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Testing Reliability and Validity of the Person-centered Climate Questionnaire-staff version in Korean for Long-term Care Facilities

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Purpose: To test the reliability and validity of the Korean version of the Person-centered Climate Questionnaire - staff version (KPCQ-S) in long-term care institutions. **Methods:** A total of 297 staff in long-term care institutions including nine nursing homes (NHs) and 4 long-term care hospitals (LTCHs) were included. The KPCQ-S was developed following the WHO guidelines of the process of translation and adaptation of instruments. An internal consistency using Cronbach's α was tested for reliability. Exploratory factor analysis (EFA) was used to examine the construct validity. Convergent and discriminant validity were examined using Pearson correlation. **Results:** EFA demonstrated the construct validity of the 14-item KPCQ-S with three-factor solutions, specifically three factors (safety, everydayness, and community) in NHs and four factors (safety, everydayness, community, and comprehensibility) in LTCHs. Convergent validity was found in the correlation with the work satisfaction (r=.55). The KPCQ-S showed satisfactory internal consistency reliability (Cronbach's α=.91). **Conclusion:** The KPCQ-S is found to be a reliable and valid tool for measuring staff perceptions of the person centeredness of long-term care environments.

Key Words: Personhood, Long-term care, Environment

INTRODUCTION

1. Background

To ensure the quality of life for elderly people living in long-term care facilities, there is a growing perception that the long-term care facilities need to provide 'person-centered care' rather than 'provider-centered care' in many countries such as Europe, the United States, the United Kingdom and Australia [1]. Person-centered care is similar to client/resident-centered care, but it is a more comprehensive term. Person-centered care represents a philosophy of care that aims to improve the quality of services of long-term care facilities and the residents' quality of life [2]. Specifically, person-centered care is holistic care that considers the physical, social, emotional, and spiritual aspects of residents [3]. Also, person-centered care presents individualized care upon individual needs, empowers residents'decision-making on their care, and instills autonomy and confidence in them [3]. In addition, person-centered care is a continuous process of determining the direction of care together in consideration of individual residents' preference, values, and lifestyle, which should be based on sincere communication between the residents and staff, instead of not simply giving residents whatever they want, nor about merely providing information [4].

Several studies have shown that the person-centered care in long-term care facilities had positive effects on the residents and staff. As for the resident outcomes, studies showed a decrease in boredom, helplessness, and depres-

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sion by improving residents' social relationships, growing plants or animals, or involving the residents in care decision-making [5]. The small-scale nursing homes (NHs) have also improved residents' quality of life by allowing residents to have more comfortable and individualized care [6]. Regarding the staff outcomes, the improvement of communication with residents decreased the staff's burnout and emotional exhaustion from work, increased their job satisfaction [7], and enhanced their confidence and ability by providing individualized care to residents based on the philosophical change of person-centeredness [8].

According to the conceptual framework of McCormack and McCane [9], person-centered care is largely composed of four concepts. 1) The first concept is the attributes of caregivers, which is whether caregivers have professional capacity for care and whether they know the values or preferences of clients based on effective communication skills. 2) The environment encompasses not only the physical environment but also the organizational aspects (eg, staffing level, organizational culture, leadership, etc.) within the organization. The level of person-centeredness of the physical and organizational environments of an facility is known to play a very important role in implementing person-centered care. 3) The person-centered care process is a process in which individual care activities are planned based on the preferences and values of residents and their active participation are encouraged throughout the care processes. 4) The fourth concept is the outcomes that can be expected from the three components described above. Positive outcomes can be expected through person-centered care activities, and they can be assessed at the resident level (eg. satisfaction and well-being) and at the organizational level (eg. quality of care).

