.02	0.3	0.94	-0.4	.33	.33	78.6	78.5
	KSH 16	-0.48	0.12	0.89	-2.8	0.82	-2.7	.53	.44	73.2	68
	KSH 17	0.7	0.13	0.93	-1.1	0.83	-1.5	.41	.36	78.4	74.7
	KSH 18	-0.66	0.12	0.85	-3.6	0.82	-2.9	.56	.46	75.1	68.7
F2: Sexual assessment	KSH 19	0.00	0.15	1.08	1.0	1.17	1.4	.58	.62	80.9	79.1
	KSH 20	0.81	0.14	1.09	1.5	1.21	2.1	.57	.60	68.3	72.0
	KSH 21	-1.38	0.21	0.73	-2.1	0.69	-1.3	.70	.63	92.2	89.7

(Continued)

TABLE 1. RASH Analysis Item-Fit Statistics Values for KSH Scale (Continued)

FACTORS	ITEM NUMBER	b	SE	INFIT		MNSQ		OUTFIT		OBSERVED PMC	EXPECTE D PMC	OBSERVED FIT	EXPECTED FIT
				MNSQ	ZSTD	MNSQ	ZSTD	MNSQ	ZSTD				
F3: Sexual assault and harassment	KSH 22	0.78	0.14	1.18	2.8	1.24	2.4	1.24	2.4	.54	.60	64.8	72.2
	KSH 23	0.76	0.14	0.97	-0.5	1.01	0.1	1.01	0.1	.61	.61	74.1	72.2
	KSH 24	0.16	0.15	0.78	-3.1	0.63	-3.9	0.63	-3.9	.70	.62	83.3	77.6
	KSH 25	1.15	0.13	0.98	-0.4	1.04	0.4	1.04	0.4	.60	.60	74.1	70.4
	KSH 26	-2.28	0.26	1.10	0.6	0.92	-0.1	0.92	-0.1	.61	.62	91.8	93.6
	KSH 27	-2.11	0.37	0.98	0.0	0.96	0.1	0.96	0.1	.71	.71	93.5	93.5
	KSH 28	0.86	0.19	0.83	-2.7	0.79	-2.4	0.79	-2.4	.76	.71	79.1	68.1
	KSH 29	0.82	0.19	1.30	4.0	1.39	3.8	1.39	3.8	.63	.71	51.1	68.3
	KSH 30	0.27	0.20	0.80	-2.2	0.76	-2.2	0.76	-2.2	.76	.71	77.7	73.8
	KSH 31	0.15	0.20	1.07	0.7	1.07	0.6	1.07	0.6	.69	.71	74.1	75.4

b = difficulty parameter; KSH = Knowledge of Sexual Healthcare; MNSQ = mean-square; PMC = point-measure correlation coefficient; SE = standard error; ZSTD = z standardized score.

