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Use of Health Literacy Training Survey for Healthcare Providers in Turkish Nurses: A Psychometric Study

Huri Yoğurtcu[1],
Meryem Öztürk Haney[2]

[1]Dokuz Eylul University, Health Science Instutite, İzmir, Türkiye
[2]Department of Public Health Nursing, Nursing Faculty, Dokuz Eylul University, Izmir, Türkiye

Abstract

Background: Training nurses in health literacy and improving their communication with patients are crucial for increasing positive health outcomes. Therefore, programs aimed at enhancing the health literacy awareness of nurses and other health professionals, along with developing measurement tools to assess the effectiveness of these programs, should be organized.

Aim: This study aimed to test the validity and reliability of the Turkish version of the Health Literacy Training Survey for Healthcare Providers (HLTSHP-T).

Methods: This methodological study was conducted with 230 clinical nurses in Türkiye. The personal information form, the HLTSHP-T, and the Health Literacy Scale were used for data collection. Content validity, item analysis, construct validity, concordance validity, convergent validity, internal consistency, and item-total correlation were used for the analysis of the psychometric properties.

Results: Cronbach's α value for the overall scale was 0.93 and ranged between 0.87 and 0.90 for the subscales, while item-total correlations ranged from 0.56 to 0.83 ($P < 0.001$). The confirmatory factor analysis results showed that the scale items were compatible with the subscales and that the items could identify the factors to which they were related.

Conclusion: HLTSHP-T is considered a valid and reliable tool for assessing the health literacy education of Turkish nurses.

Keywords: Health literacy, healthcare providers, nurses, reliability, Türkiye

Introduction

Health literacy is noted as a priority public health goal for healthcare delivery worldwide in the twenty-first century.[1] Health literacy is defined as the cognitive and social skills that enable individuals to access, understand, and use information for the protection and improvement of their health, as well as determine their motivation and abilities.[2] It is a multifaceted concept that includes cognitive, social, and guiding skills such as language proficiency, reading and quantitative skills, understanding risks and possibilities, and communication skills necessary to interact with healthcare providers.[1-3] Developing health literacy improves individuals' quality of life and enables them to participate in care-related decision-making processes.[4]

Health professionals are expected to educate patients about health and improve their health literacy levels.[5] Nurses play a critical role in the development of health literacy by facilitating communication processes.[6,7] Evaluating the individual motivation of the patient, identifying barriers to understanding, maintaining clear communication, making health information readable and accessible, adapting health messages to the cultural and linguistic needs of the patient, supporting the health-related decision-making process, and facilitating patient understanding and empowerment are basic health literacy development strategies that nurses can use.[7] The use of clear communication techniques (speaking slowly, using plain, non-medical language, drawing or showing pictures, limiting and repeating information, using teach-back and show-me techniques, providing a shame-free environment, and encouraging questioning) by nurses in interacting with patients is a priority in the development of health literacy.[6,8-10] Previous studies have revealed that nurses are not adequately trained in using clear communication techniques, assessing patients with low health literacy, and communicating with them.[11-14]

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Corresponding author: Huri Yoğurtcu
E-mail: huri.yogurtcu@gmail.com

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Training nurses about health literacy and improving their communication with patients are crucial for increasing positive health outcomes.[10] Therefore, programs aimed at improving the health literacy awareness of nurses and other health professionals and developing measurement tools to assess the effectiveness of these programs should be organized. A review of the Turkish literature demonstrated that studies on health literacy were mostly focused on determining the health literacy levels of health professionals and patients, as well as the factors affecting these levels.[15,16] Furthermore, there are no measurement tools developed in the Turkish literature to assess the health literacy knowledge, experience, awareness, perception, and educational skills of nursing professionals and/or other health professionals. It is thought that a measurement tool with established psychometric evaluation would contribute to the evaluation of training programs aimed at improving the health literacy knowledge, experience, awareness, and perceptions of nurses and health professionals. A review of the international literature demonstrated that the "Health Literacy Training Survey for Healthcare Providers (HLTSHP)" is a short, easy-to administer, self-assessment tool designed to assess health professionals' awareness of health literacy[12] and that it has been used in numerous studies.[12,13,17] This study is important for recognizing and addressing the deficiencies of nurses and other health professionals in using clear communication techniques and evaluating and communicating with patients with low health literacy. This study aimed to assess the cultural suitability and psychometric properties of the Turkish version of the Health Literacy Training Survey for Healthcare Providers (HLTSHP-T) for Turkish society. It also aimed to compare the HLTSHP-T scores based on the participants' characteristics.

