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Nursing Educators' Knowledge, Skills in Evidence-Based Practice and their Critical Thinking Skills: Self Report Study

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Background: With increasing emphasis on EBNP, nursing educators need to have a strong body of knowledge and skills in EBP that help them to gain critical thinking skills related to inquiry and understand the importance of EBNP. **Aims:** To assess the nursing educators' report of their knowledge and skills in EBP, determine their critical thinking skills and investigate the relationship between their knowledge and skills in EBP and their critical thinking skills. **Method:** Two questionnaires were filled by 144 of nursing educators at nine academic nursing departments at the Faculty of Nursing, Alexandria University. **Findings:** The mean score percentage of the nursing educator's report of their knowledge and skills in EBP were 67.7±15.8 and 68.9±14.3 respectively. Furthermore, the highest mean score percentage of nursing educators' skills in critical thinking was found in their inquisitiveness skills (75.0±7.7). On the other hand, the lowest mean score percentage was found in truth seeking (55.5±11.6) and maturity skills (56.6±2.7). Highly significant positive correlations were found between the overall mean score percentages of nursing educators' report of their knowledge and skills in EBP from one side and their critical thinking skills (r= 0.408, *p* .000, r=0.321, *p* .000). **Conclusions:** Understanding nursing educators' knowledge and skills in EBP is a critical step to successfully transforming the school's culture to an EB framework for teaching nursing practice, integrating of EBP content into curricula, and ensuring student mastery and appreciation of EBP.
Keywords: evidence-based practice, knowledge, skills, critical thinking, nursing educators

Introduction

Evidence-based practice (EBP) is the conscientious, explicit, and judicious use of the current best evidence in making decisions about the care of individual patients (Sackett et al., 1996). EBP is one of the main professional competencies for health care professionals and a priority for nursing and medical education programs as well. Nursing educators have responsibility to teach the future nurses, and an opportunity to promote positive patient outcomes (Mehardad et al., 2012). Noteboom et al. (2008) believes that EB nursing provides the basis for effective, efficient patient care practices. At a minimum, an EB approach can enhance practice by encouraging reflection on what nursing educators know about virtually every aspect of daily patient care.

EBP results in professional development of nurses' capabilities and creates a new paradigm in nursing education. A research done in Egypt showed that nurses have a positive attitude about the use of scientific evidence to guide practice (Hassona et al., 2013). A common assumption is that undergraduate education prepares nurses to use the principles of EBP, especially after graduation (Adib-Hajbaghery, 2009). This has not been the case in many nursing programs around the world like Egypt. It is believed that health care system in Egypt does not provide the incentive for nurses to engage in research and EBP (Hassona et al., 2013).

Nursing educators are in charge for training the future nurses, so their participation in integrating the EBP into clinical education will improve healthcare outcomes (Penz and Bassendowski, 2006). Therefore, they must involve themselves in clinical issues and approximate clinical, educational, and research activities through teaching EBP to students and nurses. This requires nursing educators to have sufficient knowledge and skills in EBP before involvement in this sophisticated practice (Mehrdad et al., 2012).

While most nursing educators are supportive of teaching EBP, some may not fully comprehend the differences between traditional research and an EBP approach (Rosswurm & Larrabee, 1999). Nursing educators have been slow to adopt the paradigm shift to EBP and have related concerns about the time it takes to integrate these knowledge and skills in an already full curriculum or they indicate their own lack of knowledge and skill in the critical appraisal and statistical interpretation of data (Burke et al., 2005; Burns & Foley, 2005).

To be successful in integrating evidence into nursing practice, teaching strategies must include an EBP approach across the curriculum. Several authors have outlined a number of strategies to teaching EBP including skills in asking focused clinical questions, searching electronic databases for evidence, critically analyzing the evidence, and determining if the published evidence fits with their clinical situations and justifies making a change in practice (Levin & Feldman, 2006; Burnes & Foley, 2005). Searching for evidence is a critical competency for EBP as it interprets the key messages in the articles and critically analyzing their applicability to

clinical situation or current problem (Courey et al, 2006; Ciliska, 2005).

