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Design and psychometrics cultural competence questionnaire for health promotion of Iranian nurses

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Abstract:

INTRODUCTION: As an important factor in the quality of nursing care, cultural competence of nurses should be assessed to improve the quality of care provided. Nursing care is sensitive to culture; therefore, it is necessary to design a tool for evaluation of cultural competence. In this regard, the present study intended to develop a cultural competence questionnaire for Iranian nurses.

MATERIALS AND METHODS: In this methodological study, 350 nurses working in all educational hospitals affiliated to Tabriz University of Medical Sciences were selected through convenience sampling. Questions related to cultural care were selected by experts of this field, and a questionnaire was designed and its validity and reliability were examined.

RESULTS: A 20-item questionnaire was developed which assessed the three areas of learning and education, awareness and knowledge, and skills. Cronbach's alpha of the whole questionnaire was 0.912, and its validity based on the Kaiser–Mayer–Olkin Index was 0.891.

CONCLUSION: This study provides proper evidence regarding the strength of factor structure and the reliability of the developed questionnaire; therefore, it can be considered as a scientific tool for research, educational, and practical purposes in Iranian nurses.

Keywords:

Cultural care, cultural competence, reliability, validity

Introduction

In Iranian society, as in other countries, the phenomenon of migration from villages to cities and from small cities to metropolises results in gathering of people with different cultures, each with its own values. These values lie in the midst of the society culture and affect all social behaviors of individuals and determine their orientation.^[1] This cultural diversity is also seen among patients and is an important issue facing nurses. In fact, nurses in clinical settings often deal with different patients with different cultural backgrounds, and their professional life is shared with the lives of services' recipients.^[2]

Culture can affect many aspects of human life; therefore, it plays undoubtedly a significant role in shaping people's behavior, beliefs, and values;^[3] therefore, nurses must be able to communicate effectively with patients of different cultures in order to be aware of their needs and find out which nursing measures are appropriate for them, and how to change these steps when needed to improve patient health.^[4] Cultural competence refers to the ability to communicate effectively with patients of different cultures.^[5]

As a fundamental element of professionalism, cultural competence has a unique status in the field of medical sciences because of cultural diversity of patients.^[1] Cultural competence is a set of knowledge, attitudes,

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and behaviors that enable a person to function effectively in different cultural conditions.^[6] Cultural competence of nurses also means understanding the health values, beliefs, and functions of patients which can lead to their satisfaction and positive outcomes in care and health promotion.^[7] Cultural competence is a moral and legal commitment for nurses which can ultimately lead to quality care.^[8]

Several studies have emphasized the need to examine the cultural competence of nurses.^[9] In a study in Iran, researchers stated that the way of communication with patients of different cultures is a hidden part of nursing education and providing cultural care has less importance in the curriculum and is not formally addressed. They believe that, given the cultural difference between the education place and workplace of nurses, training of culture and cultural care is an essential issue in nursing; there is also a gap between cultural communication and nursing.^[10]

Khanbabayi Gol *et al.* examined the cultural competence of nursing students during the year 2017, with the participation of 220 undergraduate nursing students. The level of cultural competence of students assessed by non-Iranian Questionnaire was based on the level of "cultural awareness" based on tool scoring. Cultural competence can affect the quality of nursing care and its share of impact is not precisely determined. On the other hand, Iran has a multicultural context and hence assessment of cultural competence is necessary to determine its exact effect on nursing care quality in order to intervene when the cultural competence level is low. Khanbabayi Gol *et al.* suggested the development of a tool with more tangible results,^[11] in addition, there is no appropriate tool to assess the level of cultural competence of nurses and using the tools designed in other countries can lead to unrealistic results; therefore, it is absolutely necessary to develop a tool appropriate for care culture of Iranian nurses. This can be a vital step in carrying out nursing research. Therefore, the researchers aimed to conduct the present study aiming to design a tool for cultural competence of Iranian nurses and to assess its psychometrics.

