

Literature Review

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Reframing evidence-based practice competence in nursing: insights from a concept analysis using Walker and Avant's method

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Abstract: This study refines the concept of evidence-based practice (EBP) competence in nursing by providing an updated operational definition grounded in contemporary educational and clinical contexts. A comprehensive literature review (2013–2023) was conducted across PubMed, CINAHL, Web of Science, and MEDLINE, supplemented by grey literature and regulatory documents, yielding 39 included publications. Using Walker and Avant's concept analysis method, key defining attributes were identified: a spirit of inquiry; the ability to formulate structured clinical questions; skills in searching for, appraising, and integrating evidence; the capacity to evaluate outcomes; and competence in disseminating findings. Antecedents included research literacy, professional experience, and organisational support, while consequences encompassed improved decision-making, professional development, and enhanced team communication. Model, borderline, and contrary cases were developed to illustrate application across clinical contexts. The refined operational definition conceptualises EBP competence as the attitudes, knowledge, and skills that enable nurses to question practice, acquire and critically appraise evidence, integrate it with clinical expertise and patient preferences, evaluate outcomes, and disseminate learning. This analysis offers a conceptual foundation to inform assessment tool development and support alignment of nursing curricula with core EBP competencies, strengthening conditions that facilitate EBP implementation across healthcare settings.

Keywords: nursing; competence; evidence-based practice; concept analysis; evidence-based nursing

Introduction

Evidence-based practice (EBP) is a cornerstone of nursing research and a multidisciplinary foundation for safe, high-quality, cost-effective care [1–4]. It is central to clinical decision-making [5] and supports consistent care delivery [6]. Global entities, including the World Health Organization, underscore nurses' responsibility in applying evidence to enhance care quality, reinforcing the need for EBP-specific competencies [1, 7–11].

Evidence-based practice has increasingly shaped contemporary healthcare by promoting more effective clinical reasoning, strengthening the reliability of interventions, and supporting systems of care that prioritise safety and quality [12]. Its importance is further reinforced by the International Council of Nurses, which identifies EBP as essential to achieving and sustaining excellence in nursing care [13]. By integrating evidence, expertise, and patient values, EBP improves decision-making [14].

Nevertheless, its implementation remains limited among nurses [4, 15–17], with 30–40 % of patients not receiving evidence-based care [18]. Barriers include insufficient knowledge and lack of formal training [19–21],

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lower level of education [22–24], negative attitudes towards EPB [25], poor differentiation in roles [12, 26–29], limited search and appraisal skills [30, 31], limited access to literature databases [21, 29], restricted opportunities to engage in research [23, 32], challenges with statistical analysis and interpretation [20, 33], weaker informatics competency [34], excessive workload [31, 35, 36], inadequate staffing [25, 36], and weak organizational support [12, 25, 36–41].

Measuring EBP competence is complex and hindered by imprecise criteria and inconsistent tools [35, 42–44]. The First Sicily Declaration established minimum standards for EBP understanding, urging valid competence assessments [9, 45, 46]. Robust tools are needed to evaluate competence and training outcomes [42, 47].

A more precise definition of EBP competence is vital to align with recent developments and clarify its essential attributes [26, 43]. Laibhen-Parkes' 2014 analysis [48] was foundational, yet its definition, framing EBP competence as the ability to formulate questions and apply knowledge in care contexts, has been criticized for its vagueness [43, 48]. Its limited specificity may stem from the evidence available at the time [43, 48].

This study revisits the concept of EBP competence in nursing, aiming to refine its operational definition by incorporating new evidence [35, 43, 44, 49] and responding to previous critiques [43], enhancing its clarity and applicability in nursing practice.

Materials and methods

The concept analysis method used (main study) was supported by a systematic and thorough literature review (supporting study). This section explains the fundamental aspects of the concept analysis methodology, namely its steps, including the relevance of concept analysis to the discipline and to research. Furthermore, the procedures adopted to ensure the literature review's rigour, clarity, and systematic nature are also detailed in this section.

Concept analysis method

Concepts constitute the foundational elements of theory, requiring clear referents, explicit definitions (structure), and specification of their theoretical uses (function). They represent distinct attributes that set them apart from other concepts, allowing the identification of which phenomena they encompass [50]. As structural components of theoretical development, their clarification and definition guide the discipline and establish links between theory, research, and practice [51].

This is particularly salient in the dynamic process of language construction, whereby language absorbs scientific concepts and scientific concepts, in turn, absorb language, requiring contextual analysis of meaning [52]. Concepts may be ordinary or scientific: ordinary concepts emerge from everyday human interactions and are reflected in common language, whereas scientific concepts are more strictly defined, abstract, and organised into precise units of meaning that together produce a theoretical representation of experienced reality [53]. Concept analysis therefore entails formulating and clarifying mental constructs, systematising and evaluating relevant information, and refining a unit that advances theory and informs professional practice [51].