Among the four components above, the environment is a fundamental element in transforming long-term care facilities into person-centered environments, as it is an important factor in promoting or restricting the person-centered care process in practice. The supportive physical environment that ensures privacy and facilitates activities is expected to reduce the anxiety and behavioral symptoms of residents with dementia and to decrease dependence in social relationships and daily life [10]. In addition, the person-centered organizational environment can be defined as a sharing of power, appropriate skill-mix, shared decision-making, collaborative staff relationships, supportive organizational system, and the potential for innovation and risk-taking [9]. This person-centered organizational environment allows the staff to have autonomy and responsibility on their work, which can allow residents to experience higher life satisfaction [11] and to develop social relations with others [12].

To date, a variety of measurement tools have been developed and used to assess diverse aspects of such person-centered care in long-term care facilities internationally. However, only the 'Person-Directed Care Measure'[13] and the 'Person-Centered Care Assessment Tool'[14] are currently available to use in Korea. Moreover, these both tools assess the degree of person-centered care processes in long-term care facilities; thus, there is no measurement tool available to assess the extent of person-centeredness of the overall climate or environment of the long-term care facilities in Korea.

The purpose of this study was to test the validity and reliability of the Korean version of 'Person-centred Climate Questionnaire-Staff (PCQ-S)' tool translated from the English version developed by Edvardsson et al [15]. The PCQ-S was originally developed in Swedish and it is a self-reporting tool for staff working in the hospitals to assess the degree of person-centeredness of the environments in which they work [16]. The PCQ-S has been translated and adapted in English (2010)[15], Norwegian (2012)[17] and Slovenian (2017)[18] to date. In particular, the validity and reliability of PCQ-S have been tested in all areas of general and surgical wards in hospitals [15, 18] and long-term care facilities [17]. In other words, The PCQ-S can be used to measure the person-centered environment in various medical environments as well as long-term care facilities with a focus on evaluating the environmental person-centeredness perceived by the staff upon the physical and psychological aspects [15]. The PCQ has three versions depending on the subjects; for the staff [16], for patients/residents [19], and for families [20]. As all three versions have similar items, the PCQ has the advantage that it can be used to evaluate the degree of person-centeredness of the physical and organizational environments of an facility in multiple perspectives.

Currently, Korea is in the early stage of research on person-centered care. Despite the need to disseminate the person-centered care in Korean long-term care facilities, there is a lack of proven tools for assessing the person-centered aspects. The types of long-term care facilities in Korea include NHs and long-term care hospitals (LTCHs). Although the roles and functions of the two types of facilities are different from each other in legal terms, both facilities offer long-term care services to older adults, and there is no clear distinction in terms of the health status and medical needs of residents [21]. Therefore, the present study was designed to develop the PCQ-S in Korean by examining its cultural adaptation and applicability in NHs and LTCHs in Korea.

2. Objectives

The purpose of this study is to examine the reliability and validity of the Korean version of the PCQ-S (KPCQ-S) among staff in long-term care facilities including NHs and LTCHs. The specific aims are to develop the KPCQ-S and to test the reliability and validity of the KPCQ-S.

METHODS

1. Study Design

This study is a methodological study to test the reliability and validity of the KPCQ-S translated from the English version of PCQ-S [15].

2. Data Collection and Participants

The data were collected in 9 NHs and 4 LTCHs located in Seoul, Kyeonggi-do, Gwangju, and Busan by convenience sampling from November 2016 to February 2017. After describing the purpose and procedure of the study to the manager of each institution, the participants were recruited specifically, registered nurses (RNs), nurse aids (NAs), personal care workers (PCWs), social workers, and physical therapists. Inclusion criteria were those who had the work experience of one month or more, and understood the purpose of the study and voluntarily agreed to participate. A total of 297 persons (163 in NHs and 134 in LTCHs) were included in data analysis. This sample size meets the criterion of 10 times of the number of items of the instrument (14 items) for obtaining a stable factor structure. In addition, the sample size of more than 200 participants has been presented as sufficient for factor analysis in recent years [22], so the number of participants in this study is thought to be sufficient. The organizational characteristics of the long-term care facilities were collected from the manager of the facilities.

