



Research article



Self-perceived competence of evidence-based practice (EBP) among undergraduate nursing students in Bahrain: A cross-sectional study

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ABSTRACT

Evidence-based practice (EBP) is essential for high-quality healthcare, ensuring that processes and patient care are guided by the best available evidence. Undergraduate nursing students are expected to be competent in EBP by the time they graduate. However, there is a gap regarding the understanding of nursing students' competence in EBP. This study aimed to investigate the self-perceived competency of EBP among BSc nursing (BSN) students in Bahrain. A cross-sectional study was conducted with 69 fourth-year BSN students using the validated Evidence-Based Practice Competence Questionnaire (EBP-COQ). The EBP-COQ uses a five-point Likert scale, with higher scores indicating greater self-perceived competence. Descriptive and inferential statistics, including correlation and group comparisons, were employed. Participants demonstrated moderately high overall EBP competence [Mean (SD) = 3.74(0.88)]. Attitudes toward EBP were mostly favourable (Mean = 4.26), followed by knowledge regarding EBP (Mean = 3.48) and skills related to EBP (Mean = 3.26). While students expressed confidence in posing clinical questions and understanding research design, they showed lower confidence in searching scientific databases and critically appraising evidence. Correlation analysis revealed significant positive relationships among knowledge, skills and attitude domains of EBP competence. No significant associations were found between EBP competence and demographic variables, including CGPA, gender, or prior research exposure. While nursing students exhibit positive attitudes toward EBP, notable skill gaps remain, particularly in evidence searching and appraisal. Nursing curricula should be strengthened through practical, skills-based EBP education, beginning early and integrated throughout the program.

1. Introduction

Evidence-based practice (EBP) is essential for high-quality healthcare, ensuring that processes and patient care are guided by the best available evidence [1]. By integrating clinical expertise, patient preferences, and the best available evidence, EBP guides informed clinical decisions, ultimately ensuring high-quality and cost-effective care [2]. For nurses, EBP is essential to make informed clinical decisions and ensure safe practices. [3,4]. It enhances the quality of nursing practice, reduces complications, and increases nurse job satisfaction [2]. Additionally, EBP empowers nurses to stay current with evolving healthcare knowledge, fostering professional growth and work morale [5]. To promote the integration of EBP, it is crucial to empower nurses through education and organisational support.

Today, undergraduate nursing students are expected to be competent in applying EBP by the time they graduate [6,7]. Thus, a primary goal of nursing education should be to develop the competence required to apply EBP in clinical practice. This competence

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includes several attributes, such as asking questions, gathering and appraising evidence, applying it in practice, and evaluating the outcomes of practice changes [8]. Undergraduate nursing programs across the world incorporate EBP in their curriculum [3]. Despite the inclusion of EBP in nursing curricula, the emphasis is often on literature searching and critical appraisal rather than the implementation and evaluation of EBP in clinical practice [3,5,9]. As a result, nursing graduates may lack confidence in applying it in real-world settings, potentially affecting patient outcomes and the quality of care provided. [6]. Developing competence in EBP is, therefore, essential to meet evolving healthcare demands and ensure optimal patient outcomes.

Research suggests that many nurses have yet to fully integrate EBP competency into their professional identity, a challenge observed across various countries such as Turkey, Hong Kong, Iran, Ireland, Egypt, the USA, Spain, and Sweden [2,9–11]. Several factors contribute to this gap, including time constraints, insufficient institutional support for new practices, unsupportive leadership, and a lack of knowledge, experience, and resources necessary for implementing EBP [3]. In Bahrain, limited research has been conducted on nurses' self-perceived competence in EBP. A cross-sectional survey of registered nurses identified significant barriers to research utilisation, including time constraints, lack of authority to change practices, and inadequate resources [11]. The study was conducted almost a decade ago, and notably, the study did not assess nurses' competencies in EBP, nor did it include nursing students, who represent the future workforce.