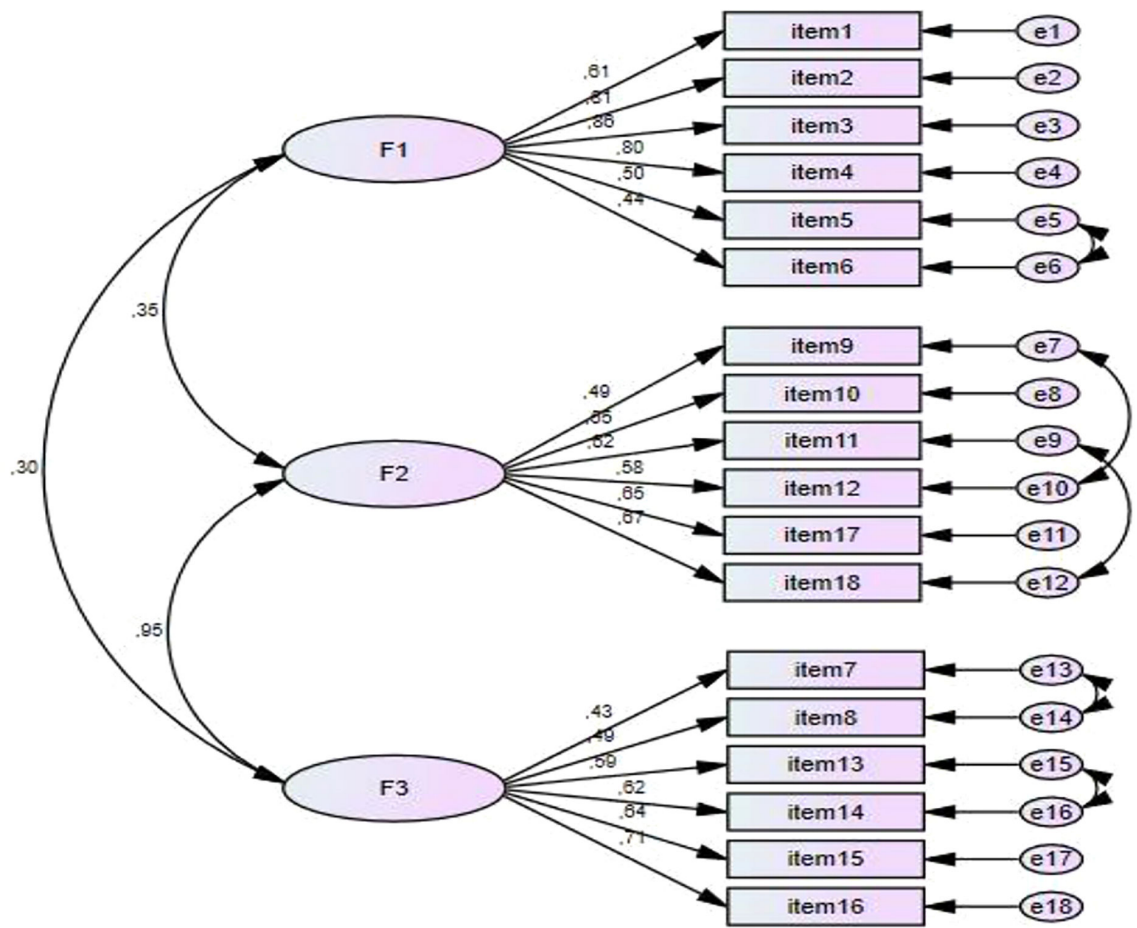


Figure 1. 3D first-order CFA model for ASH scale. *Note.* ASH = Attitude to Sexual Healthcare; CFA = confirmatory factor analysis.

The ICC analysis determined the first ($r = .74$), second ($r = .672$), and third sub-dimensions ($r = .650$), and the total scale ($r = .718$) scores.

DISCUSSION

There is a need to have comprehensive instruments assessing the readiness of nursing students to provide sexual healthcare in Turkey. In this study, the Turkish versions of the KSH, ASH, and SESH scales were developed, and the content, construct validity, and reliability of each scale were evaluated.

The original KSH scale consists of 3 subscales and 31 items (Sung, 2011). It was determined that the fit values were appropriate following the analyses applied to the KSH scale (Rantanen et al., 2019). The standard errors in the proposed instruments were within the range of $<.5$, indicating that decisive results are produced by the KSH. In the Rasch analysis, two types of reliability indices were estimated: person reliability and item reliability. Like reliability, dissociation is an indicator of the repeatability of the item and individual parameters (Wright & Masters, 1981). The acceptable values for person and item reliability are those higher than .80. The values of dissociation indices are acceptable when they exceed 1.50 (Linacre, 2018). Following the analysis, it was determined that these values were at an acceptable level on the KSH scale. The scales with a Cronbach's alpha value above .70 have internal consistency and are reliable (Nunnally, 1978, pp. 245–246). In the Rasch analysis, the item reliability value were interpreted as the KR-20 reliability coefficients. Therefore, the reliability coefficient of the scale was found to be .99. Following the ICC analysis, the total scale score ($r = .629$) showed a statistically significant degree of agreement. When the obtained weathering index values and reliability values were interpreted, it was concluded that the measurement tool is reliable. For the KSH scale, 1 point was given for the correct answer, and 0 points were given for the wrong and “do not know”

TABLE 2. Exploratory Factor Analysis Results for SESH Scale

	LOADINGS	EIGENVALUE	VARIANCE DESCRIPTION RATIO
F1: Communication skill			
SESH 3	.827	3,751	25,004
SESH 1	.778		
SESH 4	.739		
SESH 2	.650		
SESH 10	.631		
SESH 11	.600		
SESH 17	.586		
F2: Providing support and information			
SESH 22	.796	2,918	19,455
SESH 6	.790		
SESH 13	.706		
SESH 21	.679		
F3: Self-management			
SESH 14	.820	2,579	17,192
SESH 7	.766		
SESH 19	.754		
SESH 20	.537		

SESH = Self-Efficacy for Sexual Healthcare.

answers. Total obtainable scores from the scale are between 0 and 31. The higher the score on the scale, the higher the knowledge levels about sexual healthcare.

