

EVIDENCE - BASED PRACTICE COMPETENCY AMONG NURSING STUDENTS AT THE UNIVERSITY OF MEDICINE AND PHARMACY AT HO CHI MINH CITY AND ASSOCIATED FACTORS

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ABSTRACT

Background: Evidence - based practice (EBP) in healthcare is an essential trend for improving patient safety and care quality, making it crucial to ensure EBP competency among nursing students. This study aimed to assess EBP competency among nursing students and identify associated factors.

Methods: A descriptive cross - sectional study was conducted on 230 nursing students in second, third, and fourth year in the University of Medicine and Pharmacy at Ho Chi Minh City. An online survey questionnaire was emailed to the students during the sampling period from April 24, 2023 to July 3, 2023

Results: The participants had an average age of 21.2 ± 0.97 years. The majority were female (89.1%) and of the Kinh ethnic group (85.7%). The mean score of EBP competency of the students was 3.56 ± 0.39 . Specifically, EBP - related competencies of the students were at a moderate level or higher (> 2.61), with the highest mean score observed for attitude at 3.77 ± 0.45 . Factors such as research and EBP course grades, confidence levels in information technology skills and English proficiency, frequency of EBP application, completion of the thesis, and participation in research clubs all positively influenced students' EBP competency ($p < 0.05$). Knowledge, skills, and attitude regarding EBP are closely related. Students with good knowledge usually have good skills and a positive attitude towards EBP ($p < 0.01$).

Conclusions: Nursing students demonstrated EBP competency at a moderate level or higher. The identified associated factors provide a foundation for enhancing the role of EBP among nursing students.

Keywords: Evidence - based practice, nursing, nursing students, related factors, barrier.

I. BACKGROUND

Evidence - based practice (EBP) in healthcare is an essential trend aimed at enhancing the quality of care towards patient safety. Alongside skilled nursing staff, nursing students also contribute significantly to patient care. Therefore, ensuring that nursing students possess competency in EBP is crucial. According to author Ngọc Bích, 71.6% of students are interested in EBP, but most students have limited time to study scientific research (< 40 hours), and only 9% of students rate their information - seeking skills for research articles as proficient [1]. The mean scores for students' knowledge, skills, and attitudes about EBP were 2.70 ± 0.74 , 3.05 ± 0.77 , and 4.04

± 0.41 , respectively, indicating that students' EBP competence is at an average level [2]. By enhancing knowledge, attitudes, and skills related to EBP, nursing education can better prepare students to deliver high - quality, evidence - based care in their future careers. This study was conducted to assess the evidence - based practice competency of nursing students and, simultaneously, identify correlations to provide appropriate recommendations to support students.

II. METHODS

A descriptive cross - sectional study was conducted on nursing students in the 2nd, 3rd, and 4th years studying at University of Medicine and Pharmacy at Ho Chi Minh City

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Inclusion criteria were second, third, and fourth-year students who have completed the research and EBP course and have undergone clinical practice at healthcare facilities.

Exclusion criteria were first-year students and students on left or dropped out.

Determining the sample size based on the population estimate:

$$n = \frac{N}{1 + N \times e^2}$$

In which:

n: the sample size to be determined.

N: the population size. N = 509 is the total number of students over the 3 academic years.

e: allowable error. $e = \pm 0.05$

By applying the sample size calculation formula above, we have a minimum sample size of 224 for this study.

Data collection method: Researchers sent invitation letters, consent forms, and online survey questionnaires to students' university email addresses of potential study participants.

The study utilized the Evidence-Based Practice Competency Questionnaire (EBP-COQ) by Ruzafa - Martinez (2013) [3]. The questionnaire was translated into Vietnamese following the guidance of the World Health Organization [4]. The internal consistency reliability coefficient for the total scale is 0.86. Cronbach's alpha coefficients for knowledge, skill, and attitude were 0.67, 0.66, and 0.85 respectively.

The questionnaire consists of 2 parts:

Part A: Information about the personal characteristics of the participants, including relevant information about research experience, English proficiency, and information technology (IT) skills.