With the growing emphasis on EBP, it is increasingly important to evaluate undergraduate nursing students' self-perceived competence in this area. Such an assessment is essential to ensure they are adequately prepared to apply evidence in clinical decision-making as they transition into professional practice. By identifying gaps in knowledge, skills, and attitudes, this evaluation can guide the development of targeted educational strategies. Moreover, insights gained from understanding students' EBP competencies can inform curriculum design, ensuring that future nurses are well-equipped to meet the demands of modern, evidence-driven healthcare.

1.1. Conceptual framework

This study was guided by the Knowledge to Action (KTA) framework [12], which outlines how research knowledge is translated into practical application. The framework emphasises an iterative process that includes knowledge creation, identifying barriers and facilitators, and implementing and evaluating practice changes [13]. Within the context of this study, EBP competence among nursing students was conceptualised as their ability to progress through the initial stages of knowledge creation, such as asking clinical questions, sourcing and appraising evidence, and envisioning its application in practice (Fig. 1). The selection of the EBP-COQ instrument aligns with this framework, as it captures students' self-perceived abilities across knowledge, skills, and attitudes, core elements needed for initiating the EBP cycle. Thus, KTA provided a theoretical lens for both framing the research questions and interpreting how educational experiences contribute to EBP readiness.

1.2. Aim

The aim of this study was to explore the self-perceived competence related to EBP among nursing students in the Bachelor of Science in Nursing (BSN) program. This study specifically targets fourth-year nursing students because this is the final year of the

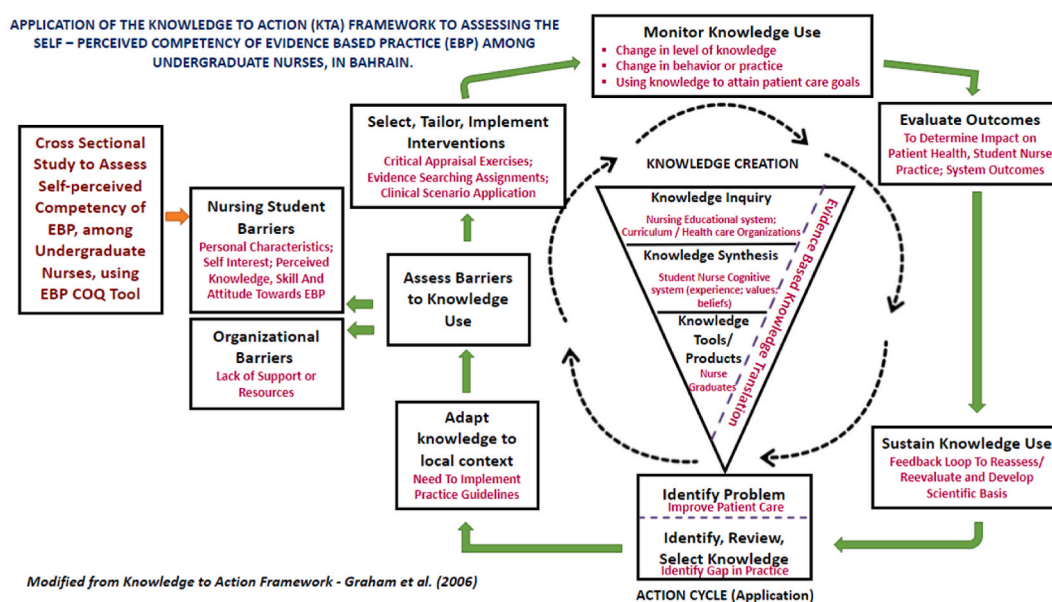


Fig. 1. Conceptual framework of the study based on the KTA framework

undergraduate nursing program and a critical period as they prepare to enter the workforce. Their perspectives are essential for informing nursing education and practice.

1.3. Study objectives

The objectives of the study were 1. To investigate self-perceived competence, encompassing knowledge, skills, and attitudes towards EBP. 2. To explore the correlation between overall EBP Competence and domains of EBP, such as knowledge, skills and attitude and 3. To compare the perceived self-competence of EBP and demographic variables, including gender, years of study, academic performance represented through cumulative grade point average (CGPA), student engagement in other research and EBP activities.

