Frontiers of Nursing • 13(1) • 2026
DOI: 10.2478/FON-2026-0017

Frontiers of **Nursing**

Implementation of evidence-based practice among clinical nurses practicing at an oncology hospital in Vietnam: a cross-sectional study

Original article

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Received: 5 March 2025; Accepted: 10 April 2025; Published: 20 March 2026

Abstract: **Objective:** To describe the implementation of evidence-based practice (EBP) and identify the associated factors among clinical nurses working at an oncology hospital in Central Vietnam.
Methods: A cross-sectional study was conducted with 190 clinical nurses recruited from an oncology hospital in Central Vietnam. The self-administered Evidence-Based Practice Questionnaire (EBPQ) was employed to assess the nurses' knowledge/skills, attitudes, and implementation of EBP. Data analysis utilized descriptive statistics, the Mann–Whitney test, the Kruskal–Wallis test, and Spearman's rho correlation.
Results: The mean total score for EBP implementation among the nurses was 29.52 (SD = 7.14) out of 42 scores. The most frequently undertaken activity was sharing evidence with colleagues, whereas finding relevant evidence was the least performed. The level of EBP implementation significantly varied based on the nurses' role types and their participation in related courses ($P < 0.05$). Moreover, a strong positive correlation was observed between EBP implementation and both knowledge/skills ($r = 0.703$, $P < 0.001$) and attitudes toward EBP ($r = 0.536$, $P < 0.001$).
Conclusions: The implementation of EBP by oncology nurses is generally moderate and is significantly positively correlated with their knowledge/skills and attitudes toward EBP. These findings underscore the importance of enhancing educational programs and facilitating supportive institutional policies to further encourage the adoption of EBP among nurses.

Keywords: *clinical nurses • evidence-based practice • evidence-based practice questionnaire • oncology • oncology nurses*

1. Introduction

Evidence-based practice (EBP) has become a fundamental principle in modern healthcare, significantly transforming clinical decision-making.[1,2] It integrates the best available evidence from rigorous research with the clinical expertise of healthcare professionals and patient preferences to deliver high-quality care.[3] In the ever-evolving healthcare landscape, EBP is crucial for improving patient outcomes, enhancing the quality of

How to cite this article: Pham TK, Luu TT, Tran THO, Nguyen TTT. Implementation of evidence-based practice among clinical nurses practicing at an oncology hospital in Vietnam: a cross-sectional study. *Front Nurs*. 2026;1:147–154.

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care, and increasing cost-effectiveness.[1,2,4,5] By systematically implementing EBP, healthcare professionals can ensure that their interventions are both scientifically valid and aligned with the latest advancements and technologies. This approach enables healthcare professionals to stay updated with emerging evidence, promoting a culture of continuous learning and improvement.[6] In addition, EBP supports the development of effective healthcare policies and protocols, ultimately leading to more efficient healthcare delivery.[7]

Nurses constitute the largest group within the healthcare system and play a pivotal role in delivering healthcare services to the community.[8] However, enhancing the quality of care presents a challenge for nurses amid increasing patient demands, nursing shortages, and ongoing advancements in medical science. EBP has emerged as a vital tool for bridging the gap between research and practice, ensuring both the quality and safety of patient care.[9] EBP is recognized as a fundamental nursing competency standard. The 2021 Code of Ethics from the International Council of Nurses (ICN)[10] mandates that nurses provide evidence-informed healthcare to patients. Similarly, the Vietnamese Ministry of Health[11] has endorsed EBP as a required competency standard for Vietnamese nurses.