According to the American Nurses Association (2004), the science of nursing is based on a critical-thinking framework that serves as the foundation of clinical decision making and EBP. The ability to think critically is an essential element of higher education and more specifically, nursing education (Noohi et al., 2012). Nursing educators are crucial to the educational interaction, thereby having the potential to facilitate positive critical thinking abilities and dispositions of students. Critical thinking is understood to be purposeful, self-regulatory judgments which result in interpretation, analysis, evaluation and inference, as well as explanation of the evidential, conceptual, methodological, criteriological or contextual considerations upon which that judgment is based (Facione, 1990). The core cognitive thinking skills are supported and driven by the identified affective dispositions such as inquisitiveness, analytical thinking, open- and fair-mindedness, flexibility, self-confidence, being systematic, truth-seeking and a mature attitude (Chabeli and Cur, 2007).

Academic & Clinical Relevance

EBP and critical thinking are required standards in health care today and so the integration of research into high education is a significant issue for all disciplines, including nursing education. This stance is premised on the belief that nursing educator needs to have the competencies of EBP and critical thinking to instill them in their students to make critical patient-care decisions. Also relevant research evidence should guide patient care and policy decisions, as inappropriate and inefficient care not based on evidence has been shown to have a significant and deleterious impact on service costs, patient outcomes and, ultimately, quality of life. Considering the novelty of the ideas of EBP and critical thinking in medical and particularly nursing education in Egypt, few nursing studies conducted about these issues, and it is mentionable that nursing educators need to be committed to the principles of EBP and critical thinking, provide resources, and create a supportive environment for their implementation. As reported by Melnyk et al. (2004) nurses who believed they were knowledgeable about EBP were more likely to teach EBP to others, making incorporation of EBP competencies an important element of nursing education.

Nursing educators strive to teach students to think critically. It has long been assumed that nursing educators are good at critical thinking because they are expected to teach these skills to students, but this assumption has not been well supported empirically. Nursing educators question their ability to think critically and are unsure of their skills (Blondy, 2011).

Aims

The underlying aims of the present study were to: assess nursing educators' report of their knowledge and skills in EBP, determine their critical thinking skills, and investigate the relationship between their knowledge and skills in EBP and their critical thinking skills.

Research questions:

1. How nursing educators report their knowledge and skills related to EBP?
2. How nursing educators report their critical thinking skills?
3. Is there a relationship between nursing educators' knowledge and skills in EBP and their critical thinking skills?

Method

Design

A descriptive correlative design was used in this study.

Setting

The study was carried out in all academic nursing departments (N=9), Faculty of Nursing, Alexandria University: Medical and Surgical, Critical Care, Education, Paediatric, Obstetrics and Gynaecology, Community Health, Geriatric, Psychiatric and Mental Health, and Administration.

Subjects

The total population was 189 nursing educators. The study was carried out on 170 who were working in the previously mentioned academic departments at the time of data collection. Only 144 of the nursing educators accepted to participate in the study, completed and returned the questionnaires. The response rate was 84.7%. They were classified as follows: 35 professors, 15 assistant professors, 40 lecturers, 26 assistant lecturers, and 28 demonstrators. Ninety nursing educators (62.5%) involved in teaching postgraduate and 54 (37.5%) in the undergraduate students.

Also 25.0% of the nursing educators were in the age group between 30 to less than 40 years and 50.7% were over forty. While 97.9% of the nursing educators were females, 63.9% had doctorate degree in nursing

sciences, and 27.8% were lecturers. Medical-Surgical Nursing specialty represented the highest capacity of nursing educators (17.4%), followed by Nursing Administration, which is equally to Community Health Nursing (13.9%). One-third of the nursing educators had 10 to less than 20 years of experience since baccalaureate graduation, was working in research paper and supervising theses and dissertations at the same time. Moreover, the highest percentage (43.1%) of nursing educators was responsible for teaching both clinical and theory, followed by those who were responsible only for carrying out clinical teaching (31.3%). The least categories represent the assistant professors (10.4%), assistant lecturers who had master degree in nursing sciences (18.1%), and demonstrators who were master students (19.4%).

