ORIGINAL ARTICLE

Validity and reliability of Evidence-Based Practice Leadership Scale and Evidence-Based Work Environment Scale in Turkish

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Abstract

Purpose: This study aims to evaluate the validity and reliability of the Evidence-Based Practice Leadership Scale (EBPLS) and Work Environment Scale (EBPWES) translated into Turkish so that they are used in nursing research.

Design and Methods: This methodological study was conducted with nurses. Language and content validity, item analyses were used to test the validity and reliability of the scales.

Findings: The confirmatory factor analysis results demonstrate that *t* values of each item in both scales are significant ($P < .05$). All model and data fit indices are higher than the acceptable level. Thus, CFA has shown that the scales with model-data fit are valid.

Practice Implications: The characteristics of nurse leaders and the suitability of the working environment are crucial for the maintenance of evidence-based practices. EBPLS and EBPWES will be effective and reliable tools in our country and an effective tool for contributing to the maintenance and development of evidence-based practices. The analyses indicate that the Turkish versions of the EBPLS and the EBPWES are acceptable, valid, and reliable for Turkish nurses.

KEYWORDS
evidence-based nursing, evidence-based practice, leadership

1 | INTRODUCTION

Most scientists working in the field of health believe that scientific evidence must be used to support and influence practice and will help in the provision of the "best" care for health professionals and those receiving services. The literature uses the concepts of evidence-based and evidence-informed practices interchangeably. But these concepts in reality are different from one another.

The *evidence-based process* comprises the steps of asking a well-developed and answerable question; evidence search, validity in clinical practice, size of impact effect size, and applicability and evidence for applicability in clinical practices; integrating a critical assessment with clinical expertise; considering the unique conditions and values of a patient; and evaluating effectiveness.

Evidence-informed practice was defined as "the conscientious, explicit, and reasonable use of the best existing evidence while making decisions about individual patient care".[1] Evidence-based

practice (EBP) relies on more than just research. Research was depicted as a data flow in clinical decision-making. EBP was defined as "the integration of the best research evidence with clinical expertise and patient values.[2] EBP creates the foundation for healthy judgment in clinical decision-making. EBPs start with a question.[2] In this regard, EBP contains the interpretation of research-based knowledge derived systematically, based on the needs and perspectives of each individual with whom the practitioner has interacted and found to have integrated with knowledge produced from their experiences and interacted.[4]

Something that operates uniquely as work always is performed is an experimental nursing practice by including empirical findings in decision-making processes in addition to research-based evidence that challenges traditions. EBP is the integration of a base of research knowledge acquired systematically and that develops nurses' understandings and interpretations of patient values, needs, and expectations to make decisions by clinical nurses. More than just a

term, EBPs improve and develop outcomes, reduce expenditures, and encourage professionalism.[5]

It has been known for years that using the best evidence is of particular importance in clinical practice; however, EBPs have still not been used adequately.[6] EBP refers to the integration of well-designed evidence-based systematic research findings into clinical practice together with personal experience, expertise and clinical decision-making processes of clinicians and preferences of patients.[7,8] EBP is a problem-solving approach used in all-round provision of healthcare services to obtain better outcomes.[7] In nursing services, EBP is not only the use of research in healthcare practice but also the integration of the best evidence based on systematic research with clinical expertise for practical purposes.[8]

EBPs are defined as the execution of theory-based, tested, and highly reliable practices to attain organizational goals and to increase the quality of offered services.[9] EBPs are established upon the principles of being economic, effective, and efficient and include the processes of selecting and examining the results of research on a certain topic and to prepare decisions for application to increase output quality thanks to scientific knowledge.[10] What is necessary in the decision-making process is to be able to select the best method considering the accumulation of scientific information.[11]

EBP offer a sturdy and supportive framework that combines the best existing scientific knowledge with the expertise of clinicians and the preferences and values of patients to make the right decisions.[12] The inclusion of EBP in the field of nursing ensures support for scientific research for nurses to make sound decisions. It is reported that, when health services do not rely on the existing best evidence, it may be inefficient, ineffective, or dangerous.[13]

The goal of EBP is to enable patients to have access to high-quality healthcare services, to improve their satisfaction, to reduce healthcare costs, to contribute to the development of nursing studies, to ensure that nursing services are predicated on evidence, and to promote autonomy and high job satisfaction in nursing practices.[14-17]

In health care, disseminating and exchanging research evidence has been the main focus of knowledge management.[16,18,19] Although practitioners are aware of significant contribution of EBP to healthcare system, research shows that nurses do not use EBPs sustainably in practice.[20] Carlson and Plonczynski,[21] in their systematic review of studies, revealed that sustainability of EBPs is related with characteristics of the organization, as well as other nurse-related factors including lack of time to read and research, lack of authority to change patient care procedures, and insufficiency of administrative support.[22]

Pryse et al,[22] in their study, discussed the Evidence-Based Practice Work Environment Scale (EBPWES), the dimensions of culture (support) and climate (resources), Evidence-Based Practice Leadership Scale (EBPLS), and the dimensions of communication, strengthening, and influence.