Despite the recognized importance and benefits of EBP in healthcare, its implementation by nurses around the world remains limited.[9] A study in Switzerland found that the level of EBP implementation was suboptimal, with most nurses rarely or never participating in EBP activities.[12] A review study indicated that the adoption of EBP into routine care by nurse practitioners is generally low.[9] Additionally, a systematic review of 20 articles by Li et al.[13] demonstrated that most nurses seldom apply EBP in their daily work. Similar findings have been reported among nurses in various Asian countries. For instance, nurses in Saudi Arabia had low EBP implementation scores, averaging 4.36 (SD = 1.53) on a 7-point Likert scale.[14] A study by Yoo[15] reported an insufficient level of EBP implementation among nurses in South Korea, with a mean score of 15.0 ± 3.2 out of 72. Among EBP activities, sharing evidence with colleagues was the most commonly practiced, whereas critically appraising research evidence was the least frequently undertaken by nurses.[16]

In Vietnam, previous studies have shown that many nurses tend to rely on their habits rather than using research evidence when providing nursing care. The level of EBP adoption among clinical nurses is moderate.[17,18] Sharing information with colleagues has been reported as the least common activity.[17] However, a study focusing on oncology nurses found that sharing ideas and information with colleagues was the most frequently practiced activity among clinical nurses. Conversely, oncology nurses were the least likely to engage in seeking out relevant evidence.[19]

The implementation of EBP implementation among nurses varies due to several influencing factors. Demographic factors, such as age, gender, and professional education, have been identified as significant influences on EBP implementation.[13,14,16,20–23] In addition, nurses with more years of experience tend to exhibit higher levels of EBP implementation.[9,21,22] Participation in EBP courses or training has also been recognized as a key contributor to the adoption of EBP.[14,20] Moreover, nurses in management roles showed higher levels of EBP implementation.[13,21] Notably, knowledge and attitudes toward EBP have consistently been shown to be important factors, exhibiting a positive correlation with EBP implementation.[14–16,22,23]

Cancer is currently one of the leading causes of death worldwide, accounting for nearly one in six fatalities. The increasing incidence of cancer poses significant challenges in treatment and patient care, primarily due to inadequate financial resources and limited access to palliative care services.[24] EBP is a valuable tool for healthcare providers, allowing them to deliver high-quality cancer care at lower costs.[25] However, research on the adoption of EBP among oncology nurses, particularly in Vietnam, is limited. To address this gap, we conducted a study to assess the implementation of EBP and its influencing factors among oncology nurses in Central Vietnam. The findings from this study could provide essential insights for developing programs aimed at enhancing EBP implementation in oncology nursing.

2. Methods

2.1. Study design

The current study used a descriptive, cross-sectional design to investigate implementation of EBP among nurses from November to December 2023. This study was followed by the Strengthening the Reporting of Observational Studies in Epidemiology statement (https://www.strobe-statement.org/).

2.2. Setting and participants

This study was conducted at an oncology hospital, the largest specialized facility in the Central region of Vietnam. The hospital consists of 15 clinical departments that provide comprehensive services, including radiotherapy, surgery, chemotherapy, palliative care, and nuclear medicine. At the time of the study, there were a total of 234 nurses employed at the hospital, with 190 of them working in clinical departments. The

study targeted registered nurses working in these clinical departments. Nurses who were not present during the survey were excluded from the study.

A software named G*Power ver. 3.1.9.4 (Heinrich-Heine-Universität Düsseldorf; http://www.gpower.hhu.de/) was used for calculating the sample size of this study. In the case of the correlation test, the input was a one-sided analysis, the effect size was 0.2, the α error probability was 0.05, and the power was 0.8. After putting these parameters into the software, a total of 153 participants was suggested as a minimum sample size. However, to enhance the generalizability of the study findings, the researchers selected an entire population with 190 clinical nurses who satisfied the inclusion criteria.

2.3. Instruments

This study utilized a two-part instrument. The first part includes questions regarding the participants' characteristics, including age, gender, marital status, professional level, work experience, working department, role type, and participation in EBP courses. This section was developed by the research team based on a literature review.