Part B: Knowledge, skills, and attitudes towards evidence - based practice (EBP-COQ) comprising 25 questions divided into 3 sections: (1) attitudes towards EBP (13 items), (2) skills in EBP (6 items), and (3) knowledge of EBP (6 items). Each item is assessed using a 5 - point Likert scale ranging from (1) completely disagree to (5) completely agree. Negative items on the scale, such as A9, A10, and A11 in the attitude factors, S2, S3, and S5 in the skill factors, and K3, and K5 in the knowledge factors, were reverse-coded.

The mean score was calculated separately for each content (knowledge, skills, attitudes) and overall competency in evidence - based practice. Higher scores indicate higher competency in evidence - based practice among nursing students, with higher levels of knowledge and skills in EBP and positive attitudes.

The collected data were analyzed using SPSS 22.0 software. Binary, ordinal, and nominal variables were described by frequency and percentage. Quantitative variables were described by mean and standard deviation. The relationships were analyzed by Independent t-tests, ANOVA, and multivariate regression.

Ethical approval for the study was obtained from the Ethics Research Committee of the University of Medicine and Pharmacy at Ho Chi Minh City (Ethical approval No: 905/DHYD-HDYD issued on November 22, 2022.)

III. RESULTS

3.1. Characteristics of participants

Out of 509 students, 230 completed the survey questionnaire, yielding a response rate of 45%. The average age of the participating students was 21.2 ± 0.97 years. Most were female (89.1%) and of Kinh ethnicity (85.7%).

Among the participants, 51.4% reported that their families had no members who had previously experienced college or university education. However, the level of emotional support from family for students was quite high, scoring an average of 8.49 ± 1.56 on a 10 - point scale. Additionally, the average GPA for the most recent semester among the students in this study was 2.29 ± 0.46 on a 4 - point scale.

3.2. Evidence - Based practice competency of students

Table 1: Mean scores of students' evidence - based practice competency

Competency	Mean $\pm$ SD	Min - Max
Knowledge	3.38 ± 0.53	2.17 - 5
Skills	3.27 ± 0.52	1 - 5
Attitude	3.77 ± 0.45	1.62 - 4.92
Overall Competency	3.56 ± 0.39	2.64 - 4.88
Research and EBP Course Score	7.37 ± 0.79	5 - 9.3

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This table provides an overview of the students' mean scores in different areas of evidence-based practice competency. Based on the interval scale of the Likert scale, the competencies related to EBP

among students are at an average level or higher (>2.61). Among these, the highest mean score is for attitude, with a value of 3.77 ± 0.45 , indicating that students have a positive attitude towards EBP.

3.3. Factors associated to EBP

Table 2: Relationship between overall competency and personal and academic characteristics

Characteristic	Mean ± SD	p-value	95% CI / F(df)
Gender*			
Male	3.75 ± 0.44	0.009	0.05-0.37
Female	3.53 ± 0.38		
Academic year**			
2nd Year	3.67 ± 0.39	<0.01	8.77(2-227)
3rd Year	3.42 ± 0.38		
4th Year	3.6 ± 0.37		
Participation in thesis*			
Yes	3.86 ± 0.33	<0.01	0.18-0.49
No	3.52 ± 0.38		
Participation in research club*			
Yes	3.82 ± 0.45	0.006	0.08-0.49
No	3.53 ± 0.38		

*: independent T-test; **: ANOVA test

The mean score of EBP competency is higher among male students compared to female students, with a statistically significant difference ($p < 0.05$). Students who participate in thesis work and those who join research clubs also have higher EBP competency mean score than their peers ($p < 0.01$).

Post hoc Tukey test indicates that 2nd-year and 4th-year students have significantly higher EBP competency than 3rd-year students, with p-values < 0.01 and confidence intervals of 95% CI 0.1-0.4 and 95% CI 0.05-0.32, respectively. Other factors, such as ethnicity, religion, and participation in extracurricular courses, do not show a significant relationship with the students' EBP competency ($p > 0.05$).