The concept analysis described here was conducted following the eight-step methodology proposed by Walker and Avant [50]. This method was selected because it is one of the most comprehensible approaches to concept analysis and is especially beneficial for researchers new to this methodology. As outlined, the method progresses through eight steps [50]: (1) Selecting a concept; (2) Determining the aims or purposes of the analysis; (3) Identifying all uses of the concept; (4) Determining the defining attributes of the concept; (5) Constructing a model case; (6) Constructing borderline, related, contrary, invented, and illegitimate cases; (7) Identifying antecedents and consequences; and (8) Defining empirical references.

Concept selection

Nurses' clinical practice requires integrating the best scientific evidence in providing care, combined with clinical expertise and the preferences and values of the person, family, group and community being cared for [54]. So, due to the still evident difficulty in objectifying and evaluating the competence of nurses in EBP grounded on effective performance, resulting from the need to clarify the attributes that define the concept, but also due to the limitations pointed out in the previous attempt to define the concept of competence in EBP in nursing, this concept was chosen for analysis [42–44].

Literature review

The literature review methodological procedures below support the concept analysis of competence in EBP in nursing. In this regard, it did not follow any specific methodological framework. Nevertheless, the adopted procedures were geared towards confirming the systematic and meticulous nature of the literature review and its rigour and reliability, supporting the results of the main study.

Inclusion and exclusion criteria

The review included only studies involving nurses, nurse specialists, midwives, and advanced practice nurses, excluding those with nursing assistants or auxiliaries and those centred on nursing teachers or students. Its purpose was to identify attributes of EBP competence: attitudes, knowledge, and skills required for effective EBP implementation. Here, attitudes reflect beliefs and values influencing performance; knowledge refers to facts and concepts determining familiarity with a field; and skills relate to the ability to execute specific tasks [55, 56].

The review incorporated quantitative, qualitative, and mixed-methods studies, as well as literature reviews, opinion pieces, editorials, and letters addressing aspects of EBP competence. It also included research on developing and validating instruments for assessing EBP competence, along with models and frameworks supporting its implementation. Additionally, regulations, norms, and legal documents referring to EBP competence at national or international levels were considered when issued by recognised regulatory bodies, professional associations, scientific societies, or comparable organisations.

No language restrictions were applied during the selection process. All documents whose full text was available in a language other than English were initially evaluated based on their English titles and abstracts. The methodological plan anticipated that, should any such document proceed to full-text screening, an initial software-assisted translation would be undertaken, followed, if the study demonstrated potential relevance for inclusion, by a professional translation to ensure accuracy and conceptual fidelity. However, this step proved unnecessary, as no non-English documents identified during title and abstract screening met the criteria to advance to full-text assessment.

Search strategy

The concept of competence in EBP, with emphasis on steps 4–8 of the concept analysis method [50], was examined through a comprehensive literature review based on a three-step search strategy. The aim was to identify documents published between January 2013 and January 2023 within the disciplinary and professional nursing field, given that Laibhen-Parkes' supporting review [48] covered literature up to 2013. Priority was given to sources relevant for determining defining attributes, antecedents, consequents, and empirical referents.

An initial exploration in Google Scholar[®] allowed the identification of potentially relevant documents. Titles, abstracts, descriptors, and keywords were analysed, generating a set of indexed and natural-language terms. These were combined with Boolean operators to build an initial search expression, subsequently tested in PubMed to estimate the volume of publications available for the review.

A second step (February 2023) involved extensive searches in PubMed, Web of Science (Clarivate), CINAHL (EBSCO), and MEDLINE (EBSCO). Other documents were also sought via EThOS and OTAD, and an online search was conducted to locate technical, regulatory, and legal documents, such as professional nursing competency profiles, issued by recognised professional associations or scientific bodies.

The third step consisted of manually screening reference lists of all included documents to identify additional relevant titles not retrieved earlier. Inclusion and exclusion criteria were then applied.

To support step 3 of the concept analysis, identifying the uses of the concept, specific searches were intentionally conducted beyond the primary timeframe and outside the disciplinary boundaries of nursing, as a methodological requirement due to two fundamental reasons. First, the two foundational concepts underpinning the analysis, competence and EBP, predate 2013 and therefore necessitated earlier sources. Second, identifying uses of a concept inherently requires recognising its presence across multiple disciplines and fields of practice. Expanding the searches without temporal or disciplinary restrictions on this specific matter ensured a comprehensive, context-sensitive understanding of how the concept is employed in diverse domains, thereby strengthening the robustness and theoretical applicability of the analysis.

