The Validity and Reliability of Organizational Culture and Readiness for System-Wide Implementation of EBP (OCRSIEP) for Turkish Sample

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Abstract

Purpose. To determine the validity and reliability of Organizational Culture and Readiness for System-Wide Implementation of EBP (OCRSIEP) to Turkish sample.

Method. The study was carried out methodologically. For validity and reliability analysis of OCRSIEP, a public and a university hospital have taken to the sample. The sampling consisted of 277 nurses who were directly responsible of patient care and were chosen using random sampling. The data were collected between August-December 2017. The scale was reviewed for language validity and content validity by seven nursing faculty members who are experts in nursing profession. For the reliability analysis, test-retest, item-total score analysis and Cronbach Alpha validity coefficient were used. In the evaluation of the data frequency/percentage t-test, Product-Moment Correlation Coefficient, exploratory and confirmatory factor analysis SPSS 15.0, and LISREL 8.7 programs were used. Written consent was obtained from the author for the scale adaptation, and verbal and written approval of the nurses, permission from the hospital administrations and ethics committee were also obtained.

Results. The intercorporate reliability value Content Validity Index was found to be .98. Two items that are not suitable for "Turkish nurses' clinical practices" were removed from the scale. The Cronbach α reliability coefficient of the scale is .95. Item-total score correlations were between .59 and .80 (p <.001). There was no significant difference between the mean scores test-retest measurement (p> .05) at 4-6 weeks to assess the consistency of the scale measured over time. Confirmatory factor analysis showed that the scale was consistent with the model in the original measure, confirming that it was a single factor, and that each item identified its own factor as satisfactory (.54 - .81). The fit indexes of the scale were RMSEA .095, CFI .97 and NNFI .97

Conclusions. The results show that Attitude Towards Evidence-Based Nursing Questionnaire has similar construction to the original scale and high values of the validity and reliability analysis and can be used successfully in Turkish studies.

Keywords. evidence-based nursing, attitude scale, validity, reliability.

I. Introduction

Evidence-based nursing is the decision-making process of nurses by using their clinical proficiencies, preferences of patients and the best evidence available in care environments where sources can be obtained (DiCenso, Guyyat and Ciliska, 2005). Evidence-based nursing practices include deciding on the care depending on theory-based information while taking into consideration the needs and preferences of persons or groups who were given care (Ingersoll, 2000). Evidence-Based Nursing (EBN), which is approached in the scope of Evidence-Based Practices (EBP), has become one of the main policies of health system over the last 20 years. Numerous countries adopted making evidence-based care decisions and developed EBP guides (Gerrish et al., 2007). Evidence-based practice, evidence-based medicine, evidence-based nursing subjects are rapidly increasing in the health and nursing literatures, relevant books are being published, congresses are being organized and EBN centers are being opened (Kocaman, 2003). However, when the literature about the use of studies and EBN was reviewed, it was understood that the gap between the studies and practices in nursing was still widening (Dicenso et. al, 2005; Scott and McSherry, 2008; Scully, 2011).

Researchers should have sufficient knowledge on organizational processes for the detailed description of organizational culture related to EBP (Melnyk, Fineout-Overholt, Gallagher-Ford, Stillwell, 2011; Schaffer, Sandau, Diedrick, 2012). The use of EBP is a significant strategy for increasing the quality of care. Although various studies were conducted, the results of these studies could not be transferred to clinical practices for the improvement of patients' results and development of care. The improvement of patient care in hospitals by using the results of studies could at best proceed a few years. The probability of using the results of the studies which show a decrease in the cost in the clinical practices is higher in today's cost-oriented health system (Melnyk, 2012).