Materials and Methods

A total of 350 nurses working in all general and special wards of the Medical Research and Training Hospitals affiliated with Tabriz University of Medical Sciences (Imam Reza, Taleghani, Al Zahra, Kodakan, Alavi, Nikoukari, Shahid Madani, Shohada, and Razi) participated in this methodological study, meeting the inclusion and exclusion criteria. The inclusion criteria were a bachelor's degree in nursing and a minimum work experience of 1 year, and the exclusion criteria

were studying abroad and unwillingness to participate in the study. The population comprised 2100 nurses, of whom 325 constituted the sample using Cochran's formula; in order to prevent the negative effects of sample attrition, 350 nurses were selected to form the final sample. The participants were selected through the convenience sampling, and the author went to a hospital and distributed the relevant questionnaires among all the present nurses to fill out in pen as a self-report.

Since cultural competence is a culture-sensitive concept,^[5] and different countries have different cultures, the cultural competence tools of other countries were not used in designing the present study's questionnaire. To design the cultural competence tool, the researcher established a team consisting of four nursing professors and associate professors, three epidemiologists, and three research, and statistics experts to find the cultural care and cultural sensitivity factors affecting the nursing care (a total of 29 items were determined and included in initial questionnaire as a question). Factors influencing the cultural care found in the first session were evaluated in terms of relevancy, simplicity, clarity, and necessity in another meeting with 10 nurses, head nurses, supervisors, and matrons as well as the previous group, and 9 questions were deleted and the final questionnaire was prepared with 20 questions in the form of a 5-point Likert scale (completely agree, agree, no comment, disagree, and completely disagree). The questionnaire was tentatively distributed among ten master of nursing students to comment on the comprehensibility, scientific relevance, and relevance of the questionnaire; then their comments were evaluated and revised by the group, and the necessary corrections were made and the questionnaire was presented to ten experts in the field of tool design, including two epidemiologists, one statistician, three nurses, and three psychologists. The selection of this number of experts reduces unanimity.^[12]

The content validity was evaluated quantitatively, and the following formula and Lavoshe method were employed to calculate the Content Validity Index. In this formula, n_c represents the number of specialists who selected the "necessary" option for each question, and N represents the total number of specialists. This index varies between -1 and $+1$.^[13]

Considering the participation of ten experts in the study, it is noteworthy that the minimum acceptable value for content validity ratio (CVR) in the Lavoshe method is 0.62. The structural validity was measured by principal components; principal component analysis showed the factors saturating the test.^[14] In this analysis, the sample adequacy was examined by Kaiser–Mayer–Olkin (KMO) size. The output value of this index represents the amount of variance in the data, and values above 0.6

represent the sampling adequacy. In addition, the Bartlett's test of sphericity was used to check if the matrix of correlation between the questionnaire's items was not zero in the community.^[15] The reliability of the questionnaire was examined using Cronbach's alpha coefficient (internal consistency of items) and the correlation coefficient (consistency between items) and re-evaluated through the test-retest method. To this end, 30 nurses were selected, among whom the questionnaire was distributed with a time interval of 2 months. The standard error of the mean formula calculated the standard error of the tool, and the SDC (Strict Defect Control) formula, the tool least discoverable variation index.

This study used the confirmatory factor analysis to investigate the three-factor model of the developed scale using LISREL 8.8. Different indices and structural coefficients were used to fit the model. The fitting indices used in this method included goodness of fit (GFI), adjusted GFI (AGFI), Root Mean Square Error of Approximation (RMSEA), Chi-square and its corresponding degree of freedom, and Comparative Fit Index (CFI), typically used to measure the fitting of confirmatory factor analysis. Based on the RMSEA score, $RMSEA \leq 0.05$, $0.05 \leq RMSEA \leq 0.08$, $0.08 \leq RMSEA \leq 0.1$, and $RMSEA > 0.1$ represent good, acceptable, moderate, and unacceptable fitting, respectively. On the other hand, $\chi^2/df < 5$ represents the acceptable fitting and $\chi^2/df < 3$ represents the good fitting of the model.

Ethical considerations in this research, as well as other research in the field of medical science, are observed in all individuals.^[16-23] The data were analyzed in terms of factor analysis and reliability using SPSS ver 20/IBM Corporation, Armonk, New York. Individuals participated in the pilot study were excluded from the final study.