Data analysis, selection, synthesis and reporting

The records were managed in EndNote® v.20.4 (Clarivate) to organise citations and remove duplicates. Document screening, sorting, and selection proceeded in two phases using the Rayyan® platform (Qatar Computing Research Institute, Doha, Qatar). First, titles and abstracts were assessed against the predefined inclusion and exclusion criteria. Subsequently, all eligible studies were read in full and re-evaluated using the same criteria. Any disagreements among the authors were resolved through discussion, guided by the need to retain evidence capable of clarifying or extending the concept's structure and function, thereby reinforcing the proposed operational definition with empirical support.

Data extraction was conducted using a bespoke Microsoft Excel® tool designed to organise information in alignment with the steps of the concept analysis method. The results were likewise reported following the corresponding stages of concept analysis [50].

Results

Following Walker and Avant's framework [50], this section presents the concept's definitions, uses, defining attributes, and illustrative cases, as well as the antecedents, consequences, and empirical referents identified through the literature review, which incorporated a total of 39 documents (Supplementary Table 2). To ensure conceptual precision, the concepts of "competence" and "EBP" were analysed separately prior to synthesising their relationship within the overarching concept of EBP competence.

Definitions and uses of the concept of competence

Competence generally refers to the capacity to perform a task or role [57–59]. In various disciplines, it reflects specific abilities: cellular uptake in genetics, behavioural performance in psychology and sociology, strategic effectiveness in management, and legal expertise in law [60–72].

In professional contexts, competence entails integrating knowledge, skills, attitudes, values, and experience in response to role demands [56, 73]. It evolves with practice complexity and cultural shifts [74]. In nursing, its assessment is challenging [75–79], often informed by Benner's framework of progression from novice to expert [80–82]. Competence is a hallmark of professionalism, linking experience to planned care [80, 81, 83].

Competence integrates cognitive, technical, and ethical dimensions in nursing regulation to ensure safe, effective, and accountable care delivery [84–90].

Definitions and uses of the concept of EBP

Originating in the 1970s with Cochrane and later advanced by Sackett's group [33, 91–93], evidence-based medicine (EBM) was initially defined as integrating best evidence with clinical expertise in patient care. EBM follows five key steps [14]: formulating questions, acquiring and appraising evidence, applying it, and evaluating outcomes.

EBP entered nursing in the 1990s, evolving into a comprehensive model for research-informed practice [94]. It blends evidence, clinician insight, patient preferences, and clinical data to guide decisions [54]. The updated seven-step EBP model includes cultivating inquiry, using PICO(T), searching and appraising evidence, applying it with clinical knowledge, evaluating outcomes, and disseminating findings [95].

EBP promotes evidence-based decision-making, extending to conservation, psychology, and management [14, 37, 96–102].

EBP competence

EBP competence in nursing integrates knowledge, skills, attitudes, judgement, and values to support evidence-based care [30, 103]. Despite identifying core competencies [35, 44], challenges remain in defining and measuring them consistently [104].

Competence development requires combining specific EBP knowledge with values, attitudes, and decision-making skills. Nurses must integrate patient and family preferences with clinical expertise [35].

Melnik et al. [35] defined 24 EBP competencies, 13 for general nurses and 11 for advanced practice roles. Albarqouni et al. [44] proposed 68 competencies across health professions. Both frameworks align competencies with EBP steps, reinforcing their theoretical coherence and practical relevance.

Instruments for measuring EBP competence

There are various instruments designed to study EBP competence in nursing: (1) Evidence-Based Practice Knowledge Assessment Questionnaire [105]; (2) Evidence-Based Practice Competency Scale [106]; (3) Evidence-based Nursing Competency Rating Scale [30]; (4) Evidence-based Practice Readiness Scale [107]; (5) Quick-EBP-VIK [108, 109]; (6) Evidence-Based Practice Competency Questionnaire, Professional Version (EBP-COQ-Prof) [110, 111]; (7) Perceptions of Nurses of Evidence-Based Practice Questionnaire [112]; (8) Evidence-Based Practice Questionnaire [113]; (9) Evidence-Based Practice Profile Questionnaire [28]; (10) Evidence-Based Nursing Competency Rating Scale [30]; (11) Nursing EBP Survey [25]; (12) Evidence-Based Nursing Practice Self-Efficacy [114]; (13) among others, some of which are not formally named [115–122]. However, reliance on self-reporting limits accuracy, particularly for complex EBP tasks [42, 46, 123].

The Fresno [124] and Berlin [125] instruments are recognized for their psychometric strength in objectively measuring EBP competence. Initially developed for physicians, Fresno assesses competence in questioning, accessing, and evaluating evidence but requires significant time and specialized knowledge for grading. The Berlin instrument, designed for physicians, evaluates competence through multiple-choice questions focused on evidence appraisal [96, 123, 126–128]. These two tools remain the only objective instruments that effectively measure EBP competence in knowledge and skills, setting a benchmark for assessing EBP within nursing [47, 96, 123].