3. Measures

1) Person-centered Climate Questionnaire-staff version (PCQ-S)

The PCQ-S is a self-reporting tool developed by Edvardsson et al.(2008) in Swedish to measure the person-centered environment perceived by the staff in medical institutions. In this study, due to the difficulty of translating Swedish into Korean, we used an English version of PCQ-S adapted from the original Swedish version after the permission of the original author [15]. The PCQ-S consists of a total of fourteen items in three sub-domains ('a climate of safety', 'a climate of everydayness', and 'a climate of community'), but the English version used in this study has been composed of four categories ('a climate of comprehensibility' in addition to the three sub-domains). Each item was measured on a 6-point Likert-scale, and higher scores indicate a more person-centered environment. The Cronbach's α was .88 at the time of development of this tool, and .91 in the present study.

2) Job Satisfaction

The literature shows that the person-centered care increases staff's job satisfaction through improved communication between the staff and residents and among the staff [7]. Job satisfaction was used to examine the convergent validity with KPCQ-S. Job satisfaction was measured using the Korean version of COPSOQ II (COPSOQ-K)[24], which was originally developed by the National Institute of Occupational Health in Denmark [23] and modified by June et al., [24]. Among the seven domains of COPSOQ-K, the job satisfaction scale was used in a part of the 'work-individual interphase' domain. This scale consists of four items on a 4-point Likert scale, and higher scores indicate higher levels of job satisfaction. Cronbach's α for job satisfaction was .79[24], and .86 in the present study.

3) General Characteristics

The general characteristics of the participants were examined by age, gender, education attainment, marital status, type of occupation, work experience, and experiences of internal and external education about person-centered care. The work related characteristics included work shift and monthly wages. Organizational characteristics including location, ownership, operating years, total number of beds, and the number of staff by occupation were investigated.

4. Procedures

After obtaining approval from the original author for the use of the tool on developing the KPCQ-S, the English version of KPCQ-S was translated and adapted in accordance with the guidelines on the process of translation and adaptation of instruments proposed by the World Health Organization [25]. The original tool was developed in Swedish, but due to the difficulty of translation, the English version translated from the original tool [15] was used for translation into Korean under the permission of the original author. First, a graduate student in nursing who lived in the United States for secondary and college education

for more than 10 years translated the English version into Korean. Second, three researchers (a professor, a doctoral student, and a master's student in nursing) who were fluent in English and had sufficient experiences in person-centered care reviewed and revised the Korean version of the questionnaire in terms of correctness and cultural and institutional suitability several times. In the process, one item (3. A place where I feel I can be myself.) was considered somewhat vague, so the research team checked the exact meaning of the item with the original author by e-mail, and we translated it into a more specific question after obtaining the author's consent. Third, a graduate student in nursing who is bilingual in both English and Korean and has completed her bachelor's degree in nursing in the United States translated it back into English to verify the revised Korean version of the questionnaire. Then, three researchers compared the original English version and the English version of back translated from the Korean version, confirming that there were not any significant differences in the meaning of each item and the choice of words. Finally, after cognitive interviews and pilot surveys of five staff members (one RNs, two NAs, and two social workers) working in long-term care facilities using the final KPCQ-S, it was found that there is no difficulty in understanding and responding to the questions. The final KPCQ-S was used to collect data from the staff working in the long-term care facilities, and then tested the reliability and validity of the tool.

5. Ethical Considerations

This study was approved by the Institutional Review Board of the Seoul National University (IRB No. 1609/001-003). The participants of the study were those who agreed to participate in the study and signed the informed consent form after they were provided with the explanation of the study. The participants were informed that the responses would not be used for any purpose other than research and they could discontinue or reject anytime during the survey without any disadvantages. They were also provided with the name and contact information of the principal investigator so that they could contact us when they had questions about their rights or the content of the survey.

6. Data Analysis

First, general characteristics of the participants and long-term care facilities were analyzed using descriptive statistics including mean, standard deviation, frequency and percentage. The t-test and the x^2 test were used to compare the characteristics of NHs and LTCHs.