The second part is the Evidence-Based Practice Questionnaire (EBPQ), developed by Upton and Upton[26] to measure nurses' knowledge/skills, attitudes, and implementation of EBP. The EBPQ consists of 24 items divided into 3 subscales: knowledge/skills (14 items), attitudes (4 items), and implementation (6 items). Each item on the knowledge subscale is rated using a Likert scale from 1 (poor) to 7 (excellent), with higher scores indicating better knowledge. For the attitude subscale, responses are measured from 1 (strongly agree) to 7 (strongly disagree), where higher scores more positives toward EBP. The EBP implementation subscale scores items on a scale from 1 (never) to 7 (frequently), with higher scores indicating more frequent implementation of EBP by nurses.[26]

This instrument has demonstrated high reliability, with a Cronbach's alpha of 0.91 for the knowledge/skills subscale, 0.79 for the attitude subscale, and 0.85 for the implementation subscale.[26] The EBPQ was validated in Vietnamese and also showed strong reliability, with Cronbach's alpha coefficients of 0.91, 0.81, and 0.92 for the knowledge/skills, attitudes, and implementation subscale, respectively.[19]

2.4. Data collection

The principal investigator began by reaching out to the head nurse of each clinical department to schedule the survey for their respective team. On the designated day, the principal investigator gathered all the nurses in a meeting room to explain the study and obtain their consent to participate. Later, the questionnaires were distributed to the nurses for them to complete. The completed questionnaires were collected immediately. All 190 nurses agreed to take part in the study and responded to the questionnaires. Data collection was conducted over 2 months, from November to December 2023.

2.5. Ethical consideration

This study received approval from the Ethics Committee in Biomedical Research at Da Nang University of Medical Technology and Pharmacy in Vietnam (Approval No.: 125/CT-HĐĐĐ, dated 30 October 2023) and permission from the hospital. Participants were fully informed about the purpose and details of the research before giving their consent. They were also assured that they could withdraw from the study at any time without needing to provide any reasons.

2.6. Statistical analysis

Data were analyzed using version 22.0 of the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA). A descriptive analysis was conducted to provide the distribution of variables in terms of frequency, mean, and standard deviation (SD). Prior to statistical analysis, the normal distribution of EBP implementation was assessed using the Kolmogorov–Smirnov test. The results indicated that this variable did not follow a normal distribution. Consequently, the Mann–Whitney test, Kruskal–Wallis test, and Spearman's rho were employed to identify factors associated with the implementation of EBP, with a significance level set at 95%.

3. Results

3.1. Characteristics of the participants

All 190 distributed questionnaires were returned, resulting in a response rate of 100%. The average age of the participants was 33.6 years (SD = 5.2). A significant majority were female, accounting for 92.6% of the respondents, and over 50% held a bachelor's degree (4 years). On average, participants had been employed for 10.5 years (SD = 4.7). Additionally, 51.6% of the participants had the opportunity to participate in courses related to EBP. The characteristics of the participants are detailed in Table 1.

Characteristics	Number (*n*)	Percentage (%)
Age (years)Mean ± SD (range): 33.6 ± 5.2 (23–53)		
Gender		
Male	14	7.4
Female	176	92.6
Marital status		
Married	151	79.5
Single/divorced/widowed	39	20.5
Professional level		
Bachelor's degree (3 years)	88	46.3
Bachelor's degree (4 years)	102	53.7
Work experience (years): Mean ± SD (range): 10.5 ± 4.7 (1–28)		
Working department		
Surgery	62	32.6
Internal medicine	60	31.6
Anesthesia and resuscitation	31	16.3
Radiotherapy – nuclear medicine	19	10
Medical examination – emergency	18	9.5
Role type		
Non-management level	180	94.7
Management level	10	5.3
Participation in EBP courses		
Yes	98	51.6
No	92	48.4

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

Table 1. Characteristics of the participants (n = 190).

3.2. Knowledge/skills and attitudes toward EBP

As shown in Table 2, the average total scores for knowledge/skills and attitudes toward EBP among nurses were 65.12 (±13.17) and 19.57 (±4.28), respectively. The average item score for knowledge/skills was 4.65 (±0.94), while that for attitudes it was 4.89 (±1.07).