For this study, it is accepted that work environment comprises culture and climate for EBP. The term "work environment" is used to research the values and shared expectations of nurses and their assumptions regarding the EBP (culture) support and the perceptions

of these pertaining to organizational characteristics such as conditions of decision-making, leadership, working, and application that serve as a resource. Denison[23] defines climate as a situation correlated with the thoughts, feelings, and behaviors of organizational members.[22] Organizational climate is defined as "the shared perspective of working and application conditions that may be directly influenced by most (head nurses) administrators as well as common characteristics such as decision-making, leadership, and norms.[24]

Culture is defined as the norms, values, and beliefs within an organization.[24] Culture is a correlation between administrative and organizational behaviors and is a significant factor to support and guide EBP efforts. Culture is defined as nurses' values, shared expectations, and assumptions pertaining to EBP support.[22]

The nurse leader is required to create a motivating environment, create organizational communication, and facilitate cooperation and negotiation in the context of complex organizations.[25]

1.1 | Communication

Supports the EBP by encouraging the research use of leadership strategies for leaders who determine clear and realistic goals, possess high degrees of influence, consistently provide feedback, and are influential.[26]

1.2 | Strengthening

Supports the EBP by providing consistency between motivations, EBP values, believes, and behaviors by ensuring that the leader possesses knowledge, resources, and opportunities regarding the EBP.

1.3 | Influence

Organizational inhibitors in EBP (administrative priorities, administrative awareness, and financial commitments) are accepted as influential. Nurse leaders are asked to remove these obstructions and ensure concrete support.

Leaders assume the duties of perceiving opportunities, managing resources, and implementing organizational policies at organizations.[27] It is reported that successful change is possible with leaders who inspire and act at a supportive organization.[28]

Leaders have the power to positively influence for change and innovative behaviors. For this reason, leadership and the existence of a supportive leader in the creation of a positive organizational climate in the implementation of EBPs are incredibly important.[29] Leader support is influential in the learning, development, and acceptance of EBPs by workers and in the development of workers' competences in acquiring evidence.[10,11]

To create an evidence-based culture, it is of particular importance to develop a research-based and inquisitive culture in the

organization, to build an organizational culture that provides more support to EBPs, to allocate sufficient time and financial resources to EBP, to build new structures and processes and to offer training programs, to recruit EBP experts, and to build organizational leadership with focus on cultural exchange, communication and knowledge, and to promote teams that exchange knowledge.[16,30]

Nursing leaders play a strategic and key role in the sustainability of EBPs.[16,19,22] Nursing leaders are expected to create a motivating setting, to build organizational communication, and to facilitate exchange of knowledge and cooperation in complex organizations. There is a need for powerful leaders in nursing to fight against and remove certain obstacles to the implementation of EBP. It is important that leader nurses support the improvement of nurses' practice skills and decision-making processes and play a mentoring role, and that mutual trust is built between leader nurses and other nurses.[22,31] The implementation of evidence-based nursing leadership is a complicated process, and it is important to use several simultaneous strategies that target nursing staff, organizational culture, leadership practices, the availability and applicability of evidence.[30,32,33]

A favorable setting for EBP requires organizational culture, organizational support, organizational climate, and organizational resources.[22] Organizational culture, a bridge between administrative and organizational behaviors, plays a significant role in supporting and guiding EBP processes.[17] In organizations as learning systems, a sensitive management approach and effective transformation processes contribute to the creation of an organizational culture that promotes EBP. Leadership and working conditions are the factors that determine organizational climate.[22] It is very important that healthcare organizations provide a culture that supports EBP, have EBP mentors and nurses as well as leaders that promote EBP, and incorporate EBP into daily healthcare services.[31]

Thus, the characteristics of leaders and the work environment play a decisive role in the sustainability of EBPs in nursing services. There are no studies or scales in Turkey related to the leaders and work environment. The present study was conducted to ensure that EBPLS and EBPWES, developed by Pryse et al,[22] are used as reliable and valid measurement instruments in Turkey, and to contribute to the improvement of nursing care services by eliminating the obstacles to effective use and sustainability of EBPs.

2 | DESIGN AND METHODS

2.1 | Aim and type of research

This is a methodological study conducted to ensure that EBPLS and EBPWES, translated into Turkish, are used as reliable and valid measurement instruments in nursing research in Turkey. Data were collected between February and June 2019.

