

Nursing Students' Competencies in Evidence-Based Practice and Its Related Factors

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Abstract

Background: Evidence-Based Practice (EBP) is one of the nursing professional roles that can lead them to provide the best and more effective care. However, no studies are available on nursing students' competencies in EBP.

Objectives: This study aimed to investigate the nursing students' knowledge, attitude and intention to implement EBP and its related factors in two nursing and midwifery faculties in Tehran, Iran.

Materials and Methods: In this cross-sectional study, 170 undergraduate nursing students were selected from two faculties of nursing and midwifery in Tehran, Iran. A census sampling method was applied and they were all before graduation in 2013. The Rubin and Parrish questionnaire was used to assess the students' knowledge, attitude and intention to implement EBP as well as factors affecting the implementation of EBP. Students completed the instrument through self-report. Descriptive statistics, Independent sample t-test and Pearson correlation coefficient were used to analyze the data.

Results: The students mean scores of knowledge, attitude and intention to implement EBP was 31.08 ± 5.77 , 50.40 ± 9.58 , 36.01 ± 4.64 , respectively. The students' age was inversely correlated with their scores of knowledge, attitude and intention to use EBP ($P < 0.05$). However, the students' GPA was in direct association with their knowledge, attitude and intention to implement EBP ($P < 0.05$). No significant differences were observed between the males and females mean scores in the three subscales. However, significant differences were found between the students mean scores in the two subscales of knowledge and attitudes toward EBP in terms of familiarity with statistics and research methods ($P < 0.05$). Neither familiarity with research methods nor familiarity with EBP could significantly affect the students' intention to implement EBP.

Conclusions: The present study showed that nursing students have not a high mean score in the three subscales of knowledge, attitude and intention to implement EBP. It is essential for faculties and nurse managers not only to focus on education of EBP, but also to support nurses and nursing students to implement it in the process patient care.

Keywords: Evidence-Based Practice, Nursing Students, Knowledge, Attitude, Intention

1. Background

Evidence-Based Practice (EBP) is a process, which helps healthcare professionals to remain up-to-date and make effective clinical decisions (1, 2). At the practice setting, EBP emphasizes on integration of the best research evidence with clinical expertise and patient values (3). In other word, EBP requires nurses to integrate technical skills and professional knowledge with up-to-date scientific evidence to diagnose their clients' problems and to design, implement, and evaluate evidence-based care plans to solve these problems (4, 5). However, a considerable gap exists between research evidence and the current nursing practice (4, 6, 7). Therefore, there is a strong emphasis on educating the skills needed for EBP through nursing educational programs (8). According to the American Nursing Colleges Association, possessing the knowledge and skills required for practicing EBP is a crucial need in undergraduate level of nursing

education that not only prepares nurses for gathering, appraising and implementation of evidence in clinical practice, but also enables them to evaluate the outcomes (9). According to Leufer and Cleary-Holdforth, practicing EBP requires nurses to ask an important clinical question firstly, and then to gather the best and most relevant evidence, to appraise the evidence and integrate them with their expertise, to determine the patient's preferences and to evaluate the consequences of the decisions made (10). This approach would finally enhance the care quality (11). However, a systematic review on the outcomes of teaching EBP in postgraduate level has concluded that although educational programs on EBP improved the healthcare professionals' knowledge on the issue, their attitude and behaviors remained unchanged (12). Many nurses are unable to determine, interpret and implement the best evidence in their practice (13, 14). Therefore, pre-

paring nurses who can provide effective and evidence-based services in the complex and changing setting is yet an international challenge (15).

Although several international studies are available on nurses and nursing students' competencies on EBP (16-18), a few studies are available in Iran on this regard. In two qualitative studies, Adib-Hajbaghery investigated Iranian nurses' perceptions of evidence-based practice (4), and factors facilitating and inhibiting evidence-based nursing in Iran (6). Rashidbeygi and Sayehmiri have also investigated Iranian physicians' knowledge and attitude towards evidence-based medicine (19). However, no studies are available on nursing students' competencies in EBP in Iran.

2. Objectives

This study aimed to investigate the nursing students' knowledge, attitude and intention to implement EBP and its related factors in two nursing and midwifery faculties in Tehran, Iran.