Defining attributes of EBP competence

Competence is contextual, representing the ability to perform a task by applying knowledge and skills relevant to the situation [22, 74, 129, 130]. In EBP, knowledge involves understanding its principles, skills encompass its processes, and attitudes reflect the value and significance of EBP in nursing care [41, 110, 131].

This concept analysis uses EBP implementation models [14, 54] as reference frameworks for EBP competence attributes [43, 96, 124, 125]. These attributes align with each EBP implementation step, enhancing nurses' capacity to apply EBP knowledge and skills effectively within care contexts [14, 23, 54]. The defining attributes of EBP competence (Table 1) were identified and structured according to the 7-step EBP implementation process [35, 37, 43, 44, 123, 132–137].

Although the defining attributes are organised according to the seven steps of the EBP implementation process, they do not merely reproduce the procedural sequence. Rather, the analysis differentiates between implementing EBP and being competent to implement EBP, emphasising the underlying dispositions, cognitive capacities, and integrative skills that enable each step to be enacted in practice. Whereas the implementation model outlines what nurses must do, the defining attributes articulated here specify what nurses must know, value, and be able to demonstrate to perform those actions consistently, autonomously, and with sound clinical judgement. In this sense, the attributes reflect deeper cognitive, affective, and behavioural requisites, such as

Table 1: EBP competence defining attributes.

Step 0

Cultivate a spirit of enquiry

Demonstrates the capacity and readiness for self-reflection and critical evaluation of the timeliness, reasonableness, relevance, and appropriateness of clinical practices, actively challenging them to enhance the quality of care.

Step 1

Formulate clinical questions in a PICO(T) format

Recognises emerging issues within professional practice and adeptly organises them within a PICO(T) framework (patient/Population; intervention/Area of interest; comparison intervention or group; outcome; time). Acknowledges the pivotal role of research in enhancing healthcare.

Step 2

Search for the best evidence

Demonstrates analytical skills in accessing health information and scientific evidence by identifying scientific databases pertinent to nursing, navigating them proficiently, and showcasing search skills, encompassing search strategies. Correlates various types of studies and the intricacies of their methodological designs with the requisite response to the PICO(T) question, thereby determining the types of information sources to be considered.

Step 3

Critically appraise the evidence

Demonstrates analytical prowess in assessing health information and scientific evidence, including critical analysis regarding its relevance to the situation/context, acknowledging that the steps and actions involved are integral parts of the knowledge transfer process. In doing so, individuals should be able to identify research terminology, understand the methodologies employed in qualitative and quantitative research, and utilise tools for critically evaluating evidence (including assessing the methodological quality of studies) to determine the strength of the extracted evidence and its applicability to the situation.

Step 4

Integrate the evidence

Demonstrates the capacity to incorporate evidence into the design and provision of nursing care, decision-making processes, and the enhancement of clinical practice, acknowledging that experience and training significantly influence a nurse's clinical expertise level, which is essential to EBP. Engages in research initiatives and projects to consistently enhance the quality of evidence-based nursing care. Encourages the modification of established professional practices by utilising guidelines, protocols, or evidence summaries when relevant to the situation/context while integrating the preferences of the individual receiving care through prior discussion before implementation.

Step 5

Evaluate the outcome of decisions made or changes implemented based on the evidence

Monitors and evaluates the outcomes of interventions or modifications to professional practices, actively promoting and participating in case discussion meetings. Encourages peer discussions regarding the implications of altering professional practices and effectively integrating scientific evidence into care delivery. Additionally, it engages in the development or review of procedures, policies, or guidelines.

Step 6

Disseminate the results of EBP

It facilitates the dissemination of the results achieved through integrating scientific evidence, along with the changes implemented in professional practices, among peers, professional groups, and policymakers. To accomplish this, it actively promotes and engages in scientific meetings, benchmarking meetings, conferences, and congresses, showcasing proficiency in different science communication approaches.

analytical reasoning, methodological awareness, evaluative judgement, interpretive flexibility, and the capacity to integrate patient preferences and contextual factors, that extend beyond the operational tasks described in existing models.

This conceptual framing advances the literature by distinguishing the surface-level actions of EBP from the internalised and transferable competencies that support them. It highlights that competence is not equivalent to the procedural enactment of steps but is instead rooted in the ability to adapt, justify, evaluate, and communicate evidence-informed decisions in diverse and evolving clinical environments. Consequently, while the seven-step structure offers an organising framework, the attributes identified through concept analysis represent a more comprehensive and granular interpretation of EBP competence, articulating the foundational elements that underpin effective engagement with the EBP process and contribute to the theoretical refinement of the concept.

Model case of EBP competence

A model case illustrates the practical application of EBP competence and exemplifies its defining attributes [50]. In this hypothetical scenario, Anthony, a nurse with four years' experience in a general surgery inpatient unit, routinely reflects on practice and questions whether current protocols align with the best evidence. One morning, he cares for a 73-year-old postoperative patient who expresses concern about the scheduled replacement of his peripheral catheter, still functional and asymptomatic, citing anxiety about repeated needle insertions.