Studies have showed the positive effects of EBP on the outputs of patients and the cost of health care in the literature for years. Although EBPs have positive effects on the increase of the health care quality, decrease in hospital cost and the strengthening of nurses, intervention studies in which models are tested by nurses to develop the use of EBPs are insufficient (Levin, Fineout-Overholt, Melnyk, Barnes, Vetter, 2011). The first step in the development of strategies to accelerate the EBN process is to assess readiness of nurses related to this subject. Readiness for EBP is possible with the coexistence of individualistic and organizational readiness. Health professionals should feel the need for EBPs, have an access to the practice and possess interpretation skills, and a supportive environment is required (Schaefer and Welton; 2018). No tools that systematically and thoroughly assess nurses' readiness for EBP exist in Turkey. The assessment of nurses' opinions about this subject will make us

realize the gap between the theory and practice in nursing, help us for the development of strategies to increase the use of EBP. In this regard, the validity and reliability studies for the scales are needed to define the readiness levels of nurses for using EBP and to guide behavior development/improvement studies based on these results. This study aims to adapt the Organizational Culture & Readiness for System-wide Implementation of EBP Scale, which is used internationally, to Turkish and examine the validity and reliability of the scale

II.   METHOD
Study Design and Participation

The study was carried out methodologically. The sample of this study consisted of 778 nurses who work in the acute inpatient units of a public hospital and a university hospital in İzmir and were chosen randomly. The data of the study were collected between August and December 2017.

A total of 227 nurses who were working during the data collection process and agreed on participating were chosen randomly. The data obtained from 277 nurses who completely filled the scales, and of them, 216 were from the university hospital and 61 were from the hospital which was affiliated to the Ministry of Health. The sample included 42 nurses in total for the test-retest reliability. The data of 12 nurses who did not fill the forms completely were not analyzed.

In the study 95.3% of the nurses were female, 52% were between the ages of 31-40 and their average years of working was 8.60±6.74. Of the participants 87% were service nurses, 79.4% were university graduate, 54.2% participated in scientific meetings and read professional journals, and 45.1% had knowledge about EBN in a ''medium level''.

Instruments and Data Collection

The data were collected using a socio-demographic characteristics questionnaire form and the Organizational Culture & Readiness for System-wide Implementation of EBP scale (OCRSIEP).

Socio-demographic Characteristics Questionnaire Form included questions about age, gender, education, years of working, working position, reading journals related to the nursing profession, participation to scientific meetings and doing research after graduation.

Organizational Culture & Readiness for System-wide Implementation of EBP Scale (OCRSIEP), which was developed by Fineout-Overholt and Melnyk (2006), is a 19-item 5-point Likert type scale. The 13th and 15th items of the scale have five and three sub-items, respectively. The scale includes one sub-scale. The study psychometrically examined the face and content validity and factor analyses and reliability coefficient of the original scale. Explanatory factor analysis found that the single-factor structure explained the scale at the rate of 43.15%. The factor loads were found to be between .37-.78. Internal consistency coefficient of the original scale was .85.

The researcher gave the forms to the nurses in closed envelopes by hand and collected within 1 to 7 days. Test-retest reliability was performed at 4- to 6-week intervals.

The Ethical Part of the Research

The written permission of Fineout-Overholt and Melnyk were taken for the Turkish adaptation and use of the scale. Verbal and written consent of nurses, ethical permission from hospital administration where the study was conducted and Non-Interventional Clinical Studies Assessment Commission of a university were taken for the data collection (10.062016, 2016/26-20, Protocol No: 2953-GOA).

Analysis of Data
The study examined the psycholinguistic and psychometric properties of OCRSIEP within the scope of the Turkish adaptation of the scale.

Optimal sentence structure and idioms of the target text should be used, and completely foreign items to the culture should be adapted for the language validity. For this reason, translation and back translation methods were used for the psycholinguistic validity of the scale.

Reliability: Test-retest method was used to measure the time invariance for the reliability analysis of the OCRSIEP; item-item/item-total score analysis and Cronbach's alpha reliability coefficient were examined to measure the internal consistency of the scale.

Validity: The study used face validity method and factor analysis in the content validity for the OCRSIEP validity analysis.

