Validation of the Persian Version of Health Professionals Communication Skills Scale

Abstract

Background: The need for assessing health-care workers' communication skills is increasingly emphasized by researchers. Achieving such a goal requires the use of a reliable tool. The purpose of this study was to validate the Persian version of Health Professionals Communication Skills Scale (HP-CSS). **Materials and Methods:** For the present methodological study carried out from September 2016 to February 2017, 400 health workers were selected by convenience sampling from educational hospitals in Mazandaran province in Iran and they were asked to fill out the 18-item HP-CSS. All steps of the scale validity were performed. Exploratory and confirmatory factor analysis were used. The reliability of the tool was measured by internal consistency. **Results:** Two factors of care and verbal clarity with patients and respect for patients' rights, extracted by exploratory factor analysis, explained 47.38% of the variance. Content Validity Index (CVI) and Content Validity Ratio (CVR) of all items were higher than 0.79 and 0.49, respectively. Reliability coefficients of factors were found to be more than 0.70. Model's fitness indicators confirmed the construct of HP-CSS. Both factors had a convergent and divergent validity. **Conclusions:** This study showed that the Persian version of the communication skills scale has a two-dimensional construct and good psychometric properties; also, this scale was found to be useful for the purpose and context in which it will be used, that is, communication skills.

Keywords: *Communication, health personnel, psychometrics, validation study*

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Introduction

Communication in the clearest definition refers to sending and receiving verbal and nonverbal messages between two or more people.[1] Proper communication is an effective factor for effective care and has a significant impact on the quality of care in the health-care system.[2] In recent decades, the model of relationships between health workers and patients has undergone a great change,[3] and the ability to communicate well with colleagues, patients, and others is the ideal clinical practice foundation for health care and forms the core of optimal health care.[4] Researches in various fields on the communication aspects between health workers and patients have shown that ineffective clinical communication in health care can lead to treatment delays, misdiagnosis, medication errors, medical-legal problems, patient injury or death, and health workers' burnout.[5] Conversely, good communication leads to improved health outcomes,[6]

better adherence to treatment, and greater satisfaction of both the health workers and the patient.[7] Therefore, valid tools based on the native culture of the target group are needed for assessing the communication skills of health service providers in order to ensure effective communication and assessment of the impact of training programs for communication skills.[3]

Having measurable effects is one of the main characteristics of clinical relationship formed among different health workers and patients. In order to do such measurements, well-constructed instruments, for which the psychometric features can be shown empirically and experimentally and which are also practically feasible, are required.[8] However, there are a few psychometric instruments available to measure this skill in health workers. The reviewed studies in the area of communication in health workers usually use qualitative tools specifically developed for the respective study.[9,10] This issue led

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us to psychometry the Health Professionals Communication Skills(HP-CSS). The original version of HP-CSS was developed in 1998 and was composed of 42 items, half being worded inversely. It was scored according to a Likert response scale with a 6-point frequency scale which indicated how often they performed the item (1 = almost never, 2 = once in a while, 3 = sometimes, 4 = normally, 5 = very often, and 6 = many times). It included four dimensions: A) informative communication, B) empathy, C) respect and authenticity, and D) social skill.[11] This scale was evaluated by Leal-Costa in 2016 and its items were reduced to 18. Items 18 and 20 were scored inversely.[3] Among the advantages of this scale are shortness and reduction in number of items, usability for all members of the health worker, including the physician, nurse, and assistant nurse, as well as the inclusion of two inverse questions in the questionnaire.

Given the importance of what has been stated, it is essential to examine the communication skills in different groups of health workers in order to provide quality care. Since the psychometric properties and factor structure of HP-CSS in Iran have not been studied so far, the present study aimed to investigate the validity and reliability of HP-CSS.

Materials and Methods

This cross-sectional study had a methodological design, and data in the study were collected from September 2016 to February 2017. The number of samples was determined based on the criterion of the need for 10-15 samples per item in the psychometric evaluation of scale.[12] Four hundred nurses, physicians, and operating room and anesthesia technicians were selected through convenience sampling from three hospitals affiliated to Mazandaran University of Medical Sciences in Sari, Iran, and they participated in this study through self-report method. The inclusion criteria were having a medical university degree, employment in hospital departments and clinics, and having at least a 1-year work experience. Data were collected using a demographic information form and the 18-item HP-CSS.