Tools

Two tools were used in this study: Tool (1): EBP Knowledge and Skills Questionnaire developed by the researchers based on the current related literatures (Al Hadid et al., 2011; Melnyk et al., 2008; Upton & Upton, 2006) to measure nursing educators' report of their knowledge and skills in EBP. It consists of 18 items grouped into *knowledge* (6 items) and s*kills* (12 items and 8 sub-items) related to EBP. The responses on these dimensions were measured by using 5-point rating scale ranging from totally adequate (5) to totally inadequate (1) for knowledge and from always (5) to never (1) for skills in EBP. The higher the score is the higher the knowledge and skills of the nursing educators in EBP.

Tool (2): California Critical Thinking Disposition Inventory (CCTDI) developed by Facione et al. (2001) and used by the researchers to measure nursing educators' report of their critical thinking skills. It consists of 75 items, classified into seven dispositions*: truth seeking* (12 items); *open-mindedness* (12 items); *analyticity* (11 items); *systematically* (11 items); *self-confidence* (9 items); *inquisitiveness* (10 items); and *maturity* (10 items). The responses were measured on a 6-point rating scale ranging from (6) strongly agree to (1) strongly disagree. Negative items were reversely scored. The higher the score is the higher the critical thinking skills. Also, it included nursing educators' demographic and professional characteristics: age, sex, educational level, academic ranking, years of experience since baccalaureate graduation, academic specialty, teaching role, and types of research activities.

Data Collection

Tools (1) and (2) were tested for their content validity by a panel of experts in the related field. The needed modifications were done. The tools were tested for their reliability using Cronbach's alpha coefficient test. The results proved to be reliable with the values being .881 and .847 for EBP and critical thinking skills of the studied nursing educators respectively.

The study plan was submitted to the ethical committee to be approved, and a formal permission was obtained from the Dean Faculty of Nursing, Alexandria University to conduct the study. The researchers explained the aims of the research to all subjects. Their privacy and confidentiality of data were maintained and assured by obtaining subjects' informed consent to participate in the research before data collection and chance was given to ask any related inquires.

A pilot study was carried out on 10 % (N=19), who were excluded from the total subjects of the selected nursing educators to assess the clarity and applicability of the study tools. The needed modifications were developed. The questionnaires were hand delivered to each study subject. About 35 minutes were consumed to fill both questionnaires. Data were collected in about three months, 2012.

Data were collected, revised, coded and fed to statistical software SPSS version 16. All statistical analyses were done using two tailed tests and alpha error of 0.05. *P* value equals to or less than 0.05 was considered to be significant. The mean score, mean score percentage with standard deviation, and median were used to describe the scales data, while frequency and percentage were used to describe the categorical data. Pearson correlation coefficient analysis was used to test the nature and strength of relation between two quantitative/ordinal variables.

Results

Table 1 indicates that the overall mean score percentages of nursing educators' report of their knowledge in EBP were 67.7±15.8 and 68.9±14.3 for their skills. Also, the highest mean scores of the nursing educators' report of their knowledge; on a 5-point rating scale ranging from strongly agree (5) to strongly disagree (1); were found in "I know how to make clinical questions organized in specific patient problem format" (3.5±1.0), "I know the fundamental sources that offer the information revised and listed behind the evidence point of view" (3.5±0.9), and "I know the methods of identifying the deficiencies in the professional practice" (3.5±1.0). On the other hand, "I know the main measures of association and potential impact that allow evaluating the significance of the analyzed effect in investigation studies" was the least reported item of their knowledge in EBP (3.2±.1.1).