The protocol mandates catheter replacement every 72 h, irrespective of phlebitis. Anthony reassures the patient but is prompted to investigate the rationale. Using the PICO framework, he searched PubMed, MEDLINE and CINAHL for randomized controlled trials over the past five years. He finds seven studies and an older systematic review with meta-analysis suggesting that routine replacement does not reduce bloodstream infections. After appraising the evidence, he proposes switching to clinically indicated replacement. The Infection Control Committee supports his proposal and collaborates with Anthony to monitor infection outcomes.

Following implementing and validating the new practice, Anthony shares his findings at the hospital's annual benchmarking event, promoting evidence-based improvements across nursing teams.

This case reflects all core attributes of EBP competence: critical reflection, formulation of structured questions, systematic literature search, rigorous appraisal, practice change grounded in evidence, outcome monitoring, and dissemination of results.

Other cases of EBP competence

In this concept analysis, the selection of borderline, related, and contrary cases followed the rationale proposed by Walker and Avant [50], privileging examples that reflect the clinical and practice-based nature of EBP competence. Invented cases were not included, as their primary purpose is to remove a concept from its usual context, often through hypothetical or abstract scenarios, to expose attributes that may otherwise remain obscured. Given that EBP competence is a context-dependent and professionally situated concept, its critical attributes are most effectively illuminated through realistic clinical situations that mirror the complexity of nursing practice. The cases presented in Table 2 were therefore intentionally grounded in authentic professional experiences, enabling a clearer demonstration of how the concept manifests, is partially enacted, or is absent in practice. By capturing these distinctions within real-world scenarios, the selected cases offer a more meaningful contribution to concept clarity than an invented case would provide, strengthening the analytical interpretation while maintaining clinical relevance.

Identifying the antecedents and consequences of EBP competence

Antecedents are necessary for EBP competence to emerge, while consequences reflect its outcomes [50]. Foundational antecedents include access to scientific evidence [48, 50, 91] and clinically relevant problems suitable for evidence-based solutions [32, 48]. Education in EBP, particularly at undergraduate and postgraduate levels, is key

Table 2: Other cases of EBP competence in nursing.**Borderline case**

Laura has been working as a nurse for two years in the paediatric diabetology clinic of a health centre, where she attends to a 15-year-old male adolescent experiencing first-onset type 1 diabetes. During the consultation, Laura observes, as is typical for most teenagers of this age, that the patient possesses a natural affinity for and proficiency with information technology, mainly because he is permanently focused on his mobile phone and says that he can organise his entire life from his mobile phone. He asks her if any online tools can assist him in managing his daily life as an insulin-treated person. Laura acknowledges the possibilities available but feels uncertain about their appropriateness for her patient and situation. Consequently, she refers him to a follow-up consultation for advice. Turning to PubMed, Laura searches using indexed descriptors and natural language terms focusing on diabetic adolescents (type 1) and the impact of utilising new technologies, particularly Apps, on managing therapeutic regimes. Her search yields approximately five hundred publications over the last five years. With this substantial volume of results, Laura automatically sorts the articles by relevance and selects the first one on the list as it addresses the target population and situation. The chosen article presents a case study documenting the experience of a type 1 diabetic adolescent over six months. The adolescent managed his therapeutic regime, including diet and medication, through an online platform called TEENDiabetesCOPE. The study describes the adolescent's experience with this approach and records the number of hyperglycaemia episodes encountered. Satisfied with the findings, Laura recommends that the teenager subscribe to and adopt this platform as a supplement to adjusting to life with type 1 diabetes mellitus, enabling monitoring of his glycaemic profile through online access during subsequent consultations.

Rationale

In the borderline case, the nurse inadequately acquires and evaluates evidence, failing to apply rigorous standards in identifying and appraising evidence relevant to the case. The nurse's choice of an app, unverified against other options, may not suit the adolescent in question, reflecting an incomplete EBP approach.

Related case

Jane, a nurse who recently completed a two-month professional integration process in a general surgery ward after previously working in the neurology department of the same hospital for five years, finds herself in a challenging situation during the middle of the afternoon shift. She is called to the post-anaesthetic care unit to oversee the transfer and admission of a patient who underwent emergency duodenal ulcer repair. During the initial physical examination upon arrival at the ward, Jane notices a dressing in the epigastric region covering the median suture, alongside a bulky dressing lateral to the suture covering a silicone drain. She observes a significant amount of serohaematic fluid draining freely between the adhesive of the second dressing and the external abdominal wall. Uncertain about the appropriate course of action, Julia deliberated between redoing the dressing and applying new compresses or installing a sterile bag and plate system for drainage to monitor lost volumes and to ensure greater patient comfort. Seeking guidance, Julia approaches the nurse in charge of the shift, who possesses more experience in the inpatient unit. After describing the case and presenting both scenarios, the nurse advises Jane to redo the dressing, citing the service's usual approach to similar cases. Despite her reservations, Jane complies with the directive to redo the dressing. She questions the comfort of that option for the patient. She also expresses concerns about its safety. Julia believes that the current practice poses risks due to the potential entry point for microorganisms when the dressing saturates and leaks. Additionally, she highlights the challenge of maintaining the rigour of the water balance established for the first 48 postoperative hours, given the significant volume losses.