At first, for the translation process, the questionnaire was prepared and permissions were obtained from the developer. The questionnaire was then translated in accordance with the World Health Organization's (WHO) standard protocol of forward-backward translation.[13] In this method, the English version of HP-CSS was first translated into Persian. For forward translation, two independent translators translated the English text into Persian. The research team and the translators then agreed on a single Persian version. For backward translation, two English language translators (different from the two primary translators) who did not have any information about the English version of the HP-CSS questionnaire translated the Persian text into English. The research team then compared the retranslated versions with the original English version. In the whole

process of forward-backward translation, differences between the English and Persian versions were evaluated. The psychometric properties of the scale were evaluated using face, content, construct, convergent, and divergent validity as follows.

For qualitative face validity, 10 health workers were invited to participate in the study. Their views on the relevance, ambiguity, difficulty of concepts and words, and appropriateness of the scale items were collected and any necessary modifications were made.

Also, for quantitative face validity, the same 10 health workers were asked to rate the importance of the scale items on a Likert scale from 1 (not important) to 5 (completely important). The score of the importance of each item in the scale was then estimated using a special formula (importance × frequency). In this formula, frequency indicates the number of people who have given a score of 4 or 5 to the intended item and importance indicates a score of 4 or 5. Impact scores higher than 1.5 for each item were considered desirable.[14] The content validity of the Persian HP-CSS was also assessed both qualitatively and quantitatively as explained below.

For assessing qualitative content validity of the scale, Persian version of HP-CSS was distributed among 15 speciali sts including nursing professors, psychiatry professors, and instrument makers. After they assessed the questionnaire based on the criteria of observing the rules of grammar, use of appropriate terms, proper placement of items, and proper method of scoring, they provided feedback on the differences found in certain items between the English and the Persian versions. Also, cultural convergence was assessed by experts.[14]

The quantitative content validity of the scale was assessed by calculating Content Validity Ratio (CVR) and Content Validity Index (CVI) for the items. CVR is internationally acknowledged as an assessment technique to confirm content validity. It was used to examine whether or not an item was necessary. Accordingly, 15 experts (mentioned above) were asked to rate the essentiality of the HP-CSS items on a 3-point scale (1 = not necessary, 2 = helpful, but not necessary, 3 = necessary). According to Lawshe (1975), when the number of panelists is 15, the minimum acceptable CVR is equal to 0.49.[15]

On the other hand, CVI was used for calculating relevancy of the items with the following options: 1 = not relevant at all, 2 = relevant to some extent, 3 = reasonably or moderately relevant, and 4 = completely relevant. Also, when the number of panelists is equal to 15, the items that acquire a CVI value of 0.79 or greater are considered as appropriate.[16] Construct validity was evaluated using exploratory and confirmatory factor analysis. In the first step, maximum likelihood exploratory factor

analysis (MLEFA) was used with promax rotation and scree plots in SPSS-22 software to extract latent factors. Kaiser-Meyer-Olkin (KMO) test and Bartlett test were used for sampling adequacy. KMO values of 0.7-0.8 and 0.8-0.9 are considered good and great, respectively.[17]

The presence of an item in the extracted factor was calculated based on the formula: Critical Value = 5.152÷ $\sqrt{}$ (n -2).[18] This was estimated to be approximately 0.3. In the next step, the extracted factors were examined using confirmatory factor analysis (maximum likelihood estimation) and based on the most common indicators of goodness of fit of the considerations in factor analysis) CFA (using AMOS24 software [Figure 1].

The convergent and divergent validity of the communication skills construct were measured by assessing average variance extracted (AVE) and maximum shared squared variance (MSV). Convergent validity is confirmed if AVE is more than 0.5, and divergent validity is confirmed if MSV is less than AVE.[19]

Coefficients of Cronbach's alpha and McDonald's omega were used to assess the internal consistency of HP-CSS. An internal consistency of more than 0.7 was considered proper. Then, construct reliability (CR) was evaluated, for which a value above 0.7 was considered desirable.[20] Two-way mixed interclass correlation coefficients (ICC) for relative reliability (agreement) with an interval of 2 weeks was computed to assess the test–retest reliability of the 15 in this sample. A value greater than 0.8 is interpreted as

almost perfect. Next, standard error of measurement (SEM) and the smallest detectable change (SDC) were calculated as responsiveness. Minimal important change (MIC) was used to measure the smallest change in the subjects perceived as important. MIC greater than SDC shows that the "real" difference is likely above the measurement error.[14]

In the present study, the normal distribution and the outlier data of the items were evaluated by univariate and multivariate analyses separately. Multivariate outliers were noticed using the Mahalanobis D^2 (p < 0.001), and the violation of multivariate kurtosis was assessed using the Mardia coefficient, whose values above 8 showed violation of multivariate normality.[21] The missing data was assessed through a multiple imputation process and next the missing data were replaced by mean of response.