Furthermore, the highest mean scores of the nursing educators' report of their skills in EBP were found in relation to "using the internet to search for information" (4.4±0.8); "sharing information with colleagues"

(3.9±0.9); and "disseminating new ideas about own specialty to colleagues" (3.9±1.0). On the contrary, the least mean score was found in item related to "getting evidence from different sources" (3.0±1.2). In addition, sub-items related to getting evidence from "systematic reviews of descriptive and qualitative studies" (3.3 ± 1.1) was the highest reported source. Moreover, "a well-designed controlled trial without randomization" (2.9±1.1) and "at least one well designed randomized controlled trial" (2.9± 1.1) were the least reported sources of getting evidence(s).

Table 2 reflects that the overall mean score percentage of nursing educators' report of their critical thinking skills was 64.8±5.9. The highest mean score percentages of critical thinking skills of nursing educators were their inquisitiveness (75.0±7.7) and analyticity skills (73.2±9.0) as they reported. On the other hand, the lowest mean score percentages were found in maturity and truth seeking skills (56.6±2.7 and 55.5±11.6) respectively.

Table 3 shows that in general, there were significant positive correlation between the mean score percentages of the nursing educators' report of their overall critical thinking skills from one side and knowledge (r= 0.408, *P* .000) and skills (r= 0.321, *P* .000) in EBP from the other side. Furthermore, significant positive correlations were found between the mean score percentages of nursing educators' report of their knowledge and each of their critical thinking skills except "maturity" skill. In relation to the nursing educators' skills in EBP, it was not significantly correlated with "self-confidence" and "maturity" of critical thinking skills. Also, all the critical thinking skills of the nursing educators as they reported were correlated significantly with the overall mean score percentage of their critical thinking skills. In addition, all the mean score percentages of the nursing educators' report of their critical thinking skills were significantly correlated with each other, except the correlation between "self-confidence" from one side and "truth-seeking," "open mindness," and "analysiticity" from the other side. Moreover, there was a significant positive correlation between the mean score percentages of nursing educators' report of their knowledge and skills in EBP (r=0.577, *P* .000)

Discussion

This study has threefold aims: determine nursing educators' report of their knowledge and skills in EBP, assess their critical thinking skills, and investigate the relationship between their knowledge and skills in EBP and their critical thinking skills. It is evident that the nursing educators reported that their overall skills were higher than their knowledge related to EBP. This was not surprising because the nursing educators are involved in different research activities, e.g., developing theses and dissertations by juniors, and supervising them by seniors, and developing research papers, could improve their skills in research and EBP.

It seems that the results of the subsequent items provide additional support to their higher level of skills, as they reported using the internet to search for information, disseminating new ideas about own specialty to colleagues, sharing information with colleagues, and evaluating the outcomes of one own practice, which were found as the most reported EBP skills. These skills are substantial research skills that nursing educators need to carry out their research activities linked with their report about knowledge of making clinical questions organized in specific patient problem format, the fundamental sources that offer the information revised and listed behind the evidence point of view, and the methods of identifying the deficiencies in the professional practice.

These findings are supported by what Eil-Nemer et al. (2009) found that more than two thirds of physicians and 43.5% of nurses agreed that the application of EBP is necessary and improve the quality of patient care (73.9%, 60.0%) respectively. Around half of physicians and nurses (58.0% and 52.2%) respectively agreed that they are interested in learning the skills necessary to incorporate EBP into practice. In addition, 58% of physicians and 26.1% of nurses agreed that they are in need to increase the use of EBP in daily practice.

On the contrary, the findings of Stichler et al. (2011) proved that the attitudes of nursing faculty members toward EBP subscale received the highest mean score, followed by knowledge associated with EBP, and then practice of EBP. These results indicated that the faculty members' attitude toward EBP tends to be more positive than their knowledge and skills of EBP.

