Original Article

Testing of the Nursing Evidence-Based Practice Survey

Cecelia L. Crawford, DNP, RN, FAAN • June Rondinelli, PhD, RN, CNS • Stephen Zuniga, PhD • Regina M. Valdez, MA • Laura Cullen, DNP, RN, FAAN • Kirsten Hanrahan, DNP, ARNP, CPNP-PC, FAAN • Marita G. Titler, PhD, RN, FAAN

Key words

evidence-based practice, instrument development/ tool development/ test construction/ psychom, nursing practice, quantitative, statistics, survey

ABSTRACT

Background: Clinicians' knowledge and skills for evidence-based practice (EBP) and organizational climate are important for science-based care. There is scant literature regarding aligning organizational culture with EBP implementation and even less for unit and organizational culture. The Nursing EBP Survey examines individual, unit, and organizational factors to better understand registered nurses' (RN) self-reported EBP.

Aims: Establish and confirm factor loading, reliability, and discriminant validity for the untested Nursing EBP Survey.

Methods: The study employed a descriptive cross-sectional survey design and was targeted for RNs. The setting included 14 hospitals and 680 medical offices in Southern California. The 1999 instrument consisted of 22 items; 7 items were added in 2005 for 29 items. The questionnaire used a 5 point, Likert-type scale. The survey website opened in November 2016 and closed after 23 weeks. Psychometric testing and factor determination used parallel analysis, exploratory factor analysis, confirmatory factor analysis (CFA), and ANOVA post hoc comparisons.

Results: One thousand one hundred and eighty-one RNs completed the survey. All factor loadings in the CFA model were positive and significant ($p < .001$). All standardized loadings ranged from .70 to .94. The covariance estimate between Factor 1 and Factor 2 was marginally significant ($p = .07$). All other covariances and error variances were significant ($p < .001$). Final factor names were Practice Climate (Factor 1), Data Collection (Factor 2), Evidence Appraisal (Factor 3), Implementation (Factor 4), and Access to Evidence (Factor 5). Four of 5 factors showed significant differences between education levels ($p < .05$ level). All factors showed significant differences ($p < .05$) between inpatient and ambulatory staff, with higher scores for inpatient settings.

Linking Evidence to Action: Nurses' knowledge, attitudes, and skills for EBP vary. The 2019 Nursing EBP survey offers RNs direction to plan and support improvement in evidence-based outcomes and tailors future EBP initiatives.

BACKGROUND

Consumers of 21st century health care expect that the care they receive is informed by evidence from scientific findings. Evidence-based practices (EBP) replace nonscientific, ritual laden, and traditionalistic practices with those that are based on the best available evidence (Cullen, Griffiths, McCormack, & Rycroft-Malone, 2008; Hanrahan et al., 2015; Melnyk, 2017; Sigma Theta Tau International, 2005–2007 Research, & Scholarship Advisory Committee, 2008; Titler, LoBiondo-Wood, & Haber, 2019). Evidence-based care results in many enhanced outcomes, such as improved compliance, patient safety, and care quality; better patient outcomes and decreased costs; and prevention of complications or adverse events (Titler, LoBiondo-Wood, & Haber, 2019).

The application of evidence in care delivery is a process ranging from critical appraisal of the existing evidence to implementing EBP changes and evaluating the impact on patient- and system-level outcomes. Clearly, the context of care delivery matters when implementing EBPs (Squires & Anderson, 2015; Titler et al., 2019). Examining clinicians' knowledge and skills for EBP as well as organizations' EBP climate is an important component of understanding a system's capacity for evidence-based care delivery (Crawford, 2015). Although there are a number of valid and reliable tools assessing individuals' beliefs, knowledge, and skills, (Majid et al., 2011; Melnyk et al., 2018; Titler & Anderson, 2019), there is scant literature regarding the alignment of organizational culture with EBP implementation (Kaplan, Zeller, Damitio, Culbert, & Bayley, 2014; Upton, Upton,

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& Scurlock-Evans, 2014). There is even less evidence for unit and organizational culture (Titler & Anderson, 2019). A tool that examines the three components of individual factors, unit factors, and organizational factors is the 29-item 2005 Nursing EBP Instrument modified from Titler et al. (Thiel & Gosh, 2008; Titler, Hill, Matthews, & Reed, 1999). This article reports the psychometric properties of this tool, as used across the Kaiser Permanente, Southern California (KPSC), integrated healthcare system.