3.3. Implementation of EBP among clinical nurses

The average total score for the implementation of EBP by nurses was 29.52 (SD = 7.14). The activity "Sharing evidence with colleagues" was rated by nurses as the most frequently performed, with an average score of 5.22 (SD = 1.31). The least performed activity was "Finding relevant evidence", with an average score of 4.72 (SD = 1.37). The results are presented in Table 3.

Content	Mean	SD	Range
Knowledge/skills about EBP			
Total score	65.12	13.17	26–92
Item score	4.65	0.94	1.9–6.6
Atitudes toward EBP			
Total score	19.57	4.28	6–28
Item score	4.89	1.07	1.5–7

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

Table 2. Knowledge/skills and attitudes toward EBP (n = 190).

Implementation of EBP	Mean	SD	Range
Sharing evidence with colleagues	5.22	1.31	1–7
Critically appraising evidence	4.97	1.33	1–7
Integrating the evidence to practice	4.91	1.36	1–7
Evaluating the outcomes of practice	4.89	1.38	1–7
Formulating clinical questions	4.81	1.35	1–7
Finding relevant evidence	4.72	1.37	1–7
Average total score	29.52	7.14	6–42
Average item score	4.92	1.19	1–7

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

Table 3. Implementation of EBP among clinical nurses (n = 190).

3.4. Factors related to EBP implementation among clinical nurses

As shown in Table 4, there is a statistically significant difference in the implementation of EBP based on the roles of nurses and their participation in EBP courses. Specifically, nurses in management positions or those who attended EBP courses had higher average scores compared with those in non-management roles or without EBP training. Additionally, no significant associations were found between EBP implementation with gender, marital status, professional level, and working department.

Table 5 shows a strong positive correlation between the implementation of EBP and knowledge/skills related to EBP (r = 0.703, P < 0.001). Additionally, there is a moderate correlation between EBP implementation and attitudes toward EBP, indicated by a correlation coefficient of 0.536 (P < 0.001). However, no significant association was found between EBP implementation and either age or work experience.

4. Discussion

Knowledge and skills in EBP are essential for effective nursing practice. In our study, clinical nurses achieved an average total score of 65.12 (SD = 13.17) out of 98, corresponding to an average item score of 4.65

Demographic factors	Mean rank	*P*
Gender		0.145*
Male	116.07	
Female	93.86	
Marital status		0.113*
Married	99.25	
Single/divorced/widowed	133.5	
Professional level		0.067*
Bachelor's degree (3 years)	87.64	
Bachelor's degree (4 years)	102.28	
Working department		0.110**
Surgery	104.79	
Internal medicine	89.33	
Anesthesia and resuscitation	107.15	
Radiotherapy – nuclear medicine	72.68	
Medical examination emergency	88.11	
Role type		0.005*
Non-management level	92.86	
Management level	143.05	
Participation in EBP courses		0.005*
Yes	106.44	
No	83.85	

Note: EBP, evidence-based practice; *Mann–Whitney test, **Kruskal–Wallis test.

Table 4. The differences in EBP implementation based on demographic factors.

Factors	r^s	*P*
Age (years)	0.140	0.053
Work experience	0.127	0.081
Knowledge/skills about EBP	0.703	0.000
Attitudes toward EBP	0.536	0.000

Note: EBP, evidence-based practice; ^{s}Spearman's rho.

Table 5. Relationships between EBP implementation and age, work experience, knowledge/skills, and attitudes toward EBP.

(SD = 0.94), indicating a moderate level of knowledge and skills, which may be attributed to the fact that only approximately 50% of nurses attended EBP training. Our findings align with Alshammari's[27] study, which reported a score of 63.44 (SD = 19.81). However, our result is higher than that of a South Korean study, which documented a score of 52.5 (SD = 11.1), possibly due to a higher participation rate in EBP training.[15] In Vietnam, similar outcomes were observed in Chu's[18] study, with an average score of 4.4 (SD = 0.5), while Nguyen et al.[17] recorded a lower score of 3.66 (SD = 0.53). Conversely, Dao et al.'s[19] study reported a higher score of 5.12 (SD = 0.74), likely influenced by a greater proportion of university-educated nurses. These differences indicate that EBP knowledge and skills vary among nurses depending on their regions and educational backgrounds.