Rationale

In the related case, the nurse effectively formulates a clinical question using a PICO format and questions the validity of her practice post-intervention. However, she lacks critical competence in sourcing and evaluating evidence, relying instead on a colleague's opinion rooted in tradition rather than empirical evidence. This reliance highlights her misunderstanding of credible evidence sources in EBP.

Contrary case

A young, primiparous mother visits her local health centre seeking assistance. She has been breastfeeding for approximately two weeks and has begun experiencing sore nipples for the past five days. At the time of the consultation, she presents with breast cracks and bleeding. Nurse Anette attends to the woman, inquiring about the cause of her discomfort. After assessing the client's breasts, Anette informs her that cracks are quite a regular occurrence during breastfeeding and states there is not much that can be done about it.

Rationale

The contrary case illustrates the antithesis of EBP competence. Here, the nurse bypasses an opportunity to formulate a clinical question and engage with scientific evidence, thus disregarding the foundational steps and processes essential to EBP implementation.

to competence development, with higher academic attainment linked to stronger EBP knowledge and attitudes [19, 20, 27, 28, 30, 49, 138].

Professional experience also shapes competence. Advanced nurses often show greater overall proficiency, while newer nurses may better understand EBP processes; more experienced professionals tend to exhibit more favourable attitudes [27, 30]. As EBP becomes more embedded in curricula, recent graduates may benefit from greater exposure [30].

Participation in research enhances core EBP abilities, such as interpreting scientific terminology and analyzing data [27, 32, 38, 39]. A supportive organizational culture promotes competence by providing resources, leadership backing, and structured environments [19, 25, 35–39, 139]. Technically advanced hospitals typically offer better training and access to evidence [30, 36]. Mentorship also plays a key role in bridging knowledge gaps and supporting application in practice [25, 26, 37, 39, 140].

EBP competence is associated with improved care quality, patient safety, outcomes, and satisfaction [38, 39, 132]. It reduces ineffective practices and promotes sustainable, resource-efficient care [19, 49, 119, 141]. It also fosters nurses' professional growth, critical thinking, and involvement in decision-making and patient care [19, 94]. Finally, EBP competence reinforces the integration of evidence into practice and encourages peer knowledge-sharing, further embedding EBP in clinical settings [38].

Defining the empirical referents of EBP competence

According to Walker and Avant's method [50], the identification of empirical referents constitutes the final step of concept analysis and aims to determine how the defining attributes of a concept can be observed in real-world practice. Empirical referents do not replicate the concept itself nor merely restate its procedural components; rather, they consist of categories of observable phenomena that demonstrate the presence of the defining attributes. Their identification is particularly valuable for developing assessment tools, as they provide conceptually grounded behavioural indicators that support both content and construct validity [50, 142]. They also assist clinicians and educators in recognising when EBP competence is being enacted during practice.

In the present analysis, empirical referents were derived not from the sequence of EBP implementation steps per se, but from the observable behaviours, decisions, and performances that reflect the underlying attributes required to enact those steps competently. While the seven-step EBP process remains a useful organisational structure, empirical referents must instead indicate how competence becomes recognisable within that structure. Thus, the empirical referents for EBP competence include behaviours such as:

- Demonstrating inquisitive reasoning and reflective questioning, which signals the attribute of cultivating a spirit of inquiry;
- Formulating well-structured, clinically meaningful questions using frameworks such as PICO(T), evidencing conceptual clarity and methodological awareness;
- Conducting systematic and justified searches for evidence, observable through accurate database selection, coherent use of search strategies, and alignment between the search process and the clinical question;
- Executing rigorous and methodologically informed critical appraisal, identifiable through appropriate use of appraisal tools, recognition of study limitations, methodological fit, and applicability to the clinical context;
- Integrating evidence into clinical reasoning and decision-making, demonstrated by articulating the rationale for practice changes, balancing expertise, patient preferences, and contextual factors;
- Monitoring outcomes and interpreting practice-based data, indicating evaluative competence and the capacity to assess the impact of evidence-informed decisions;
- Communicating and disseminating findings, observable through presentations, written reports, participation in case discussions, and contributions to professional learning environments.