In the same way, it seems that nursing educators' knowledge about the main measures of association and potential impact that allow evaluating the significance of the analyzed effect in investigation studies and getting evidence especially from a well-designed controlled trial without randomization, and a well designed randomized controlled trials (RCTs) were the least reported knowledge and skills. The culture in health care agencies and school of nursing in Egypt did not encourage utilization of EBP and maintain EBP literacy. This could hinder the curriculum planners from translation of the research activities into a unified EBP framework. In addition, insufficient financial resources as well as journals, reports, and computers to making EBP a reality in their theoretical and clinical teaching could affect negatively on nursing educators' ability to access to evidences from various sources. Probably teaching of research and statistics courses in undergraduate and postgraduate study does not recognize learning to be a relational process, whereby learners are engaged in the social construction of knowledge and practice due to arbitrary and unplanned efforts to teach EBP.

In this respect, Stichler et al., 2011 mentioned that the traditional research knowledge and skills among faculty do not necessarily translate to knowledge of the EBP process, and skills in acquiring and appraising evidence. Other research has demonstrated that educational interventions can be effective at increasing the knowledge and skills associated with EBP (Sherriff et al. 2007).

The finding of the present study indicates that the overall mean score percentages of the nursing educators' report of their critical thinking skills were relatively high. However, there is a pattern of providing too much content, which cause failure of the nursing curricula to capture the lasting of the critical thinking practice and impedes developing of their related skills. In this sense, Giddens and Brady (2007) outlined that the traditional topic-based curricula are being contested by educators and researchers. These results could be explained in the light of what Zygmont and Schaefer (2006) suggested that the studied faculties were not equally skilled at critical thinking because they may not have developed intellectually to the point of thinking critically. These results demonstrate that the faculty appreciate the need for critical thinking in the discipline but are not positioned to teach it well in their theoretical approach to knowledge. In other words, nursing faculties understand critical thinking but continue to have difficulty in presenting this to the students.

Nurse educators must move away from traditional approaches to nursing education, where didactic lectures, memorization, and return laboratory demonstrations, are emphasized. These may lead to technical mastery, but they do not stimulate the development of critical thinking skills. Some educators emphasize the development of technical skills, while overlooking the learning of humanities and ethical care (Potgieter, 2012).

In a study done to measure nursing educators' critical thinking dispositions across a western Canadian province (n=287), Profetto-McGrath et al. (2009) found that almost all nurse educators who participated in the study scored above the target score of 280 on the California Critical Thinking Dispositions Inventory. The majority of nurse educators (82.1%) scored 280-350, with 15.4% of them scoring above 350, indicating high critical thinking dispositions. Nurse educators scored quite high on overall research utilization (mean=4.4/5). They believe that research makes a positive difference in practice and reported using various sources of information. Our analysis indicates that there is a statistically-significant correlation between nurse educators' total critical thinking dispositions and all measures of research utilization. Education of nurse educators must include critical thinking to maximize their role in promoting research use as part of evidence-based practice.

These results are similar to our findings; inquisitiveness (75.0±7.7) was the highest scoring disposition in this group, which is confirmed by nursing educators' report of their curiosity and eagerness to gain knowledge even when it may not have immediate application. However, truth-seeking and maturity in the present study were found to be the lowest reported dispositions (55.5±11.6) and (56.6±2.7) respectively. This might be due to that about half of the studied nursing educators were young (less than 40 years); they might have no sufficient experience that gives them skill to search for credibility of any research report. Low scores on the truth-seeking subscale may be seen in nursing educators who are unwilling to re-evaluate new information, and who base their nursing on how things always have been done

These findings are similar to the findings of Profetto-McGrath (2003) and Profetto-McGrath et al. (2009) in their study of nursing students' critical thinking dispositions. The result is less than desirable in educators who, by virtue of their roles and responsibilities, are expected to have questioning abilities and to be courageous in their desire to acquire the best knowledge. Furthermore, Wangensteen et al. (2010) stated that the highest mean score was on the inquisitiveness subscale (48·0) characterizing an intellectual curiosity and desire for learning, while the lowest-rated mean score was on the truth-seeking subscale (39·4), indicating ambivalence related to seeking the best knowledge and courage to ask questions.