STUDY PURPOSE

The purpose of this analysis was to establish and confirm factor loading, reliability, and discriminant validity for the untested 2005 version of the Nursing EBP Survey. The survey tool was used with permission. This analysis is part of a larger study to assess and describe the registered nurses' self-reported EBP at three different levels: individual RN, unit, and organizational. Psychometrics were assessed for the original 1999 version of the tool; the survey was then modified in 2005 but psychometric properties of the modified version were not assessed.

FRAMEWORK

Richardson's 5 A's Model was used as a framework for the primary research study, Self-Reported Degrees of EBP for Kaiser Permanente Registered Nurses in Southern California. The model uses five steps to describe an iterative approach to EBP (Goode, Fink, Krugman, Oman, & Traditi, 2011). This systematic method can be used by nurses at all levels to guide the EBP process, particularly when seeking the best available evidence for a protocol, procedure, or guideline. The model can also be used to assess the EBP environment or the implementation of EBP projects (Goode et al., 2011). The five steps are as follows:

1. Ask: Develop a clinical question to guide the evidence review.
2. Acquire: Conduct a systematic search to acquire the evidence.
3. Appraise: Critically appraise and synthesize the evidence.
4. Apply: Utilize the evidence in making patient care decisions.
5. Act and Assess: Describe the evaluation process in the clinical setting.

METHODOLOGY

Design and Instrumentation

This study employed a descriptive cross-sectional survey design. The tool being evaluated was the 2005 Nursing EBP Survey, used by the Department of Nursing Services and Patient Care at the University of Iowa Hospitals and Clinic. The original 1999 instrument consisted of 22 items, with strong psychometric properties (Thiel & Gosh, 2008; Titler et al., 1999). In 2005, seven items (questions 1, 5, 12, 20, 27, 28, and 29) were added to the survey to capture the evolution of EBP and implementation science. The revised 2005 instrument consists of 29 total items. The questionnaire used a five point, Likert-type scale measurement (*strongly disagree* = 1 to *strongly agree* = 5). The 2005 version of the tool was not tested. This study added two additional open-ended questions to address the barriers and facilitators related to nursing EBP, which will be analyzed at a future date, as well as a demographic section to describe respondents.

Setting and Sample

The setting included 14 hospitals and 680 medical office buildings and ambulatory care clinics in Southern California. Hospitals ranged in size from approximately 50 to 350 beds. When factoring in the ambulatory setting, the KPSC integrated healthcare system provides care for approximately 4.5 million members (Kaiser Permanente, 2018).

There were approximately 18,000 registered nurses (RNs) employed within KPSC available to potentially complete the survey. At the time of the survey, there were approximately 10,200 RNs in the acute care inpatient setting and approximately 7,800 ambulatory care RNs. Sample sizes were calculated for inpatient ($n = 408$) and ambulatory ($n = 404$) (Raosoft, 2004). The achieved sample sizes for inpatient ($n = 724$) and ambulatory ($n = 454$) were then combined. The final sample size ($n = 1,181$) for this study was more than adequate for the desired ratio of 10 subjects per variable ($n = 29$) in the tool and above the number to reach power of .80 to detect small effects (0.15) for three groups in analysis of variance (ANOVA; Cohen, 1988; Munro, 2005).

Data Collection Procedures

Data collection started after receiving institutional review board approval. Registered nurses were recruited to participate using flyers, email invitations, and discussion at unit or clinic staff meetings. The survey was distributed electronically through a web-based survey vendor (SurveyMonkey, 2019). Access to the website started in November of 2016 and closed after 23 weeks.