Our study revealed that the total attitude score toward EBP was 19.57 (SD = 4.28) out of 28, with an average item score of 4.89 (SD = 1.07), indicating a positive attitude among clinical nurses. This finding aligns with numerous national and international studies. Alqahtani's[14] study in Saudi Arabia reported a comparable result of 4.82 (SD = 1.49), while Chu Thi Nguyet's[18] study in Vietnam yielded a score of 5.05 (SD = 0.45). In contrast, a study by Nguyen et al.[17] recorded a mean attitude score of 3.81 (SD = 0.81), which is lower than our findings. These discrepancies may result from variations in nurses' characteristics across different regions.

In addition, our study found that the average score for EBP implementation among clinical nurses was 29.52 (SD = 7.14), which corresponds to an average score of 4.92 (SD = 1.19) per item, suggesting a moderate level of EBP implementation. These findings align with a previous study conducted in Saudi Arabia, where the total EBP adoption score was 28.02 (SD = 6.68).[27] Similarly, a cross-sectional study in Southern Vietnam reported comparable scores of EBP implementation among oncology nurses, with a mean score of 4.90 (SD = 0.99) for each item.[19] However, our findings were higher than those from a study conducted in 4 low- and middle-income countries, which recorded a mean EBP use score of 23.1 (SD = 10.7).[28] Additionally, our results surpassed those from some studies in Vietnam, where the average scores for EBP implementation ranged from 3.59 to 4.50.[17,18] These differences may be attributed to our participants demonstrating better EBP knowledge/skills compared with those in other studies. Evidence suggests that having greater knowledge/skills is associated with more frequent implementation of EBP.[22,23]

Among EBP activities, the most frequently performed task is sharing evidence with colleagues, with an observed average score of 5.22 (SD = 1.31). This finding is corroborated by Kaseka and Mbakaya[16], who indicated that the activity of "sharing information/evidence with colleagues" achieved the highest mean score of 4.49 (SD = 1.95). Consistent findings were observed in a study conducted in another region of Vietnam, where the average score for this activity was reported as 5.03 (SD = 1.08).[19] The active sharing of evidence among nurses is imperative, as it facilitates the widespread dissemination of scientific knowledge, and enables them to effectively apply this information in patient care. Ultimately, this practice contributes to ongoing improvements in the quality of care.

Conversely, finding relevant evidence is the least performed EBP activity among nurses, with a mean score of 4.72 (SD = 1.37). Although our result is higher than those reported by Kaseka and Mbakaya[16], who

reported a mean score of 3.84 (SD = 1.9), both studies underscore that this activity is less frequently implemented compared with others. Our findings are also consistent with a study conducted in Vietnam, where Dao et al.[19] recorded a mean score of 4.76 (SD = 1.08) for the activity of finding relevant evidence.

This study identified 4 significant factors influencing the implementation of EBP. First, adopting EBP varies according to the professional roles of nurses. Nurses in management positions had higher EBP implementation scores, suggesting that they engaged more frequently in EBP activities compared with their staff counterparts. This observation aligns with studies conducted in Saudi Arabia, which also documented that occupying management roles is positively associated with higher EBP implementation scores.[20,27] This trend may be attributed to the expectations placed on nursing managers to foster an EBP culture, provide training, and allocate resources to support the delivery of evidence-based care. Additionally, nurse managers normally hold higher professional qualifications than staff nurses; thus, they may be more aware of the importance of EBP in optimizing patient care outcomes. Consequently, they are more inclined to regularly integrate EBP into their practice.