3. Materials and Methods

In this cross-sectional study, 170 undergraduate nursing students were selected from Tehran and Iran faculties of nursing and midwifery in Tehran, Iran. They were all before graduation in 2013. A census sampling method was applied and all nursing students in last year of their education in nursing completed and returned the questionnaire. The inclusion criteria were being in the last year of education in nursing and willingness to participate in the study. After explaining the objectives, the participants were given a self-report anonymous questionnaire.

A two-part instrument was used in this study. The first part was questions about demographic characteristics including age, sex, University Grade-Point Average (GPA), familiarity with EBP and research methods. The second part of the instrument was the Rubin and Parrish questionnaire (20), which assesses the students' knowledge, attitude and intention to implement EBP as well as factors affecting the implementation of EBP. The Rubin and Parrish questionnaire has 5 subscales; however, we used only three subscales of knowledge, attitude, and intention to implement EBP. These three subscales consist of 34 items (knowledge = 10 items, attitude = 14 items, and intention to implement EBP = 10 items). All items are responded in a 5-point Likert's scale ranging from 1 (I completely disagree) to 5 (I completely agree). The maximum scores of the three subscales are 50, 70, and 50 for knowledge, attitude and intention subscales, respectively. Higher scores represent higher levels of knowledge, attitude and intention to implement EBP. After obtaining authorization from Prof. Rubin, the process of translation and validation of the instrument was conducted.

The content validity and face validity of the EPB questionnaire were confirmed by 14 nursing faculty members and experts in the field of EBP and the Scale-Content Validity Index (S-CVI) was 0.98. To determine the reliability

of the questionnaire, the Interclass Correlation Coefficient (ICC) and Cronbach's alpha were used to evaluate the stability and internal consistency of the tool respectively, which showed favorable results (Knowledge: $\alpha = 0.82$ and ICC = 0.94, attitude: $\alpha = 0.80$ and ICC = 0.94, and intention to implement EBP: $\alpha = 0.75$ and ICC = 0.74). The overall Cronbach's alpha of this questionnaire was reported to be more than 0.80.

3.1. Ethical Considerations

The present study was approved by the ethics committee of Shahid Beheshti University of Medical Sciences. Participants were informed of the study objective and they were requested to sign an informed consent form prior to participation. The participants were also assured of anonymity and confidentiality of the data and they were also reminded that they could withdraw from the study at any time.

3.2. Data Analysis

Statistical analysis was performed using SPSS version 13 (SPSS, Inc., Chicago, IL, USA). Descriptive statistics (frequencies, percentage, mean and standard deviation) were calculated. Independent sample t-test was used to compare the mean scores of the students' knowledge, attitude and intention to implement EBP in terms of their gender, familiarity with research methods, and familiarity with EBP. Pearson correlation coefficient was used to examine the association between the students' age and GPA with their scores of knowledge, attitude and intention to implement EBP. P values less than 0.05 were considered statistically significant for all tests.

4. Results

In total, 170 nursing students participated in this study. All participants completed and returned the questionnaire. The mean age of the students was 22.75 ± 0.99 years and 77.6% of them were female. The mean GPA of the students was 15.80 ± 0.91 (of 20), and 86.5% of them had passed courses in statistics and research methods.

The mean \pm SD scores of knowledge, attitude, and intention to implement EBP were 31.08 ± 5.77 , 50.40 ± 9.58 and 36.01 ± 4.64 , respectively.

The students' age was inversely correlated with their scores of knowledge, attitude and intention in EBP ($P < 0.05$). However, the students' GPA was in direct association with their knowledge, attitude and intention to implement EBP ($P < 0.05$) (Table 1). No significant differences were observed between the males and females mean scores in the three subscales of knowledge, attitudes and intention to implement EBP. However, significant differences were found between the students mean scores in the two subscales of knowledge and attitudes toward EBP in terms of familiarity with statistics and research methods ($P < 0.05$). Moreover, neither familiarity with research methods nor familiarity with EBP could significantly affect the students' intention to implement EBP (Table 2).