Data Analysis and Results

SPSS Version 24 (IBM Corp., Armonk, NY, USA) and various R packages version 3.1.2 (paran, psych, lavaan, and semPlot; https://www.r-project.org) were utilized to analyze data. There were 724 responses from inpatient RNs and 454 responses from outpatient RNs. Demographic data showed a mean age of 45 years, with an average of 12 years working for this organization (Table 1). Eight-six percent of the

Table. Study Demographics[b]

Table 1. Study Demographics

Participants (*n* = 1181)	Value[a]
Age (Mean/*SD*)	45.38 (*SD* = 10.26)
Years Employed with Organization	11.93 (*SD* = 9.039)
Gender (*n* = 1145)	
Female	1016 (86.0)
Male	118 (10.0)
Transgender	11 (.9)
Race (*n* = 1096)	
White/Caucasian	367 (31.1)
Filipino	281 (23.8)
Asian	161 (13.6)
Hispanic	149 (12.6)
Black/African American	56 (4.7)
Latino	32 (2.7)
Other/Prefer not to Say	24 (2.0)
Multiracial	22 (1.9)
Native American	4 (.3)
Area of Work (*n* = 1178)	
Inpatient	724 (61.3)
Ambulatory	454 (38.4)
Highest Education (*n* = 893)	
BS/BSN	621 (52.6)
MS/MSN	152 (12.9)
ADN/ASN	110 (9.3)
Doctoral Level (DNP, PhD, EdD)	10 (.8)
Employment Status (*n* = 1157)	
Full-Time	747 (63.3)
Part-Time	309 (26.2)
Per Diem	101 (8.6)

[a]All values are stated as frequency (percentage) or mean (standard deviation).
[b]Southern California.

respondents were female, and 31% were White Caucasian. Over half of RNs are bachelor's prepared (n = 621; 53.5%) and work full-time. The low number of doctoral prepared respondents (n = 10; 0.8%) was combined with master's prepared for a combined "graduate degree" category used in further analyses (Table 1).

The process for establishing factors started with a parallel analysis to determine the potential number within this data set. This parallel analysis utilized a Monte Carlo simulation of 5,000 iterations, using the 95th percentile estimate (Glorfeld, 1995) of eigenvalues for retaining factors. The logic underlying this approach is that the magnitude of the eigenvalue for the last retained factor should exceed an eigenvalue obtained from random data (DeVellis, 2017). If real non-random factors exist, then eigenvalues from real data will be larger than the randomly generated eigenvalues (Schmitt, 2011). Adjusted eigenvalues >0 indicated eight dimensions to retain.

Next, an exploratory factor analysis (EFA) was run with promax rotation (Finch & French, 2015). We selected EFA over principal components analysis (PCA) for three reasons. First, it has a naturally progressive fit into confirmatory factor analysis (CFA). Second, PCA assumes measurement without error which can produce inflated values of variance accounted for by the components. Third, PCA is intended to reduce the data and not necessarily identify an underlying latent structure that is tied to theory (Finch & French, 2015). Results demonstrated several items that loaded strongly onto unique factors. We selected the items for each factor based on loadings of at least medium levels (0.60; Acock, 2013) resulting in five factors, as shown in Table 2.

Fifteen items from the survey were retained in the factor model, and 14 were removed based on item loading during EFA (See Table 2), investigator discussions, and fit with conceptual components of EBP. Ten items were eliminated, as they had low loading values and crossed over several factors. One item related to EBP awareness in general was removed, as awareness of EBP concepts and processes is now widespread in the practice setting and taught at all levels of educational preparation. Items 14 and 16 with factors loadings greater than 0.60 were eliminated, as they did not fit conceptually with any of the other five factors. Item 14 asked for the level of agreement on physician cooperation, whereas item 16 asked for the level of agreement regarding RN caring about EBP.

Confirmatory factor analysis was then used to assess our factor structure and to examine the nature of and relations among latent constructs. CFA demonstrates a measurement model and allows for assessment of latent variables effects and model fit. In contrast to EPA, CFA explicitly tests assumed associations between observed variables (Jackson, Gillaspy, & Purc-Stephenson, 2009). With only slight departures from normality, the robust maximum likelihood estimation was used. Missing data were handled with listwise deletion.

Chi-square, comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error approximation (RMSEA), and standardized root mean squared residual (SRMR) were used as indices to assess model fit for both the full sample and for a randomly selected split half. Chi-square was significant for both the full and split half sample, which is often significant for larger sample sizes. Thus, other fit indices were also assessed. Indices reflected results of CFI (0.969 full, 0.972 half), TLI

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Table 2. Exploratory Factor Loading for 29 items: 2005 Nursing Evidence Based Practice Survey