According to this objective, the research questions are as follows:

1. Is the Turkish version of the HLTSHP-T a valid measurement tool?
2. Is the Turkish version of the HLTSHP-T a reliable measurement tool?

Materials and Methods

Study Design

This methodological study was conducted with nurses working in two public training and research hospitals in Türkiye between February and June 2021.

Setting and Sampling

In determining the sample size in scale studies, the minimum sample size should ideally be ten times the number of items in the scale, but at least 100. Thus, the minimum sample size was calculated as 130 participants, corresponding to ten times the total number of items (13) in the scale.[18] However, to increase the generalizability of the study, all nurses who agreed to participate were included without additional sampling. The criteria for inclusion were voluntary participation and a minimum of six months of nursing experience. In the two hospitals, 1,118 nurses were employed. Of these, 230 volunteered to participate in the study. The response rate was 20%, as some nurses were on annual or maternity leave, and others had a busy work schedule due to the coronavirus disease 2019 (COVID-19) pandemic. The power of the study was calculated using the "G*Power-3.1.9.2" program. According to the results of the analysis applied to 230 participants, the effect size was 0.420 at the $\alpha = 0.05$ level, and the post-hoc power of the study was calculated as 0.803. The minimum power value for post-hoc analysis should be 0.67. Thus, the power of the study was at an acceptable level, and the number of participants was sufficient.

Data Collection Tools

The study data were collected using the Personal Information Form, the Turkish version of the Health Literacy Training Survey for Healthcare Providers (HLTSHP-T), and the Health Literacy Scale.

Personal Information Form

The personal information form, created by the researchers, includes eight items questioning the participants' age, sex, marital and educational status, the unit they work in, length of service in nursing, work schedule, and perception of health status.

Health Literacy Training Survey for Healthcare Providers

The scale, developed by Mackert, Ball, and Lopez (2011), is used to evaluate the effectiveness of programs designed to improve the health literacy education skills of health professionals. This self-assessment scale is administered to assess health professionals' basic knowledge about health literacy, ability to cope with patients with low health literacy, frequency of using clear communication techniques, and their intention to use these techniques. The 13-item scale evaluates three main areas: basic knowledge (items 1-4), ability to identify patients with low health literacy (items 5-7), and frequency of using clear communication techniques (items 8-13). Responses to the items are rated on a 7-point Likert-type scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). Higher total scores indicate better health literacy education skills of health professionals. In studies where the HLTSHP was administered, its Cronbach's alpha value was not mentioned.[12,13,17]

Translation and Content Validity of the Health Literacy Training Survey for Healthcare Providers

In this study, the HLTSHP scale was translated into Turkish using the back translation method. The back-translated and original HLTSHPs were compared and found to be consistent with each other. The Content Validity Index (CVI) was evaluated using the Dawis technique with expert opinions.[19] Eight health professionals who were experts in public health and nursing were given the original HLTSHP and HLTSHP-T together. They rated the Turkish statements on the scale from 1 (not appropriate) to 4 (very appropriate). Based on their scores, the scale level CVI (S-CVI) and item level CVI (I-CVI) were calculated for the HLTSHP-T. The value of 0.80 was accepted as the criterion for high content validity.[20] The pilot study of the final version of the HLTSHP-T was carried out with 20 nurses who were not included in the sample.