2. Materials and methods

2.1. Study design & participants

A cross-sectional study was conducted using a convenience sample of undergraduate nursing students in a selected university in Bahrain. The study included nursing students enrolled in the BSN program who were actively registered in level four of the program. Those who did not consent to participate were excluded from the study. Data were collected between May and June 2020. One hundred eighteen student nurses were considered potentially eligible and invited to take part in the survey. Out of these, 78 participants accessed the online survey link. However, nine participants did not complete the survey. This resulted in a total of sixty-nine completed responses, representing 58 % of the eligible sample (Fig. 2).

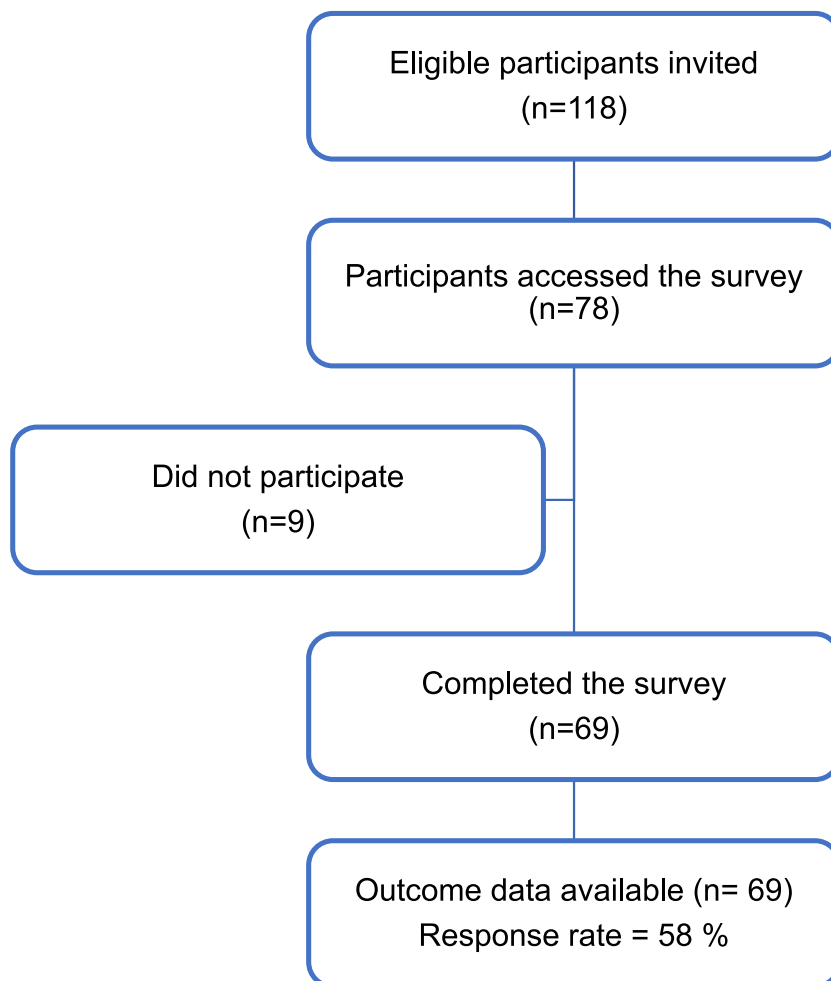


Fig. 2. Flowchart of recruitment

2.2. Instruments

Two instruments were used to collect the data. The first questionnaire included basic demographic details, such as participants' age, gender, extensions taken, self-reported CGPA, and their involvement in research and EBP education and activities. In this study, CGPA refers to the CGPA obtained in level 3 of the undergraduate nursing program. The second questionnaire was the Evidence-Based Practice Competence Questionnaire (EBP-COQ), originally developed by Ruzafa-Martinez and colleagues [14]. The EBP-COQ gathers information about self-perceived competency in EBP within nursing practice. Developed in Spanish, this tool was piloted in 2013 to establish its reliability and other psychometric properties [14]. A significant positive correlation was observed between knowledge and skills [14]. The EBP-COQ was selected because it is one of the few tools specifically developed, piloted, tested, and validated for nursing students, and it is easy to use and understand. Moreover, it encompasses all the dimensions planned to be investigated in this study.