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
1[a]	0.929	−0.010	0.014	0.007	0.085	0.011	−0.015	0.489
2	**1.023**	0.053	0.019	0.016	0.006	0.017	0.011	0.478
3[b]	0.129	0.095	−0.120	0.036	0.400	0.356	−0.139	0.043
4	−0.116	−0.083	−0.030	−0.114	**0.918**	0.050	0.064	−0.073
5	0.115	−0.058	0.081	−0.000	**0.865**	−0.142	0.030	0.110
6	**0.856**	0.013	−0.054	0.045	0.034	−0.143	−0.033	−0.098
7[b]	0.478	−0.025	0.181	0.0978	0.161	0.055	0.039	0.082
8	**0.907**	−0.010	−0.045	−0.016	−0.034	0.039	−0.060	−0.048
9[b]	0.223	−0.042	0.039	0.011	0.118	0.442	−0.042	−0.049
10	0.251	−0.019	**0.695**	−0.057	0.029	0.080	−0.023	0.062
11	0.052	−0.048	**0.936**	0.001	−0.042	0.081	−0.066	−0.009
12	0.035	0.0252	**0.709**	0.025	0.089	−0.097	0.014	−0.061
13	**0.745**	−0.016	0.048	−0.046	−0.134	0.139	−0.001	−0.011
14[c]	−0.105	−0.031	0.146	−0.042	−0.096	0.666	0.138	−0.067
15	**0.931**	−0.025	0.028	0.009	−0.027	−0.001	0.049	0.213
16[c]	0.269	0.005	0.041	−0.089	−0.173	0.674	0.105	0.090
17[b]	−0.125	−0.047	−0.054	−0.006	0.028	0.338	0.670	0.002
18[b]	−0.128	0.020	−0.058	0.087	0.029	0.593	0.279	0.001
19	0.030	−0.051	−0.047	**0.764**	−0.041	0.171	0.019	0.026
20	0.028	−0.046	0.019	**0.941**	−0.074	−0.013	0.006	−0.006
21[b]	0.196	0.0475	−0.087	0.023	0.102	−0.013	0.500	−0.041
22[d]	N/A							
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24[d]	N/A							
25[b]	−0.129	0.221	0.012	0.204	0.196	0.331	−0.109	−0.048
26	−0.109	**0.828**	0.205	−0.001	−0.049	0.045	−0.068	−0.038
27	0.149	**0.897**	−0.101	−0.100	0.006	−0.005	0.034	0.056
28	−0.022	**0.994**	−0.011	−0.012	−0.085	0.007	−0.018	0.014
29[b]	−0.023	0.447	0.211	0.104	0.071	−0.117	0.159	−0.030

Note Bolded loadings were included in the 5-factor model. Items 1, 5, 12, 20, 27, 28, 29 added to 2005 survey. Nonsignificant values greyed per request.
[a]Item 1 omitted as EBP awareness, concepts, processes are now widespread in clinical settings and taught during ADN/BSN/MSN preparation
[b]Items eliminated due to low factor loading
[c]Not associated with EBP readiness
[d]Items 22, 23, 24 not included in analyses, as they were educational Yes/No questions.

(0.960 full, 0.963 half), RMSEA (0.064 full, 0.061 half), and SRMR (0.035 full, 0.036 half). All fit index criteria (>0.95, >0.95, <0.08, <0.08) were met (Acock, 2013; Kaplan, 2000). Modification indices did not indicate a substantial improvement or theoretically justifiable additions, so the original model was retained. Because the split-sample results were almost identical with the full sample, the conservative full sample results and model are displayed (Figure 1).

For completeness, we reviewed the Cronbach's alpha to determine how well the items were associated. The alpha values were all moderate to high. The alpha levels for the five factors were 0.92, 0.90, 0.90, 0.85, and 0.79 respectively, as seen in Table 3.