2.2 | Population and sample of research

The research population comprises nurses (n = 550) working in a university hospital in Eskişehir. In validity and reliability testing of scales, it is suggested that the sample size is 5 to 10 times greater than the number of items in the scale.[34]

It is emphasized that less than 200 samples may not be sufficient to reveal the psychometric structure and 300 samples should ideally be taken to reveal the factor structure of a test.[35]

It is, nevertheless, advised that the sample size is at least 300 times greater than the item number if the number of items in factors is small.[36] The literature suggests that a sample used in the confirmatory factor analysis (CFA) should comprise 300 to 500 participants.[37] A total of 401 nurses were recruited for this study as the number of items in respective scales are 10 and 8.

2.3 | Data-collecting instruments

The instruments used in this study to collect data were the sociodemographic information form, EBPLS, and EBWES

2.4 | Sociodemographic information form

The form includes questions on age, sex, marital status, educational status, length of employment, clinic in which the nurse is employed, whether the nurse has previously received training on EBPs, and whether the nurse uses EBPs in clinical practice.

2.5 | Evidence-Based Practice Leadership Scale

The scale developed by Pryse et al[22] consists of 10 items. EBPLS evaluates staff nurses' perceptions of support provided by head nurses in EBPs. The items may be scored from 1 (strongly disagree) to 5 (strongly agree) on a 5-point Likert-type scale. The reliability coefficient of the original scale was α = .96.

2.6 | Evidence-Based Practice Work Environment Scale

The scale developed by Pryse et al[22] consists of eight items. EBPWES evaluates staff nurses' perceptions of their work environment in EBPs. The items may be scored from 1 (strongly disagree) to 5 (strongly agree) on a 5-point Likert-type scale. The reliability coefficient of the original scale was α = .86.

The test-retest method was used to estimate the reliability over time. A total of 40 nurses were included in the sample for retest analysis conducted 4 weeks later.

2.7 | Evaluation of data

Content validity and construct validity were evaluated to test validity. In validity analysis, test-retest method was used to evaluate the stability of the instrument over time, and Cronbach's α validity coefficient and item-total score analysis were used to measure internal consistency. Cronbach's α validity coefficient and CFA were used to evaluate the data. SPSS 25.0 and LISREL 8.727 were used in data analyses.

2.8 | Ethical aspect of research

Before the study was conducted, approvals were obtained from Noninterventional Clinical Research Ethics Committee (Approval no.10840098-604.01.01-E.1661). In addition, written permission was obtained from the hospital administration of University. Written consent was received from Yvette Pryse to translate the scales into Turkish and use them for research purposes. In all cases the nurses' written consent was obtained to collect data.

3 | FINDINGS

A total of 401 nurses were recruited in the university hospital where the research was conducted (n: 550). Over half of participants were women (69.3%; n: 278) and single (53.4%; n: 214). The rate of those holding a bachelor's degree was 43.1% (n: 173) and those employed in internal medicine clinics was 44.4% (n: 178). The average age of nurses that participated in the study was 30.78 ± 6.39, and the average length of experience was 8.52 2 ± 6.28. The majority of nurses already received training on EBPs (57.1%; n: 229) and used them in the provision of healthcare services (61.8%; n: 248).

3.1 | Findings related to validity of scales

Tests were performed for language, content, and construct validity.

3.2 | Language and content validity

Translation and back-translation were used to test language and content validity of the scales. The scales were translated from English into Turkish by two linguists with native fluency in both languages. After revisions were made on the Turkish versions, the scales were back translated into English by an English studies scholar who has a good mastery of both languages. The Turkish versions were then revised by two Turkish language scholars who checked the items in terms of semantics and grammar. Subsequently, for content validity, expert opinion was received from eight scholars with expertise in nursing studies and experience in scale development and adaptation. The experts were asked to evaluate the items by scoring each from 1 (*not appropriate, needs to be removed*) to 4 (*completely appropriate*). Lawshe's content

validity ratios were calculated for each item (the minimum validity ratio should be 0.78 at 0.5 reliability interval). No items were removed from the scales given that the validity values of all items (0.88) were higher than this preset value.

3.3 | Construct validity

CFA was used to test the validity of the 10-item EBPLS and 8-item EBPWES. CFA is a theory-based technique used to test the hypotheses related to factor constructs. As there was not multivariate normal distribution between the items, asymptotic covariance matrix of robust unweighted least squares was used for parametric estimating. Tables 1 and 2 below provide load factors of items (λ), square of the coefficient of multiple correlation (r^2)—the value showing the degree of correlation between each item and latent variable, and t values referring to the significance of correlation.

CFA results demonstrate that t values of each item in both scales are significant (P < .05). The results indicate that there is no need to remove any items from the scales and that load factors are quite high. The results further suggest that each item has a high rate of explaining the construct measures (Tables 1).

Fit indices describe the fit between model and data set for one dimension of the observed data. Model and data fit indices for EBPLS and EBPWES are presented in Table 3.

