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Competence of Evidence based Practice among Academic Faculty of Community Health Nursing in South Korea: A Cross-sectional Study

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Purpose: This study was aimed to investigate the level of EBP competence consisting of knowledge, attitude, and skills, and related factors with EBP competence for the faculty members working in community health nursing. **Methods:** This descriptive cross-sectional was done with 42 faculty members using a self-administered questionnaire including demographic characteristics, EBP-related training/education, and the modified-Korean version of competence in EBP with 25 items from December 1, 2014 to March 2, 2015. Data was analyzed with descriptive statistics, Student's t-test, and one-way ANOVA. **Results:** The mean scores of knowledge, attitude, and skills were 3.98, 4.14, and 4.01 on a five point scale, respectively. And, participants who have experienced in teaching EBP showed higher in knowledge in EBP than others (t=-2.38, *p*=.022). **Conclusion:** This study indicates that Korean faculty members working in community health nursing have a positive attitude toward EBP but they do not rate their knowledge in EBP as positively. Only experience of teaching EBP is related with the knowledge in EBP. Therefore, an educational program needs to be developed, offering knowledge and developing necessary skills to promote EBP for faculty members. Further studies using larger sample size are required to increase the representativeness and generalizability of the study results.

Key Words: Attitude to health, Evidence-based practice, Faculty, Knowledge, Nursing

INTRODUCTION

Evidence-based practice (EBP) is a practice based on scientific evidence from study results, and is defined as "integration of research and other best evidence with clinical expertise and patient preference and values in health care decision making"[1]. There has been an increasing need for provision of evidence-based nursing care since 1990s [2], recently in the health care field including nursing, there has been a strong emphasis on 'evidence-based practice' or 'knowledge translation into nursing practice'[3]. In the summit on healthcare professional education supported by the Institute of Medicine, employing an evidence based care was one of five essential core competencies for health care disciplines to close the health-care quality chasms [4]. Therefore, nurses should translate research findings into clinical practice to improve health outcomes and quality of life in vulnerable populations [5].

In line with global trend, various EBP initiatives were established in conferences, societies, and nursing field to introduce and develop EBP in the nursing communities since 2000s in South Korea [6]. In spite of the critical demand for nurses to provide EBP, there were multiple barriers including lack of confidence and skills relevant to the research component of EBP [7], misperceptions about EBP [5], difficulties of interpretation of materials written in English in non-English speaking countries [8], and insufficient/inappropriate EBP training in undergraduate and continuing education [9].

In order to accelerate the use of an evidence-based ap-

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proach to nursing care, nurses must acquire EBP knowledge, skills, and beliefs about the importance of EBP in clinical and community settings. Considering most undergraduate students become nurses after graduation and most students in masters or doctoral courses are nurses in nursing department, they should have opportunities to be exposed to EBP during academic courses. As they learn EBP knowledge and skills in the academic courses, they can be familiar with EBP and feel easy to apply them in the nursing practices. Nursing education at both the undergraduate and graduate levels has traditionally focused on generation of research instead of use of evidence resulted from researches. That is, research courses have usually focused on teaching specific research methods and have little interested in translating research findings into practice to improve clinical care [10]. Thus, students have failed to see the application to clinical practice [11]. Therefore, educational institutions must provide strategies on how best to teach EBP to base students' practice on the best available evidence from researches [12].

In the Summit on Healthcare Professional Education, employing EBP was cited as one of five essential core competencies for health care educational programs [13]. And EBP experts and healthcare leaders emphasized that advanced practice and direct care nurses must acquire sufficient EBP knowledge and skills to advance evidence-based care in clinical settings and nurse educators must teach their students the EBP process to provide them lifelong skills to deliver the highest quality of care during US EBP Leadership Summit [5].