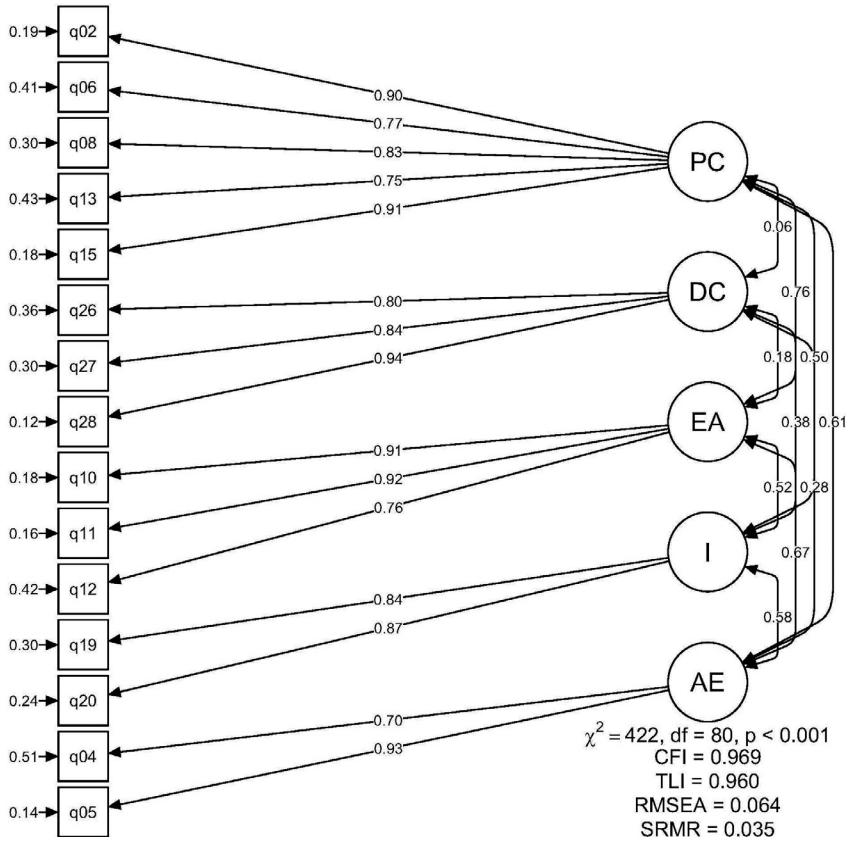

Figure 1. Confirmatory factor analysis for full sample.

All factor loadings in our CFA model were positive and significant ($p < .001$, Figure 1). All standardized loadings were at least at medium strength and ranged from 0.70 to 0.94. For example, participants responding 1 *SD* higher on Factor 1 will respond 0.90 SDs higher on question 1. The covariance estimate between Factor 1 and Factor 2 was marginally significant ($p = .07$). All other covariances and error variances were significant ($p < .001$). Once the number of factors was finalized, four rounds of factor naming were needed to reach consensus by investigators (Figure 1; Table 3). The final factors were Practice Climate (Factor 1), Data Collection (Factor 2), Evidence Appraisal (Factor 3), Implementation (Factor 4), and Access to Evidence (Factor 5).

Final analyses included ANOVA testing with post hoc comparisons, which assisted in establishing discriminant validity between education levels and inpatient vs. outpatient nurses for the subscales and total score (See Table S1). We hypothesized that those with more education would score higher than those with less education and that those working in inpatient settings would score higher than those working in ambulatory settings. The rationale for these hypotheses are (a) that those with higher education have more knowledge and skills regarding EBP, and (b) nurses in ambulatory settings have unique roles and challenges leading EBP that differ from the acute care setting (Haas, 2008; Sanders et al., 2010). Four of the five factors (Data Collection, Evidence Appraisal, Implementation, Access to Evidence) showed significant differences between levels of education at the $p < .05$ level. All five factors showed significant differences ($p < .05$) between inpatient and ambulatory staff with those on inpatient settings scoring higher than those in ambulatory settings (Table 4).

DISCUSSION

The results demonstrate a strong instrument that is valuable in measuring specific concepts related to EBP. The final Nursing EBP Survey consists of 15 items and five subscales. This is the third iteration of the scale (Titler et al., 1999), and it has now undergone robust psychometric testing with demonstrated reliability and validity. The new 2019 version of the Nursing EBP Survey has been reduced from 29 items in the 2005 version to 15 items, making it pragmatic without losing essential content (Table 3). However, the eliminated items could still provide valuable information regarding physician cooperation, EBP attitudes, and demographics elements. The tool discriminates as hypothesized among educational levels and type of practice setting (inpatient vs. ambulatory).