Second, for the item analysis, item-to-total correlation and Cronbach's α if item deleted were calculated, and Cronbach's α was calculated for all items and sub-factors to examine internal consistency, a measure of reliability.

Third, exploratory factor analysis (EFA) was conducted to examine the construct validity. Considering that the structures of sub-factors differed slightly in different facilities in various countries, EFA was performed to determine how the factor structure of PCQ-S in Korean long-term care facilities. The maximum likelihood method was used as the factor extraction method and the geomin method among oblique rotation methods was used for factor rotation. In addition, we separately conducted EFA by facility type to investigate whether there are any differences in the factor structure between NHs and LTCHs.

Fourth, we used correlation analysis to test convergent validity with job satisfaction.

The descriptive statistics were conducted using IBM SPSS 24.0 and the EFA was performed using Mplus 7.0.

RESULTS

1. General Characteristics of Participants and Long-term Care Facilities

Table 1 shows the characteristics of the participants of each type of facility. The average operating period was 12.22 years for NHs and 7.75 years for LTCHs. The average number of beds per facility was 73 in NHs and 200 in LTCHs. The number of patients per PCW was 22.08 persons for NHs and 6.99 persons for LTCHs. The number of patients per RN was 19.84 persons in LTCHs and 46.45 persons in NHs. The staffing levels between NHs and LTCHs were not directly compared because each facility type has a different staffing standard on workforce regulation.

Table 2 shows the general characteristics of the participants. Most of the staff in long-term care facilities were women, with an average age of about 50 years. Regarding staffing levels, the proportion of PCW was the highest at 58.3%, followed by that of social workers at 12.9% in NHs, while the proportion of PCW was 34.3% and that of RNs was 29.9% in LTCHs.

The number of education about person-centered care refers to the number of education perceived by the staff and it is measured by the question 'Have you had training/education in person-centered care (internal or external

Table 1. General Characteristics of Long-term Care Facilities

Variables	Total (n=13)	NH (n=9)	LTCH (n=4)
	n (%) or M±SD	n (%) or M±SD	n (%) or M±SD
Location Urban Rural	11 (84.6) 2 (15.4)	7 (77.8) 2 (22.2)	4 (100.0) 0 (0.0)
Ownership Incorporated Private	6 (46.2) 7 (53.8)	5 (55.6) 4 (44.4)	1 (25.0) 3 (75.0)
Operating years	10.85±6.01	12.22±6.74	7.75±2.22
Number of beds	111.69±81.35	72.78±38.26	199.25±88.34
Number of residents per nursing staff (RN+NA)	16.73±4.71	18.16±4.70	13.49±3.11
Number of residents per RN	36.78±34.49	46.45±40.93	19.84±3.73
Number of residents per PCW	11.63±11.84	6.99±4.38	22.08±17.31

NH=nursing home; LTCH=long-term care hospital; RN=registered nurse; NA=nurse aid; PCW=personal care worker.

training/education)?'. The frequency of person-centered training/education was higher in the staff of NHs than that of LTCHs, especially in the external training/education (t=4.49, $p<.05$).

2. Item Analysis and Reliability Analysis

Table 3 shows the results of item analysis of KPCQ-S. The mean score of KPCQ-S was 4.71 out of 6. The item with the highest score (5.07) was '13. A place where it is easy for the patients to talk to the staff,' and the item with the lowest score (4.31) was '3. A place where I feel I can be myself.' The correlation coefficients of the 14 items ranged from .52 to .72, which means no redundancy or duplication of items. The Cronbach's α value was .91 which satisfied the internal consistency of the scale.

3. Validity Analysis

1) Construct validity

(1) Exploratory factor analysis

The Kaiser-Meyer-Olkin test was conducted to determine the suitability for the factor analysis of 14 items, and the value was .90. The Bartlett's test of sphericity was significant (x^2=2038.39, $p<.001$) which means that the sample was suitable for factor analysis. In a scree plot with an eigen value of 1 or more, three factors were extracted.