The study assessed the data of socio-demographic characteristics questionnaire form; the total scale and sub-scales were assessed as number, rate and arithmetic mean within the scope of descriptive statistics.

III.   RESULTS
The results of the study conducted for the Turkish adaptation of the OCRSIEP were presented under the main titles of the psycholinguistic properties and the content validity of the scale, reliability and validity analyses of the scale.

1. **the Psycholinguistic Properties and the Content Validity of the Scale**

Three experts who know Turkish and English very well translated the OCRSIEP from English to Turkish for the examination of psycholinguistic properties of the scale. The researchers edited the first translation and then a Turkish language expert examined the scale items in terms of the appropriate use of the language. The back translation of the Turkish scale to English and the comparison of it with the original scale were performed by another expert linguist who is a native English speaker. Seven experts gave expert opinions for the content validity of the Turkish form of the scale and the lowest and highest scores that experts gave to the items, mean, standard deviation, content validity rates (CVR) and content validity index (CVI) values were examined. The study found CVR values of scale items were between .86 and 1.0 (≥.80), and the CVI value of the total scale as .98 (98%).

The study detected two items which were not practiced by the nurses in hospitals in Turkey. Researchers removed these two items from the scale by permission of the author. The scale was finalized after expert opinions and then performed on 10 nurses who had similar characteristics with the nurses who would participate in the study as a pilot study. Since all the items were found comprehensible, the researchers did not

make any changes on the 23-item scale and proceeded with reliability/validity analyses.

2. Results of Reliability Analysis

For the reliability analysis of the OCRSIEP, the study used Cronbach's alpha coefficient and item-total score analysis to measure the internal consistency of the scale. Test-retest method was examined to measure the power of time invariance. The study found Cronbach's alpha coefficient as $\mu = .95$ in the analysis which was performed to test the internal consistency which was a reliability indicator of the Turkish form of the OCRSIEP. When one item was removed from the scale, the alpha reliability coefficients of the total scale were found as .95. The study determined that the reliability of the internal consistency of the scale did not show any changes when any item was removed from the scale. The study used Pearson correlation analysis for the assessment of item scores and the total scale score correlations of the Turkish version of the OCRSIEP (Table 1).

Table 1. OCRSIEP Item-Score Correlations

Number	Items	Item-Total score	
		r	p
1	How clearly was EBP described as the center of the philosophy and mission of your organization?	.73	.000
2	To what extend do you believe EBP is practiced in the organization you work for?	.77	.000
3	How determined are the nurses you work with about EBP?	.78	.000
4	How determined are the physicians you work with about EBP?	.66	.000
5	How determined are the organizational directors about EBP?	.79	.000
6	How many nurses in your organization have strong information and skills related to EBP?	.72	.000
7	When there is no evidence regarding care, how many nurse scientists (PhD researchers) can help generate evidence in your organization?	.62	.000
8	How many experienced nurses are there to be consultants for the nurses working at EBP in your organization?	.64	.000
9	To what extend do the nurses in your organization can be a model for EBP?	.75	.000
10	To what extend do working nurses have access to high-quality computers and electronic databases?	.67	.000
11	To what extend do the nurses have sufficient computer skills?	.57	.000
12	To what extend is the financial resources of your organization supported for EBP?	.69	.000
13	How many EBP champions do you have around you? (Persons who have high level of information about EBP)		
	a. Directors	.71	.000
	b. Physicians	.66	.000
	c. Nurse educators	.72	.000
	d. Nurses	.66	.000
	e. Assistant nurses	.67	.000
14	To what extend are the measurements and outputs shared in the culture of the organization you work for?	.74	.000
15	Who generally make decisions?		
	a. Care givers	.63	.000
	b. Senior executives	.67	.000
	c. Physicians and other medical staff	.59	.000
16	To what extend do you think your organization is generally ready for the EBP?	.80	.000
17	How many studies did the organization perform for the EBP in comparison with six months before?	.76	.000
Total Scale Score (α= .95)			

When the 23 items' item-total score correlations of the reliability study of the Turkish form of the scale were examined, the study found the reliability coefficients were between .57 and .80 and were positively and statistically significant at a very high level ($p<.001$, Table 1).