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Table 3. EBP Readiness Assessment for Registered Nurses with Subscale Scores, Cronbach's Alpha, Survey Questions, and Confirmatory Factor Analysis (CFA)

Factor	Alpha[a]	No.[b]	Item	CFA				
1. Practice Climate Subscale Score/*SD* 4.14 (0.87) *N* = 1,181	.92	2	Evidence-based nursing practice is important to me.	.90				
		6	A journal club to discuss nursing research findings would be helpful.	.77				
		8	Someone to assist with a literature search and obtain articles would increase use of evidence-based practices.	.83				
		13	A bulletin board on my unit to share research articles would be helpful.	.75				
		15	I am willing to try out new innovations found to be effective.	.91				
2. Data Collection Subscale Score/*SD* 3.03 (1.08) *N* = 1,173	.90	26	I participate in the collection of data for research studies (i.e., conduct of research, not evidence-based practice projects).		.80			
		27	I participate in the collection of data for quality improvement projects.		.84			
		28	I participate in the collection of data for evidence-based practice projects.		.94			
3. Evidence Appraisal Subscale Score/*SD* 3.76 (0.83) *N* = 1,178	.92	10	I can read a nursing research report and have a general notion about its strengths and weaknesses.			.91		
		11	I can read a nursing research report and make a sound judgment about its scientific merit.			.92		
		12	I am able to critique "synthesis" reports or technology assessments (e.g., systematic reviews) for a general understanding of their strengths and weaknesses.			.76		
4. Implementation Subscale Score/*SD* 3.62 (0.90) *N* = 1,176	.85	19	I understand the process for implementing evidence into practice in my organization.				.84	
		20	I am aware of effective strategies for implementing practice changes				.87	
5. Access to Evidence Subscale Score/*SD* 3.75 (0.80) *N* = 1,181	.79	4	I have convenient access to nursing research journals.					.70
		5	I know where to find evidence (e.g., research findings or evidence-based clinical guidelines) to guide my practice.					.93

[a]Denotes Cronbach's alpha (α) for each respective factor. Model fit indices reflected results of RMSEA (.063), CFI (.970), and SRMR (.034).
[b]The number (No.) in this column corresponds to the survey item number in the 2005 version.

Table. EBP Survey Education and Practice Setting ANOVA and T-test for Discriminant Validity

Factors and Total score Mean (*SD*) *n* = 1181	Education Mean (95% Confidence Interval)			Practice Setting Mean (95% Confidence Interval)	
	ADN	BSN	Graduate*	Inpatient	Ambulatory Practice
Factor 1: Practice Climate 4.15 (0.868)	4.08 (3.97, 4.18)	4.17 (4.11 ,4.23)	4.17 (4.02, 4.31)	4.28 (4.23, 4.33)	3.93 (3.83, 4.03)
ANOVA and *t* test	*F* (2,1140) = 1.129			*t* (680.93) = 6.281	
p Value	*p* = .324			*p* < .001	
Factor 2: Data Collection 3.03 (1.079)	2.87 (2.75, 3.00)	3.03 (2.95, 3.11)	3.27 (3.11, 3.43)	3.10 (3.02, 3.18)	2.90 (2.80, 3.00)
ANOVA and *t* test	*F* (2,1134) = 7.835			*t* (945.53) = 3.1066	
p Value	*p* < .001			*p* = .019	
Factor 3: Evidence Appraisal 3.76 (0.836)	3.64 (3.54, 3.72)	3.75 (3.68, 3.81)	3.99 (3.85, 4.14)	3.84 (3.78, 3.89)	3.63 (3.55, 3.72)
ANOVA and *t* test	*F* (2,1138) =11.21,			*t* (777.8) =3.789	
p Value	*p* <.001			*p* < .001	
Factor 4: Implementation 3.62 (0.897)	3.53 (3.43, 3.63)	3.62 (3.55, 3.69)	3.79 (3.65, 3.93)	3.69 (3.63, 3.75)	3.51 (3.43, 3.60)
ANOVA and *t* test	*F* (2,1136) = 4.856			*t* (907.36) = 3.2197	
p Value	*p* = .008			*p* = .001	
Factor 5: Access to Evidence 3.70 (0.991)	3.57 (3.47, 3.68)	3.67 (3.60, 3.74)	4.01 (3.85, 4.18)	3.78 (3.71, 3.84)	3.56 (3.46, 3.66)
ANOVA and *t* test	*F* (2,1139) =12.44,			*t* (851.5) = 3.52	
p Value	*p* < .001			*p* < .001	
Total Score 3.67 (0.671)	3.51 (3.40, 3.62)	3.68 (3.63, 3.73)	3.85 (3.72, 3.97)	3.77	3.51
ANOVA and *t* test	*F* (2,890) = 8.507			*t* (813.4) = 6.55	
p Value	*p* = .000			*p* = .000	

Note ADN = Associate Degree in Nursing, BSN = Bachelors of Science in Nursing.
*Graduate denotes Masters and doctoral degrees combined due to low count of doctoral degrees.