A variety of criteria were used to test the fit between the model and the data set. A low ratio of χ^2/SD refers to a good fit between the model and data.[38] All model and data fit indices are higher than the acceptable level. Thus, CFA has shown that the scales with model-data fit are valid.

Path diagrams of items in EBPLS and EBPWES are presented in Figures 1 and 2.

3.4 | Findings related to reliability of scales

Test-retest analysis, Cronbach's α coefficient, and item-total correlation were used to test the reliability.

3.4.1 | Test-retest analysis

The correlation coefficient was calculated after EBPLS and EBPWES were administered to 40 nurses 4 weeks later. The general correlation was $r = .99$, $P = .000$ in EBPLS and $r = .98$, $P = .000$ in EBPWES. No significant difference was found between test and retest mean scores (P > .05).

3.4.2 | Cronbach's α coefficient

The analyses refer to a high level of reliability with an internal consistency of $\alpha = .97$ for EBPLS and $\alpha = .96$ for EBPWES.

TABLE 1 Load factors, squares of the coefficient of multiple correlations (r^2), and t values of items in Evidence-Based Practice Leadership Scale (EBPLS)

EBPLS items	Load factors	t Values	Variances explained (r^2)
1. My manager is able to communicate how EBP is important for improving patient outcomes in my unit.	0.81	17.23	.65
2. My manager encourages me to examine evidence to guide clinical decision-making.	0.87	21.17	.75
3. My manager has a vision for EBP in my unit.	0.87	21.23	.75
4. My manager can explain EBP in terms that are easy to understand.	0.89	23.24	.80
5. My manager helps me resolve conflicts between nursing research and clinical practice.	0.89	23.36	.79
6. My manager supports my efforts to change practice in response to new knowledge/evidence.	0.88	22.86	.77
7. My manager is able to influence others to engage in EBP.	0.90	23.79	.80
8. My manager facilitates my use of resources for EBP (eg, data bases, experts, literature).	0.89	23.42	.79
9. My manager facilitates practice change based on relevant nursing research.	0.89	23.7	.79
10. My manager provides time for me to engage in EBP.	0.79	19.15	.62

TABLE 2 Load factors, squares of the coefficient of multiple correlations (r^2), and t values of items in Evidence-Based Practice Work Environment Scale (EBPWES)

EBPWES items	Load factors	t Values	Variances explained (r^2)
1. Experts in EBP are available in my work setting.	0.85	21.58	.72
2. In my organization I have access to data bases that have full-length nursing research articles.	0.91	28.97	.83
3. I believe my organization values evidence-based nursing practice.	0.90	27.03	.81
4. The nurses on my unit discuss research relevant to our clinical practice.	0.91	28.05	.83
5. The physicians I work with support EBP changes based on nursing research.	0.92	30.88	.85
6. The nurses on my unit base their practice on the best evidence.	0.90	28.12	.81
7. My manager makes sure that I have access to relevant research on my unit.	0.91	29.05	.83
8. My organization pays for me to attend educational offerings about EBP.	0.90	28.71	.81

TABLE 3 Goodness of fit indices for items in EBPLS and EBPWES

Goodness of Fit Indices	Acceptable level	EBPLS values	EBPWES values
χ^2/SD	<5 Medium fit <3 Good fit	84.22/35 = 2.41	39.88/20 = 1.99
GFI	>0.90	1.00	1.00
CFI	>0.90	1.00	1.00
NFI	>0.90	1.00	1.00
NNFI	>0.90	1.00	1.00
RFI	>0.85	1.00	1.00
SRMR	<0.08	0.024	0.016
RMSEA	<0.08	0.075	0.063

Abbreviations: CFI, comparative fit index; EBPLS, Evidence-Based Practice Leadership Scale; EBPWES, Evidence-Based Practice Work Environment Scale; GFI, goodness of fit; IFI, incremental fitness index; NFI, normed fit index; NNFI, non-normed fit index; RFI, relative fit index; RMSEA, root mean square error of approximation; SRMR, standard root mean square residual.

3.4.3 | Item-total score correlation

The item-total mean score correlation is greater than the average, and the total score correlation coefficients are between .82 and .90 for the 10-item EBPLS (see Table 3).

The item-total mean score correlation is greater than the average, and the total score correlation coefficients are between .75 and .89 for the 8-item EBPWES (see Table 3).

The scores for each item in EBPLS and EBPWES indicate that the items have comparable characteristics (see Tables 4 and 5). The EBP Nursing Leadership Scale examines nurses' perceptions of support provided by the head nurse to the EBP, and the EBPWES examines organizational perceptions of support for the EBP. When evaluating the average scores from the scale, it is seen that the average scores in both scales were above average but were not high at the desired level (EBPLS = 3.04 ± 1.165; EBPWES = 2.88 ± 1.166). It was reported that they receive support from head nurses and that it was higher than the perception of support provided by the environment and institution where they work.

