

Validity and Reliability of the Korean Version of the Watson Caritas Patient Score

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ABSTRACT

Background: The increasing use of information technology in healthcare settings has reduced human contact with healthcare providers and is hampering human-centered intrinsic nursing work associated with patient discomfort, emotional distress, and desire. The caring attitude of nurses affects patient compliance with medication instructions as well as the promotion of health behaviors and patient satisfaction.

Purpose: This study was designed to develop a Korean version of the Watson Caritas Patient Score (WCPS) developed by Watson and then verify its reliability and validity.

Methods: This was a methodological study. Data were collected from 240 patients in wards of the departments of internal medicine and surgery of a general hospital with more than 500 beds in Kunsan City between May 1 and June 8, 2017. Exploratory factor analysis and confirmatory factor analysis were used to verify the construct validity and model fit. The Patient Perception of Hospital Experience with Nursing was used to confirm convergence validity. Data were analyzed using descriptive analysis, Cronbach's alpha, factor analysis, and Pearson's product-moment correlation analysis.

Results: The internal consistency of the Korean version of the WCPS assessed using Cronbach's alpha was .94. The content validity index for each of the five items was 1.0. The communalities ranged from .75 to .87, and the overall model fit was good. In addition, the average variance extracted was .61, the composite reliability was .89, and the convergent validity was .72 ($p < .001$).

Conclusions/Implications for Practice: The original English version and the Korean version of the WCPS both address a single factor, which confirmed the reliability and good fit of the model and showed both convergent and criterion-related validity. The Korean version of the WCPS is expected to contribute to improving the quality of nursing care in Korea by providing a simple scale that assesses patient perceptions of nursing care easily and accurately.

KEY WORDS:

caring, nurse, patient-centered care, patients' experience, validity.

sector are expected to accelerate the utilization of robots and artificial intelligence in diagnosis and surgical equipment. However, although this trend has provided patients with faster and more accurate diagnoses and treatments, it has reduced human contact with healthcare providers and hampered human-centered intrinsic nursing work, which has subsequently increased patient discomfort, emotional distress, and desires (Edvardsson, Watt, & Pearce, 2017; McGilton et al., 2017). In addition to professional competencies that combine scientific and medical knowledge and skills, nurses must also have personal and esthetic attitudes that allow them to provide high-quality nursing services (Rhodes, Morris, & Lazenby, 2011). Nursing may be defined by the answer of "caring" to the question "What do you do for the patient?" (Lee, 1996).

The caring attitude of nurses affects their degree of compliance with medication instructions, the promotion of health behaviors, and patient satisfaction, which determines whether patients will select the same hospital in the future (Lee, Lee, Cho, & Seol, 1998; Paik & Kim, 2014). It has been reported that wait time, convenience of procedures, and smoothness and appropriateness of workflows affect the satisfaction of patients. Kindness and respect as well as information provided to patients by nurses affect the satisfaction of hospitalized patients and their intention to return to a hospital (Jung, 2005; Lee et al., 1998). Therefore, identifying how well nurses care for patients is very important for improving the quality of nursing care and increasing patient satisfaction. This situation has led to various studies of caring by nurses in Korea. However, few validated instruments for measuring caring have been developed and used in Korea (Park & Kim, 2016).

Jean Watson, a nursing theorist, emphasized the importance of caring science and argued that nursing should shift away from an industrial model and toward a creative and mature professional model that views patients as spirit-filled people

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Introduction

Many information-technology-based healthcare applications have been developed in recent years, and the effects of the fourth industrial revolution based on big data in the medical

rather than only patients (Watson, 2016). Watson and Woodward (2010) proposed 10 caritas factors and processes based on respect for human beings and developed the Watson Caritas Patient Score (WCPS), a five-item measure of the care provided by nurses as perceived by acute care and rehabilitation ward inpatients, with item scores given on a 7-point scale (Brewer & Watson, 2015). The WCPS scale has been translated into five different languages and is used worldwide (Watson et al., 2010). However, the instrument cannot be used in Korea, as no research has verified its reliability and validity on Korean subjects. This instrument is well suited for busy clinical practices because it is easy to apply and comprises easy-to-understand and concise items that reflect both the care provided by nurses and the experience of patients.