Health Literacy Scale

The health literacy levels of the participating nurses were determined using the "Health Literacy Scale" (HLS). The 25-item scale is the short form of the Health Literacy Survey in Europe (HLS-EU), simplified by Toci, Bruzari, and Sorenson.[21,22] The Cronbach's alpha coefficients for the health literacy scale and its subscales ranged between 0.90 and 0.92.[23] The scale was adapted for Turkish society by Aras and Bayık Temel (2017).[24] The scale consists of 25 items and 4 subscales: Accessing information (items 1-5), Understanding information (items 6-12), Valuing/Evaluating (items 13-20), and Implementing/Using (items 21-25). Responses to the items are rated on a 5-point Likert-type scale ranging from 1 to 5 (1 = I am unable to do / I have no ability / impossible, 2 = I have a lot of difficulties, 3 = I sometimes have difficulties,

4=I have difficulties, 5=I have no difficulty). The total score that can be obtained from the scale is between 25 and 125. All the items on the scale are positively keyed. The Cronbach's alpha value was 0.92 for the overall scale and ranged from 0.62 to 0.79 for the sub-dimensions.[24]

Data Collection

The researchers visited the participating nurses in the units where they worked, explained the purpose of the study to them, and invited them to participate. The researchers periodically visited the units where the nurses who agreed to participate worked, and after obtaining the nurses' written consent, they administered the data collection tools to them. The researchers explained any unclear points if there were any. The nurses completed the data collection tools one-on-one, unaided, and independently.

During this period, nurses who were on annual leave, maternity leave, or sick leave did not participate in the study. It took the nurses approximately 15-20 minutes to fill in the forms. During the data collection process, the nurses wore personal protective equipment (mask, apron, gloves, face shield, etc.) to guard against the risk of COVID-19 transmission. Data collection forms obtained from the nurses were kept for at least one week before being used for data recording.

Data Analysis

The Statistical Package for the Social Science (SPSS) 24.0 (IBM SPSS Corp., Armonk, NY, USA) program and the Analysis of Moment Structures (AMOS) 24.0 package program were used for the analysis, with statistical significance accepted as $P < 0.05$. The results of the Shapiro-Wilk test indicated that the data were normally distributed ($p > 0.05$). The personal characteristics of the nurses were presented using descriptive statistics. The validity of the scale was evaluated by item analysis, construct validity, concordance validity, and convergent validity. Item analysis was evaluated using the independent samples t-test. Construct validity was tested with confirmatory factor analysis (CFA) and exploratory factor analysis (EFA). Concordance validity was tested with S-CVI and I-CVI. In the test of convergent validity, the relationship between the nurses' HLTSHP-T scores and health literacy total and subscale scores was analyzed using Pearson correlation analysis. The reliability of the scale was evaluated by the internal consistency coefficient and item-total correlation. Internal consistency (Cronbach's alpha coefficient) and item-total correlation were evaluated using Pearson correlation analysis. A minimum value of 0.70 for Cronbach's alpha and a value between 0.30 and 0.70 for item-total correlations were determined as the acceptance criteria for reliability.[25, 26] Comparison of the HLTSHP-T score distributions according to the demographic characteristics of the participants was evaluated with the one-way analysis of variance (ANOVA) test and the post hoc Bonferroni test, while the t-test was used for independent groups.

Ethical Approval

Permission to adapt the HLTSHP into Turkish and to administer it in the study was obtained from its developers. Before conducting the study, ethical approval was obtained from the Ethics Committee of Dokuz Eylul University (Approval Number: 5389-GOA, Date: 18.01.2021) of the university to which the researchers were affiliated. Written permission was obtained from the Izmir Provincial Health Directorate and the management of the hospitals where the study was conducted. Written informed consent was obtained from the participating nurses. The study was conducted in accordance with the ethical standards established in the Declaration of Helsinki.

Results

Demographic Characteristics of the Participants

The mean age of the nurses was 31.9 ± 8.59 years. Of them, 50.4% were 20-29 years old, 78.7% were women, and 60% were single. Additionally, 68.3% had an undergraduate degree, 12.6% had a graduate degree, 58.7% worked in medical or surgical units, 40% had nursing experience of 6-12 months, 68.3% worked both night and day shifts, and more than half (53%) perceived their health as good (Table 1).

Validity of the HLTSHP-T

Concordance Validity of the HLTSHP-T

The opinions of eight experts were evaluated with CVI (S-CVI) at the scale level and CVI (I-CVI) at the item level. S-CVI was 97.3% and I-CVI ranged from 87.5% to 100.0%. The scores given by the experts were consistent with each other.