Nurses with more education, specifically graduate education, scored higher than those with Associate or Baccalaureate Degrees. This is congruent with recent findings (Melnyk et al., 2018) and is not surprising, as the knowledge and skills for EBP are emphasized in graduate education at both the master's and DNP levels. Nurses practicing on inpatient settings scored higher than those in ambulatory settings. To our knowledge, this is the first study that has compared the scores of an EBP assessment of inpatient and ambulatory nurses. Perhaps inpatient nurses scored higher because of the long-standing emphasis on EBP in hospital settings. Only more recently has ambulatory nursing practice emphasized care delivery informed by evidence (Baiomy & Khalek, 2015; Greenberg & Pyle, 2004; Sanders et al., 2010). Nurses increasingly practice in outpatient settings as healthcare systems transition from an acute care model to an ambulatory care model. Workshops and programs for EBP need to include the tools, resources, and access to information to support ambulatory care nurses in implementing EBPs that fit their settings.

Nurses scored highest on the Practice Climate subscale (M = 4.15; *SD* 0.868), followed by Evidence Appraisal (M = 3.76; *SD* 0.836), Access to Evidence (M = 3.70; *SD* 0.991), Implementation (M = 3.62; *SD* 0.897), and Data Collection (M = 3.03; *SD* 1.079). Overall, KPSC nurses had means scores of 3.03 to 4.14 on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale, suggesting that most nurses have a relatively high level of expertise in EBP, with a future emphasis on data collection skills. One explanation is that the KPSC practice environment itself was perceived as being highly supportive of EBP. Perhaps EBP has become more embedded into nursing practice and academia than previously seen. These and other questions represent research opportunities for future investigation.

Results are aligned with the Richard's 5 A's Model (Goode et al., 2011), which is used to assess the EBP environment or the implementation of EBP projects (Goode et al., 2011). Richardson's 5 A's model uses five steps (Ask, Acquire, Appraise, Apply, Act, and Assess) to describe an iterative approach to EBP (Goode et al., 2011; Table 3).

The second step, Acquire, is aligned with Factor 5 of Access to Evidence, which queries whether staff can find and access the evidence to address the clinical question (Ask; Table 3). The third step of Appraise is related to Factor 3, Evidence Appraisal. The fourth step Apply is aligned with Factor 4, Implementation. The model's first step (Ask) and fifth step (Act and Assess) are most closely aligned with Factor 1, Practice Climate, and Factor 2, Data Collection, respectfully in Richardson's model. Alignment of factors with components of the Richardson model provides some conceptual support for the factors and retained items from the survey.

Building organizational capacity for creating and sustaining a practice environment that values and supports EBP requires an assessment of the organization and targeted interventions to address assessment findings. Use of the 2019 Nursing EBP Survey is one way to begin understanding the current state of EBP in an organization and where resources may be targeted for improvement (Table 4).

However, organization capacity or leadership was not captured in the 2005 survey tool. A complimentary tool that may help assess organizational capacity is the Implementation Climate Scale (ICS). This reliable and valid instrument measures the unit climate for EBP implementation (Ehrhart, Aarons, & Farahnak, 2014). It is short (18 items) and evaluates the extent (1 = *slight extent* to 4 = *very great extent*) the unit-practice setting prioritizes and values EBP. All items are anchored to a specific unit or practice setting as a point of reference. The six areas addressed are as follows: focus on EBP; educational support for EBP; recognition for EBP; rewards for EBP; selection of staff for EBP knowledge and experience; and selection of staff for openness (flexible, adaptable, open to new interventions).