Table 1. Association Between Variables

Variable	GPA	Knowledge	Attitude	Intention to Practice
Age, y	-0.18 ^a	-0.28 ^b	-0.15 ^a	-0.21 ^b
GPA		0.45 ^b	0.38 ^b	0.36 ^b
Knowledge			0.51 ^b	0.66 ^b
Attitude				0.49 ^b

Abbreviation: GPA, grade point average.

^aCorrelation is significant at the 0.05 level (2-tailed).

^bCorrelation is significant at the 0.01 level (2-tailed).

Table 2. Association Between Variables (Independent T-Test)

Variables	Mean ± SD in the Three Subscales of EBP		
	Knowledge	Attitude	Intention to Practice
Gender			
Male	31.02 ± 5.73	51.10 ± 9.28	35.92 ± 4.42
Female	31.24 ± 5.91	48.74 ± 10.16	36.24 ± 5.18
P Value	0.8	0.1	0.6
Familiarity with research methods			
Yes	31.47 ± 5.64	51.31 ± 9.50	36.04 ± 4.80
No	28.60 ± 6.05	44.60 ± 8.07	35.86 ± 3.52
P Value	0.02	0.002	0.8
Familiarity with EBP			
Yes	31.92 ± 5.75	52.60 ± 9.19	36.22 ± 4.79
No	30.32 ± 5.70	48.40 ± 9.53	35.83 ± 4.52
P Value	0.07	0.004	0.5

Abbreviations: EBP, evidence-based practice; SD, standard deviation.

5. Discussion

The present study showed that nursing students did not possess high mean scores in the three subscales of knowledge, attitude and intention to implement EBP. The mean scores were in the moderate level. This finding is in contrast with the purpose of education system in preparing competent graduates to deliver a quality and evidence-based nursing care. It is emphasized that nursing curricula should prepare nursing students skilled with EBP competencies (3, 8). Then, nursing faculties need to integrate concepts in EBP into their curricula to prepare graduates to practice EBP in their patient care (21-23). Adib-Hajbaghery found that although nurses have a positive attitude toward EBP, scientific evidence has little application in their current nursing practice (4). Several studies in Iran indicated that EBP is still new in healthcare settings, and the healthcare professionals (including nurses and nursing students) need to learn EBP and how to implement it into their practice (4, 19). However, as Adib-Hajbaghery (6) and Jalali-Nia et al. (24) have reported, this paradigm shift seems to be very slow due to several barriers and it is

needed to be facilitated through appropriate managerial and educational strategies.

The current study showed that there is a significant correlation between the students' knowledge, attitude and intention to use EBP. As reported by Palmer, the individuals' attitude toward EBP is a powerful predictor for implementing it in practice (25). Brown et al. have also investigated the predictors of knowledge, attitudes, use and future use of EBP among baccalaureate nursing students and reported that all of these variables have significantly correlated with the students' academic levels (26). Several studies have also confirmed that the three elements of knowledge, attitudes and behavior are inseparably interconnected and complement each other in EBP (27-29). Studies also suggest that nurses with positive attitudes toward EBP are more likely to implement it (7, 30, 31). Then it can be predicted that more educations on EBP not only might affect the students' knowledge on EBP, but also would enhance their attitudes toward it and the possibility of its use in their current and future practice.

The results of this study showed that familiarity with research methods and EBP had positive effects on the students' knowledge and attitude toward EBP. However, these variables had no effects on the students' intention to implement EBP. Although a positive attitude is a crucial factor in EBP, it is not the adequate factor. Perhaps managerial support is a vital and complementary factor in the process of implementation. In a recent study on the factors facilitating and inhibiting evidence-based nursing in Iran, Adib-Hajbaghery (6) reported that the current process in nursing education and practice do not facilitate the EBP. Therefore, managers and educators need to be committed to the principles of EBP, provide resources and create a supportive environment to implement it (5, 6, 32).

In conclusion, the present study showed that nursing students have not a high mean score in the three subscales of knowledge, attitude and intention to implement EBP. Evidence-based practice is a vital competency for nursing student. It is essential for faculties and nurse managers not only to focus on education of EBP, but also to support nurses and nursing students to implement it in the process patient care. Courses on EBP must be carefully planned and guided by well-defined EBP competencies and teaching frameworks.