These empirical referents extend beyond the procedural tasks described in the EBP process and instead reflect the competency-based manifestations of the concept [24]. They represent measurable, observable behaviours that correspond to the underlying knowledge, skills, and attitudes identified as defining attributes. In this way, they allow for the recognition of EBP competence across diverse practice settings and provide a foundation for instrument development, performance evaluation, and educational assessment.

Figure 1 synthesises these empirical referents by mapping them onto the conceptual structure of antecedents, defining attributes, implementation processes, and consequents. Although the figure visually aligns the referents with the seven EBP steps for conceptual coherence, the empirical referents themselves consist of the behavioural expressions of competence associated with each attribute, rather than the procedural steps alone. This

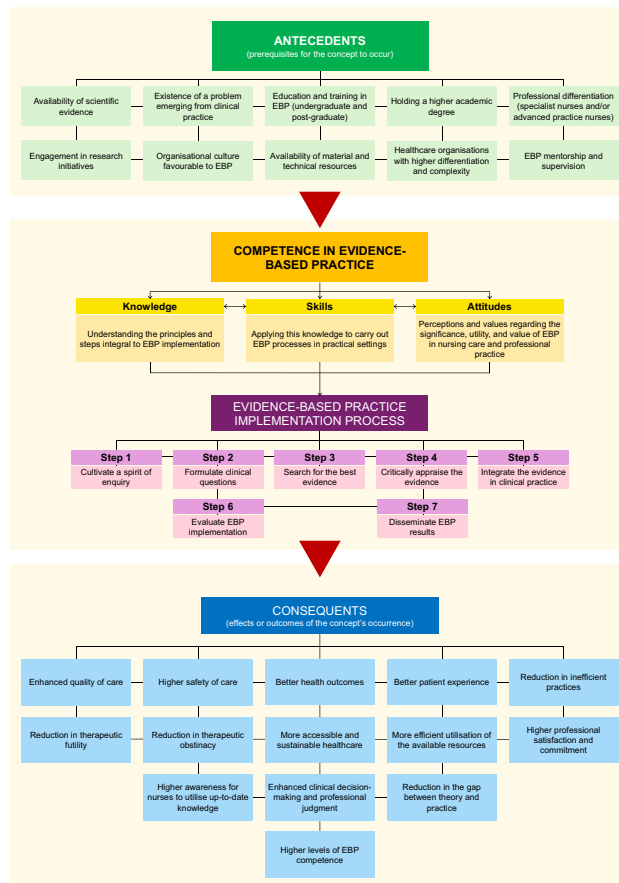


Figure 1: Conceptual framework for EBP competence in nursing.

clarification strengthens the conceptual distinction between EBP as a process and EBP competence as an observable set of capabilities, ensuring fidelity to Walker and Avant's methodological principles [50] and supporting future empirical and instrument-development initiatives.

Discussion

This concept analysis reinforces the evolving nature of conceptual clarity, as described by Walker and Avant [50], and builds upon the last formal analysis of EBP competence by Laibhen-Parkes [48]. Since then, a substantial body of new research has emerged, prompting critiques of her operational definition for its lack of specificity, particularly concerning the attitudes, knowledge, and skills required at each EBP stage [43].

Laibhen-Parkes' work [48], grounded in the five-step EBP model by Strauss et al. [14], was a valuable initial contribution but reflected the limited scope of evidence available up to 2013. As a result, her analysis did not fully capture the multifaceted nature of EBP competence in nursing, underscoring the need for a more refined and comprehensive framework.

The present study adopts the seven-step model developed by Melnyk et al. [95], enabling a broader and more structured exploration of EBP competence. This framework allowed for a deeper examination of the antecedents and consequences of competence and a more precise articulation of its defining attributes. The resulting conceptual model (Figure 1) illustrates the complexity and integrative nature of EBP competence in nursing practice.

This work does not dispute Laibhen-Parkes' definition but seeks to extend it through a more robust and current understanding. Grounded in updated literature and rigorous concept analysis, we propose the following operational definition:

EBP competence comprises the attitudes, knowledge, and skills required to effectively perform each stage of the EBP process. It involves critically questioning professional practice, identifying areas for improvement, and formulating structured clinical questions using the PICO(T) format. Competence entails retrieving, evaluating, and applying trustworthy scientific evidence, ensuring that clinical decisions are informed, relevant, and contextually appropriate. Integrating evidence into care requires consideration of the nurse's expertise, the clinical environment, and the values and preferences of individuals, families, or communities. Outcomes are systematically monitored and evaluated, including through reflective appraisal of one's own competence. EBP-competent nurses disseminate findings through peer dialogue, publications, and professional forums, contributing to collective learning and practice improvement.