Some models for promoting EBP emphasize facilitators to support the process of change [14], and academic and clinical staffs are considered key people to promote and facilitate students to have EBP knowledge, attitude, and skills. They teach and support students how to retrieve, understand, and appraise the body of evidence, and apply relevant research findings for EBP in nursing care [15]. Therefore, EBP competence in nurse educators is important to augment nursing students' learning about EBP in nursing care. According to previous studies nurse educators' beliefs about EBP showed significant relationship with the extent to which they teach and practice it [12], and nurse educators played an important role in disseminating evidence-based information at ward level [16].

Several studies relevant to EBP competence have investigated in nurse educators and faculty. Melnyk et al. [12] study with 79 nurse practitioner educators in US reported that the participants had a strong need to integrate it into academic curricula, although few academic programs offered a foundational course in EBP. And educators' knowledge of EBP had significant relationships with their beliefs that EBP improves clinical care (p=.004), beliefs that EBP improves patient outcome (p=.010), beliefs that teaching EBP will advance the profession (p=.004), and how comfortable they feel in teaching EBP (p<.001). Stichler et al. [7] study with 40 faculty members (32.0% of response rate) in US showed that mean score of knowledge/skills associated with EBP, attitude toward EBP, and the practice were 4.93, 5.64, and 4.86 on a scale of 7, respectively. Upon et al. [2] study with 81 academic and clinical faculty members (US academic=12, US clinical=17, UK academic=9, UK clinical=43) indicated that EBP knowledge, attitude and practice was 5.71, 6.00, and 6.00 in academic staff, respectively, and 5.21, 6.00, and 5.50 in clinical sample, respectively. Academic faculty scored significantly higher on knowledge of EBP than clinical faculty (p=.026). The level of EBP practice, attitudes, and knowledge/skills between UK and the US participants was not significantly different. Malik et al. [17] explored the perceived knowledge, attitude, and skills among 41 nurse educators, 10 clinical coaches, and 84 nurse specialists working at a tertiary healthcare network in Australia. The overall mean knowledge was 2.98 on a five-point Likert scale, and only 2% of nurse educators perceived they had 'excellent' knowledge. For their critical appraisal skills14.6% of educators reported being 'beginner' and 34.1% as 'quite skilled', whereas 23.8% of CNSs had rated as 'beginner' and 31% as 'novice'. They reported that respondents revealed lack of knowledge and skills of appraisal and translation of evidence into clinical practice despite positive attitudes towards EBP. Similarly, Mehrdad et al. [18] studied nursing faculties' knowledge and attitude at nursing faculties of two universities in Iran and found that 88.6% of participants reported a positive attitude toward EBP whereas the only10% of those was high level of knowledge of EBP.

According to the several previous studies done in the foreign countries, EBP competence among nurse educators are very important and showed had a positive attitude toward EBP in nursing care but the knowledge and practice were not satisfactory. However, there have been few investigations about the EBP competency of academic faculty in South Korea. Therefore, we tried to investigate the perceived knowledge, attitude, and skills of EBP in nursing faculty members in Korea.

1. Aim

This study explored following research questions: (1) What is the faculty's level of knowledge, attitude, and skills

of EBP, (2) What are the associations among demographic characteristics, EBP-related -training/education, EBP competence consisting of knowledge, attitude, and skills.

METHODS

1. Design

This was a descriptive cross-sectional study to investigate competence with regard to knowledge, attitude, and skills of EBP among faculty members whose major was community health nursing.

2. Participants

The population of this study was full-time faculty members affiliated with nursing colleges or universities whose major was community health nursing in Korea, which was estimated approximately 172 at June, 2014 according to the Korean Academy of Community Health Nursing. Among these, 42 faculty members participated in the study, giving a response rate of 24.4%.

3. Instruments

Tool for the study was a self-administered questionnaire including demographic characteristics, EBP-related training/education, and the modified-Korean version of competence in EBP questionnaire [19]. The demographic questionnaire asked 4 questions about gender, age, highest academic degree, and faculty teaching and clinical experience related to community health nursing. EBP-related training/education was investigated using 2 questions on experience to participate in EBP training courses, and experience in teaching of EBP [20].