Current study was carried out at two faculties of nursing and midwifery at Tehran. Therefore, researchers suggest that similar studies be conducted in other faculties. Then the results can be compared.

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Footnotes

Authors' Contribution: Shahzad Pashaeypoor conceived the development and drafting of the original paper and performed the sampling and data collection. Hamid Alavi-Majd directed data analysis. Tahereh Ashktorab and Maryam Rassouli critically supervised the research. All authors were involved in writing, editing and reviewing content of the paper. All authors have approved the final version submitted for publication.

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References

1. Macnee CL, McCabe S. *Understanding nursing research: Using*

- research in evidence-based practice. Philadelphia: Williams & Wilkins; 2011.
2. Upton D, Upton P. Development of an evidence-based practice questionnaire for nurses. *J Adv Nurs*. 2006;**53**(4):454-8. doi: 10.1111/j.1365-2648.2006.03739.x. [PubMed: 16448488]
3. Melnyk BM, Fineout-Overholt E. *Evidence-based practice in nursing & healthcare: A guide to best practice*. Philadelphia,; Williams & Wilkins; 2011.
4. Adib-Hajbaghery M. Evidence-based practice: Iranian nurses' perceptions. *Worldviews Evid Based Nurs*. 2009;**6**(2):93-101. doi: 10.1111/j.1741-6787.2009.00149.x. [PubMed: 19413583]
5. Schmidt NA, Brown JM. *Evidence-based practice for nurses*. Sudbury Mass: Jones & Bartlett; 2014.
6. Adib-Hajbaghery M. Factors facilitating and inhibiting evidence-based nursing in Iran. *J Nurs Educ*. 2007;**58**(6):566-75. doi: 10.1111/j.1365-2648.2007.04253.x. [PubMed: 17442028]
7. Melnyk BM, Fineout-Overholt E, Fischbeck Feinstein N, Li H, Small L, Wilcox L, et al. Nurses' perceived knowledge, beliefs, skills, and needs regarding evidence-based practice: implications for accelerating the paradigm shift. *Worldviews Evid Based Nurs*. 2004;**1**(3):185-93. doi: 10.1111/j.1524-475X.2004.04024.x. [PubMed: 17163896]
8. Straus SE, Ball C, Balcombe N, Sheldon J, McAlister FA. Teaching evidence-based medicine skills can change practice in a community hospital. *J Gen Intern Med*. 2005;**20**(4):340-3. doi: 10.1111/j.1525-1497.2005.04045.x. [PubMed: 15857491]
9. Balakas K, Sparks L. Teaching research and evidence-based practice using a service-learning approach. *J Nurs Educ*. 2010;**49**(12):691-5. doi: 10.3928/01484834-20100831-07. [PubMed: 20795608]
10. Leufer T, Cleary-Holdforth J. Evidence-based practice: improving patient outcomes. *Nurs Stand*. 2009;**23**(32):35-9. doi: 10.7748/ns2009.04.23.32.35.c6935. [PubMed: 19441625]
11. Holland K, Rees C. *Nursing Evidence-Based Practice Skills*. New York: Oxford University Press; 2010.
12. Coomarasamy A, Khan KS. What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review. *BMJ*. 2004;**329**(7473):1017. doi: 10.1136/bmj.329.7473.1017. [PubMed: 15514348]
13. Masters K. *Role development in professional nursing practice*. Sudbury, Mass: Jones & Bartlett; 2014.
14. Oh EG, Kim S, Kim SS, Kim S, Cho EY, Yoo JS, et al. Integrating evidence-based practice into RN-to-BSN clinical nursing education. *J Nurs Educ*. 2010;**49**(7):387-92. doi: 10.3928/01484834-20100331-02. [PubMed: 20411864]
15. Nielsen AE, Noone J, Voss H, Mathews LR. Preparing nursing students for the future: an innovative approach to clinical education. *Nurse Educ Pract*. 2013;**13**(4):301-9. doi: 10.1016/j.nepr.2013.03.015. [PubMed: 23591129]
16. Flores-Mateo G, Argimon JM. Evidence based practice in postgraduate healthcare education: a systematic review. *BMC Health Serv Res*. 2007;**7**:119. doi: 10.1186/1472-6963-7-119. [PubMed: 17655743]
17. Heye ML, Stevens KR. Using new resources to teach evidence-based practice. *J Nurs Educ*. 2009;**48**(6):334-9. [PubMed: 19552320]
18. Meeker MA, Jones JM, Flanagan NA. Teaching undergraduate nursing research from an evidence-based practice perspective. *J Nurs Educ*. 2008;**47**(8):376-9. [PubMed: 18751652]
19. Rashidbeygi M, Sayehmiri K. Knowledge and attitudes of physicians towards evidence based medicine in ilam, iran. *Iran Red Crescent Med J*. 2013;**15**(9):798-803. doi: 10.5812/ircmj.7204. [PubMed: 24616789]
20. Rubin A, Parrish DE. Development and validation of the evidence-based practice process assessment scale: Preliminary findings. *Res Soc Work Practice*. 2010;**20**(6):29-40.
21. Callister LC, Matsumura G, Lookinland S, Mangum S, Loucks C. Inquiry in baccalaureate nursing education: fostering evidence-based practice. *J Nurs Educ*. 2005;**44**(2):59-64. [PubMed: 15719712]
22. Emerson RJ, Records K. Today's challenge, tomorrow's excellence: the practice of evidence-based education. *J Nurs Educ*. 2008;**47**(8):359-70. [PubMed: 18751650]
23. Pierce ST. Integrating evidence-based practice into nursing curricula. *Annu Rev Nurs Educ*. 2005;**3**:233.
24. Jalali-Nia SF, Salsali M, Dehghan-Nayeri N, Ebadi A. Effect of evi-