Beyond clarifying the boundaries and observable manifestations of the concept, EBP competence holds broader significance for nursing as a profession [41]. It shapes the quality of clinical decision-making by enabling nurses to justify their actions using transparent, evidence-informed reasoning. It also contributes to professional development by fostering critical inquiry, methodological literacy, and reflective practice, all of which are essential for autonomous and accountable nursing care. In educational contexts, understanding EBP competence supports the design of curricula that cultivate not only technical skills but also the cognitive and dispositional capacities required for lifelong engagement with evidence. It is our understanding that articulating the concept in this way enhances its relevance across practice, education, and professional regulation, reinforcing its central role in preparing nurses for contemporary, evolving healthcare environments.

Limitations

As with any study, this analysis has limitations. Although it followed established procedures [50], the findings reflect the current state of the literature and may evolve as new research emerges. The review period (2013–2023) was defined in continuity with the previous concept analysis by Laibhen-Parkes [48], aiming not for a complete reassessment but for the refinement and expansion of the concept through updated evidence. However, this defined timeframe, together with the inherent constraints of the search strategy, may have influenced the scope of the literature identified. Despite not applying formal language restrictions, reliance on indexed titles and abstracts in English may have limited access to relevant full-text publications originally written in other languages.

Walker and Avant's method [50] ensures methodological consistency but carries inherent subjectivity shaped by the researchers' interpretations, an acknowledged and unavoidable characteristic of concept analysis. Furthermore, the decision to exclude invented and illegitimate cases, while justified by the clinical nature of the concept, and the reliance on cases drawn from the authors' professional experience may limit the generalisability of some examples across diverse practice contexts. These choices, though methodologically coherent, should be considered when interpreting the illustrative power of the cases.

Finally, the defining attributes and empirical referents proposed remain theoretical. Their validity and applicability require empirical testing, including examination through observational studies and psychometric evaluation of instruments designed to operationalise EBP competence. Such work is essential to confirm, refine, or extend the conceptual boundaries established in this analysis and to support the integration of EBP competence into educational, organisational, and clinical assessment frameworks.

Implications for nursing practice

This concept analysis holds implications across nursing research, education, and clinical practice.

Research: The proposed definition provides a clearer theoretical foundation for developing precise and performance-based instruments to assess EBP competence. This may strengthen methodological consistency across international studies, improving reliability and enabling meaningful comparison of findings across different healthcare systems and cultural contexts. The articulation of empirical referents also supports cross-

country adaptation and validation of assessment tools, an essential step for advancing global EBP competence research.

Education: Within pre-registration and postgraduate programmes, the findings encourage alignment between curricula and the knowledge, skills, and attitudes required for EBP. Because nursing education models vary substantially across countries, in structure, clinical exposure, and regulatory frameworks, the proposed definition may assist educational institutions internationally in designing competence-oriented learning outcomes and assessment strategies. Moreover, it may help harmonise expectations across jurisdictions, supporting international mobility and strengthening global nursing workforce development.

Clinical practice: A clearer understanding of EBP competence can help nurses apply evidence more effectively and consistently, irrespective of the organisational model or resource constraints characteristic of different health systems. By articulating observable indicators of competence, the findings support alignment of expectations between individual practitioners, multidisciplinary teams, and healthcare organisations operating in diverse cultural and structural contexts. In settings where EBP infrastructure is less developed, the definition may serve as a guiding framework for progressive implementation and capacity-building initiatives.

Across all domains, the international applicability of the concept depends on recognising contextual variability, such as differences in professional autonomy, regulatory requirements, resource availability, and patient engagement norms. In our understanding, this analysis offers a flexible but conceptually robust foundation that can be adapted to these differing conditions, promoting global uptake while respecting local realities.

Despite these contributions, a key challenge remains: determining where responsibility lies for linking the definition to regulatory standards. Whether this responsibility should fall to individual nurses, educational institutions, employers, professional bodies, or national and international regulators is yet to be clarified. Addressing this question requires coordinated, cross-sector collaboration to ensure that EBP competence is formally recognised, contextually adapted, and sustainably embedded in nursing practice across diverse global settings.

Conclusions

This concept analysis of EBP competence provides an updated operational definition that clarifies the concept and strengthens its theoretical and practical foundations across nursing education, research, and clinical practice. Informed by Melnyk et al.'s implementation framework [95] and grounded in Walker and Avant's method, the analysis refines the defining attributes of EBP competence and identifies empirical referents that support its recognition and assessment in real-world practice. Although the study does not aim to advance broader nursing theory, it offers a conceptually robust resource for future research and instrument development by specifying the essential components of EBP competence and their observable manifestations.

Importantly, the refined definition and associated attributes are sufficiently flexible to be applicable across diverse healthcare systems, cultural contexts, and educational frameworks. By articulating a transferable and internationally relevant conceptualisation of EBP competence, this analysis contributes to global efforts to strengthen evidence-based nursing education and to support the development of practitioners equipped to engage with evidence in complex and evolving care environments.

Research ethics: Waived, as this is a theoretical study.

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