Results

The content coefficient of the whole questionnaire (mean coefficients of relevancy, simplicity, and clarity) was 0.943 [Table 1]. Nine items were deleted due to CVR < 0.6 . No question was added to the main questions from the suggestions of the faculty members, postgraduate students, and nurses and the final questionnaire, containing 20 questions, was distributed to assess the reliability and validity.

In the assessment of the sampling adequacy, the KMO index was calculated at 0.751. In addition, the Bartlett's test of sphericity showed that the correlation matrix had a significant difference with zero ($P < 0.001$), and factor analysis was, therefore, appropriate for the factorial structure identification [Table 2].

Table 1: The content validity coefficient of the entire questionnaire is based on the Content Validity Index

Validity validation	Relevancy	Simplicity	Clarity
Average coefficient in each domain	0.950	0.960	0.920
Average overall CVI	0.943		

CVI=Content Validity Index

Table 2: Sufficient sample statistics based on exploratory factor analysis

KMO indicator	0.751	
Bartlett's test	Chi-square test	5582.81
	df	300
	P	<0.001

KMO=Kaiser-Mayer-Olkin

In the next step, the exploratory factor analysis was carried out using the principal components and Varimax rotation. It should be noted that this rotation was used to maximize the relationship between variables and all/some of the factors. Using this method, three factors, with a specific value of higher than one, were extracted accounting for 63% of the total variance. In addition, the minimum factor load was considered 0.4 to maintain each item in the extracted factors and avoid the secondary loads. The items with a factor load lower than its equivalent or inconsistent with other items in that factor were deleted. Finally, three factors including learning and education, awareness and knowledge, and skills were chosen. These factors were able to explain totally 71% of the total variance, with a contribution in the total variance of 47% for the first factor, 10% for the second factor, and 18% for the third factor. After discussion about naming the factors formed, the first-to-third factors were named "learning and education," "awareness and knowledge," and "skills," respectively. The first factor consisted of items 4, 8, 11, 15, and 20; the second factor consisted of items 1, 2, 3, 7, 9 and 10; and the third factor consisted of items 5, 6, 12, 13, 14, 16, 17, 18, and 19.

Table 3 shows the model indices. Since CFI, GFI, AGFI, and NFI are close to one, RMSEA is < 0.1 , and $\chi^2/df < 3$, the three-factor model fitting is at an acceptable level.

The *t*-values of all questions in all three subscales were higher than 1.96, and thus none of the items needed to be removed. R^2 is the variance ratio of manifest variables, which is justifiable in the respective subscale. An item with the larger factor load in each subscale is its best indicator.

Table 4 shows that items 4 and 11 of the learning and teaching subscale, items 1 and 9 of the awareness and knowledge subscale, and items 16 and 17 of the skill subscale are the best items of their respective subscale. On the other hand, since the model indices are in a suitable range and *t* statistic is at a significant level, there is no need to remove any item.

To assess the reliability of the questionnaire, a pilot study was performed where 30 questionnaires were distributed and collected. For these data, the amount of intragroup correlation coefficient in two implementations of the questionnaire was equal to 0.942 (confidence interval [CI]: 0.847–0.978), indicating the questionnaire stability, and the correlation between the scores of two implementations of the questionnaire was equal to 0.99, confirming the questionnaire reliability.

The value of Cronbach’s alpha coefficient for the questionnaire was 0.912 and the mean correlation coefficient was 0.930 (CI: 0.920–0.940). The results of the standard error measurement, such as the interclass correlation coefficient, showed that the first, the third, and the second factors were the most valid factors, respectively [Table 5].

The questionnaire is answered and scored based on the 5-point Likert scale: completely agree (5), agree (4), no comment (3), disagree (2), and completely disagree (1). Questions 12, 6, and 19 are inverse questions and are scored inversely, so that completely agree is scored 1 and completely disagree is scored 5.