The original ASH scale consists of 3 subscales and 18 items (Sung, 2011). When the χ^2/df , IFI, CFI, RMSEA, and SRMR fit values obtained as a result of CFA are analyzed, it is seen that the ASH scale generally provides a good fit (Hu & Bentler, 1999, p. 27; Meydan, 2011, p. 37; Tabachnick & Fidel, 2001, pp. 699–700). If the item–total score correlation coefficient is below .30, these items are considered to have a serious problem, and these items can be removed from the scale (Şencan, 2005, pp. 249–260; Alpar, 2012, pp. 494–498). In this study, none of the item–total correlation coefficients were below .30. When any item was deleted in the item analysis, it did not significantly change the Cronbach's alpha value. Therefore, no item was removed from the ASH scale. The Cronbach's alpha value of the scale was .864. This value is higher than the generally acceptable value of .70 (Nunnally, 1978, pp. 245–246). Following the ICC analysis, the total scale score ($r = .832$) showed a statistically good fit. When the obtained fit values and reliability values were interpreted, it was concluded that the measurement tool is valid and reliable. The ASH scale is a 5-point Likert-type scale, and the scores that can be obtained from the scale vary between 18 and 90. A high score indicates a positive attitude toward sexual health services.

The original SESH scale consists of 3 subscales and 22 items (Sung, 2011). The EFA and CFA were applied together because the fit values were not good as a result of CFA. As a result of the factor analysis applied in our study, the number of items decreased from 22 to 15. The items of this 15-item scale were grouped into three factors, and all factor loadings were above .5.

The SESH scale explains 61.65% of the total variance. When the χ^2/df (3,455), IFI (.922), CFI (.922), RMSEA (.080), and SRMR (.056) fit values obtained as a result of CFA were examined; it was determined that the structure of the SESH scale consisting of 15 items generally provided a good fit (Hu & Bentler, 1999, p. 27; Meydan, 2011, p. 37; Tabachnick & Fidel, 2001, pp. 699–700). In this study, none of the item–total correlation coefficients were below .30. The Cronbach's alpha value for the whole scale was .902. This value is higher than

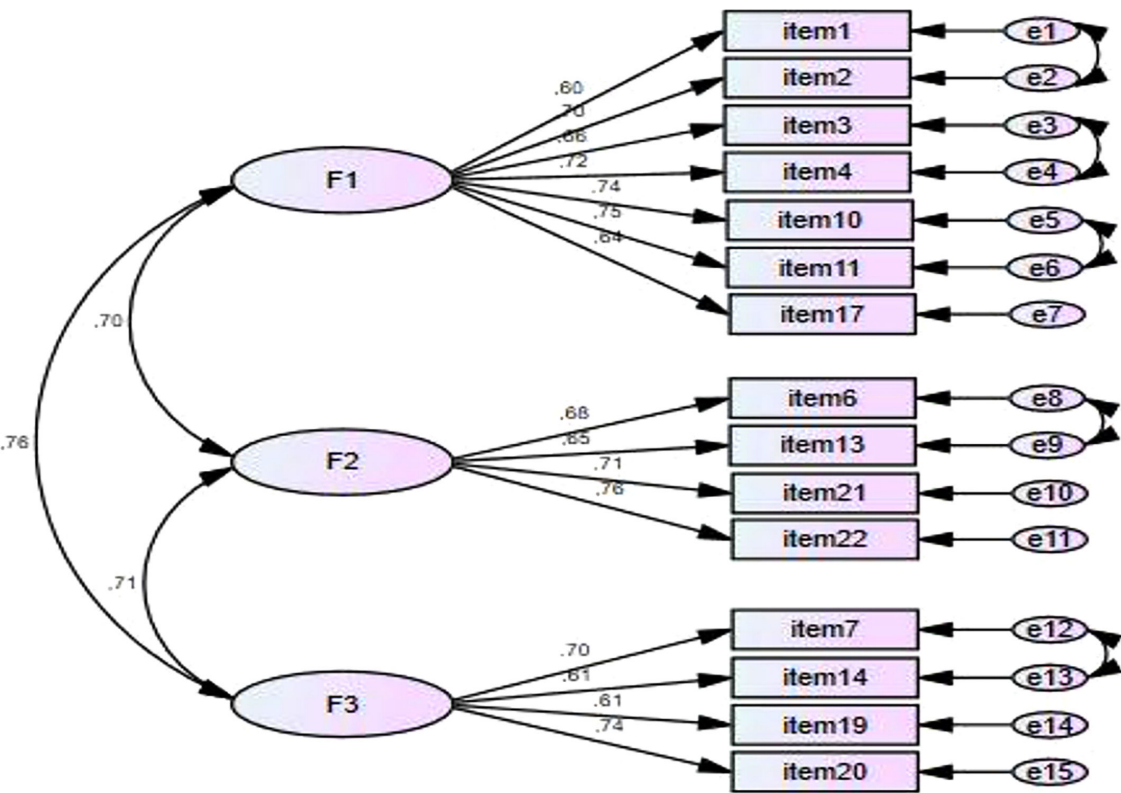


Figure 2. 3D first-order CFA model for SESH scale. *Note.* CFA = confirmatory factor analysis; SESH = Self-Efficacy for Sexual Healthcare.