Table 3 shows item factor loadings indicating .67~1.02 (Factor 1), .43~.96 (Factor 2), and .66~.86 (Factor 3). The explanatory power of each factor was 18.1%(Factor 1), 24.1 %(Factor 2), and 23.6%(Factor 3), and three factors accounted for 65.8% of the total variance. As for the names of the factors, we tried to maintain the names of the factors of the original tool, if possible [16]. Factor 1 included three items about employee competence and interpersonal skills, and was named 'a climate of safety.' Factor 2 included 7 items about the daily characteristics of the medical environment related to the supporting organizational system, and was named 'a climate of everydayness.' Factor 3 included 4 items related to an atmosphere that allows patients to form relationships with the employees and their families, colleagues, and friends, and was named 'a climate of community' that promotes patient participation.

(2) Exploratory factor analysis by facility type

Considering that there are two types of long-term care facilities in Korea, we conducted an EFA by distinguishing between staff of NHs and those of LTCHs to examine whether the factor structures of the two types of facilities are identical. The two data sets by facility type were found to be suitable for factor analysis as a result of the KMO test and Bartlett's test of sphericity. As shown in the right side of Table 3, the sample of the staff in NHs derived three factors as same as the factor structure derived using the total sample. However, in the sample of staff in LTCHs, a total of four factors were derived. The item 4, 5, 6, and 10 were the items that were loaded in the 'climate of everydayness' in the factor analysis using the whole sample, but they were derived as Factor 4 additionally in the factor analysis using the staff of LTCHs. This fourth factor was named as a 'climate of comprehensibility'[15], which provides a means to understand the patient's past and present experience of diseases and the direction of care.

Table 2. General Characteristics of Study Participants

Variables	Categories	Total staff (N=297)	NH staff (n=163)	LTCH staff (n=134)	x^2 or t (p)
		n (%) or M±SD	n (%) or M±SD	n (%) or M±SD	
Age (year)		49.91±11.32	51.21±10.26	48.35±12.32	2.17 (.006)
	<40	62 (20.7)	25 (15.3)	37 (27.6)	
	40~<50	60 (20.2)	34 (20.9)	26 (19.4)	
	50~<60	107 (36.0)	66 (40.5)	41 (30.6)	
	≥60	68 (22.9)	38 (23.3)	30 (22.4)	
Gender	Female	279 (93.9)	151 (92.6)	128 (95.5)	1.61 (.204)
Education attainment	Middle school or less	41 (13.8)	24 (14.7)	17 (12.7)	5.35 (.253)
	High school	93 (31.3)	54 (33.1)	39 (29.1)	
	College diploma	79 (26.6)	36 (22.1)	43 (32.1)	
	Bachelor degree	70 (23.6)	39 (23.9)	31 (23.1)	
	Graduate school	12 (4.0)	9 (5.5)	3 (2.2)	
Type of occupation	Registered nurse	57 (19.2)	17 (10.4)	40 (29.9)	43.37 (<.001)
	Nurse assistant	37 (12.5)	17 (10.4)	20 (14.9)	
	Social worker	25 (8.4)	21 (12.9)	4 (3.0)	
	Personal care worker	141 (47.5)	95 (58.3)	46 (34.3)	
	Physical therapist	30 (10.1)	8 (4.9)	22 (16.4)	
	Others	4 (1.3)	3 (1.8)	1 (0.7)	
Total wok experiences (year)		6.89±5.95	6.7±5.69	7.01±6.24	-0.30 (.583)
Current work experiences (year)		3.93±3.51	4.56±4.04	3.16±2.54	3.45 (<.001)
PCC education (times)	Internal program	1.55±1.28	1.79±1.21	1.26±1.30	3.61 (.115)
	External program	1.09±1.19	1.36±1.23	0.75±1.07	4.49 (.001)
Work shift	Rotating shift	151 (51.9)	79 (48.5)	72 (53.9)	7.57 (.023)
	Fixed shift	143 (48.1)	81 (49.7)	62 (46.3)	
Monthly income (10,000 won)	<150	166.63±35.20	164.92±33.70	168.64±36.93	-0.90 (.005)
	150~<199	103 (34.7)	56 (34.4)	47 (35.1)	
	200~<249	118 (39.7)	74 (45.4)	44 (32.8)	
	≥250	59 (19.9)	21 (12.9)	38 (28.4)	
		17 (5.7)	12 (7.4)	5 (3.7)	