FIGURE 1 Path diagram for Evidence-Based Practice Leadership (EBPL) Scale. RMSEA, root mean square error of approximation
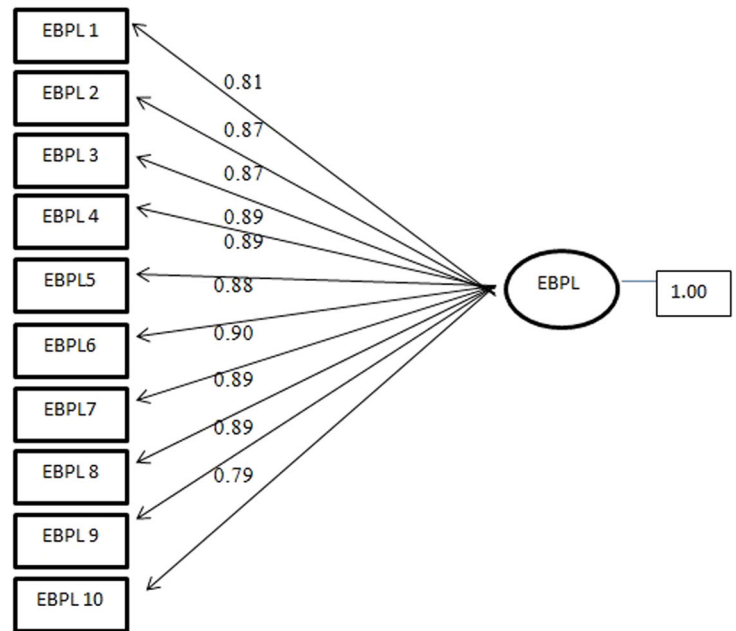
Chi-Square=84.22, df=35, P-value =0.00001, RMSEA=0.075

The validity was indicated for the EBP Nursing Leadership Scale and the EBPWES. Differences were identified in the grouped scores created by sociodemographic and EBP characteristics in both scales. Significant differences were found in the average scores for both scales. While there were meaningful differences in sex, educational status, unit of employment, and education on EBP, it was reported that no differences existed in terms of years of employment and marital status (see Table 6).

4 | DISCUSSION

The phrase "They determine the health-related needs that can be met with nursing interventions for individuals, families, and society in every environment and plan, implement, evaluate, and control nursing care based on evidence in the context of the needs specified in the process of nursing diagnosis" found in Article 6, Paragraph a, of the Nursing Regulation, dated 03/08/2010 number 27515, in Turkey.

In our country, no study published as a measurement of nurses' perceptions of organizational work environment and nursing leadership regarding evidence-based applications. On a similar topic, the Turkish validity for the "Attitude Towards Evidence-based Nursing Questionnaire" developed by Ruzafa-Martínez et al[39] was conducted by Ayhan et al.[40] By performing the validity and reliability for the scales "EBP Nursing Leadership Scale" and the "EBP Work Environment Scale," which were designed by Pryse et al[22] to research clinical nurses' perceptions of organizational work environments and nursing
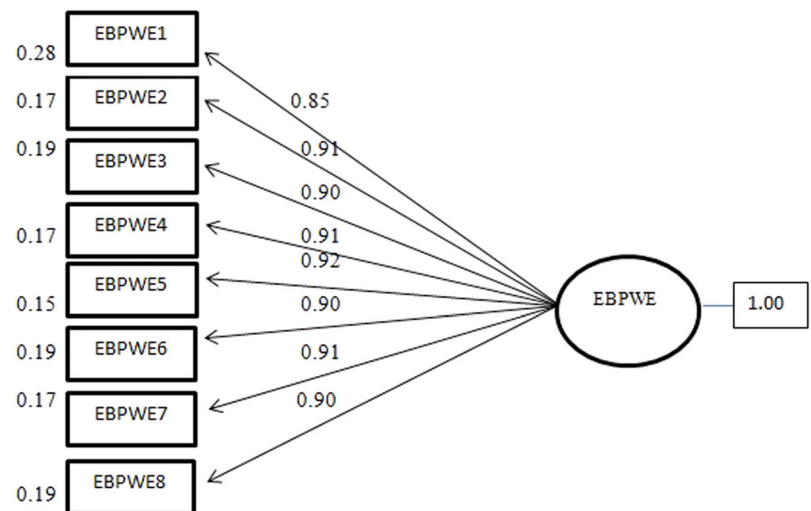

FIGURE 2 Path diagram for Evidence-Based Practice Work Environment (EBPWE) Scale. RMSEA, root mean square error of approximation

Chi-Square=39.88, df=20, P-value=0.00518, RMSEA=0.063

TABLE 4 Item-total mean scores and correlation values for items in Evidence-Based Practice Leadership Scale (EBPLS)