Item Analysis of the HLTSHP-T

Item analysis was carried out to determine the power of the scale in distinguishing nurses with high levels of health literacy awareness from those with low levels of health literacy awareness. Therefore, the total scores obtained by the participants from the scale were listed from highest to lowest. After this listing, the total scores were divided into the lower 27% and upper 27% groups, and the mean item scores of the nurses in these two groups were compared. Table 2 shows the mean item scores of the nurses in the upper and lower 27% groups according to their HLTSHP-T scores. According to the independent samples t-test results, there was a significant difference between the item scores of the groups ($P < 0.001$). This difference was in favor of the upper 27% group.

Construct Validity of the Scale

The suitability of the study data for factor analysis was evaluated with the Kaiser-Meyer-Olkin (KMO) test, and the consistency of the items/variables was evaluated with Bartlett's Test of Sphericity (BTS). In the present study, the KMO value was 0.918, the BTS value was $x^2 = 2054.525$, which was considered statistically significant, and the df value was 78, $P < 0.001$. The Varimax rotation method and principal component analysis were performed to analyze the factor structure of the scale. Three factors were determined according to the Varimax rotation method. These three sub-dimensions accounted for 54.48%, 12.31%, and 7.15% of the total variance, respectively. According to the Exploratory Factor Analysis (EFA) results, three factors with eigenvalues above 1 were identified for the 13 items. The eigenvalues of the factors were: F1=7.083, F2=1.601, F3=1.000. These factors accounted for 73.952% of the total variance. The factor loadings of the items varied between 0.486 and 0.853 (Table 3).

In the present study, CFA was used to test the Turkish version of the original three-factor scale. The criteria defining the model fit are shown in Table 4. The three-factor model showed an acceptable fit for most of the criteria [root mean square error of approximation (RMSEA)=0.074, goodness of fit index (GFI)=0.915, comparative

Table 1. Descriptive Characteristics of Nurses (n=230)

Characteristics	n	
Age (Mean ± SD) (years)	(31.9 ± 8.59)	
20-29	116	50.4
30-39	52	22.6
40-49	56	**24.3**
50-59	6	2.6
Gender		
Female	181	**78.7**
Male	49	21.3
Marital Status		
Married	92	40.0
Single	138	60.0
Educational Status		
High School or Equivalent	24	10.4
Associate Degree	20	8.7
Graduate Degree	157	68.3
Master's Degree/Doctorate	29	12.6
Unit Worked in		
Medical and Surgical Units	135	58.7
Intensive Care Unit	32	13.9
Other clinics (Outpatient Clinics, Endoscopy Unit, Operating Room)	63	27.4
Nursing Experience		
6-12 months	92	40.0
13-60 months	25	10.9
61-120 months	29	12.6
121 months or more	84	36.5
Working Schedule		
Only night	24	10.4
Both day and night	157	68.3
Only day	49	21.3
Perception of Health Status		
Poor	12	**5.2**
Moderate	63	27.4
Good	122	53.0
Very good	33	14.3

fit index (CFI) = 0.962, normal fit index (NFI) = 0.935, adjusted GFI (AGFI) = 0.872, $x^2 = 136.046$, df = 60, $x^2/df = 2.267$, P < 0.001]. The CFA results showed that factor loadings were between 0.80 and 0.86 for factor 1 (basic knowledge), between 0.78 and 0.89 for factor 2 (ability to identify patients with low health literacy), and between 0.53 and 0.81 for factor 3 (frequency of using clear communication techniques) (Figure 1). The CFA results demonstrated that the scale items were compatible with the subscales and that the items could identify the factors associated with them.