Competence for EBP was measured with questions from the Korean version of competence in evidence based practice questionnaire (EBP-COQ) which addressed perceived knowledge, attitude, and skills of EBP. The Korean version of EBP-COQ is linguistic-valid measure originated from EBP-COQ developed and validated by Ruzafa-Martinez et al. [21]. Permission to use the Korean version of EBP-COQ was obtained. In this study, the Korean version of EBP-COQ was modified in terms of terminology: 'patients' were replaced into 'subjects,' and 'patient results' were revised as 'health care results'. Study tool consisted of a total of 25 items including 6 in EBP knowledge, 13 on attitude towards EBP, and 6 in EBP skills. Each question was on a 5-Likert scale (1-point="Strongly disagree", 5-points="Strongly agree"), and higher points indicated higher EBP competence. The EBP-COQ has been found to be a reliable and valid tool for measuring competence for EBP in nursing students. Ruzafa-Martinez et al. [21] reported that Cronbach's α was 0.888 for the entire questionnaire, and a factorial analysis classified the items into the three categories relevant to competence for EBP: attitude, knowledge and skills. The factor solution explained 55.6% of the variance. And in discriminant validity using known group comparison, the mean knowledge and skills in EBP were significantly higher for nursing students who have received formal education in EBP and research methodology than those without [21]. Regarding reliability and validity of Korean version of EBP-COQ, Cronbach's α was .72 and two authors independently translated the instrument and the other two authors produced back-translations, after which a research committee decided on a Korean version [19]. In the present study, substantial reliability of modified Korean version of EBP-COQ was evident (Cronbach's α=.90 for the whole items, .70 for knowledge, .84 for attitude, and .88 for skill).

4. Data collection

This data was collected from December 1, 2014 to March 2, 2015 by two ways to increase the response rate. First, an invitation to participate in the survey was announced in Winter conference hosted by Korean Academy of Community Health Nursing at December 2014, and questionnaires were distributed to the faculty members attending on the conference after getting written informed consent. 31 questionnaires were returned, and we recruited additional participants via email invitation that included a brief description of the study, the voluntary participation of survey, the consent form, research team contact information, their rights as a participant, and an anonymous link to the online survey with help of Korean Academy of Community Health Nursing. Return of the completed survey was regarded as consent to participate in the study. We sent two reminders at 2 and 4 weeks after first message sending to increase the response rate. Additional 11 questionnaires were returned after three reminders. This study received ethical review from Pusan National University's institutional review board (PNU/IRB/2014_81_HR).

5. Data Analysis

Data analysis was carried out using IBM SPSS Statistics 23.0 (SPSS, Chicago, Illinois, USA) and a significance level was set at $p<.05$. Descriptive statistics (e.g. mean, standard deviation, frequencies, and percentage) were calcu-

lated to answer the study questions, demographics and EBP-related training/education. Student's t-test or one-way was used to examine the association between level of knowledge, attitudes and skill in EBP, the significant characteristics and EBP-related training/education.

RESULTS

1. Demographic Characteristics and EBP-related Training/Education

All of the samples were female, with mean age of 48.67 years, and most participants had a doctoral degree (88.1 %). Years of experience as a faculty ranged from 1 to 33 years. Of the participants, 78.6% have attended an EBP training course, only 38.1% have given a lecture on EBP (Table 1).

2. Knowledge, Attitudes, and Skills of EBP

The mean knowledge in EBP was 21.57 (3.60 on a 5 point), attitude toward EBP was 53.81 (4.14 on a 5 point), and skills in EBP was 24.05 (4.01 on a 5 point)(Table 2).

For knowledge in EBP, most participants (78.6%) reported a 'strongly agree/agree' response whether they know the different evidence level of the study designs, whereas less than half (40.5%) participants reported that they know how to formulate an answerable clinical question using PICO format. And 57.1% of respondents answered the question that they were likely to know the different recommendation grades about the adoption of health intervention of interest (Table 3).