the generally acceptable value of .70 (Nunnally, 1978, pp. 245–246). Following the ICC analysis, the total scale score ($r = .718$) showed a statistically good fit. When the fit and reliability values obtained from the analysis of the 15-item SESH scale were interpreted, it was concluded that the measurement tool is valid and reliable. The scores that can be obtained from the final 15-item version of the 5-point Likert-type SESH scale range from 15 to 75. A higher score on the scale indicates a higher level of confidence in providing sexual healthcare services.

As a result, the KSH, ASH, and SESH scales determine the level of knowledge, attitude, and self-efficacy toward sexual healthcare, respectively. According to the findings of this study, the Turkish versions of the KSH and ASH scales have adequate validity and reliability in this sample. After seven items were removed from the original SESH scale, the items showed a different distribution within the factors (first factor: items 1–4, 10, 11, and 17; second factor: items 6, 13, 21, and 22; and third factor: items 7, 14, 19, and 20), and a new structure was formed. In the newly formed structure, the items in the factors were found to be theoretically semantically compatible with each other. The Turkish version of the 15-item and three-sub-dimensional structure of the SESH scale has adequate validity and reliability. The study showed that the Turkish version of the scales is sufficiently valid and reliable for Turkish student nurses based on the psychometric properties of the final versions.

LIMITATIONS

Limitations of this study include the following: all participants were student nurses, and the study was conducted at a single university. Additionally, potential linguistic or cultural issues with the translated questionnaire could affect its psychometric performance.

RELEVANCE TO NURSING PRACTICE, EDUCATION, OR RESEARCH

These scales will allow nursing educators to assess nursing students’ readiness to provide sexual healthcare services. Nursing educators can identify gaps in knowledge, attitudes, and self-efficacy regarding sexual healthcare and adapt educational programs to improve these areas. Researchers can use these scales to conduct

studies on the impact of sexual health-related educational interventions on students’ knowledge, attitudes, and self-efficacy. Additionally, these tools may be helpful in comparing the competencies of nursing students in different cultural contexts. Moreover, since the scales in the questionnaire are three different scales, they can be used separately in future studies.