EBPLS items	Mean	SD	Item-total correlation
1. My manager is able to communicate how EBP is important for improving patient outcomes on my unit.	3.18	1.16	.82
2. My manager encourages me to examine evidence to guide clinical decision-making.	3.07	1.28	.88
3. My manager has a vision for EBP on my unit.	3.07	1.24	.87
4. My manager can explain EBP in terms that are easy to understand.	3.03	1.27	.90
5. My manager helps me resolve conflicts between nursing research and clinical practice.	3.04	1.33	.90
6. My manager supports my efforts to change practice in response to new knowledge/evidence.	3.07	1.28	.89
7. My manager is able to influence others to engage in EBP.	3.01	1.31	.90
8. My manager facilitates my use of resources for EBP (eg, data bases, experts, literature).	3.01	1.30	.90
9. My manager facilitates practice change based on relevant nursing research.	3.02	1.31	.90
10. My manager provides time for me to engage in EBP.	2.86	1.37	.80

leadership, the literature gained a single means of measurement that can be used in Turkey on this issue.

Clinical nurses constitute a large portion of the healthcare workforce and play a central role in the presentation of all healthcare services. Nurses have the potential to improve healthcare quality if they routinely use the best existing evidence in clinical practices.

EBP creates a fundamental component of safe and quality patient care by ensuring that nurses are aware of existing practices to provide care to patients with complex processes. Nurses who adopt EBP-based practices are more satisfied with their caregiving roles, feeling strengthened. Thanks to the EBP, nurses can increase their updated knowledge about new medical protocols for patient care, applications of documented interventions that comply with the profiles of the patients for whom they are caring, their understanding of the risks or effects of diagnostic tests or treatments, and patients' chance of recovery. EBP helps nurses adopt a proactive role in which they can vocalize the concerns of patients by including their patients into care plans, in which they can share their values and preferences, and in which they can make recommendations regarding how they wish to proceed regarding the processes of treatment and care. EBP may reduce the costs of healthcare institutions by providing patient outcomes that may decrease the demand for health resources with better patient outcomes.

In healthcare organizations, the organizational structure, wok environment and characteristics of leader nurses play an effective role in developing and maintaining EBPs and making significant changes in the organization. For instance, if a leader nurse adopts a decisive, insisting, attentive, and systematic approach, it is easier to promote, implement, monitor, and assess EBPs in a healthcare organization, and to provide healthcare services in an orderly rather than a chaotic manner.[41,42]

The point of departure for this study was the need for a measurement instrument for identifying nurses' attitudes towards leadership and work environment with regard to EBPs. In this respect, EBPLS and EBPWES, developed by Pryse et al,[22] were translated and adapted into Turkish. Validity and reliability testing were previously done for the Chinese version of the scales by Zhang et al.[42]

In the present study, the scales were first evaluated for language and content validity. Then, CFA was performed to test construct validity. The test-retest analysis, Cronbach's α coefficient and item-total correlation analysis were used to test reliability.

The scales were translated into Turkish and subsequently back translated into English. Revisions were made after expert opinion

TABLE 5 Item-total mean scores and correlation values for items in Evidence-Based Practice Work Environment Scale (EBPWES)

EBPWES items	Mean	SD	Item-total correlation
1. Experts in EBP are available in my work setting.	2.86	1.10	.75
2. In my organization, I have access to data bases that have full-length nursing research articles.	2.96	1.21	.84
3. I believe my organization values evidence-based nursing practice.	2.90	1.37	.89
4. The nurses on my unit discuss research relevant to our clinical practice.	2.82	1.30	.87
5. The physicians I work with support EBP changes based on nursing research.	2.94	1.33	.89
6. The nurses on my unit base their practice on the best evidence.	2.97	1.33	.86
7. My manager makes sure that I have access to relevant research on my unit.	2.93	1.43	.88
8. My organization pays for me to attend educational offerings about EBP.	2.63	1.38	.81

TABLE 6 Differences in the EBP Nursing Leadership Scale and the EBPWES by nurse characteristics