Researchers compared the difference between mean scores of the first and the second tests of the Turkish form of the OCRSIEP which were performed on nurses at 4- to 6-week intervals using the t-test in dependent groups. The correlation between the scale scores of recurrent two tests was assessed using ICC (Table 2).

Table 2. the OCRSIEP Comparisons and Correlations of the Test-Retest Mean Scores (n= 42)

The Date of Measurement	$\bar{x} \pm SS$	t	p	ICC	p
First Performance	66.69±11.72	1.061	.29	.90	.00
Second Performance	67.83±11.57				

t: t-test in dependent groups, sd: 41

ICC: Intraclass Correlation Coefficient

The study found no significant difference between the mean OCRSIEP scores of the two measurements which were performed on the nurses recurrently ($p>.05$, Table 2).

3. Results of Validity Analysis

The study examined structure validity and the known group comparison in the validity study of the OCRSIEP.

Confirmatory factor analysis (CFA) was performed for the structure validity of the Turkish form of the scale and compliance values were given in Figure 1.
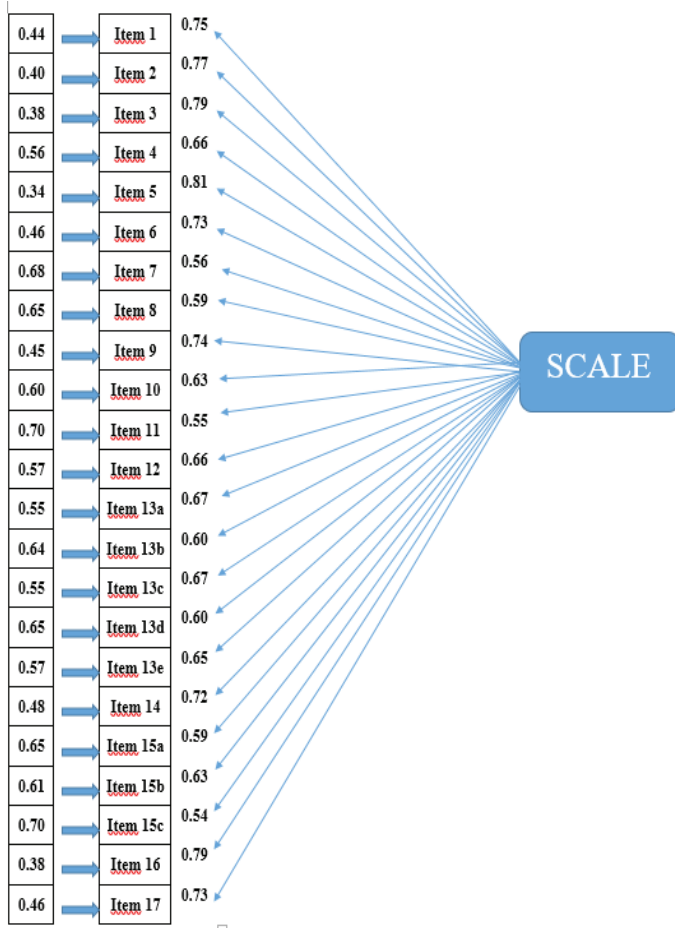
Figure 1. CFA Results of the OCRSIEP: Path Coefficients and Error Variances

The study found the path coefficients (factor loads) of scale items with total scale between .54 and .81 (Figure 1). In order to test the correlation between the model and the data, researchers used various criteria: the rate of chi-square to degrees of freedom(X^2/df), the standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), and comparative fit index (CFI). The study determined the rate of the acceptable levels of fit indexes to chi-square degrees of freedom as 3 or 6, and SRMR, RMSEA and CFI were 0056, ,095, and over 97, respectively.