Ethical considerations

First, permission was obtained from the scale developer. Next, the project was approved by the Ethics Committee of the Mazandaran University of Medical Sciences (IR. MAZUMS.REC.95.2609). The researcher, after introducing herself to the research unit, explained the purpose of the research to them. She also told them that their participation in the research was optional. All the participants gave their consent to participate in the study. Also, the required information was collected anonymously.

Results

Participants' demographic information is presented in Table 1. Also The participants had a mean(SD) age of 32.60 (6.15) years, and their mean(SD) experience was 10.19 (10.60). Two independent Persian translations of HP-CSS had been developed that provided a single Persian version of the scale, while included all possible options for words and terms. Two separate English language experts translated the Persian version into English. These two English translations were compared with the original English version.

Face and content validity

The quantitative face validity of all the items based on the views of 10 health workers was considered favorable. The impact score was more than 1.50. In this study, the CVI values of each item were higher than 0.80 and according to the Lawshe table, the CVR values of all items were higher than 0.50 with an average of 0.88, so all items were appropriate and no item was removed at this stage [Table 2].

Construct validity

KMO was 0.766 and Bartlett's test was 1577.11 (df = 36; p < 0.001). According to Table 3, the two extracted factors after rotation accounted for 2.29 and 1.97 of the eigenvalue and, in total, explained 47.38% of the variance of the HP-CSS construct in the health professionals. The final
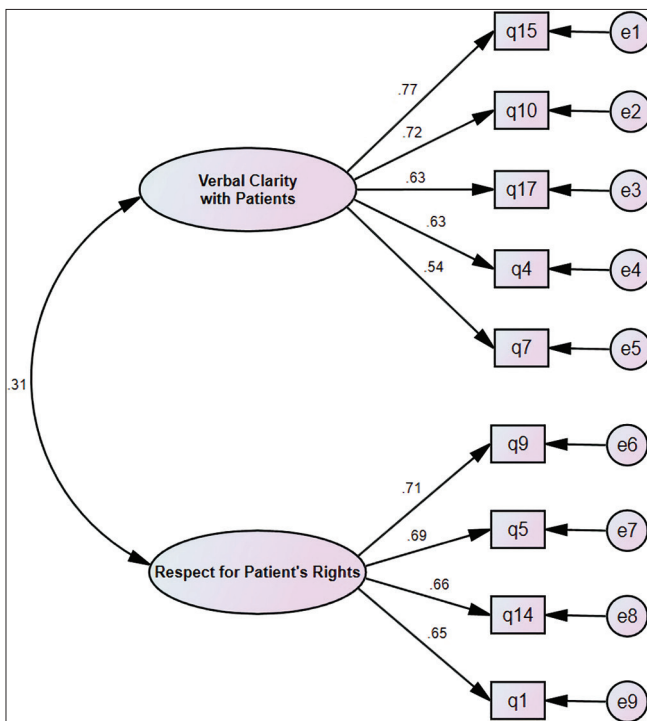

Figure 1: The factor structural model of the Health Professionals Communication Skills Scale with standardized path coefficients. All coefficients are significant at *p* < 0.001

Table 1: Baseline patient characteristics

Variables	Characteristics	*n* (%)	Variables	Characteristics	*n* (%)
			Level	Official employment	167 (43.50)
Gender	Male	135 (33.60)		Contract employment	233 (56.50)
	Female	265 (66.40)			
Married	Single	141 (35.10)	Shift	Morning fix	32 (8.80)
	Married	259 (64.90)		Evening fix	4 (1)
Education	Bachelor	283 (70.40)		Night fix	21 (5.20)
	Master	89 (22.10)		Circulate	343 (85)
	Doctor	28 (7.50)			

Table 2: CVI* and CVR** of the Persian version of the Health Professionals Communication Skills Scale