NH=nursing home; LTCH=long-term care hospital; PCC=person-centered care; Missing cases [Age: NH=3, LTCH=1; Gender: NH=2, LTCH=2; Education level: NH=1, LTCH=1; Length of employment with the current facility: NH=4, LTCH=3, Total career: NH=46, LTCH=23, PCC internal education: NH=3, LTCH=1, PCC external education: NH=6, LTCH=1, Working type: NH=3].

2) Convergent validity

Correlation analysis was used to examine the convergent validity of KPCQ-S and job satisfaction. The correlation coefficient between KPCQ-S and job satisfaction indicated a high positive correlation with r=.55 (p<.001). Therefore, convergent validity of KPCQ-S with job satisfaction was verified [27].

DISCUSSION

The aim of this study was to develop the KPCQ-S to measure the person-centered environment perceived by staff working in Korean long-term care facilities. The English version of PCQ-S developed by Edvardsson et al. (2008)[15] was translated into Korean and modified in accordance with the guidelines of the WHO [25], and tested its reliability and validity to a total of 297 staff from nine NHs and four LTCHs. This study demonstraed that the KPCQ-S was applicable for measuring the person-centered environment from the perspective of the staff in Korean long-term care facilities.

As for the overall factor structure, three factors were identified as follows: 'a climate of safety,' 'a climate of everydayness,' and 'a climate of community' from the total sample. Also, the factor loading of the items was similar to that of the Swedish original PCQ-S, but two items were

Table 3. Item Performance, Reliability and Result of Factor Analysis

Item	Item contents	M±SD	Corrected Item-total correlation	Cronbach's α if item deleted	Total staff (n=297)			NH staff (n=163)			LTCH staff (n=134)			
					Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 4
1	A place where I feel welcome	4.47±0.86	.56	.90	0.67	0.03	0.06	0.53	0.15	0.12	0.76	0.13	0.08	-0.19
2	A place where I feel acknowledged as a person	4.50±0.83	.64	.90	1.02	-0.12	0.04	0.99	-0.08	0.05	0.96	-0.16	-0.04	0.15
3	A place where I feel I can be myself	4.31±1.11	.52	.90	0.67	0.17	-0.15	0.77	0.12	-0.13	0.62	0.12	-0.05	0.04
4	A place where the patients are in safe hands	4.76±0.80	.68	.90	0.08	0.55	0.17	0.11	0.73	-0.01	-0.08	0.01	0.11	0.74
5	A place where the staff use a language that the patients can understand	4.84±0.65	.68	.90	0.14	0.43	0.25	0.13	0.42	0.28	0.03	0.05	-0.15	0.92
6	A place which feels homely even though it is in an institution	4.75±0.88	.72	.89	0.07	0.67	0.08	0.11	0.68	0.03	0.06	0.30	0.10	0.41
7	A place where there is something nice to look at	4.50±1.14	.54	.90	-0.04	0.72	-0.08	0.04	0.63	0.06	-0.01	0.76	-0.15	0.02
8	A place where it is quiet and peaceful	4.70±0.86	.71	.89	-0.06	0.96	-0.12	-0.04	0.94	-0.12	-0.01	0.77	0.03	0.12
9	A place where it is possible to get unpleasant thoughts out of your head	4.33±1.00	.55	.90	0.16	0.48	-0.00	0.22	0.47	-0.08	0.13	0.46	0.25	-0.11
10	A place which is neat and clean	4.76±0.85	.65	.90	-0.00	0.48	0.28	-0.10	0.66	0.18	0.06	0.07	0.22	0.44
11	A place where it is easy for the patients to keep in contact with their loved ones	4.86±0.82	.61	.90	-0.02	0.13	0.66	-0.12	0.36	0.55	0.02	-0.23	0.51	0.40
12	A place where it is easy for the patients to receive visitors	5.03±0.71	.52	.90	0.01	-0.17	0.86	-0.04	-0.07	0.88	0.06	-0.06	0.76	-0.10
13	A place where it is easy for the patients to talk to the staff	5.07±0.66	.63	.90	-0.02	-0.03	0.86	0.08	-0.13	0.93	-0.10	0.13	0.82	-0.01
14	A place where the patients have someone to talk to if they so wish	40.91±0.73	.62	.90	-0.05	0.11	0.73	-0.01	0.08	0.70	0.00	-0.02	0.78	0.06
	M±SD of sub-domai				4.43±0.83	4.67±0.66	4.97±0.61	4.43±0.82	4.84±0.62	5.10±0.57	4.42±0.82	4.22±0.83	4.81±0.62	4.63±0.68
	M±SD of whole scale						4.71±0.58			4.82±0.55				4.55±0.58
	Cronbach's α of sub-domain				.83	.66	.85	.83	.87	.87	.83	.70	.81	.84
	Cronbach's α of whole scale					.91			.91				.89	
	Explained variance (%)					65.8%			67.8%				70.8%	