Furthermore, the present study shows that there are significant positive correlations between the overall mean score percentages of the nursing educators' knowledge and skills in EBP and their critical thinking skills: truth-seeking, open mindness, analyticity, systematicity, self confidence, and inquisitiveness. However, maturity did not significantly correlate with the EBP knowledge and skills. In addition, self confidence had no significant correlation with nursing educators' skills in EBP. Billings & Halstead (2009) suggest that in order to reflect among the knowledge, skills, and processes needed to support EBP, critical thinking is paramount. The development of critical thinking can prepare nursing educators with the necessary skills and dispositions (habits of mind, attitudes, and traits) to support EBP. There has been a paradigm shift among nursing educators to change the student- teacher relationship to one that is more commensurate in nature with the teacher serving as a facilitator of learning, rather than adopting an authoritarian position. Educators are encouraged to use techniques and create active educational experiences which promote active modes of learning where students are able to apply their knowledge in new and creative ways (Romeo, 2010; Simpson & Courtney, 2002).

As most of the studied nursing educators in the present study were young and juniors so they could be eager and enthusiastic to know more about the new concepts such as EBP; although they might be less self confident and immature in their judgment. These speculations could be supported by (Majid et al., 2011) who mentioned that nurses with longer experience in nursing were likely to be more confident in implementing EBP. The finding of Ferguson and Day (2004) claimed that new nurses, due to limited practical knowledge and

experience, felt less confident and willing to engage in EBP. Similarly, those nurses who had attended EBP training considered themselves more comfortable in integrating EBP into their practice (Majid et al., 2011).

Conclusion

It cannot be assumed through the self report of the nursing educators that those who know research will know how to use EBP in teaching students. Traditional research skills could not directly transferable to knowledge or teaching of EBP. It is interesting to find that both skills and knowledge in EBP according to nursing educators' report were relatively high. Also, their report addressed that their skills in EBP was higher than their related knowledge. Furthermore, significant positive correlations were found between the overall nurse educators' report of their knowledge and skills in EBP from one side and their critical thinking skills from the other side.

It is incumbent on nursing school to have a clear vision to integrate EBP and critical thinking concepts into theoretical and clinical courses and to develop nursing educators' knowledge and skills in EBP and critical thinking skills. Build on this, there is a need for training the nursing educators on the EB process and critical thinking as well as structuring the nursing programs with the required policies and standards. Also, teaching methodologies to support the practice of EBP and critical thinking skills should be integrated into the undergraduate and postgraduate curricula. Further research is needed to explore the effectiveness of nursing education through the faculty's integration of the EBP process into course content, assignments, and students' clinical learning experiences as well as into the faculty's professional practice. Also, a research is needed to evaluate the ability of specific educational interventions to increase the actual implementation of EBP.

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Table 1 Nursing educators' report of their knowledge and skills related to evidence-based practice