No.	Items	CVR	CVI	Results of CVR	Results of CVI
1	I respect the right of patients to express themselves freely	0.70	1	Acceptable	Perfect
2	I explore the emotions of my patients	0.80	0.80	Acceptable	Perfect
3	I respect the autonomy and freedom of patients	1	0.90	Acceptable	Perfect
4	When the patient speaks, I show interest through body gestures (nodding, eye contact, smiles, …)	0.80	0.80	Acceptable	Perfect
5	I provide information to patients (whenever my professional competency permits me) about what concerns them	1	1	Acceptable	Perfect
6	I listen to patients without prejudice, regardless of their physical appearance, mannerisms, form of expression	0.70	1	Acceptable	Perfect
7	I express my opinions and desires clearly to patients	1	0.90	Acceptable	Perfect
8	When I give information, I use silence to allow the patient to assimilate what I am saying	0.80	0.80	Acceptable	Perfect
9	When I give information to patients, I do so in understandable terms	1	0.80	Acceptable	Perfect
10	When a patient does something that does not seem right, I express my disagreement or discomfort	0.70	0.90	Acceptable	Perfect
11	I dedicate time to listen and try to understand the needs of patients	1	0.80	Acceptable	Perfect
12	I try to understand the feelings of my patient	1	0.80	Acceptable	Perfect
13	When I interact with patients, I express my opinions clearly and firmly	1	0.90	Acceptable	Perfect
14	I believe that the patient is entitled to receive health information	0.80	0.80	Acceptable	Perfect
15	I feel that I respect the needs of patients	1	0.80	Acceptable	Perfect
16	I find it difficult to make requests of patients	1	1	Acceptable	Perfect
17	I make sure that patients have comprehended the information provided	0.80	1	Acceptable	Perfect
18	I find it difficult to ask for information from patients	0.80	0.80	Acceptable	Perfect

*CVI=content validity index, **CVR=content validity ratio

scale was made up of nine items (1-4-5-7-9-10-14-15-17) and the rest were removed.

The Chi-square goodness of fit test for CFA was conducted to investigate the goodness of fit of the final model of the factor construct of HP-CSS normed Chi-square (CMIN [*n* = 400] =55.28, df = 26, *p* < 0.001). The indices of parsimonious comparative fit index (PCFI) =0.70, comparative fit index (CFI) =0.97, CMIN/df = 2.12, root mean square error of approximation (RMSEA) =0.053, parsimonious normed fit index (PNFI) =0.68, and adjusted goodness of fit index (AGFI) =0.95 confirmed goodness of fit of the final model [Table 4].[22]

According to Table 4, in order to evaluate the convergent and divergent validity, the AVE of the HP-CSS construc t was found to be more than MSV, and thus, the HP-CSS construct had sufficient convergent and divergent validity [Table 5].

Reliability

The internal consistency of the extracted factors of the construct was estimated to be more than 0.70, which was good. The ICC was 0.80 (95% CI: 0.73-0.93, *f* (14) =6.45, *p* = 0.001). The mean (SD) time period between T1 and T2 was 88.46 (SD$_{pooled}$ = 0.90). SEM, SDC, and MIC were 0.39, 1.08, and 0.45, respectively. The results suggest that the actual change and the change caused by measurement error are differentiated.

Discussion

In this study, the two factors care and verbal clarity with patients and respect for patients' rights, extracted by exploratory factor analysis, explained 47.38% of the variance. Reliability coefficients of factors were found to be more than 0.70. Model's fitness indicators confirmed the construct of HP-CSS. Both factors had a convergent and

Table 3: Rotated factor loadings of exploratory factor analysis for the Health Professionals Communication Skills Scale

Factors	Items	Loading	h²*	% of variance	Eigenvalue	α**	Ω***
Verbal clarity with patients	Q15: I express my opinions desires clearly to patients	0.77	0.59	25.47	2.29	0.78	0.77
	Q10: When a patient does something that does not seem right, I express my disagreement or discomfort	0.70	0.51				
	Q17: I make sure that patients have comprehended the information provided	0.62	0.38				
	Q4: When the patient speaks, I show interest through body gestures (nodding, eye contact, smiles…)	0.61	0.37				
	Q7: I express my opinions and desires clearly to patients	0.52	0.27				
Respect for patients' rights	Q1: I respect the right of patients to express themselves freely	0.63	0.40	21.91	1.97	0.77	0.75
	Q9: When I give information to patients, I do so in understandable terms	0.71	0.50				
	Q5: I provide information to patients (whenever my professional competency permits me) about what concerns them	0.68	0.46				
	Q14: I believe that the patient is entitled to receive health information	0.64	0.42				

*Communalities; **Cronbach's alpha; ***McDonald's omega coefficient

Table 4: Fit indices of the confirmatory factor analysis of the Health Professionals Communication Skills Scale

Fit indices CFA	X^2	df	p	CMIN/df	RMSEA	PCFI	PNFI	AGFI	IFI	CFI
	55.28	26	<.0.001	2.12	0.05	0.70	0.68	0.95	0.97	0.97