For attitude toward EBP, most participants showed a positive attitude that implementation of EBP improves patients' health outcomes (95.2%), EBP will aid to make decisions in clinical practice (88.1%), and respondents' willingness to contribute to apply the EBP (88.1%). The least positive response item for attitude was that they have confidence that they will be able to assess the quality of a scientific article (71.4%)(Table 3).

For skills in EBP, most participants (88.1%) felt they were able to search for the scientific information about the subject in the most important bibliographic indexes. However, the participants showed the least skill rating was formulation of a clinical question to start the searching of the best scientific evidence, with the lowest positive response of 69.0%. Subsequently, 73.8% of respondents rated positive skills of searching the scientific evidences utilizing health sciences databases and critical appraisal skill (Table 3).

3. Relationship among Demographic Characteristics, EBP-related Training/Education, and Faculty's Competence for EBP

According to bivariate analysis, participants who have experienced in teaching EBP showed higher in knowledge in EBP than others (t=-2.38, p=.022). The attitude toward EBP and skills in EBP were not related with demographic characteristics, EBP-related training/education (Table 4).

Table 1. Characteristics of Participants and EBP-related Training/Education (*N*=42)

Characteristics	Categories	n (%)	M±SD	Median (range)
Gender	Female	42 (100.0)		
Age (year)	30~39 40~49 ≥50	7 (16.7) 18 (42.9) 17 (40.5)	48.67±8.24	
Highest degree earned	Master's Doctoral	5 (11.9) 37 (88.1)		
Teaching experience (year)	≤5.0 5.1~10.0 10.1~15.0 15.1~20.0 ≥20.1	10 (23.8) 8 (19.0) 5 (11.9) 9 (21.5) 10 (23.8)		14.0 (1~33)
Experience to participate in EBP training courses	Yes No	33 (78.6) 9 (11.4)		
Experience in teaching EBP	Yes No	16 (38.1) 22 (61.9)		

Table 2. Mean Scores of Knowledge, Attitude, and Skills in EBP (*N*=42)

Subscales	Possible range	Actual range	M±SD	M±SD based on 5
Total	25~125	69~123	99.43±11.35	3.98±0.45
Knowledge in EBP	6~30	14~29	21.57±3.65	3.60±0.61
Attitudes towards EBP	13~65	37~65	53.81±6.30	4.14±0.48
Skills in EBP	6~30	16~30	24.05±3.82	4.01±0.64

Table 3. Knowledge, Attitude, and Skills in EBP' Subscale Item Response (*N*=42)

Question		% of strongly agree/agree
Knowledge in EBP	1. I know how to make clinical questions organize in the PICO format	40.5
	2. I know the principal sources that offer the information revised and catalogued behind the evidence point of view	61.9
	3. I do not know the most important characteristics of the principal investigation designs*	69.0
	4. I know the different evidence level of the designs of the investigation studies	78.6
	5. I do not know the different recommendation grades about the adoption of a determined procedure or health intervention*	57.1
	6. I know the principal measures of association and potential impact that allow to evaluate the magnitude of the analyzed effect in investigation studies	52.4
Attitude toward EBP	1. The EBP helps to make decisions in clinical practice	88.1
	2. I'm confident that I will be able to evaluate critically the quality of a scientific article	71.4
	3. The practice of EBP will help to have a better definition of the nurse roll	85.7
	4. The nursing contract should include time to read scientific papers and make critical appraisal of them	73.8
	5. The widespread EBP implementation will allow to increase nursing autonomy from others professions	83.3
	6. When I work as a nurse educator I will pleased if the PBE will be in practice	92.9
	7. The application of EBP improves patient's healthcare outcomes	95.2
	8. In the future I wish to contribute to apply the EBP	88.1
	9. I do not like reading scientific articles*	76.2
	10. The patient care will experiment minor changes with the EBP application	76.2
	11. It pleased me that the EBP is only a theoretical movement that does not takes in practice*	85.7
	12. If I will have the opportunity, I would assist to an EBP course	73.8
	13. I would like to have better access to published nursing scientific evidences	85.7
Skills in EBP	1. I feel able to make a clinical question to start the searching of the best scientific evidence	69.0
	2. I do not feel able to search for scientific evidences in the principles health sciences databases*	73.8
	3. I do not feel able to search for the scientific information about the subject in the most important bibliographic indexes*	88.1
	4. I feel able to evaluate critically the quality of a scientific article	73.8
	5. I do not feel able to analyze if the obtained results of a scientific study are valid*	83.3
	6. I feel able to analyze the practical utility of a scientific study	81.0

*Reverse coding.