The study compared the mean scores of the scale according to the status of the nurses' participation in scientific meetings for the comparison of known group of the scale. The study found the mean score of the group which participate in scientific meetings (68.86±8.27) was significantly higher than those who did not participate (62.10±7.38) (p<0.001).

Whether the responses of the nurses in the sample of the study to the scale items were equal was assessed with Hotelling's T^2 test. The study found the Hotelling's T^2 of the scale as =230,113, p<0.001 as a result of this test. The study determined that the scale was not response bias.

IV.   DISCUSSION

This study adapted the OCRSIEP which was developed by Fineout-Overholt and Melnyk (2006) to Turkish based on the need for a measurement tool to determine the readiness of nurses to EBPs.

Content validity index (,98) which assessed the compliance of expert opinions indicated that there was high

level of compliance between the experts and content validity criteria were met (Veneziano and Hooper, 1997). Experts assessed whether the items in the scale and the scale measured the intended field; also, whether it contained different concepts out of the related field for the content validity (Tavşancıl, 2006). The study found that there was no item under the minimum level (,86) of the content validity rate according to the Lawshe technique in the scale, which was sent to seven experts for the assessment of content validity. As a result, it can be said that the scale had a comprehensible language structure and content.

The study determined that the internal consistency coefficient of the Turkish form (,95) had showed a similarity with the internal consistency coefficient of the original scale (,85) at a high level. In the item analysis done for the item reliability, the study also found that the total scores of the scale and the correlation (.57 and .80) score between the items were higher than .30, which was defined in the literature. This means that all the items measured the same situation (Büyüköztürk, 2002).

Re-implementation of the scale to the same group after an interval (time invariance) and the relations between them are examined using the Pearson product-moment correlation coefficient in the test-retest method which is used for the reliability of the scale (Aksayan and Gözüm, 2002; Tavşancıl, 2006; Büyüköztürk, 2008; Gürbüz and Şahin, 2014). The study found that the responses of the nurses, which they gave to the scale items at two different dates –4-to 6-weeks intervals, were consistent.

The study examined the factor structure and distinctive characteristic of the scale for the validity of the scale. Structure validity assesses which concepts and characteristics the scale measures. The researchers performed confirmatory factor analysis (CFA) to measure the structure validity of the OCRSIEP. CFA is a type of structural equation modeling (SEM) which is identified as a study method on its own (Şimşek, 2007). CFA method is used to detect the main structure lying behind various variables. The aim of the CFA is to degrade the structure of various variables which were thought to have a relationship for easing the understandability and the interpretation of the relation between them (Şencan,2005). The study used RMSEA, CFI, non-normed fit index (NNFI) and goodness of fit index (GFI) values to test the goodness of fit of the scale. The fact that RMSEA valueis equal to or below 0.08 and that p value is below 0.05 (being statistically significant) means that there is a good fit; however, its being equal to 0.10 or below means that the fit is weak (Harrington, 2009; Şimşek, 2007). The fact that the CFI and NNFI values are equal to or above ,90 means that there is a fit in the scale. Again, that the GFI valueis equal to or above 90 means that there is a fit in the scale (Çapık, 2014). The results of the study showed that all goodness of fit values (X^2/df, SRMR, RMSEA, GFI, AGFI, and CFI) were above the accepted level of the values. The study showed that the fit values of the scale were at the desired level and there was a good fit.

For the distinctive validity, the study used the known-groups-technique which is a type of construct validity (Şencan, 2005). The hypothesis of ''the EBP readiness scores of the ones who participate in scientific meetings are higher than the ones who do not participate'' was was examined in the known-groups-technique. The study found that scale scores of the nurses who participated in scientific meetings were higher, and the scale could differentiate groups with different features.

V.   CONCLUSION

This study found that the Turkish form of Organizational Culture & Readiness for System-wide Implementation of EBP Scale was a valid and reliable tool. It is thought that the scale can be used to assess the readiness of nurses to EBPs in the studies in which evidence-based proposals are put into practice.

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