- dence-based education on Iranian nursing students' knowledge and attitude. *Nurs Health Sci.* 2011;**13**(2):221-7. doi: 10.1111/j.1442-2018.2011.00603.x. [PubMed: 21595816]
25. Palmer MA, editor. The role of attitudes, individual innovativeness, and organizational support for innovation in evidence-based practice implementation.; 2010; University of South Dakota. ProQuest Dissertations Publishing; pp. 1-133.
26. Brown CE, Kim SC, Stichler JF, Fields W. Predictors of knowledge, attitudes, use and future use of evidence-based practice among baccalaureate nursing students at two universities. *Nurse Educ Today.* 2010;**30**(6):521-7. doi: 10.1016/j.nedt.2009.10.021. [PubMed: 19948369]
27. Smith-Strom H, Nortvedt MW. Evaluation of evidence-based methods used to teach nursing students to critically appraise evidence. *J Nurs Educ.* 2008;**47**(8):372-5. [PubMed: 18751651]
28. Varnell G, Haas B, Duke G, Hudson K. Effect of an educational intervention on attitudes toward and implementation of evidence-based practice. *Worldviews Evid Based Nurs.* 2008;**5**(4):172-81. doi: 10.1111/j.1741-6787.2008.00124.x. [PubMed: 19076918]
29. Zhang Q, Zeng T, Chen Y, Li X. Assisting undergraduate nursing students to learn evidence-based practice through self-directed learning and workshop strategies during clinical practicum. *Nurse Educ Today.* 2012;**32**(5):570-5. doi: 10.1016/j.nedt.2011.05.018. [PubMed: 21664015]
30. Mittal R, Perakath B. Evidence-based surgery: knowledge, attitudes, and perceived barriers among surgical trainees. *J Surg Educ.* 2010;**67**(5):278-82. doi: 10.1016/j.jsurg.2010.06.012. [PubMed: 21035766]
31. Stichler JF, Fields W, Kim SC, Brown CE. Faculty knowledge, attitudes, and perceived barriers to teaching evidence-based nursing. *J Prof Nurs.* 2011;**27**(2):92-100. doi: 10.1016/j.profnurs.2010.09.012. [PubMed: 21420041]
32. Schmidt NA, Brown JM. Use of the innovation-decision process teaching strategy to promote evidence-based practice. *J Prof Nurs.* 2007;**23**(3):150-6. doi: 10.1016/j.profnurs.2007.01.009. [PubMed: 17540318]