The EBP-COQ consists of twenty-five items organized into three subscales (Supplementary file). Each subscale assesses different domains of competency: knowledge (6 questions), skills (6 questions), and attitudes (13 questions) towards EBP. Each item is rated on a five-point Likert scale, ranging from (1) strongly disagree to (5) strongly agree. The responses indicate the level of agreement with each statement presented in the EBP-COQ [14]. The score for each subscale was calculated by computing the mean score of the items within that subscale, while the overall competence in EBP was determined by calculating the mean score for all items on the scale. Higher scores indicate better self-perceived competence in EBP, as well as greater self-perception of knowledge, skills, and positive attitudes towards EBP [14].

2.3. Data collection procedures

Potential participants received an email from the university's public relations department on behalf of the research team. This email provided information about the purpose of the research, ethical considerations, and included a link to the survey using SurveyMonkey. Participants who accessed the link were required to read a participant information sheet, which outlined the study procedures, the voluntary nature of the study and the anonymity and confidentiality of the study. Participants who were willing provided electronic informed consent. Access to the data collection forms was available only to those who provided their consent.

The data were stored digitally on a password-protected institutional computer with access restricted to the research team. All files were saved in encrypted folders. To maintain participant confidentiality, the survey was designed to be fully anonymous. No names, email addresses, IP addresses, or any other identifying information were collected at any stage. This ensured that responses could not be traced back to individual participants. The use of a gatekeeper further enhanced confidentiality by preventing direct contact between the researchers and potential participants. The combination of these measures guaranteed confidentiality and protected participant anonymity throughout the study.

2.4. Study setting

The study was conducted at a selected college of nursing in Bahrain. The college delivers a fully accredited Bachelor of Science in Nursing (BSN) program, structured as a four-year, full-time course of study. Although the program is designed to be completed across four levels, students who are required to repeat modules may need additional time to fulfil all academic requirements. The BSN program consists of 135 credits and is delivered in English. Admission to the program requires either a minimum average of 90 % in English courses at the high school level or an IELTS score of at least 5.5.

2.5. Data analysis

All data were downloaded from Survey Monkey into an Excel file and later uploaded to Statistical Package for Social Science (SPSS) version 23.0 for data analysis. Frequency reports were run for each variable. There was no missing data. Categorical data were expressed as frequencies and percentages, and continuous data were expressed as mean or median. A p-value <0.05 is considered statistically significant.

2.6. Ethical considerations

Full ethical approval was obtained from the Research & Ethics Committee (REC) at the Royal College of Surgeons in Ireland-Bahrain on May 7, 2020 prior to the commencement of data collection. The study was administratively registered under the institutional project identifier no. (45/13-Jun-2020). The study adhered to the Bahrain Personal Data Protection Law Act of 2018. It was clear that participation in the study was voluntary and that non-participation had no impact on students in any way. After publication of this study, administrative related files will be destroyed. Anonymized data will be retained and remain available upon reasonable request. There was no compensation to participants.

3. Findings

Study participants were female (n = 52, 75 %) and male (n = 17, 24.6 %). The mean age of participants was 22.41 years. The mean (SD) CGPA of the participants was 2.98 (0.42). All the participants (n = 69, 100.0 %) had completed a nursing research course as a part

of their curriculum. Nine participants (13.0 %) had participated in a research workshop. Of all the participants, seven (10.1 %) had participated in a research activity (Table 1).

3.1. Overall EBP competency

Results of this study indicate that nursing students possess moderate overall competence in EBP. The overall score of EBP competence measured by the EBP-COQ instrument had a mean score of 3.74 (SD = 0.88), with a 95 % confidence interval (CI) of 3.63–3.85, indicating a moderately high level of perceived competence among respondents. The knowledge domain showed a mean of 3.48 (SD = 0.85), with a 95 % CI of 3.33–3.62, suggesting a moderate level of knowledge in EBP. The skills domain had the lowest mean score at 3.26 (SD = 1.05), with a 95 % CI of 3.10–3.42, pointing to relatively lower confidence in EBP-related skills among nursing students. In contrast, the attitude towards EBP received the highest mean score of 4.26 (SD = 0.74), reflecting a positive attitude towards EBP among participants (Table 2). The EBP-COQ instrument was assessed for reliability using Cronbach's alpha, resulting in a score of 0.82, indicating high internal consistency.