Table 4. Relationship among Demographics, EBP-related Training/Education, and Competence for EBP (*N*=42)

Characteristics	Categories	Knowledge	Attitude	Skill
		M±SD	M±SD	M±SD
Age (year)	30~39	21.43±5.00	56.00±6.95	24.57±4.16
	40~49	21.06±2.80	53.61±4.98	23.44±3.24
	≥50	22.18±3.97	53.12±7.38	24.47±4.36
	F (*p*)	0.41 (.669)	0.52 (.597)	0.38 (.684)
Highest degree earned	Master's	20.20±3.27	54.00±2.92	21.80±2.86
	Doctoral	21.76±3.70	53.78±6.65	24.35±3.86
	t (*p*)	-0.89 (.377)	0.07 (.944)	-1.42 (.164)
Teaching experience (year)	≤5.0	21.20±4.49	55.90±5.90	23.90±3.54
	5.1~10.0	22.00±2.78	53.00±5.98	24.75±4.56
	10.1~15.0	22.00±2.74	54.40±3.65	26.80±3.56
	15.1~20.0	21.89±3.48	54.00±5.20	24.44±1.81
	≥20.1	21.10±4.43	51.90±8.86	21.90±4.38
	F (*p*)	0.12 (.975)	0.53 (.717)	1.63 (.187)
Experience to participate in EBP training courses	Yes	21.97±3.33	53.88±6.77	24.12±3.99
	No	20.11±4.57	53.56±4.50	23.78±3.31
	t (*p*)	-1.37 (.179)	-0.14 (.893)	-0.24 (.814)
Experience in teaching EBP	Yes	23.19±2.93	54.25±7.50	25.00±3.72
	No	20.58±3.74	53.54±5.58	23.46±3.83
	t (*p*)	-2.38 (.022)	-0.35 (.727)	-1.28 (.209)

DISCUSSION

This study indicates that Korean faculty members working in community health nursing have a positive attitude toward EBP but low level of knowledge and skills in EBP. And only experience teaching EBP is related with the knowledge in EBP. That is, the attitude toward EBP was rated the highest among 3 components of EBP competence, followed by skills and knowledge in EBP. This result seems to be similar to the previous studies [2,7,18]. As mentioned earlier, various EBP initiatives have provided in conferences, societies, and nursing field and 78.6% have attended an EBP training courses, which may influence Korean faculty members working in community health nursing to have positive attitude toward EBP, However, they still feel they are lack in skills and knowledge in EBP. We measured the skills and knowledge in EBP in a subjective way in the study, so further studies are recommended to measure the skills and knowledge in EBP in objective ways such as observing how much they can make clinical questions in PICO format, search the evidence and evaluate the evidence level of designs and recommendation grades.

Compared to previous studies done in foreign countries in spite of the difference study instrument, this knowledge, attitude and skills in EBP were slightly higher than those of Stichler et al. [7]' study among faculty members in US, but much lower than those of Upon et al. [2]' study among academic staff in US and UK. We could not explain the reasons why three studies showed difference in the level of knowledge, attitude and skills in EBP with limited information of previous studies. One possible reason may be related with the participants' characteristics. That is, while over 88% of the participants had doctoral degree in this study, most participants (75.0%) had master's degree in Stichler et al. [7]. Though the academic degree did not show significant relationship with knowledge in EBP in this study, but previous research findings [22-24] showed the postgraduate education was related to greater EBP knowledge and skills. This may be due to higher chance to attend EBP education program and to teach postgraduate students on EBP and research methodology [2]. The other reason may be related with social desirability bias, as Upon et al. [2] explained in their study. That is, owing to the pressure on EBP in nursing care settings, some participants rated high or positively for some subscales and led potential ceiling effects of the attitude and knowledge/skills subscales.