Table 3: Relationship between overall competency and students' accumulated skills

Characteristic	Mean ± SD	p-value	F(df)
Confidence in English			
Unconfident/very unconfident	3.48 ± 0.35	0.004	5.76(2-227)
Average	3.65 ± 0.42		
Confident/very confident	3.68 ± 0.53		
Confidence in IT skills			
Unconfident/very unconfident	3.32 ± 0.25	< 0.01	13.63(2-227)
Average	3.55 ± 0.39		
Confident/very confident	3.72 ± 0.39		

Characteristic	Mean ± SD	p-value	F(df)
Frequency of applying EBP			
Rarely/never	3.3 ± 0.07	< 0.01	14.43(2-222)
Occasionally	3.53 ± 0.38		
Frequently/always	3.73 ± 0.36		

There are statistically significant differences ($p < 0.01$) among student groups with different levels of confidence in IT skills, English skills, and frequency of applying EBP. According to Post hoc Tukey test, for IT skills, students who reported being confident or very confident had higher competency mean score than those who were unconfident or very unconfident (95% CI 0.22 - 0.58) and those with average confidence (95% CI 0.04 - 0.31). For English skills, students with average confidence had higher competency mean score than those who were unconfident or very unconfident ($p < 0.01$; 95% CI 0.05 - 0.29). The differences between the other groups were not statistically significant ($p > 0.05$). For the frequency of applying EBP, students who frequently or always applied EBP had higher average competency scores than those who occasionally applied EBP ($p < 0.01$; 95% CI 0.07 - 0.33) and those who rarely or never applied EBP ($p < 0.01$; 95% CI 0.03 - 0.63).

Table 4: Relationship between knowledge, attitudes, and skills towards EBP and personal, academic characteristics

Characteristic	Knowledge		Skills		Attitude	
	Mean ± SD	p-value 95%CI/ F(df)	Mean ± SD	p-value 95%CI/ F(df)	Mean ± SD	p-value 95%CI/ F(df)
Gender*						
Male	3.63 ± 0.64	0.01 0.06-0.5	3.37 ± 0.39	0.3 -0.1-0.34	3.97 ± 0.49	0.02 0.04-0.41
Female	3.35 ± 0.51		3.25 ± 0.53		3.74 ± 0.44	
Academic year**						
2nd Year	3.59 ± 0.53	<0.01 8.03(2-227)	3.38 ± 0.54	0.002 6.55(2-227)	3.84 ± 0.4	0.008 4.93(2-227)
3rd Year	3.24 ± 0.47		3.09 ± 0.49		3.64 ± 0.5	
4th Year	3.35 ± 0.55		3.34 ± 0.49		3.84 ± 0.42	
Participation in thesis*						
Yes	3.59 ± 0.5	0.04 0.01-0.45	3.61 ± 0.48	<0.01 0.18-0.6	4.1 ± 0.33	<0.01 0.18-0.55
No	3.35 ± 0.53		3.22 ± 0.5		3.73 ± 0.45	
Participation in extracurricular research course*						
Yes	3.54 ± 0.46	0.01 0.04-0.37	3.4 ± 0.47	0.03 0.02-0.33	3.78 ± 0.45	0.9 -0.13-0.15
No	3.33 ± 0.55		3.22 ± 0.53		3.77 ± 0.45	
Participation in research club*						
Yes	3.68 ± 0.6	0.03 0.04-0.6	3.5 ± 0.52	0.07 -0.02-0.5	4.04 ± 0.44	0.02 0.05-0.51
No	3.36 ± 0.53		3.25 ± 0.52		3.75 ± 0.44	

*: independent T-test; **: ANOVA test

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In terms of gender, there is a statistically significant difference in both knowledge and attitude towards EBP, with males scoring higher than females ($p < 0.05$). Students in different academic years also exhibit varying levels of competence in EBP ($p < 0.01$). The mean scores of students involved in thesis work and participation in research clubs tend to be higher than the rest of the group regarding knowledge, skills, and attitude ($p < 0.05$). For students engaged in extracurricular research courses, their mean scores in knowledge and skills are higher than the rest of the group ($p < 0.05$), although there is no significant difference in attitude ($p > 0.05$).