3.2. Knowledge regarding EBP

The results of the first subscale exploring how student nurses evaluated their fundamental knowledge of EBP revealed interesting findings. Participant mean scores ranged from 3.14 to 3.80. The highest mean score was 3.80 in response to the statement K1) "I feel able to pose a clinical question in order to start searching of the best scientific evidence." The nursing students' perceived ability to translate the results of research into clinical practice in the future was also high (mean: 3.75). The lowest mean score was 3.14 in response to the statement K3) "I do not feel confident searching for scientific evidence associated with systematic reviews and clinical practice guidelines databases." Lower scores were also reported by students related to knowledge of searching for evidence through common scientific databases (mean 3.30), interpretation of findings to apply them in practice (mean: 3.23) and critical evaluation of the quality of research (mean: 3.26) (Table 3). The findings show moderate knowledge regarding EBP. However, improvements are needed in searching databases and critically evaluating research.

3.3. Skills regarding EBP

The results of the second subscale, which assessed the students' ability to translate knowledge they acquired into the required skills for EBP implementation, provide valuable insights into their proficiency in practical aspects of EBP. In this subscale, item mean scores ranged from 2.80 to 3.51. Students scored highest in their perception of the ability to interpret the main results of data analysis correctly (mean: 3.51). Another high mean score of 3.51 was in response to statement C3 assessing the understanding of different research designs, which is essential for evaluating the quality of evidence and applying it in practice. Students reported moderate scores for knowing how to formulate a question using the Population Intervention Comparison Outcome (PICO) framework (mean: 3.12). They scored lowest in the familiarity with major databases such as Cochrane and Joanna Briggs Institute (mean: 2.80) and being able to differentiate the different levels of evidence reported in scientific research articles (mean: 2.90), as well as how to assess the strength and quality of scientific evidence (mean: 3.07). The skills subscale had relatively lower scores and represented limited familiarity with EBP (Table 4).

3.4. Attitude towards EBP

The results of the third subscale in the EBP COQ explored the attitudes of nursing students in relation to EBP, and findings reveal

Table 1
Demographic characteristics of participants.

Variables	Mean (SD)
Age (in years)	22.41 (1.22)
CGPA	2.98 (0.42)
Variables	Frequency (Percentage)
Gender:	
Male	17 (24.6 %)
Female	52 (75.4 %)
Years spent in nursing education:	
Four years	47 (68.1 %)
Five Years	15 (21.7 %)
Six years	7(10.1 %)
Student level of experience in research or EBP:	
Undertaken a Research course	69 (100.0 %)
Undertaken a EBP Course/workshop	9 (13.0 %)
Participated in Research activity	7 (10.1 %)

*CGPA: Cumulative Grade Point Average, EBP: Evidence-Based Practice, SD Standard Deviation

Table 2

Evidence-Based Practice competence (EBP-COQ) overall response among nursing students.

	Range of Scores	EBP-COQ Mean(SD)	95 % CI
Overall competence in EBP	(1–5)	3.74(0.88)	(3.63, 3.85)
Knowledge in EBP		3.48(0.85)	(3.33, 3.62)
Skills in EBP		3.26(1.05)	(3.10, 3.42)
Attitude towards EBP		4.26(0.74)	(4.13, 4.39)

*Data expressed as mean. CI- Confidence Interval (lower value, upper value)

Table 3

Knowledge regarding EBP.

Items	Mean	Std. Deviation
K1) I feel able to pose a clinical question in order to start searching of the best scientific evidence.	3.8	0.778
K2) I do not feel confident searching scientific evidence using various health sciences databases (Medline, PsycINFO, CINAHL).	3.3	0.81
K3) I do not feel confident searching for scientific evidence associated with systematic reviews and clinical practice guidelines databases.	3.14	0.928
K4) I feel I am able to critically evaluate the quality of a scientific article.	3.26	0.949
K5) I do not feel confident interpreting the finding in scientific articles nor their relevance to practice.	3.23	0.843
K6) I feel I am able to translate scientific articles into practice.	3.75	0.812

*the score range from 5 (strongly agree) to 1 (strongly disagree).