Research Aims

The purposes of this study were to (a) translate the WCPS and (b) estimate the reliability and validity of the translated instrument. The aim was to contribute to the improvement of the quality of nursing care by developing a simple scale that can easily and accurately assess nursing care as perceived by patients.

Methods

Participants and Data Collection Methods

This study used a methodological research design. The participants in this study were able to communicate in Korean, had been hospitalized in the wards of the departments of internal medicine and surgery of a general hospital with more than 500 beds in Kunsan City, and voluntarily agreed to participate. The minimum number of participants required for an exploratory factor analysis (EFA) is five times the number of variables (Kim, 2010). Using the criterion that a sample of 200 would be required for a confirmatory factor analysis (CFA; Moon, 2009), data were collected from 250 participants based on an anticipated maximum dropout rate of 20%.

After obtaining approval from the institutional review board of Kunsan College of Nursing, the researcher applied for permission to perform the study and provided information regarding the study purpose, procedures, methods, and questionnaire content to the hospital director. Advanced cooperation was obtained from the nursing department, and data were collected between May 1 and June 8, 2017. The questionnaire was distributed by the research assistant, who explained the content and confidentiality of the research as well as the method of administering the questionnaire and collected written informed consent from each participant. The questionnaire was composed of nine sociodemographic items (age, gender, religion, marital status, education, occupation, hospitalization experience, hospitalization period, and inpatient ward), five WCPS items, and 15 Patient Perception of Hospital Experience with Nursing (PPHEN) items. The

total time required to complete the questionnaire was about 10 minutes. Two hundred forty questionnaires were used in the final analysis because 10 of the submitted questionnaires were not complete.

Research Tools

Watson caritas patient score

The WCPS was developed by Brewer and Watson (2015) based on caritas factors and caritas processes, which encompass the formation of a humanistic altruistic system of value; instillation of faith and hope; cultivation of sensitivity to self and others; development of a helping-trust relationship; promotion and acceptance of the expression of positive and negative feelings; systematic use of the scientific problem-solving method for decision making; promotion of interpersonal teaching and learning; provision for supportive, protective, and corrective mental, physical, sociocultural, and spiritual environments; assistance with gratification of human needs; and allowance for existential-phenomenological forces. The questionnaire consists of the following five items: deliver my care with loving kindness; meet my basic human needs with dignity; have helping and trusting relationships with me; create a caring environment that helps me heal; and value my personal beliefs and faith, allowing for hope. The WCPS items are each scored on a 7-point scale, ranging from "not at all" (1) to "very much" (7), with a higher score indicating better nursing care. The reliability was confirmed in the original study by the developer of the tool with a Cronbach's α of .90 (Brewer & Watson, 2015).

Patient perception of hospital experience with nursing

The PPHEN was developed by Dozier, Kitzman, Ingersoll, Holmberg, and Schultz (2001) to gather self-reported patient responses on quality of care. The instrument was composed of 15 items that are scored on a 5-point Likert scale. It was developed using a conceptual framework of caring. The quality of nursing is measured from the patient's point of view, and this instrument was used in this study to confirm the criterion-related validity of the WCPS. The reliability of the PPHEN has been supported by Cronbach's α values ranging from .85 to .95 (Dozier et al., 2001; Ipek Coban & Kasikci, 2010; Heo & Im, 2019), with the highest value (.95) found in a study that was conducted in Korea (Heo & Im, 2019).

Research Procedure

Translation of the Watson Caritas Patient Score

Written approval was received from Jean Watson, the developer of the WCPS. The translation and application process for the tool was carried out in accordance with World Health Organization guidelines (World Health Organization, 2017)

in the order of primary translation, expert panel assessment, back-translation, preliminary investigation, and final completion. The primary translation was carried out by a bilingual nursing professor who has both clinical practice and education experience in English-speaking countries and is familiar with the terms used in the original instrument. To check for discrepancies between the original text and the translation and in the expressions used because of cultural differences, a panel composed of three expert nursing professors and one professor of English language and literature corrected the instrument.