Table 2. Comparison of 27% Lower-Upper Group Mean Values of Scale Items

Item	Group	n	Mean	Standard Deviation	t	P*
1	Lower	62	3.32	1.21	-18.30	0.000
	Upper	62	6.61	0.73		
2	Lower	62	3.24	1.18	-15.32	0.000
	Upper	62	6.32	1.05		
3	Lower	62	3.27	1.13	-15.31	0.000
	Upper	62	6.32	1.08		
4	Lower	62	3.69	1.36	-15.58	0.000
	Upper	62	6.41	0.80		
5	Lower	62	3.25	1.17	-18.29	0.000
	Upper	62	6.45	0.71		
6	Lower	62	3.72	1.14	-13.37	0.000
	Upper	62	6.29	0.98		
7	Lower	62	3.66	1.21	-12.07	0.000
	Upper	62	6.22	1.15		
8	Lower	62	3.25	1.39	-14.41	0.000
	Upper	62	6.30	0.91		
9	Lower	62	4.12	1.26	-11.35	0.000
	Upper	62	6.38	0.92		
10	Lower	62	2.98	1.34	-9.80	0.000
	Upper	62	5.61	1.62		
11	Lower	62	3.72	1.20	-15.32	0.000
	Upper	62	6.45	0.71		
12	Lower	62	3.77	1.16	-13.11	0.000
	Upper	62	6.33	1.00		
13	Lower	62	4.41	1.28	-11.64	0.000
	Upper	62	6.58	0.69		

*P < 0.001.

Convergent Validity of the Scale

A positive significant relationship was found between the scores the nurses obtained from the HLTSHP-T and the overall HLS and its subscales (accessing information, understanding information, valuing/evaluating, implementing/using) (r=0.45, 0.40, 0.38, 0.42, and 0.38, respectively, P < 0.001). The correlation analysis results showed that the HLTSHP-T had acceptable convergent validity.

Table 3. Health Literacy Training Survey for Healthcare Providers Item Analysis and Explanatory Factor Analysis Results

Items	Mean ± SD	Item-Total Correlation	Cronbach α When the Item Was Deleted	Factor (Varimax Rotated) 1	2	3	Communalities
Item 1	5.24 ± 1.66	0.785	0.919	0.743			0.744
Item 2	4.76 ± 1.65	0.711	0.922	0.853			0.783
Item 3	4.96 ±1.56	0.777	0.919	0.846			0.824
Item 4	5.13 ± 1.51	0.770	0.919	0.791			0.777
Item 5	5.08 ± 1.58	0.828	0.917			0.639	0.771
Item 6	5.26 ± 1.42	0.780	0.919			0.741	0.774
Item 7	5.1 5± 1.50	0.718	0.921			0.715	0.705
Item 8	4.93 ± 1.64	0.722	0.921		0.657		0.675
Item 9	5.30 ± 1.37	0.717	0.921		0.542		0.657
Item 10	4.22 ± 1.86	0.557	0.931		0.823		0.765
Item 11	5.12 ± 1.47	0.730	0.921		0.790		0.764
Item 12	5.17 ± 1.43	0.734	0.921		0.736		0.708
Item 13	5.64 ± 1.27	0.722	0.921		0.486		0.667
Eigenvalues				7.083	1.601	1.000	
Variance Explained (%)				54.487	12.315	7.150	73.952

Table 4. Model Fit Indices for Confirmatory Factor Analysis

x^2	*df*	*p*	x^2/df	GFI	CFI	NFI	AGFI	RMSEA
136.046	60	<0.001	2.267	0.915	0.962	0.935	0.872	0.074

Reliability of HLTSHP-T

The Cronbach's alpha (α) was 0.93, 0.90, 0.88, and 0.87 for the overall HLTSHP-T and its basic knowledge, ability to identify patients with low health literacy, and frequency of using clear communication techniques sub-dimensions, respectively. The item-total correlations of the scale items were between 0.56 and 0.83 (P < 0.001). There was no increase in the Cronbach's alpha value when any of the scale items were removed. Hotelling's T-Squared was 171.477, F was 13.603, and P was < 0.001. There is no response bias in the scale. These results showed that the reliability of the scale was satisfactory.

The Relationship Between Descriptive Characteristics and HLTSHP-T Scores

The distribution of the HLTSHP-T scores according to the descriptive characteristics of the participants is shown in Table 5. A statistically significant difference was found between the HLTSHP-T scores of the nurses according to age groups (P < 0.05). According to the Bonferroni test, the mean HLTSHP-T score of the nurses in the 40-49 age group was higher than that of the nurses in the 20-29 age group (69.94 ± 15.08 and 63.60 ± 13.94, respectively).