REFERENCES

- Alpar, R. (2012). *Uygulamalı istatistik ve geçerlik-güvenirlik. [Applied statistics and validity-reliability]* (2nd ed., pp. 494–498). Detay Yayıncılık.
- Areskoug-Josefsson, K., Juuso, P., Gard, G., Rolander, B., & Larsson, A. (2016). Health care students’ attitudes toward addressing sexual health in their future profession: Validity and reliability of a questionnaire. *International Journal of Sexual Health*, 28(3), 243–250. <https://doi.org/10.1080/19317611.2016.1199453>
- Ayala, R. J. (2009). *The theory and practice of item response theory*. Guilford Press.
- Ayhan, H., Iyigun, E., Tastan, S., & Coskun, H. (2010). Turkish version of the reliability and validity study of the sexual attitudes and belief survey. *Sexuality and Disability*, 28(4), 287–296. <https://doi.org/10.1007/s11195-010-9157-5>
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185–216. <https://doi.org/10.1177/135910457000100301>
- Davis, L. L. (1992). Instrument review: Getting the most from a panel of experts. *Applied Nursing Research*, 5(4), 194–197. [https://doi.org/10.1016/S0897-1897\(05\)80008-4](https://doi.org/10.1016/S0897-1897(05)80008-4)
- Devellis, R. F. (2017). *Ölçek geliştirme, kuram ve uygulamalar [Scale development, theory and applications]* (Tarkan Totan [trans. eds], 3rd ed., pp. 156–158). Nobel Akademik Yayıncılık.
- Evcili, F., & Gölbaşı, Z. (2017). Cinsel Sağlık Bilgi Testi: geliştirme, geçerlik ve güvenirlik çalışması [Sexual Health Information Test: Developing, reliability and validation]. *Acıbadem Üniversitesi Sağlık Bilimleri Dergisi*, 2017(1), 29–33.
- Hair, J., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2005). *Multivariate data analysis* (6th ed., p. 791). Pearson, Prentice Hall.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Kılıç, A. F., & Koyuncu, İ. (2017). *Ölçek uyarlama çalışmalarının yapı geçerliği açısından incelenmesi. Küreselleşen Dünyada Eğitim [Examining scale adaptation studies in terms of construct validity. Education in a globalizing world]* (pp. 415–438). Pegem Akademi.
- Linacre, J. M. (2018). *A user’s guide to winsteps*. Winsteps.com.
- LoGiudice, J. A., & Douglas, S. (2016). Incorporation of sexual violence in nursing curricula using trauma-informed care: A case study. *Journal of Nursing Education*, 55(4), 215–219. <https://doi.org/10.3928/01484834-20160316-06>
- Lu, M. J., Li, J. B., Wu, C. Y., Huang, P. T. T., Hsu, P. C., & Chang, C. R. (2024). Effectiveness of a sexual health care training to enhance psychiatric nurses’ knowledge, attitude, and self-efficacy: A quasi-experimental study in southern Taiwan. *Journal of the American Psychiatric Nurses Association*, 30(1), 17–29. <https://doi.org/10.1177/10783903211045733>
- Meydan, C. H. (2011). *Yapısal eşitlik modellemesi AMOS uygulamaları [Structural equation modeling, AMOS applications]* (p. 37). Detay Yayıncılık.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed., pp. 245–246). McGraw Hill.
- Polit, D. F., Beck, C. T., & Owen, S. V. (2007). Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing & Health*, 30(4), 459–467. <https://doi.org/10.1002/nur.20199>
- Rantanen, T., Portegijs, E., Kokko, K., Rantakokko, M., Törmäkangas, T., & Saajanaho, M. (2019). Developing an assessment method of active aging: University of Jyväskylä active aging scale. *Journal of Aging and Health*, 31(6), 1002–1024. <https://doi.org/10.1177/0898264317750449>
- Şencan, H. (2005). *Sosyal ve davranışsal ölçümlerde güvenirlik ve geçerlilik [Reliability and validity in social and behavioral measures]* (pp. 249–260). Seçkin Yayınevi.
- Sung, S. C. (2011). *The effectiveness of “Sexual Issues and Nursing Profession Development Program” in nursing students’ knowledge, attitudes, and self-efficacy on sexual healthcare*. [Unpublished Doctoral Dissertation]. Shu-Te University.
- Sung, S. C., Huang, H. C., & Lin, M. H. (2015). Relationship between the knowledge, attitude, and self-efficacy on sexual health care for nursing students. *Journal of Professional Nursing*, 31(3), 254–261. <https://doi.org/10.1016/j.profnurs.2014.11.001>
- Sung, S.-C., Jiang, H.-H., Chen, R.-R., & Chao, J.-K. (2016). Bridging the gap in sexual healthcare in nursing practice: Implementing a sexual healthcare training programme to improve outcomes. *Journal of Clinical Nursing*, 25(19–20), 2989–3000. <https://doi.org/10.1111/jocn.13441>
- Sung, S. C., & Lin, Y. C. (2013). Effectiveness of the sexual healthcare education in nursing students’ knowledge, attitude, and self-efficacy on sexual healthcare. *Nurse Education Today*, 33(5), 498–503. <https://doi.org/10.1016/j.nedt.2012.06.019>
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed., pp. 699–700). Allyn & Bacon, Inc.
- Tuğut, N., & Gölbaşı, Z. (2013). Öğrenci Hemşirelere Yönelik Cinselliği Değerlendirme Bilgi Testi’nin Geliştirilmesi, Geçerlik ve Güvenirliği [Developing, reliability and validation of sexuality assessment information test prepared for nursing students]. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, 16(3), 148–153.
- Turan, N., Çulha, Y., Özdemir Aydın, G., & Kaya, H. (2021). Reliability and validity of the adapted Turkish “students’ attitudes towards addressing sexual health questionnaire” (SA-SH-TR). *SAGE Open*, 11(1), 215824402198930. <https://doi.org/10.1177/2158244021989305>

- Wright, B. D., & Masters, G. N. (1981). *The measurement of knowledge and attitude*. Statistical Laboratory, Department of Education, University of Chicago.
- Wright, U. D., & Linacre, J. M. (1994). Reasonable mean-square fit values. *Rasch Measurement Transactions*, 8(3), 370.

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