Item 1 raised the most discussion among members of the expert panel. The first translation process resulted in this being phrased as “to take care sincerely,” with the majority opinion stating that this constituted overinterpretation. Thus, this phrase was modified to “to take care with affection and kindness” to make it easier for the layperson to understand. The other items were subject to simple modifications only (e.g., using the active rather than the passive tense), and no modifications in meaning were made. This process included the back-translation of the final version by an English-language professor who is bilingual and has an English-speaking doctoral degree. The back-translated version was subsequently accepted based on the opinion that its meaning was the same as the original text.

Preliminary investigation

The Korean version of the translated WCPS was initially administered to 30 patients who were hospitalized in one ward of the departments of internal medicine and surgery of the general hospital in May 2017 to test the clarity of content, ease of understanding, time required for responses, and potential problems in completing the questionnaire. The questionnaire content and respondent understanding of phrases were generally considered to be appropriate, and approximately 1 minute was required to complete the questionnaire. Thus, none of the items was revised (Figure 1).

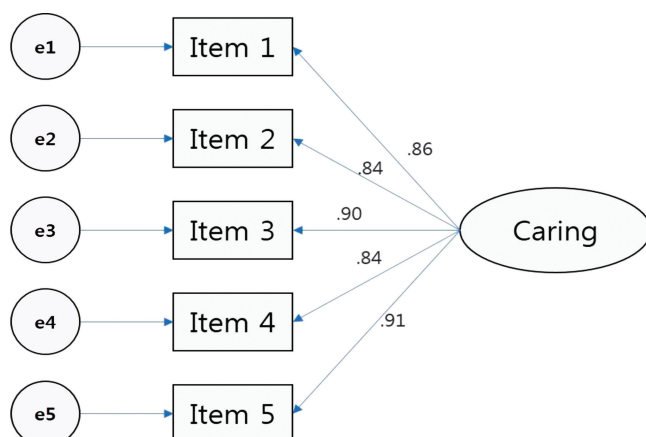


Figure 1. Path diagram of the revised version of translated Watson Caritas Patient Score.

Ethical considerations

The institutional ethics review committee of the researcher's educational institution approved this study (IRB No. 2017-04-HR-02) based on the opinion that the study involved applying a very low-risk and concise questionnaire to adult inpatients at the minimum-risk stage. Patients who voluntarily agreed to participate were given explanations of the purpose, content, and procedures of the study; of their anonymity as participants; and of their right to withdraw at any time. All of those willing to enroll as participants completed a written consent form.

Data analysis methods

The collected data were analyzed using IBM SPSS Statistics Version 22.0 and AMOS 21.0 (IBM Inc., Armonk, NY, USA). Questionnaires that had been returned with data missing were excluded from analysis, so that 240 questionnaires were analyzed. Participants' demographic characteristics were evaluated using frequency, percentage, mean, and standard deviation values. The reliability test that was performed to assess the internal consistency of the study tool produced a Cronbach's α of $> .70$, which confirmed its internal consistency (Noh, 2014).

Validity of the instrument was ensured through EFA and CFA. Item analysis was conducted using the correlations between the total score and the individual factors. For factor extraction, the Kaiser–Meyer–Olkin and Bartlett's sphericity tests were used to determine the number of factors with eigenvalues of ≥ 1.0 in the principal component factor analysis. A cumulative variance of at least 60% was explained by the extracted factors with loadings of $> .50$. When the number of factors was determined, the model fit of the tool may be confirmed using CFA to show that the significance level of chi-square is $p \geq .05$, the root mean square residual (RMR) is $< .08$, the standardized root mean square residual (SRMR) is $< .05$, the root mean square error of approximation (RMSEA) is $< .08$, the goodness-of-fit index (GFI) is $> .90$, the normed fit index (NFI) is $> .90$, the relative fit index is $> .90$, the incremental fit index (IFI) is $> .90$, the average variance extracted (AVE) is $\geq .5$, and the composite reliability (CR) is $\geq .7$. In addition, the Pearson's correlation coefficient was used to analyze the correlation between the scale and the patient-perceived quality of care as measured using the PPHEN to verify the convergent validity of the WCPS.