NH=nursing home; LTCH=long-term care hospital; Factor 1: A climate of safety, Factor 2: A climate of everydayness, Factor 3: A climate of community, Factor 4: A climate of comprehensibility.

differently loaded. While '4. A place where the patients are in safe hands.' and '5. A place where the staff use a language that the patients can understand.' were loaded on the 'climate of safety' factor in the study of Swedish hospital medical personnel [16]; however, it was loaded on the 'climate of everydayness' factor in the present study. In the Norwegian study, which conducted a psychometric assessment for NH staff in 2012, the item '4. A place where the patients are in safe hands.' was derived not as an item of the 'climate of safety' but as an item of the 'climate of community'[17]. Regarding the study participants, the present study and the Norwegian study were conducted with the staff in long-term care settings, while the Swedish PCQ-S was conducted with the staff in acute care hospitals. The question asking about safety of the working environment can be regarded literally as related to 'safety' of the hospitals. However, in the long-term care setting, it is considered as everyday life environment or community environment in terms of the perception of the as a safe environment like a 'home'. Since the PCQ-S is a tool that can be effectively used to compare differences in person-centered environments between wards in acute care hospitals in Korea, where patient-centered services are currently emphasized, it is necessary to conduct a comparative analysis about whether similar or different factor structures of the items are derived through further research on acute hospitals.

In addition, since this study investigated two facility types (NHs and LTCHs) in Korea with different characteristics providing care for the elderly, EFA was conducted for each facility type. In general, when determining the number of factors in EFA, it is common to employ the Kaiser's eigen value >1 criterion. However, in the present study, there was a difficulty in identifying the factor structure only with the eigenvalue for each facility type. In the sample of the NHs, considering the eigen value (0.972) and the model fit of the tool, three factors were derived as same as that of the EFA with the total sample of facilities.