Second, a higher average score for the implementation of EBP was observed among those who attended EBP courses compared with those who did not receive such trainings. This finding is consistent with previous research, where participation in EBP courses was strongly associated with better EBP competencies.[20] Our results also align with global studies, indicating that attending EBP training significantly impacts EBP implementation among nurses. These findings suggest that EBP education positively influences nurses' knowledge and skills, ultimately enhancing their application of EBP.[15,29–31]

Third, our study identified a strong positive correlation between knowledge/skills and EBP implementation, with a correlation coefficient of 0.703 ($P < 0.001$). This suggests that improving nurses' knowledge/skills can lead to better implementation of EBP. Previous studies in various settings have reported similar findings.[14–16,22] For example, Kaseka and Mbakaya[16], using the same EBPQ, found a significant positive association between knowledge levels and the use of EBP among nurses ($r = 0.487$; $P < 0.001$). Additionally, Yoo et al.[15] noted that EBP knowledge was a significant predictor of EBP implementation among clinical nurses in Korea. This relationship has also been observed in studies involving nurses from Saudi Arabia,[14] and Iran,[22] where a significant positive correlation between knowledge and EBP adoption was documented. Moreover, a study of 194 oncology nurses in Vietnam corroborated these results.[19] These findings indicate that enhancing nurses' knowledge and skills in EBP can rapidly and significantly improve their EBP adoption.

Fourth, attitudes toward EBP is another important factor influencing its implementation, as our study identified a moderate correlation ($r = 0.536$; $P < 0.001$). This finding is similar to several international studies.[14–16,22] For instance, Alqahtani et al.[14] found that positive attitudes toward EBP significantly influenced EBP implementation among nurses in Saudi Arabia. Similarly, a study by Mohammadi et al.[22] involving 482 Iranian nurses and nursing students revealed that individual attitudes toward EBP had the strongest impact on its adoption. Additionally, a study by Kaseka and Mbakaya[16] in Malawi reported a significant, albeit weak, correlation between EBP adoption and attitude. These results highlight the positive effect of nurses' attitudes toward EBP on their adoption of these practices. Therefore, increasing nurses' awareness of EBP is essential for fostering a positive attitude, which, in turn, can enhance EBP implementation.

This study provides valuable insights into the implementation of EBP among oncology nurses in Vietnam, a region that has been relatively underexplored in this topic. Unlike previous studies that broadly examined EBP adoption, our investigation offers a concentrated analysis of intrinsic factors, particularly knowledge/skills and attitudes, which significantly influence EBP engagement.

A significant methodological strength of this study is the independent evaluation of the EBPQ subscales. By recognizing knowledge, skills, attitudes, and implementation as distinct constructs rather than cumulative components, this approach enhances measurement accuracy and mitigates potential misinterpretations that could arise from aggregating EBPQ subscale scores. Our study has some limitations that should be considered. Because of resource constraints, it was carried out at a single oncology hospital, potentially restricting the findings' applicability to other healthcare settings or regions. Moreover, using self-reported questionnaires could lead to bias, as participants might exaggerate their knowledge, attitudes, or practices related to EBP.

5. Conclusions

The implementation of EBP among oncology nurses was found to be at a moderate level. Nurses demonstrated a greater tendency to share information with their colleagues than to seek out relevant evidence for their practice. The adoption of EBP was positively influenced by the nurses' knowledge/skills, and attitudes toward EBP.

Our study highlights the need for institutional policies to foster a supportive environment for the adoption of EBP in nursing practice. Hospitals should focus on allocating adequate resources to improve EBP implementation, including the provision of training workshops

and access to databases. Moreover, further research should be pursued in diverse healthcare settings to explore correlations with additional variables, such as organizational or systemic factors. Furthermore, longitudinal studies are essential to identify and analyze the relationships among these variables.

Acknowledgment

The authors gratefully acknowledge all nurses who participated in this study.

Ethical approval

This study received approval from the Ethics Committee in Biomedical Research at Da Nang University of Medical Technology and Pharmacy in Vietnam (Approval No.: 125/CT-HĐĐĐ, dated 30 October 2023) and permission from the hospital.

Conflicts of interest

All contributing authors declare no conflicts of interest.

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