Results

Participant Characteristics

Of the 240 participants, 53.8% were male, 90.9% were middle aged (35–64 years) or older (65 years and over), 65.8% were religious, 84.6% were married, 53.3% had less than a high school level of education, 33.3% were employed, and 79.6% had a previous hospitalization experience. Most (89.2%) had been hospitalized for a period between 2 days and 1 month, and 62.5% were surgery department inpatients (Table 1).

TABLE 1.
Watson Caritas Patient Score, by Participant Characteristics (N = 240)

Characteristic	n	%	WCPS			
			M	SD	t or F	p/Post Hoc
Age (years)					F = 4.40	.013
① 19–34 ^a	22	9.2	5.49	1.20		① < ②, ③
② 35–64 ^b	107	44.6	6.01	1.24		
③ ≥ 65 ^b	111	46.3	6.31	1.28		
Gender					0.65	.519
Male	129	53.8	6.15	1.17		
Female	111	46.2	6.05	1.39		
Religion					-1.42	.156
Yes	158	65.8	6.03	1.36		
No	82	34.2	6.26	1.09		
Marital status					1.95	.052
Married	203	84.6	6.17	1.25		
Single	37	15.4	5.73	1.34		
Education					4.63	< .001
Below high school graduate	128	53.3	6.45	0.96		
Above high school graduate	112	46.7	5.70	1.47		
Occupation					-2.07	.040
Yes	80	33.3	5.87	1.40		
No	160	66.7	6.22	1.19		
Experience of hospitalization					0.97	.335
Yes	191	79.6	6.06	1.32		
No	49	20.4	6.26	1.08		
Hospitalization period (days)					F = 2.07	.133
< 2	113	47.1	6.00	1.35		
2–30	101	42.1	6.30	1.11		
> 30	26	10.8	5.81	1.45		
Hospital ward					0.78	.439
Department of medicine	90	37.5	6.19	1.28		
Department of surgery	150	62.5	6.05	1.27		

Note. WCPS = Watson Caritas Patient Score.

Reliability Test

The item analysis for the reliability test revealed a skewness range of -1.48 to -1.71 and a kurtosis range of 1.34–2.54, indicating regularity (West, Finch, & Curran, 1995). The internal consistency (Cronbach's α) of the five items was .94, indicating that the final tool is reliable.

Validity Verification

Content validity

The content validity of the Korean version of the WCPS was verified by two nursing professors, two ward administrators, and two clinical nurses. The content validity instrument was configured to respond to each item on a 4-point Likert scale ranging from “poor fit” (1) to “excellent fit” (4). The content validity index of the total instrument was assessed by the experts as the proportion of the

five items that scored either 3 or 4. The content validity index of each of the items was 1.0, which means that all of the experts agreed that all of the five items were valid. Therefore, in accordance with usual acceptance criteria (Lee et al., 2009), all five items were included in the final questionnaire.

Exploratory factor analysis

The EFA, analyzed using SPSS 22.0, yielded a Kaiser–Meyer–Olkin index of .89. The Bartlett's sphericity test resulted in $\chi^2 = 1104.27$ and $df = 10$ ($p < .001$). In the EFA, a single factor with an eigenvalue of ≥ 1.0 was extracted from the principal component analysis, with a total explanatory power of 81.36%. The communality ranged from .75 to .87, indicating that all of the questions included satisfied the $> .40$ criterion (Costello & Osborne, 2005). The factor loading of each item ranged from .86 to .93 (Table 2).

TABLE 2.
Descriptive Statistics, Factor Loading, Reliability, and Correlation Between PPHEN of the Korean Version of WCPS Items (N = 240)

No	WCPS Item	M	SD	Factor Loading	PPHEN	
					r	p
1	Deliver my care with loving kindness.	6.15	1.33	.91	.63	< .001
2	Meet my basic human needs with dignity.	6.19	1.29	.90	.62	< .001
3	Have helping and trusting relationships with me.	6.07	1.46	.91	.60	< .001
4	Create a caring environment that helps me heal.	6.01	1.54	.86	.68	< .001
5	Value my personal beliefs and faith, allowing for hope.	6.10	1.45	.93	.70	< .001
Total		6.10	1.28		.72	< .001

Note. Kaiser–Meyer–Olkin values = .89; Bartlett's sphericity test: $\chi^2 = 1104.27, p < .001$; total explanatory power: 81.36%; Cronbach's $\alpha = .94$. WCPS = Watson Caritas Patient Score; PPHEN = Patient Perception of Hospital Experience with Nursing.