On the other hand, the EFA using only LTCH sample showed a different factor structure. When the four factor structure was determined considering the eigen value (0.979) and model fit, the four items ('4. A place where the patients are in safe hands,' '5. The workers speaks to me in a comprehensible manner,' '6. A place which feels homely even though it is in an institution,' and '10. A place which is neat and clean'), which were included in the 'climate of everydayness' factor, were derived as a new factor. These new factor may be considered similar to those derived from an English-version PCQ-S study of the staff in the Australian short-term inpatient hospitals. Edvardsson et al.(2009) named this new factor as a 'climate of comprehensibility,' explaining that it provides a means to understand the patient's past and present experience of diseases and directions of care [15]. We also named the fourth newly derived factor as a 'climate of comprehensibility.' LTCHs are the facilities that provide long-term care services, but they have a stronger nature of medical institutions than NHs. Residents in NHs have relatively lower needs for medical care compared to the residents in LTCHs, and have a nature of a place of residence. However, in LTCHs, the time for treatment is relatively longer as medical practitioners perform rehabilitation therapy, skilled nursing care, or oriental medicine treatment, and administer routine medications. LTCH staff may regard the environment in which staff talk about medical matters in easy ways to residents in a neat, safe and home-like circumstances as a separate domain for improving the effects of treatment and understanding the direction of care. Therefore, it is recommanded that the factor structure of the items should be applied differently when calculating the scores of the sub-domains according to the facility type.

The mean score of KPCQ-S was 4.71 points (4.82 points for NHs and 4.55 points for LTCHs), which is similar to 4.88 points in the Norwegian study of NH staff [17], but higher than 4.39 points in the Slovenian study of nursing staff of operating rooms and general wards [18] and 4.52 points in the Swedish study of staff of general wards [16]. This difference is presumably due to differences in the facilities. The mean score of the KPCQ-S in Korean NHs was 4.82 points, which is similar to the result of the Norwegian study of NHs. The mean score for LTCHs was 4.55 points, which is similar to the finding of the Slovenian study (4.39 points) and of the Swedish study (4.52 points) conducted with hospitals. In particular, comparing the mean scores of each factors, the scores of NHs were higher than those of LTCHs in the 'climate of everydayness'(4.84 points for NHs and 4.22 points for LTCHs) and 'climate of community'(5.10 points for NHs and 4.81 points for LTCHs). This difference shows that although both NHs and LTCHs provide a certain level of long-term care services in Korea, NH residents are likely to have a longer period of stay and share more of everyday life with staff than the LTCH residents, which have a relatively stronger therapeutic purpose.

As described above, NHs showed higher KPCQ-S scores than LTCHs, which may be attributed to the fact that LTCHs provide relatively more treatment and medical services, and the ratios of nursing staff and therapists are relatively higher than NHs. This characteristic of LTCHs may have staff to perceive their care environments to be less person-centered compared to NH staff. Nevertheless,

considering that both NHs and LTCHs are the facilities where elderly people live for a certain period of time, the person-centered environment is should be emphasized in both settings.

In this study, we evaluated the applicability of the KPCQ-S among a total of 297 staff in 13 long-term care facilities. However, there is a limitation that participants were selected not by systematic quota sampling but by convenience sampling. Nevertheless, this study will contribute as the cornerstone of future research efforts on person-centered care in the field of long-term care, which is increasingly attracting attention worldwide. Regarding the possibility of its specific applicability in practice, it can be used as the instrument for continuous quality improvement of the environments in long-term care settings through comparative and longitudinal analysis by assessing the level of the person-centered environment of each ward or unit within the same facility. Second, since KPCQ-S is composed of specific items, it can be applied to the intervention studies to create person-centered environments in long-term care facilities using individual items. To realize a person-centered environment, it is necessary to develop intervention programs that enables the implementation of a safe environment where overall comprehensibility is ensured and everyday life and communality are emphasized. Finally, since the PCQ-S is currently being used in practice as translated and modified versions in many countries, it can be used effectively for international studies of comparative analysis.

CONCLUSION

This study was conducted to test the applicability of the PCQ-S in Korea. The KPCQ-S has been proven to be a suitable tool for evaluating the person-centered environment of long-term care facilities in Korea in terms of reliability and validity. However, it was shown that there are some differences in the person-centered environment according to the facility type by deriving slightly different factors between NHs and LTCHs. The KPCQ-S can contribute to conduct further studies on investigating the levels of the person-centered environment of various long-term care facilities and to promote interests in the person-centered care of the facilities.

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