Characteristics	EBPLS	EBPWES
Sex		
Female	3.12 ± 1.135*	2.94 ± 1.148
Male	2.84 ± 1.215	2.73 ± 1.200
Marital status		
Married	3.05 ± 1.168	2.85 ± 1.148
Single	3.02 ± 1.165	2.90 ± 1.190
School of graduation		
Vocational school of health	2.90 ± 1.111	2.68 ± 1.070
Associate degree	2.85 ± 1.245	2.84 ± 1.264
Bachelor's degree	3.25 ± 1.120*	3.03 ± 1.150*
Clinic		
Internal medicine	3.12 ± 1.153	3.02 ± 1.168**
Surgical medicine	3.19 ± 1.166**	2.96 ± 1.170
Intensive care	2.47 ± 1.039	2.31 ± 0.984
Duration of work, yıl		
1-5	2.96 ± 1.162	2.81 ± 1.192
6-10	2.99 ± 1.187	2.83 ± 1.162
11-15	3.03 ± 1.146	2.86 ± 1.118
üzeri 16	3.33 ± 1.136	3.13 ± 1.144
Evidence-based training		
Yes	3.57 ± 1.022*	3.30 ± 1.136*
No	2.32 ± 0.942	2.30 ± 0.942
Using evidence-based practice while working		
Yes	3.60 ± 0.961*	3.38 ± 1.060*
No	2.12 ± 0.837	2.06 ± 0.822

Abbreviations: EBPLS, Evidence-Based Practice Leadership Scale; EBPWES, Evidence-Based Practice Work Environment Scale.
*$P < .05$.; **$P < .01$.

was received. Content validity rate with reference to the review of the expert panel is quite high (0.88). The results indicate that the scales have comprehensible content and language.

The factor analysis method is conducted to remove the underlying fundamental structure in the background of numerous variables.[43] According to the confirmatory factor analysis (CFA) results, it was determined that the t values of all items on both scales were meaningful and had high factor loads. It was determined that the rates of explanation by each item for the structure wishing to be measured with the scales were high (Tables 1 and 2). Pryse et al[22] in their study confirmed with a factor analysis that each scale measured a one-dimensional structure ($P < .000$). Accordingly, both studies produced similar results.

Fit indices are used to measure whether the fit between model and a set of data is acceptable.[44] In the present study, the model indices of the scales are higher than the acceptable level (Table 2). CFA results indicate that the single-factor construct of the scales is at the acceptable level. Path diagrams of items also confirmed the results (see Figures 1 and 2). Researchers found similar results for the Chinese version of the scales, confirming that the model with a single-factor construct fits the data.[42]

The test-retest analysis was performed to determine the stability of measuring over time. The consistency of a scale depends on the similarity of measurement results conducted with the same group of subjects in different times.[45] Correlation coefficient needs to be minimum .70 and close to 1. A value over .80 is preferred.[46] Correlation analysis performed to evaluate the fit between test and retest mean scores ($r = .99$ in EBPLS and $r = .98$ in EBPWES) indicate that the participants' responses to scale items are consistent in two different times. Correlations are positive and highly significant ($P < .05$).

Cronbach's α indicates the extent to which the items that the scale contains are consistent with one another.[47] In our study, the Cronbach α values were reported as (.97) for the EBP Nursing Leadership Scale and as (.96) for the EBP Work Environment Scale, and it was determined that the scales were at a high reliability. Pryse et al[22] identified the internal consistency coefficients as (.96) for the EBP Nursing Leadership Scale and (.86) for the EBP Work Environment Scale. It can be said that the total scale internal consistency coefficients for the Turkish forms of the EBP Nursing Leadership Scale and EBP Work Environment Scale displayed similarity to a great extent with the internal consistency coefficients of the original scale. In the Chinese version of the scales conducted by Zhang et al,[42] the Cronbach α values were determined as (.93) for the EBP Nursing Leadership Scale and as (.90) for the EBP Work Environment Scale.

The study uses a CFA in the determination of the structure validity of the scale to evaluate the consistency of the scales as a result of the factor analysis. CFA is a method that relies on the evaluation of the goodness of compliance indices between the data and structure. Acceptable goodness of compliance is $\chi^2/df < 5$. The literature asserts that the factor loads must be greater than 0.30 and that elements with smaller values must be removed from the scale. As a result of the, it was deported that the scales had factor loads of greater than 0.30.[48,49]

The other compliance tests used in CFA are the root mean square error of approximation (RMSEA), standard root mean square residual (SRMR), comparative fit index (CFI), normed fit index (NFI), goodness of fit (GFI), incremental fitness index, and relative fit index (RFI). According to the literature an RMSEA value of greater than 0.10, a GFI > 0.80, and compliance indices of greater than 0.85 or 0.90 indicate that the consistency indices of the model are at a good level and that the model is applicable.

In our study, in the single-factor model for the EBP Nursing Leadership Scale, RMSEA = 0.075 GFI = 1.00, CFI = 1.00, RFI = 1.00, NFI = 1.00, and SRMR = 0.024 χ^2/df = 2.41. And for the EBP Work Environment Scale, RMSEA = 0.063 GFI = 1.00, CFI = 1.00, RFI = 1.00, NFI = 1.00, and SRMR = 0.016 χ^2/df = 1.99 (Table 3). In the original version of the study, as a result of the that Pryse et al[22] conducted, they determined that both scales could be used as a one-dimensional means of measurement ($P < .000$). The other compliance indices in CFA were not regarded in the original study. In the Chinese version of the scales conducted by Zhang et al,[42] for the EBP Nursing Leadership Scale, in the single-factor model, CFI = 0.953, GFI = 0.919, RMSEA = 0.090, and χ^2/df = 4.38. For the EBP Work Environment

Scale, in the single-factor model, CFI = 0.966, GFI = 0.951, RMSEA = 0.089, and χ^2/df = 4.27. The scale compliance indices are consistent with the compliance indices of the Chinese version.