TABLE 3.
Goodness of Fit in the Korean Version of the WCPS Model (N = 240)

Category	χ^2	df	p	RMR	SRMR	RMSEA	GFI	NFI	RFI	IFI	TLI	CFI
Model fit (modified)	3.47	2	.18	.02	.01	.06	.99	.99	.98	.99	.99	.99
Model fit (hypothetical)	35.82	5	< .001	.05	.02	.16	.94	.97	.94	.97	.94	.98
Acceptance value			> .05	< .08	< .05	< .08	> .90	> .90	> .90	> .90	> .90	> .90

Note. WCPS = Watson Caritas Patient Score; RMR = root mean square residual; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; GFI = goodness-of-fit index; NFI = normed fit index; RFI = relative fit index; IFI = incremental fit index; TLI = Tucker–Lewis index; CFI = comparative fit index.

Construct validity

The results of the CFA using AMOS 21.0 were $\chi^2 = 35.82$ and $p < .001$. Because the value of RMSEA was .16, a modification of the model was warranted. Error covariances between Items 1 and 2, Items 2 and 5, and Items 2 and 4 were controlled based on the modification index suggested by the AMOS program, and the goodness of fit of the modified model was determined. The results of $\chi^2 = 3.47$ and $p > .05$ showed the model to be significant and the overall goodness of fit of the model to be favorable, with RMR = .02 (< .08), SRMR = .01 (< .05), RMSEA = .06 (< .08), and GFI = .99 (> .90). The suitability of this model as a valid instrument was confirmed by all values of the IFIs satisfying the acceptance criteria (Noh, 2014), with NFI = .99 (> .90), relative fit index = .98 (> .90), IFI = .99 (> .90), Tucker–Lewis index = .99 (> .90), and CFI = .99 (> .90; Table 3). When the convergent validity of items is tested, the standardized factor loading for each item should be $\geq .50$ (preferably $> .70$). The loadings for all of the items in the WCPS were $> .83$. The analysis performed using the equation of Fornell and Larcker (1981) resulted in an AVE of .61 and a CR of .89 (AVE $\geq .50$ and CR $\geq .70$), indicating that the five items measured the caring concept well (Table 4).

Convergent validity

Convergent validity was shown by a positive correlation between the coefficients for the quality of nursing (PPHEN)

tool and the five items of the WCPS (range: .60–.70, $p < .001$), with an overall coefficient of .72 ($p < .001$). This result shows that the same concept is closely measured, which confirms the convergent validity (Table 2).

Discussion

The process of translating the original version of the WCPS prompted several discussions about terms such as “took care

TABLE 4.
Confirmatory Factor Analysis Results of the Korean Version of WCPS (N = 240)

Variable	Number of Items	Standardized Factor Loading	Error Variance	AVE	CR
WCPS	1	.86	.47	.61	.89
	2	.84	.50		
	3	.90	.40		
	4	.84	.69		
	5	.91	.35		
Evaluation criteria		$\geq .5$		$\geq .5$	$\geq .7$

Note. WCPS = Watson Caritas Patient Score; AVE = average variance extracted; CR = composite reliability.

with sincerity,” “took care with caritas,” and “took kind care with affection” in the context of Item 1: “Deliver my care with loving-kindness.” On the basis of the opinion that it would be better to use sentences that allow patients to understand their subjective experiences, the decision was made to use the following expression: “Look after them kindly with compassion.” The back-translation process confirmed that this expression reflected the same meaning as the original English version, with the expert group stating that the question provided a valid measure of the concept of caring. Moreover, the participants understood the question without difficulty. Therefore, “look after them kindly with compassion” was deemed as appropriate for inclusion in the Korean version of the WCPS.