*AGFI=adjusted goodness of fit index, **CFA=considerations in factor analysis, ***CFI=comparative fit index, ****CMIN-df=normed Chi-square by degrees of freedom divided, *****IFI=incremental fit index, ******PCFI=parsimonious comparative fit index, *******PNFI=parsimonious normed fit index, ********RMSEA=root mean square error of approximation. Fitness indexes: *********PNFI, **********PCFI, AGFI (>0.5), ***********CFI, ************IFI (>0.9), *************RMSEA <0.08), **************CMIN/df (<3 good, <5 acceptable)

Table 5: Convergent and divergent validity assessment of the Health Professionals Communication Skills Scale: use of Fornell and Larcker criterion

Factors	AVE*	MSV**	CR***
Verbal clarity with patients	0.43	0.31	0.78
Respect for patients' rights	0.44		0.76

*AVE=average variance extracted, **MSV=maximum shared squared variance, ***CR=construct reliability

divergent validity. Also, based on face validity and content, no item was removed; but in the construct validity, 18 items were reduced to 9 items. In this study, two factors were extracted. In this regard, Leal-Costa *et al*.[3] in Spain identified four factors of communication: information, empathy, respect, and social behavioral skills.

In the present study, the first factor identified in the exploratory factor analysis was "care and verbal clarity with patients." Based on the items in this factor, the following indicated a clear communication with the patient: addressing patients' needs, using nonverbal communication, speaking clearly and expressively in the event of objection to and discomfort with patients' inappropriate performance, ensuring patients' perception of the things explained to them, and clear expression of opinions and demands to the patients.

Verbal communication is an important part of interpersonal relationships in everyday life, and patients need verbal clarity in communications with the health professionals to meet their needs. Verbal clarity with patients leads to the active interaction of the patient in communication and helps with understanding and discovering their opinions.[23] To communicate well with patients, the health-care providers must understand the patients with the tools of politeness, kindness, physical abilities, experience, and education and know the right time to communicate properly, and the language of communication must be understood by all health-care providers.[24] Zarei *et al*.[25] also considered factors such as greetings, eye contact, intimate communication, and not interrupting the patient during communication to be important. Effective and meaningful communication is the most significant element in providing quality of care to a patient in a health-care setting.[26] Effective communication needs to be developed when patients are admitted to the hospital and it is very important for the patient and health-care provider to communicate well in order to give information and in the decision-making process regarding patient health.[27] Good quality of care is measured by patient satisfaction level. Patient satisfaction levels depend on good communication level, wound healing, and emotional well-being. Secondly, good patient experience can change attitude toward health-care provider.[28] Marilyn considered listening carefully and acknowledging the accurate interpretation of the purpose of the messages as the sign of honesty in a communication.[29]

The results showed that the patients felt comfortable on receiving attention from the nurses, and also, the responsible behavior of the nurses facilitated communication with the patients. From the patients' point of view, a dedicated and committed nurse is one that pays attention to the patients, seeks to meet the patient's needs comprehensively, and answers their questions.[30]

In the present study, the second factor identified was "respecting patients' rights." Based on the items in this factor, respect for the rights of the patients to free speech, providing medical information using understandable terms and based on the level of patients' understanding to address their concerns, and believing in the patients' right to receive health-related information were the proof of respecting patients' rights.

One of the patients' rights is to get complete information about the disease and how to treat it. Kourkouta stated that the patients should be comfortable with the nurse such that they can get the information they need away from any misunderstanding.[31] Bays and colleagues[32] demonstrated an improvement in trainees' communication skills in simulated patient encounters after a series of small-group workshops over a 1-month timeframe. Nurses often use modern medical technologies to deal with problems such as how to serve patients and respect their dignity and rights, making it difficult for the medical technicians to intervene and communicate. Also, in nursing, similar to other areas, three factors contribute to being a communication professional.[33] Klisiari *et al*.[34] also stated in their study that most patients feel that they have made a more effective communication and have received care with the highest quality upon receiving their therapeutic information.

The most important inevitable limitation in this study was the use of self-report method which can lead to errors in the reports. The cultural and social class differences of the volunteers were also another inevitable limitation of this study.

Conclusion

The construct of HP-CSS showed an acceptable factor construct and its internal consistency was confirmed by different approaches, and thus can be used as a valid and reliable tool to properly assess the communication skills of health workers, which are recognized as an important part of service delivery. So, an effective communication forms the basis of service quality. But it may not be suitable for other target groups. In order to achieve a nationally valid scale for measuring communication skill, the authors suggest rep eating the study in other target groups including nurses in special wards.

Conflicts of interest

Nothing to declare.

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