A statistically significant difference was found between the HLTSHP-T scores of the nurses according to the units where they worked (P < 0.05). In the Bonferroni test, the mean scores of the nurses working in clinics such as polyclinics, endoscopy units, outpatient treatment units, and operating rooms (other clinics) were higher than those of the nurses working in medical and surgical units (69.38 ± 12.78 and 63.85 ± 14.88, respectively).

A statistically significant difference was found between the HLTSHP-T scores of the nurses according to their perception of health status (P < 0.05). Further analysis showed that the mean HLTSHP-T score of the nurses with a poor health perception was significantly lower than that of the nurses with moderate, good, and very good health perception (51.66 ± 19.52, 64.85 ± 14.21, 66.81 ± 13.35, and 66.02 ± 14.63, respectively).

There was no statistically significant difference between the HLTSHP-T scores of the participants according to sex, marital status, education level, length of nursing experience, and work schedule variables (p > 0.05).

Discussion

For the adaption of the original HLTSHP to Turkish society in the present study, the original scale was first translated from English to Turkish and back-translated, and then its validity and reliability were evaluated.[27] In the evaluation of the content validity index of the scale, experts experienced in the fields of public health and nursing were consulted to determine the quantitative and qualitative adequacy of the items.[28,19] Experts agreeing on the understandability and appropriateness of the scale items is accepted as an indicator of

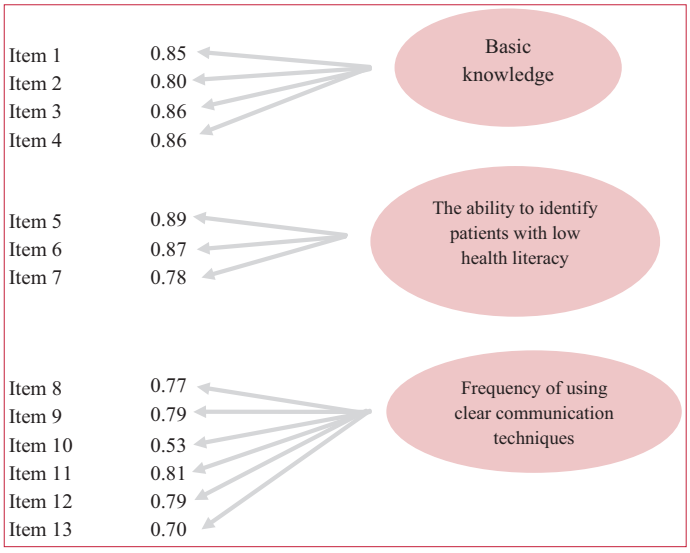

Figure 1. Confirmatory factor analysis of HLTSHP-T for Turkish nurses. Chi-square = 136.046; df = 60; P < 0.001; RMSEA = 0.074; GFI = 0.915; CFI = 0.962; NFI = 0.935; AGFI = 0.872.

the content validity of the scale. In the present study, content validity was evaluated with I-CVI and S-CVI based on expert opinions. An agreement rate of at least 80% between expert opinions was considered acceptable for content validity.[28] Both I-CVI and S-CVI values in the present study (87.5%-100.0% and 97.3%, respectively) were higher than the accepted reference values. In line with these results, the HLTSHP scale was determined to be suitable for Turkish culture, achieving content and concordance validity.

Another method to determine the validity of the scale items is to compare the mean scores of the 27% lower and upper groups. The main characteristic of this approach is that the scale predicts a statistical difference for each item between the 27% lower group and the 27% upper group in terms of the feature to be measured. If there is no difference, it is assumed that the relevant item does not have the discriminative power for this difference and should not be included in the scale.[29] The results of the present study demonstrated that all the items in the HLTSHP-T could distinguish nurses in the lower group from those in the upper group in terms of their levels of health literacy knowledge, ability, and skill. The suitability of the data and sample size for factor analysis was tested using Bartlett's test of sphericity and the KMO values test. Bartlett's test of sphericity being statistically significant indicates that the scale items are suitable for factor analysis, and KMO values of 0.80 and above indicate that the sample is suitable for factor analysis.[30] In the present study, KMO (0.918) and the results of Bartlett's test of sphericity ($x^2 = 2054.525$, df = 78, P < 0.001) were statistically significant, indicating that the data was suitable for factor analysis.