Table 5: The relationship between knowledge, attitude, skills regarding EBP and students' accumulated skills

Characteristics	Knowledge		Skills		Attitude	
	Mean $\pm$ SD	p-value F(df)	Mean $\pm$ SD	p-value F(df)	Mean $\pm$ SD	p-value F(df)
Level of Confidence in English						
Inconfident/ total inconfident	3.26 $\pm$ 0.5	<0.01 7.95(2-227)	3.15 $\pm$ 0.44	<0.01 9.49(2-227)	3.74 $\pm$ 0.38	0.35 1.07(2-227)
Normal	3.52 $\pm$ 0.56		3.4 $\pm$ 0.58		3.83 $\pm$ 0.48	
Confident/ total confident	3.64 $\pm$ 0.35		3.63 $\pm$ 0.47		3.72 $\pm$ 0.89	
Level of Confidence in Computer Skills						
Inconfident/ total inconfident	3.05 $\pm$ 0.37	<0.01 15.36(2-227)	2.94 $\pm$ 0.39	<0.01 11.51(2-227)	3.62 $\pm$ 0.32	0.01 4.59(2-227)
Normal	3.36 $\pm$ 0.54		3.28 $\pm$ 0.47		3.76 $\pm$ 0.45	
Confident/ total confident	3.63 $\pm$ 0.49		3.44 $\pm$ 0.65		3.89 $\pm$ 0.51	
Frequency of Applying EBP						
Rarely/Never	3.01 $\pm$ 0.45	<0.01 11.61(2-222)	2.93 $\pm$ 0.41	<0.01 9.22(2-222)	3.6 $\pm$ 0.4	<0.01 8.29(2-222)
Occasionally	3.36 $\pm$ 0.51		3.28 $\pm$ 0.47		3.72 $\pm$ 0.47	
Often/Always	3.57 $\pm$ 0.54		3.42 $\pm$ 0.56		3.95 $\pm$ 0.41	

Regarding the correlation with English skills, there are significant differences in mean knowledge and skills scores among groups with different confidence levels ($p < 0.01$), but no significant difference in attitude ($p > 0.05$). Similarly, for computer skills, students with different confidence levels also have significantly different mean scores ($p < 0.01$). Regarding the frequency of applying EBP, students who do so regularly/always have higher mean scores than the other groups ($p < 0.01$).

Table 6: Correlation between knowledge, skills, attitude regarding EBP and research and EBP course score

	Research and EBP course scores	Mean score of knowledge	Mean score of skills	Mean score of attitude
Research and EBP course scores	1	0.22**	0.17**	0.21**
Mean score of knowledge	0.22**	1	0.64**	0.36**
Mean score of skills	0.17**	0.64**	1	0.38**
Mean score of attitude	0.21**	0.36**	0.38**	1

** : $p < 0.01$

Continuous variables have a positive correlation with each other and are statistically significant with $p < 0.01$. Among these, mean score of knowledge, skills, and attitude have a moderate positive correlation with each other ($0.3 < r < 0.7$). The analysis results also show a weak positive correlation between the final score of the research and EBP course and students' EBP competency. Accordingly, higher - score students tend to have higher EBP competency ($p < 0.01$).

IV. DISCUSSION

4.1. Characteristics of participants

The nursing students in the study had an average age of 21.2 ± 0.97 years. Most were female (89.1%) and the Kinh ethnicity (85.7%). The level of emotional support from family for the students was quite high, scoring 8.49 ± 1.56 on a 10-point scale. Additionally, the average GPA of the students in the most recent semester was 2.29 ± 0.46 on a 4 - point scale. Similarly, the characteristics of students in Nguyễn Thị Xuân Huỳnh's study included 82.3% females with an average age of 19.87 ± 1.27 years. Most students had a cumulative GPA in the range of 2.5 - 3.19 points [5].

4.2. Students' EBP Competence

The mean score of EBP competency of students was 3.56 ± 0.39 . Among the components, the attitude mean score was 3.77 ± 0.45 , followed by the knowledge mean score of 3.38 ± 0.53 , and the skills mean score of 3.27 ± 0.52 . These results are comparable to the competence levels of students in the study conducted by Dương Thị Ngọc Bích [1]. Accordingly, students at Duy Tan University had mean scores of EBP competency, knowledge, and skills were 3.67 ± 0.49 , 3.31 ± 0.81 , and 3.71 ± 0.69 , respectively. Additionally, students also had a positive attitude towards EBP (4.06 ± 0.59). In comparison, the study by Mohamed Ayoub Tlili reported an overall score of 3.26 ± 0.53 , with the attitude subscale scoring 4.04 ± 0.41 students in our study had lower mean scores [2]. However, the mean score knowledge and skills of students in our study were higher. This difference could be attributed to the diverse participants in this study, including both undergraduate and graduate students. Our research results are similar to those in Lina Marcela Parra Gonzalez's study, where the overall EBP competence mean score was 3.45 ± 0.4 , with

the "attitude toward EBP" factor having the highest score (3.77 ± 0.58) and the skills factor representing the lowest score (3.06 ± 0.6) [6].