Similarly, leadership behaviors enacted by an organization and unit leaders can facilitate EBP implementation and foster an evidence-based climate (Shuman, Powers, Banaszak-Holl, & Titler, 2019). These behaviors can be assessed using the Implementation Leadership Scale (ILS), which presents an opportunity to include leadership comparisons with an EBP evaluation. This is a 12-item scale that measures the extent that leaders enact behaviors that support EBP implementation (0 = *not at all* to 4 = *great extent*; Aarons, Ehrhart, Farahnak, & Sklar, 2014; Torres et al., 2018). There are two versions of the ILS, one for staff to report their perceptions of their supervisor's leadership and another for supervisor-leaders to assess themselves. The leadership behaviors are as follows: proactive leadership; knowledgeable leadership; supportive leadership; and perseverant leadership.

LIMITATIONS AND STRENGTHS

There were limitations and strengths to this study. One limitation was possible survey bias, as the self-reported information was obtained only from RNs who completed the online survey in one health system. The degree of EBP for RNs not completing the survey may be different, which limits the generalizability for the total population of RNs in Southern California and beyond. Another limitation is that the nurses in this sample are from the same healthcare organization with similar resources, tools, education, and support from an embedded regional research and EBP program. Authors recommend that CFA with fit indices be completed on future samples from different healthcare organizations and regions to further support the model. The third limitation was the unequal number of inpatient vs. ambulatory respondents, yet sufficient sample size was achieved for both groups.

Although the nurses were from the same healthcare system, the large sample size was a major strength of the study, which heightened the level of confidence in sample estimates and reduced the risk of error. The large sample also allowed detailed comparison between two groups—ambulatory practice and inpatient acute care. Lastly, items 22, 23, and 24 (Table 2) may best be used as yes or no demographic questions, because they ask whether the participant is planning or actively pursuing a bachelor or advanced degree.

CONCLUSIONS

Testing of the validity and reliability of the 29 item 2005 Nursing EBP Survey resulted in five factors using confirmatory and exploratory factor analyses. This instrument was able to discriminate between the educational preparation of inpatient and ambulatory care registered nurses and their ability to incorporate EBP processes into their daily care activities. Now that measurement has been established for the five factors, this survey could be used in future research to examine specialty inpatient areas such as critical care, maternal child health, and ambulatory areas of adult and pediatric primary care, and procedure areas. Survey results could aid in understanding the needs of registered nurses as they engage in evidence-based care throughout all organizational levels. **WVN**

LINKING EVIDENCE TO ACTION

- Nurses' knowledge, attitudes, and skills for EBP vary. Measurement is now established for this tool to compare groups, examine areas to address, and create opportunities to tailor future EBP initiatives.
- Nurse leadership for evidence-based care delivery is essential for quality and safety. The revised 2019 EBP Nursing EBP survey offers direction to support planning for and resourcing support for improvement in evidence-based outcomes.
- Practice leaders must partner with academic leaders to examine current EBP gaps and develop contemporary strategies to ensure that nurses' EBP competencies are visible from the classroom to the boardroom and across all practice settings

Author information

Cecelia L. Crawford, Director of Evidence-Based Nursing Practice, Regional Patient Care Services, Kaiser Permanente Southern California, Pasadena, CA, USA; June Rondinelli, Nurse Scientist, Director, Regional Nursing Research Program, Kaiser Permanente Southern California, Pasadena, CA, USA; Stephen Zuniga, Data Scientist, Data, Analytics & Technology, Continuing Care & Outside Medical, Kaiser Permanente Southern California, Pasadena, CA, USA; Regina M. Valdez, Senior Research Analyst, Regional Nursing Research Program, Regional Patient Care Services, Kaiser Permanente Southern California, Pasadena, CA, USA; Laura Cullen, Evidence-Based Practice Scientist, Nursing Research and Evidence-Based Practice, Department of Nursing Services and Patient Care, University of Iowa Health Care, Iowa City, IA, USA; Kirsten Hanrahan, Director Nursing Research and Evidence-Based Practice, Department of Nursing Services and Patient Care, University of Iowa Health Care, Iowa City, IA, USA; Marita G. Titler, Rhetaugh Dumas Endowed Chair, Department of Systems, Populations and Leadership, University of Michigan School of Nursing, Ann Arbor, MI, USA

Address correspondence to Cecelia L. Crawford, Regional Patient Care Services, Kaiser Permanente Southern California, 393 E. Walnut Street, 7th Floor, Pasadena, CA 91188, USA; Cecelia.L.Crawford@kp.org

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article at the publisher's web site:

Table S1. EBP Survey Education and Practice Setting ANOVA and t Test for Discriminant Validity