The results of the exploratory factor analysis demonstrated that the HLTSHP-T was grouped under three factors, which accounted for 73.952% of the total variance. The high level of variance explained shows that the scale has a strong structure.[31] In the present study, factor loadings in the EFA ranged between 0.486 and 0.853. The factor loading of each factor being more than 0.30 indicates that the scale has a strong factor structure. In the literature, it is recommended that the factor loading should be at least 0.30 and that items with factor loadings below this value should be removed.[26] The results of the present study indicated that the factor loadings in the EFA were at the desired level. Confirmatory factor analysis (CFA) is performed to determine whether the items are adequately represented in the determined subscales and whether these items are sufficient to explain the structure of the scale.[32] The Root Mean Square Error of Approximation, Comparative Fit Index, Goodness of Fit Index, and Normal Fit Index values were used for the model fit indices evaluation criteria of the scale. In the literature, if the RMSEA value is below 0.80, it is considered acceptable. CFI, NFI, and AGFI values greater than or equal to 0.90 indicate acceptable model fit.[33] In the present study, GFI, CFI, and NFI values among the model fit indices of HLTSHP-T were greater than 0.90, x^2/df was less than 5, and RMSEA was 0.74, indicating acceptable levels. The results of the present study could not be compared with those of other studies since the model fit indices were not specified in the study conducted by Mackert, Ball, and Lopez (2011), and there was no psychometric evaluation of the scale in a different culture in the literature. The analysis of the model fit indices of the study demonstrated that the model was fit, confirming the three-factor structure of the scale, and that the items and sub-dimensions of the scale were related to the scale.

The relationship between two measures evaluating the same construct is evaluated with convergent validity. In the present study, the relationship between HLTSHP-T and the subscales of the HLS was evaluated for convergent validity.[25] The results demonstrated that there was an acceptable relationship between HLTSHP-T and the HLS and its sub-dimensions. HLTSHP-T, which was used to identify nurses with low levels of literacy knowledge, ability, and skill, effectively distinguished nurses with high health literacy levels from those with low health literacy levels.

The internal consistency of a scale is accepted as a measure of the homogeneity of the items. In the literature, an internal consistency coefficient value above 0.70 is noted as an acceptable level of reliability.[25] The results of the present study indicated that the internal consistency values for the overall HLTSHP-T and its subscales were acceptable, ranging between 0.87 and 0.93. Furthermore, item-total correlations ranging between 0.56 and 0.83 were within the values recommended in the literature (between 0.30 and 0.70).[26] It was not possible to compare the results of the present study with those of the original study because the internal consistency coefficient value was not specified for the overall scale and its subscales in the original study.[12] Response bias is an important issue because it affects the reliability of the scale. Response bias refers to respondents filling out the scale according to the expectations of the researchers or society.[34] In the present study, the result of Hotelling's T-Squared test was considered significant. This finding shows that nurses answered according to their own opinions, their answers were different from each other, and there was no response bias. The study findings showed that as the age of the nurses increased, their levels of health literacy education skills (basic knowledge, ability to deal with patients with low health literacy, and the intention and frequency of using clear communication techniques) increased. Similarly, in their study[13] investigating health literacy education skills of nurses and other health professionals, Coleman and Fromer[13] found a positive significant relationship between the age of the participants and their level of education skills. This finding suggests that nurses, having more experience with the increase in their age, may improve their health literacy education skills.