Items	Mean	S.D
Knowledge		
1. I know the most important features of the essential investigation designs.	3.4	1.0
2. I know the different evidence levels of the investigation studies' designs.	3.3	1.0
3. I know how to make clinical questions organized in specific patient problem format.	3.5	1.0
4. I know the fundamental sources that offer the information revised and listed behind the evidence point of view.	3.5	0.9
5. I know the methods of identifying the deficiencies in the professional practice.	3.5	1.0
6. I know the main measures of association and potential impact that allow evaluating the significance of the analyzed effect in investigation studies.	3.2	1.1
Overall Mean Score of Knowledge in EBP	**20.3**	**4.7**
Overall Mean Score Percentage of Knowledge in EBP	**67.7**	**15.8**
Skills		
1. Formulating a clearly answerable research question	3.6	1.0
2. Using the library to locate information	3.7	1.0
3. Using the internet to search for information	4.4	0.8
4. Getting evidence from different sources such as:		
a) the opinion of authorities	3.2	1.0
b) Reports of expert committees	3.1	1.0
c) A single descriptive or qualitative study	3.2	1.1
d) Systematic reviews of descriptive and qualitative studies	3.3	1.1
e) Well-designed case-control and cohort studies	3.0	1.1
f) A well-designed controlled trial without randomization	2.9	1.1
g) At least one well designed randomized controlled trials (RCT)	2.9	1.1
h) Systematic review or meta-analysis of all relevant (RCTs), and EBP clinical guidelines based on systematic reviews of RCT	3.0	1.2
Subtotal	***3.1***	***1.1***
5. Critically appraising the determined literature against set criteria.	3.2	1.2
6. Determining how valid the material is	3.6	1.1
7. Determining how useful (clinically applicable) the material is	3.6	1.2
8. Applying gathered information to individual cases	3.5	1.1
9. Integrating the evidence found with one own expertise	3.5	1.0
10. Evaluating the outcomes of one own practice	3.7	1.1
11. Sharing information with colleagues	3.9	0.9
12. Disseminating new ideas about own specialty to colleagues.	3.9	1.0
Overall Mean Score of skills in EBP	**65.4**	**13.5**
Overall Mean Score Percentage of Sills in EBP	**68.9**	**14.3**

Table 2 Nursing educators' report of their critical thinking skills

Critical thinking skills	Skewness	Kurtosis	Minimum	Mean ± SD	Median
Truth seeking	-0.05	-0.03	26.4-81.9	55.5 ±11.6	54.2
Open mindness	0.53	0.22	45.8-87.5	61.2 ± 8.1	59.7
Analyticity	0.11	0.03	48.5-97.0	73.2 ±9.0	72.7
Systematicity	0.06	-0.21	47.0-87.9	65.6 ±7.6	65.2
Self confidence	-0.57	0.85	44.4-87.0	66.8 ±7.8	66.7
Inquisitiveness	0.21	0.24	56.7-100	75.0 ± 7.7	75.0
Maturity	-0.23	-0.31	25.0-83.3	56.6 ±2.7	56.7
Overall critical thinking skills	**0.44**	**-0.26**	**54.4-80.6**	**64.8 ± 5.9**	**64.6**

Table 3 Pearson correlation matrix between mean score percentages of nursing educators' report of their knowledge and skills in evidence-based practice and their critical thinking skills

Items		skills	Truth. seeking	Open mildness	Analyticity	Systematicity	Self-confidence	Inquisitiveness	Maturity	**Overall critical thinking**
Knowledge	r	0.577	0.278	0.170	0.223	0.381	0.258	0.402	0.149	0.408
	P	0.000*	0.001*	0.042*	0.007*	0.000*	0.002*	0.000*	0.074	0.000*
skills	r	1	0.205	0.178	0.270	0.227	0.151	0.260	0.146	0.321
	P		0.014*	0.033*	0.001*	0.006*	0.071	0.002*	0.081	0.000*
Truth. seeking	r		1	0.490	0.349	0.475	-0.150	0.245	0.715	0.764
	P			0.000*	0.000*	0.000*	0.073	0.003*	0.000*	0.000*
Open mildness	r			1	0.379	0.405	-0.058	0.224	0.389	0.645
	P				0.000*	0.000*	0.492	0.007*	0.000*	0.000*
Analyticity	r				1	0.414	0.276	0.558	0.297	0.695
	P					0.000*	0.001*	0.000*	0.000*	0.000*
Sytematicity	r					1	0.228	0.430	0.423	0.721
	P						0.006*	0.000*	0.000*	0.000*
self-confidence	r						1	0.401	-0.252	0.185
	P							0.000*	0.002*	0.026*
Inquisitiveness	r							1	0.166	0.598
	P								0.046*	0.000*
Maturity	r								1	0.704
	P									0.000*

r: Pearson Correlation coefficient * P < 0.05 (significant)

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