Item reliability is based on the correlation coefficient between an item in the scale and total score of all items in the scale. It is used to determine the degree to which extent each item measures the concept that is central to the scale. It is desirable that the correlation coefficient is not a negative number and is over .25.[50] This study shows that the reliability of items in these scales are above the values specified in the literature. This indicates that all items measure the same attitude.

Differences were identified in the total scores in terms of the sociodemographic findings of the EBP Nursing Leadership Scale and EBP Work Environment Scale. Meaningful differences in favor of university-graduate nurses were reported in terms of the educational status of nurses (see Table 6). Previous studies in the literature have noted that nurses with higher levels of education have a higher likelihood of using research findings. In this regard, our study findings are consistent with the literature. It was reported that the theoretical assumptions upon which the means of measurement acquired as a result of the cultural adaptation of the EBP Nursing Leadership Scale and EBP Work Environment Scale, created in the context of the theory developed were confirmed.[21,51-53]

Leadership is a key element in the development of EBP at health institutions. Evidence-based leadership covers the best use of evidence to increase the quality of care and ensure patient security. Nurse leaders are in a central position with vital importance to develop the EBP application process.[54] They are the building blocks of EBP programs. In EBP practices, supportive leadership possess a significant influence in the perception of a healthy workplace environment.[55] Nurse leaders create an evidence-based culture of application to ensure the highest quality of care based on the best existing evidence.[56] Experienced leaders, clear roles, adequate incentives, training, and supervision are fundamental in the maintenance of the EBP. The success of clinical nurses in implementing EBP relies on a supportive work environment and effective nursing. The skills of finding, interpreting, analyzing, and applying the best evidence necessitates a supportive environment.[57]

5 | LIMITATIONS

Despite the successful international adaptation of the EBP Nursing Leadership Scale and EBP Work Environment Scale, some limitations became relevant. First, data were collected from a university hospital in only one city in Turkey, and, for this reason, common generalizations and applications regarding tools of measurement may be limited. Second, estimated validity could not be directly identified because no golden standard exists. Future verification studies should consider psychometric evaluations regarding the convergent validity of the EBP Nursing Leadership Scale and EBP Work Environment Scale.

6 | CONCLUSION

The research results indicate that the Turkish version of the EBPLS and the EBPWES are sufficiently valid and reliable. Internal consistency coefficients and validity values are compatible with those reported for the original version. It is found out that EBPLS and EBPWES in Turkish have adequate psychometric qualities to evaluate nurses' attitudes towards leadership and work environment with regard to EBP. The scales are expected to respond to needs in future studies in the field of nursing.

EBPs are necessary for communication, interprofessional collaboration, safety, and quality care. The implementation of evidence-based nursing leadership is an intricate process and it is important to employ a few concurrent strategies that target nursing personnel, leadership practices, organizational culture, and the usability and applicability of evidence. Nurse leaders are in a unique position to advance with a strategic plan as a member of a professional health team and to guide patient security, infrastructure, resources, reporting structures, definitions, and programs.

7 | NURSING IMPLICATIONS

Professional nurses are expected to provide safe and effective care. Care should be based on the most scientific information available. The relationship between knowledge and decision-making is the most decisive factor in the professionalization of nursing. EBPs enable nursing practices to become scientific. The main purpose of nursing practice is to provide a solid foundation for EBP and to ensure that it is best used for nurses. To increase the quality of nursing care, to make a difference in clinical applications and patient care results, to increase patient satisfaction, to develop the science of nursing and nursing care to provide evidence-based standardization of care and nursing practices to provide autonomy, increase the job satisfaction and job performance of nurses to reduce nurses intention to leave however, EBPs will be possible. Leadership support is the practice culture for EBP. Leadership supporting positive attitudes and beliefs about EBP is important in developing EBP. To achieve this, the characteristics of nurse leaders and the suitability of the working environment are crucial for the maintenance of EBPs. The EBPLS and the EBPWES will be effective and reliable tools in our country for contributing to the maintenance and development of EBPs.

CONFLICT OF INTERESTS
The authors declare that there are no conflict of interests.

ETHICS STATEMENT AND INFORMED CONSENT
All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the Helsinki Declaration and its later amendments or comparable ethical standards. This chapter does not contain any studies with animals performed by any

of the authors. Informed consent was obtained from all individual participants included in the study.

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