Table 5. Distribution of HLTSHP-T Scores According to the Characteristics of Nurses (n=230)

Characteristics	n	%	HLEASHP-T (Mean ± SD)	Test Value	P*
Age (Years)					
20-39	168	73.0	64.38 ± 14.35	-2.832	
40-59	62	27.0	70.45 ± 14.55		0.005*
Sex					
Women	181	78.7	66.67 ± 14.66	1.312	0.191
Men	49	21.3	63.59 ± 14.38		
Marital Status					
Married	92	40.0	66.09 ± 16.76	0.061	0.951
Single	138	60.0	65.97 ± 13.08		
Educational Status					
High School or Equivalent	24	10.4	65.45 ± 12.68		
Associate Degree	20	8.6	63.60 ± 15.06	0.541	0.654
Undergraduate/Graduate	157	68.2	65.90 ± 14.95		
Master's Degree/Doctorate	29	12.6	68.79 ± 14.36		
Working Unit					
Medical or Surgical Clinics (a)	135	58.6	63.85 ± 14.88		
Intensive Care Unit (b)	32	13.9	68.53 ± 15.70		0.026*
Other Clinics (c)	63	27.3	69.38 ± 12.78	3.690	c>a
Nursing Experience					
6 months - 12 months	92	40	64.47 ± 12.89		
13 months - 60 months	25	10.8	61.48 ± 15.54	2.137	0.096
61 months - 120 months	29	12.6	67.27 ± 13.64		
121 months or more	84	36.5	68.63 ± 16.11		
Working Schedule					
Only night	24	10.4	65.33 ± 15.37		
Both day and night	157	68.2	64.95 ± 14.83	2.075	0.128
Only day	49	21.3	69.77 ± 13.21		
Perception of Health Status					
Poor (a)	12	5.2	51.66 ± 19.52		
Moderate (b)	63	27.3	64.85 ± 14.21		
Good (c)	122	53	66.81 ± 13.35	4.864	0.003*
Very good (d)	33	14.3	66.02 ± 14.63		a<b,c,d

*P < 0.05.

Furthermore, the findings indicated a relationship between the participating nurses' health literacy education skills levels and the units they worked in. The health literacy education skills of the nurses working in clinics such as polyclinics, endoscopy units, outpatient treatment units, and operating rooms (other clinics) were better than those of the nurses working in medical and surgical units. These findings were not compared with those of other studies due to a gap in the literature regarding studies that compare the health literacy education skills of nurses according to the units they work in. Moreover, the importance of health literacy education has been emphasized so that health professionals can improve their health literacy education skills, communicate better with patients in the units they work in, and provide support to them.[35] Another finding of the study was the relationship between the nurses' perception of health and their health literacy education skills. The findings revealed that the health literacy education skills of the nurses who perceived their health as poor were lower than those of the other nurses. These findings were not compared with those of other studies due to a gap in the literature regarding studies that compare the health literacy education skills of nurses and their health perception. However, it is thought that nurses' perception of their own health as poor was due to their intense working schedule and insufficient health literacy knowledge.

The results of the present study support the fact that the health literacy education skills of nurses are affected by their demographic characteristics and working environments. The scale can identify the variables associated with the assessment of nurses' health literacy education skills, their basic knowledge levels, their ability to cope with patients with low health literacy, and their intention and frequency of using clear communication techniques.

Limitations and Strengths of the Study

The strength of the present study was the inclusion of nurses working in different units and age groups. On the other hand, the present study has some limitations. Due to the adverse conditions resulting from the COVID-19 pandemic and the day-night shifts of the participants, the test-retest of the scale could not be applied to the participants. It is recommended that in future studies, a test-retest study of the scale should be conducted. Since the psychometric properties of the scale were not specified in the original study (such as Cronbach's alpha (α)), it was not possible to compare the results of the present

study with the original study. Additionally, it was not possible to compare the results of the present study with those of studies in other cultures due to a lack of studies performing psychometric evaluations of the original scale in different languages.

Conclusion

The study results showed that the Turkish version of HLTSHP-T is a valid and reliable measurement tool for determining the health literacy education skills of nurses, their basic knowledge levels, their ability to cope with patients with low health literacy, and their intention and frequency of using clear communication techniques.

The scale has sufficient psychometric properties to evaluate the effectiveness of programs organized to improve the health literacy education skills of nurses in Türkiye. It is expected that the scale will meet an important need for future studies and might be used in evaluating the effectiveness of programs organized to improve health literacy education skills and their results. Furthermore, it is recommended that studies be conducted to test the validity and reliability of the HLTSHP scale in different samples.

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