Table 4

Skills regarding EBP.

Items	Mean	Std. Deviation
S1) I know how to formulate a clinical question organized in the PICO format	3.12	0.963
S2) I am familiar with major databases that report scientific research (Joanna Briggs Institute, Cochrane Library, Evidence Based-Nursing, etc.)	2.8	1.17
S3) I do not understand the different types of research designs	3.51	1.171
S4) I can differentiate the levels of evidence reported in scientific articles.	2.9	1.073
S5) I do not know how to assess the strength and quality of scientific evidence.	3.07	1.005
S6) I know how to interpret the main results of the data analysis correctly	3.51	0.918

positive and encouraging results. The items of the subscale focused on exploring students' value of EBP, willingness to search for evidence and intention to implement it in the future. Overall mean scores ranged from 3.80 to 4.65. The highest score (mean: 4.65) was for the recognition of using the best available evidence to inform clinical decision-making and provide quality care, while on the other hand, the willingness to search for evidence to inform nursing practice had the lowest score in the subscale (mean: 3.80) (Table 5).

3.5. Correlation among domains of EBP competence

Pearson's correlation analysis revealed significant positive relationships among all domains of EBP competence. EBP competence was moderately correlated with attitude ($\rho = 0.506$, $p < 0.001$), knowledge ($\rho = 0.489$, $p < 0.001$), and skills ($\rho = 0.505$, $p < 0.001$), indicating that higher self-perceived competence is associated with stronger individual domain scores. Furthermore, attitude

Table 5

Attitude towards EBP.

Items	Mean	Std. Deviation
A1) The EBP helps to make decisions in clinical practice.	4.65	0.56
A2) I'm confident that I will be able to evaluate the quality of a scientific article critically.	3.8	0.82
A3) The practice of EBP will help to have a better definition of the nurse role.	4.41	0.65
A4) Professional nurses should include time to read scientific articles and critically analyze them.	4.35	0.72
A5) Implementing EBP in Professional nursing will increase collaboration with other professionals.	4.29	0.71
A6) I will use EBP in my practice as a nurse.	4.51	0.63
A7) The application of EBP improves patient's healthcare outcomes.	4.59	0.60
A8) In the future, I wish to contribute to apply the EBP.	4.43	0.72
A9) I do not like reading scientific articles.	3.52	0.96
A10) Patient care will not significantly change with the EBP application.	4.12	0.98
A11) I consider EBP only a theoretical method that is not used in nursing practice.	4	1.07
A12) If I had the opportunity, I would like to take an EBP course.	4.17	0.95
A13) I believe that access to published scientific articles is important.	4.46	0.78

demonstrated a weak correlation with knowledge ($\rho = 0.290$, $p = 0.016$) and skills ($\rho = 0.349$, $p = 0.003$), while knowledge and skills were weakly correlated ($\rho = 0.309$, $p = 0.010$). These findings suggest that all components, attitude, knowledge, and skills, are interrelated and collectively contribute to students' overall perceived EBP competence (Table 6).

3.6. EBP competence and CGPA

To examine whether academic performance was associated with students' self-perceived competence in EBP, a correlational analysis was conducted between CGPA and the total score on the EBP Competence. The results indicated **no statistically significant correlation** between CGPA and EBP competence ($p = 0.40$), suggesting that students' academic achievement may not necessarily predict their perceived EBP competence.

3.7. Differences in EBP competencies by demographic characteristics

No significant differences were observed in overall EBP competence scores across various demographic and experiential variables. A Mann-Whitney *U* test revealed no statistically significant difference in the global EBP-COQ scores between male and female students, with both groups reporting an overall score of 4 ($z = -1.06$, $p = 0.289$). Similarly, participation in EBP courses or workshops did not result in a significant difference in global competence scores, nor did prior involvement in research activities. Additionally, students in their fourth year and those with more than four years in nursing showed comparable levels of perceived EBP competence. These findings suggest that global self-perceived competence in EBP remains consistently high regardless of gender, formal EBP training, research involvement, or duration in nursing education (Table 7).