The original WCPS consisted of one factor. In this study, a single factor was also used for the Korean version based on an eigenvalue cutoff of ≥ 1.0 . Woo (2012) suggested that there is no standard for the number of factors required in valid tools and that at least three observational variables should be used to constitute one potential variable to avoid the identification problem in CFA. The fit of a model in CFA is considered acceptable when RMR is $< .08$, with a value of $\leq .05$ indicating a very suitable model. A value of $.05$ was obtained in this study, whereas a good fit of $.01$ was found for the standardized coefficient (SRMR) and the absolute fit index (GFI) was found to be $.99$ ($> .90$), which, together, indicated that the overall model was appropriate. Moreover, the IFI, which is an index of how well a research model was measured, was appropriate compared with the null model. In particular, the NFI, which is the most basic index, was $.99$ ($> .90$), showing that the research model in the null model improved to 99% and indicating that it is highly relevant. Although the absolute GFI (RMSEA) is best when the value nears zero (good when the index is less than $.5$ and bad when the index is 1 or greater), a poor goodness of fit with a high RMSEA value will result when the number of variables is small because of the influence of the degree of freedom (Hong, 2000). The goodness-of-fit test of the model in this study resulted in the following: RMSEA = $.06$ and CFI = $.99$ ($> .90$). As CFI is deemed superior to RMSEA for testing the goodness of fit when, as in this study, the number of variables is small (Hong, 2000), the goodness of fit of the model of the WCPS instrument in this study was considered satisfactory.

The result is a model using modified indices that connects Items 1 and 2, 2 and 4, and 2 and 5. In a domestic study, the inpatients asked the nurses to provide a more comfortable environment, kindness in care, and respect for their beliefs. As these requirements reflect the desire of patients to be treated in a dignified manner, they highlight the correlations between the items. In addition, the AVE and CR values, calculated in accordance with Fornell and Larcker (1981), confirmed that the five items measured caring consistently.

On the other hand, the convergent validity of the PPHEN was confirmed through correlations with the WCPS, because the PPHEN was constructed based on the concept of care

and has been used like the WCPS to evaluate the patient-perceived quality of nursing care.

The level of caring measured in this study was 6.10 ± 1.28 ($M \pm SD$), which was similar to the range of 5.7 – 7.0 found for the original instrument (Brewer & Watson, 2015). Thus, it may be concluded that nurses in the United States and Korea provide human-centered caring. Previous domestic and foreign studies have found differences in how nurses and patients perceive the degree and importance of caring (Kim & Lee, 1999; McCance, Slater, & McCormack, 2009). Because different instruments were used for these measurements, future research should attempt to determine the validity and reliability of the WCPS in clinical applications and use the results as basic data for improving nursing attitudes and perceptions toward patient care.

The caring provided by nurses to patients was found to differ by age, educational level, and occupation. Nearly half (46%) of the participants in this study were aged 65 years or older. The average age of 58.7 years in the study of Brewer and Watson (2015), which used the same instrument, was similar to this study. Whereas the score for perception of care was high in previous studies because of the high proportion of older inpatients, the score for perception of nurses' care among participants aged 35 years or younger in this study was significantly lower than that among the older (65 years and older) group. Similarly, Kim and Lee (1999) reported a low score among participants younger than 30 years old. This appears to be because of the high susceptibility to relationships in this age group, because most subjects in early adulthood are independent from their parents and single. In-depth questions on participant characteristics could not be explored in this study, and Brewer and Watson similarly did not compare the perception of care by age. Therefore, exploring the underlying factors causing young adults to give lower care scores than their older peers and testing the validity of the instrument by age should be pursued in future studies.

Domestic studies of caring have largely relied on qualitative research methods, with quantitative research limited by the lack of appropriate measurement instruments. The results of this study support the Korean version of the WCPS as a valid and easy-to-implement instrument for use in measuring the self-perceived care quality of domestic inpatients. Furthermore, this instrument may help increase research into the care provided by nurses.

Conclusion and Suggestions

This study was designed to develop the Korean version of the WCPS and to verify its validity and reliability. Both the translated single-factor instrument was confirmed as reliable, providing a good fit to the model and showing convergent validity. However, the generalizability of this Korean version of the WCPS is unclear, as it was tested on internal medicine and surgery patients at one general hospital only. A test validation study should be performed to determine the suitability of using the

7-point scoring scheme in this instrument with other patient populations in Korea.

Author Contributions

Study conception and design: SBI
 Data collection: All authors
 Data analysis and interpretation: All authors
 Drafting of the article: MLH
 Critical revision of the article: All authors

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