4.3. Factors associated to EBP

Male students had higher mean score of overall competence, knowledge, attitude, and skills compared to female students, with the differences being statistically significant ($p < 0.05$). Students who participated in thesis writing and scientific research clubs also had higher competency mean scores than other students ($p < 0.01$). Tukey's post hoc test indicated that second-year and fourth - year students had higher EBP competence than third - year students, with statistical significance levels of $p < 0.01$; 95% CI 0.1 - 0.4 and $p < 0.01$; 95% CI 0.05 - 0.32, respectively. This difference might be because second - year students had just completed the course on scientific research and evidence - based practice, while fourth - year students, although having taken the course a long time ago, had more opportunities to apply evidence in practice and some participated in thesis projects. Other factors such as ethnicity, religion, and participation in extracurricular courses were not related to the students' mean scores ($p > 0.05$).

Conversely, in the study "Predictors of Evidence - Based Practice Competency among Tunisian Nursing Students," female students had higher mean scores than male students in the attitudes subscale (4.06 ± 0.40 and 3.94 ± 0.40 , respectively; $p = 0.047$), as well as higher scores in EBP skills and knowledge ($p = 0.001$). Being trained in research methodology and having completed a course in statistics were significantly related to students' competencies in EBP (both $p < 0.001$). Multiple linear regression analysis revealed that significant related factors were academic level ($\beta = 0.271$, $p = 0.001$), English-language reading skills ($\beta = 0.435$, $p < 0.001$) [2].

Regarding the correlation with English skills, there are significant differences in mean score of knowledge and skills among groups with different confidence levels ($p < 0.01$), but no significant difference in attitude ($p > 0.05$). Similarly, for IT skills, students with different confidence levels also have significantly different mean scores ($p < 0.01$). Students who felt confident or very confident in their English and IT skills had higher mean scores than the other groups. Regarding the frequency of applying

EBP, students who did so regularly or always had higher mean scores than the other groups ($p < 0.01$). These results indicate that soft skills play a crucial role in developing students' EBP competence. English reading comprehension ability is one of the barriers to EBP competence among nursing students [2, 7]. Most current resources and research are written in English. When students have good English skills, they can more easily access these sources of evidence. Additionally, with good IT skills, they can effectively search for information on the internet [6].

Knowledge, skills, and attitudes towards EBP are positively correlated at a moderate level ($p < 0.01$, $0.3 < r < 0.7$). Specifically, students with good knowledge tend to have good skills and a positive attitude towards EBP. Furthermore, students who perform well in courses related to research and evidence - based practice also demonstrate high competence in EBP, and vice versa. Continuous variables show a positive correlation with each other and are statistically significant with $p < 0.01$. Among them, the mean score of knowledge, skills, attitude exhibit a moderate positive correlation ($0.3 < r < 0.7$). Additionally, there is a weak positive correlation between the final score of the research and EBP course and students' EBP competency. Consequently, students with higher scores tend to have higher EBP competency ($p < 0.01$). These correlations are also found in the study by author María Ruzafa-Martínez [8]. Through this, it is evident that to enhance students' EBP competence, they need to accumulate knowledge, develop skills, and maintain a positive attitude.

IV. CONCLUSION

Evidence-based practice (EBP) is a necessary competence for nursing students to improve the quality and safety of patient care. The competence of students in this study ranged from average to higher. To further enhance this competence, students need to improve their English and IT skills, actively participate in scientific research clubs to gain experience. Conducting a thesis is an advantage in strengthening EBP competence, so encouraging and actively engaging students in thesis topics is essential. Currently, the University of Medicine and Pharmacy at Ho Chi Minh City has had policies to encourage and support students in conducting

scientific research for their graduation theses to promote EBP competence.

This study was conducted on nursing students at one university with the same education program and is a cross - sectional descriptive study at one point in time, so it cannot fully represent the competence of Vietnamese students. Moreover, the data collected in the study were based on students' self- evaluations and self - reported EBP competence, so they may lack of objectivity. Subsequent studies should be conducted on a larger sample size, encompassing more diverse academic programs to increase representativeness.

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