4. Discussion

To our knowledge, this is the first study in Bahrain to investigate self-perceived EBP competence among nursing students. The findings enhance our understanding of students' perceptions of their own competence in EBP. Assessing EBP competence is crucial for identifying current proficiency levels and areas needing improvement. Nursing education plays a pivotal role in preparing graduates to be skilled in EBP. The primary aim of the study was to determine the mean overall EBP competence score. The mean (SD) score of 3.74 (0.88) on a 5-point scale indicates an acceptable level of competence. This aligns with findings from previous studies that used the same instrument in Spain ([15]: mean = 3.87), Colombia, Chile, and Spain ([16]: mean = 3.58–3.68), and again in Spain ([15]: mean = 3.62). In contrast, another study [17] which used a different instrument, reported lower scores in student self-reported EBP capabilities. While students in the present study demonstrated a satisfactory understanding of EBP principles, there is scope for achieving higher levels of proficiency. Strengthening EBP-related skills may be key to enhancing the quality of patient care.

Globally, the integration of EBP into nursing curricula remains inconsistent. Calls have been made to standardize EBP teaching approaches and content to enhance its incorporation in nursing education [5]. In the present study, the integration of EBP within a research course may have contributed to the positive findings, as all participants were enrolled in this course. However, the reliance on self-reported data warrants cautious interpretation. Another study [18] noted that students often overestimate their competence, and discrepancies may exist between perceived and actual EBP capabilities. Among the most frequently cited barriers to EBP adoption are limited education and knowledge [5,14]. Positively, students in this study reported an acceptable mean score of 3.48 for EBP knowledge. However, many also expressed unfamiliarity with major research databases and lacked confidence in searching for evidence, highlighting a critical skill gap. The mean (SD) score on the EBP skills subscale was lower [3.26 (1.05)], indicating reduced confidence in implementing EBP. This echoes findings from other studies that recommend modern nursing curricula focus not only on research generation but also on applying evidence in clinical decision-making [5].

To address these gaps, nursing programs should incorporate workshops, simulations, and hands-on activities that emphasize EBP in both academic and clinical settings. These strategies would support students in learning how to effectively search for evidence, critically appraise it, and apply it in practice. Moreover, nursing curricula should prioritize training in the use of research databases and evidence-based decision-making. Given that it takes on average 17 years for evidence to be integrated into clinical practice, there is a pressing need to close this gap. Implementation science, an emerging discipline, offers valuable strategies to facilitate the more efficient translation of research into practice [19]. By addressing these challenges and embedding skills-based EBP education into nursing curricula, programs can better prepare students to confidently apply EBP, ultimately contributing to improved patient outcomes and a stronger nursing workforce.

Table 6
Correlation among domains of EBP Competence.

Variables	ρ	p-value
Global EBP Competence – Attitude	0.506**	<0.001
Global EBP Competence – Knowledge	0.489**	<0.001
Global EBP Competence – Skills	0.505**	<0.001
Attitude – Knowledge	0.290*	0.016
Attitude – Skills	0.349**	0.003
Knowledge – Skills	0.309**	<0.001

Table 7
Differences in EBP domains by demographic characteristics.

Variable	Group 1	Group 2	Median (Group 1)	Median (Group 2)	z	p-value
Gender	Male	Female	4.00	4.00	−1.06	0.289
EBP Course/Workshop Attendance	Attended	Not Attended	4.00	4.00	−0.475	0.635
Involvement in Research Activities	Involved	Not Involved	4.00	4.00	−0.731	0.465
Years in Nursing Education	4th Year	>4 Years	4.00	4.00	−0.866	0.387

*p-value from Mann-Whitney *U* test. $P < 0.05$ considered statistically significant.

Secondary analysis in this study explored the relationship between students' CGPA and their self-perceived EBP competence. No statistically significant association was found. Previous studies have reported mixed results, including some [20–22] that found a positive correlation between CGPA and EBP competence. It is important to note that CGPA is self-reported and may be subject to bias or inflation, warranting careful interpretation.