Though we expected that attending the training course would have positive relationship with the EBP classes attended, attitude toward EBP, skills and knowledge in EBP were not related with attending the training course and only experience in teaching EBP showed positive relationship with higher in knowledge in EBP according to bi-

variate analysis. This result was similar to the previous study. That is, Stichler et al. [7]' study with 40 faculty members in US showed no relationship between the number of EBP classes attended and attitude toward EBP, skills and knowledge in EBP. The attitude toward EBP has showed higher score regardless of attending the training course, resulted in no difference between two groups. And, knowledge in EBP seems to be improved not by the attending the EBP training course alone but by more active measure such as teaching EBP.

Considering nursing faculty members play a key role in training the future nurses and faculty members, their sufficient knowledge and skills, and a positive attitude toward EBP before involvement in teaching students is very important [5,15]. However, the knowledge, attitude and skills in EBP among Korean faculty members working in community health nursing were much lower than those of academic staff in US and UK.[2], which suggests that we need two steps to enhance the knowledge, attitude and skills in EBP among Korean faculty members working in community health nursing. The first, systemic education on the EBP process should be provided in the undergraduate and graduate course for the future faculty members Future members should have opportunities to be exposed to EBP during academic courses to be familiar with the concept of EBP [12,17]. To do this, core content on EBP needs to be included in nursing curricula for undergraduate and graduate and incorporated as a component of the research process to establish a foundation from which knowledge and skills related to EBP as Malik et al. [17] recommended. For developing continuing education program or nursing curricula for EBP, specific EBP content which showed lower level of knowledge, attitude or skills in this study and previous studies should be included; making clinical questions in PICO format, evaluating the magnitude of the analyzed effect in investigation studies such as odds ratios, relative risk, and the meaning of different recommendation grades [7]. The second, the current faculty members should participate in teaching the EBP course. Melnyk et al. [12] showed positive correlation between level of EBP knowledge and comfort level in teaching EBP. Continuing EBP teaching experience can improve the knowledge and confidence in EBP among faculty members.

This study is very significant as it adds new information about the level of perceived knowledge, attitude, and skills in EBP among faculty members working in community health nursing in various regions of South Korea. However, the following limitations should be considered. First, this study was conducted through a self-report survey and may have certain degree of social desirability bias. That is, it is possible for the participants to answer the question in a way that is most desirably appreciated without an accurate understanding of EBP. Second, whilst approximating previous survey response rates [2,7,17], the study's response rate was quite low indicating the potential for sampling bias . Even we tried to encourage for the faculty members to participate in the survey under the cooperation of the Korean Academy of Community Health Nursing, but failed to increase the response rate. As Malik et al. [17]' s comment, it is possible that the study participants were more interested in the EBP and had higher knowledge and a positive attitude toward EBP. Thus, findings might not be representative of the population. Third, the study participants were faculty members working in community health nursing. Thus, findings might not be applicable to faculty members working in other nursing specialties such as adult nursing, pediatric nursing, etc. which are more closely related with the individual nursing care practice.

CONCLUSION

This study indicates that Korean faculty members working in community health nursing have positive attitude toward EBP but they do not rate their knowledge in EBP as positively. Only experience teaching EBP is related with the knowledge in EBP. Therefore, an educational program needs to be developed, offering knowledge and developing necessary skills to promote EBP for faculty members. And, Korean faculty members working in community health nursing must involve themselves in clinical educational and research activities through teaching EBP to students and nurses. In addition, academic societies need prepare and advertise more educational or training programs on EBP to facilitate faculty members to attend the programs. Further studies using larger sample size are required to increase the representativeness and generalizability of the study results.

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