Table 3: Goodness of fit of confirmatory factor analysis model of the Khanbabayi’s Cultural Competence Toolkit

Fitting indices	CFI	GFI	AGFI	RMSEA	χ^2/df
Indicator value	0.91	0.91	0.90	0.06	2.25

CFI=Comparative Fit Index, GFI=Goodness-Of-Fit Index, AGFI=Adjusted Goodness-Of-Fit Index, RMSEA=Root Mean Square Error of Approximation

Table 4: Content Validity Index, standard factor load, multiple correlation square, and t values of items of Khanbabayi’s cultural competence toolkit

Dimensions	Question number	CVI	Standard factor load	Multiple squared squares	t statistics
Learning and teaching	4	0.98	0.75	0.60	15.36
	8	0.92	0.36	0.30	2.80
	11	0.92	0.81	0.65	11.49
	15	1	0.49	0.52	6.95
	20	1	0.53	0.54	10.30
Awareness and knowledge	1	0.90	0.71	0.59	3.99
	2	0.88	0.55	0.50	13.95
	3	0.86	0.68	0.58	12.35
	7	0.91	0.49	0.49	4.64
	9	1	0.85	0.67	17.17
	10	1	0.65	0.56	5.19
Skill	5	0.92	0.63	0.56	7.80
	6	0.92	0.49	0.52	7.00
	12	0.87	0.55	0.50	11.19
	13	1	0.66	0.57	3.95
	14	0.90	0.61	0.53	8.98
	16	1	0.96	0.92	7.35
	17	0.87	0.80	0.64	4.21
	18	0.90	0.49	0.49	7.77
	19	0.88	0.36	0.30	7.89

CVI=Content Validity Index

The total score of the questionnaire ranges from 20 to 100; a score of 20–43 means a very weak cultural competence or cultural competence unawareness, a score of 43–63 means poor cultural competence or poor cultural competence awareness, a score of 64–80 means moderate cultural competence, or moderate cultural competence awareness, a score of 81–92 means a strong cultural competence or cultural competence awareness, and a score of 93–100 means a very strong cultural competence or complete cultural competence awareness.

Discussion

Cultural competence plays an important role in providing quality and patient-centered services and its share of impact has not yet been determined precisely. There are many factors in the acquisition of nurses’ cultural competence, and investigation of all of these factors is essential to achieve principled and patient satisfaction-based care; but achievement of the levels of cultural competence is a prerequisite to determine its affecting factors, and this should be determined by a suitable tool. Since culture and cultural care are unique for various cultures, the existing tools cannot be used for achieving its levels in Iranian nurses.

The questionnaire was designed according to the views of experts in nursing, statistics, and epidemiology by reviewing literature and factors affecting cultural care, and finally, a 20-item questionnaire was designed in three areas. The results of the tests were used to assess

Table 5: Internal consistency coefficients and reliability of the questionnaire

Dimensions	Question number	Cronbach's alpha	Cronbach's alpha	ICC	SEM
Learning and teaching	4	0.942	0.947	0.950	0.581
	8	0.959			
	11	0.950			
	15	0.940			
	20	0.933			
Awareness and knowledge	1	0.890	0.869	0.850	0.642
	2	0.888			
	3	0.895			
	7	0.915			
	9	0.901			
	10	0.905			
	19	0.961			
Skill	5	0.920	0.914	0.901	0.490
	6	0.920			
	12	0.961			
	13	0.921			
	14	0.899			
	16	0.956			
	17	0.912			
	18	0.902			
	19	0.961			

ICC=Intraclass correlation, SEM=Standard error of the mean

validity as well as internal consistency of the whole tool and its areas indicated the relevance of the items and the final questionnaire.

Since there was no study with a suitable tool for Iranian culture in Iran, the researchers did not cite similar studies and hence no comparison was performed.

Conclusion

The 20-item Iranian Nurses Cultural Competence Questionnaire was designed in three areas and its validity and reliability were confirmed. This questionnaire known as the "Iranian Nurses Cultural Competence Questionnaire of Khanbabayi" can be used after obtaining permission from the developer. It should be noted that this questionnaire can be used by other medical departments with minor changes.

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Conflicts of interest

There are no conflicts of interest.

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