The study was guided by the KTA framework developed by Graham [12]. The EBP competence assessed in this study aligns with the knowledge creation phase, crucial for moving evidence into action. Integrating EBP more extensively throughout the BSN curriculum may help consolidate knowledge and foster greater confidence in applying evidence-based care in clinical settings.

4.1. Limitations

This study has several limitations. First, the small sample size limited the statistical power of the secondary analyses, reducing the ability to detect significant effects. For example, while a sample size of approximately 64 participants per group would be required to achieve 80 % power for detecting medium effect sizes, the actual sample was considerably smaller, likely reducing power to around 40–50 %. This may have compromised the robustness of the findings and increased susceptibility to Type II errors in the secondary analyses. Second, the study was limited to nursing students from a single educational institution, which restricts the generalizability of the findings to a broader population. The use of a convenience sample may have introduced selection bias, particularly as some students may have been familiar with the researchers. However, the involvement of a gatekeeper helped to mitigate this risk. Additionally, data collection relied on self-report measures, which can be influenced by social desirability or participants' subjective perceptions of competence. While more objective measures of EBP competence might have been preferable, previous research has shown that self-reports correlate well with objective assessments [15]. Therefore, although self-reporting introduces potential bias, it remains a valid and commonly used approach in behavioural and educational research.

4.2. Recommendations and implications

The findings have important implications for nursing education. EBP should be integrated throughout the nursing curriculum, including in theoretical courses and clinical practice, to ensure students can apply these principles in real-world settings. Offering dedicated EBP workshops can further enhance student competencies by providing hands-on learning, guidance, and support.

Although the study found that students held positive attitudes toward EBP, their perceived knowledge and skills were comparatively weaker. To bridge this gap, nursing curricula should incorporate skill-based EBP activities such as critical appraisal exercises, evidence-searching tasks, and the application of research findings in clinical scenarios. Workshops with practical training can help students build confidence and competence, preparing them to become EBP leaders and change agents.

Embedding a culture of inquiry, mentorship, collaboration, and transparency is crucial for translating research into practice [23]. Ensuring students have access to key research databases is also essential for developing evidence-searching capabilities. Furthermore, the timing of EBP and research courses should be reconsidered—introducing these concepts early and reinforcing them throughout the program can provide a scaffolded learning experience that builds competence over time.

To address current limitations and improve generalizability, future research should include larger, more diverse samples across multiple institutions. This would increase statistical power and allow for more robust secondary analyses. Additionally, future studies should explore the role of nursing faculty in delivering EBP education. Understanding faculty competencies may help address instructional gaps and guide curriculum improvements. Finally, research should focus on strategies that foster critical thinking and the practical application of EBP in clinical settings.

5. Conclusion

Overall, this study emphasises the importance of enhancing EBP education within nursing programs. This study found that there is a moderate self-perceived competence in EBP among fourth-year nursing students, with particularly strong attitudes but notable gaps in knowledge and skills. These findings underscore the urgent need to strengthen EBP education within nursing programs by providing practical, skill-based learning opportunities. Embedding EBP throughout the curriculum, alongside workshops, simulations, and hands-on training, can help students translate theory into clinical practice and build confidence in evidence-based decision-making. By equipping future nurses with robust EBP skills, nursing education not only enhances individual competence but also advances the profession and ultimately improves patient outcomes.

CRediT authorship contribution statement

M.A. O'Connell: Writing – original draft, Visualization, Validation, Supervision, Project administration, Conceptualization. **M. Altheeb:** Writing – review & editing, Visualization, Software, Resources, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **V. Renjith:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Formal analysis, Data curation. **B. Devadas:** Writing – review & editing, Validation. **M. Pidgeon:** Writing – review & editing, Supervision, Data curation, Conceptualization.

Availability of data

Data will be made available on request. For requesting data, please write to the corresponding author.

Declaration of competing interest

We the authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

We declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere. We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us. We understand that the Corresponding Author is the sole contact for the Editorial process. She is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2026.e44565>.

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