

Research Article

Bridging Science and Practice: The Role of Evidence-Based Medicine in Clinical Decision Making

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Abstract: *Background:* Clinical decision-making is a cornerstone of effective patient care, shaped by evolving research, technological advancements, and practitioner expertise. Evidence-Based Practice (EBP) enhances this process by incorporating the recent evidence with clinical judgment and patient preferences. Despite its proven benefits, EBP adoption remains inconsistent across healthcare settings due to structural, educational, and financial barriers. *Objective:* This review explores the crucial role of Evidence-Based Medicine (EBM) in strengthening clinical decision-making through the structured five-step model. It examines the primary factors influencing the adoption of EBP among healthcare professionals and evaluates current educational strategies that support its integration into clinical settings. *Methods:* This is a narrative review. Relevant literature was collected using a triangulation method across multiple electronic databases, including Google Scholar, JSTOR, ScienceDirect, and PubMed. Key findings were synthesized to identify patterns, gaps, and emerging trends. *Results:* The analysis identified the five-step EBM model such as formulating clinical questions, locating reliable results, critical analysis, application in practice, and evaluation of outcomes as a foundational framework for integrating research into healthcare delivery. Factors influencing the utilisation of EBP include clinician competency, institutional support, access to technology, and time constraints. The review also highlighted gaps in EBP education across healthcare disciplines, underscoring the need for targeted training and capacity-building initiatives. Rapid developments in decision-making tools and practices suggest that the current synthesis reflects a temporal snapshot rather than a comprehensive account. *Conclusions:* Integrating EBP into clinical decision-making requires a multifaceted approach involving workforce development, strategic financial planning, and institutional commitment. The inclusion of experienced mentors and flexible learning formats can enhance practitioner engagement. Addressing these barriers can enhance the consistency and impact of evidence-informed care. Future research should focus on interdisciplinary comparisons, digital decision-support tools, and longitudinal trends in clinical judgment.

Keywords: Evidence-based practise, Evidence-based medicine, Decision making, Cognition, Physicians, Systematic review health, Patients, Knowledge acquisition.

INTRODUCTION

The global rise in the prevalence and incidence of life-threatening diseases continues to affect millions annually, posing profound challenges to both public health systems and clinical care frameworks. These debilitating conditions have exposed critical limitations in traditional knowledge translation models, underscoring the urgent need for more adaptive, interdisciplinary, and evidence-informed approaches to connect the gap between research, policy, and practice (Chen et al., 2025; Karlsson et al., 2025).

The emergence of novel viral diseases has triggered serious global health emergencies, prompting urgent calls for effective preventive and therapeutic strategies. In response, a wide array of public health measures ranging from lockdowns to the repurposing of pharmacological agents such as antibiotics, antivirals, antimalarials, and convalescent plasma have been rapidly deployed, particularly during the Coronavirus Disease 2019 (COVID-19) pandemic. While these actions reflect the immediacy of the crisis, they also highlight the tension between swift intervention and evidence-based practice.

Amid escalating workloads and pervasive uncertainty, the foundational principles of critical care risk being overshadowed. The absence of robust, high-quality evidence supporting the efficacy of certain interventions should not be misconstrued as clinical inertia. On the contrary, it underscores the need for deliberate, evidence-informed decision-making that prioritizes patient safety. As Ahmad et al. (2021) emphasize, optimizing health outcomes necessitates the embed the optimal evidence into clinical decision-making processes.

Together, EBM and EBP form the foundation of modern healthcare, shaping clinical decisions by merging scientific evidence, professional expertise, and patient-centered values. EBM, as defined by Sackett et al. (1996), emphasizes the use of critically appraised, high-quality research to replace anecdotal or traditional practices. Its core aim is to improve patient outcomes through methodological rigor and ethical discernment. In doing so, EBM fosters transparency, accountability, and safety in clinical care, qualities that are increasingly vital in the face of complex and evolving disease landscapes.

Building upon the principles of EBM, EBP broadens the scope by incorporating patient and caregiver preferences, interdisciplinary collaboration, and contextual factors such as local healthcare environments (Disler et al., 2019; Hoffman et al., 2017). The EBP process involves formulating clinically relevant questions, identifying and appraising high-quality evidence, and synthesizing this knowledge with practitioner experience and patient values to guide care delivery (Disler et al., 2019). Its implementation has consistently been associated with improved patient safety, enhanced quality of care, better health outcomes, and increased professional satisfaction among healthcare providers (Manickam et al., 2021). Together, EBM and EBP serve as essential frameworks for advancing clinical excellence and cultivating a culture of continuous improvement within healthcare systems. Their combined emphasis on evidence, context, and collaboration ensures that care is not only scientifically sound but also responsive to the nuanced needs of patients and healthcare environments.

The demonstrated impact of evidence-based medical care on patient outcomes has led to growing recognition of EBP as a critical component of healthcare delivery. Globally, healthcare authorities and international organizations increasingly advocate for the systematic integration of current research findings into clinical decision-making, policy development, and program implementation. This strategic alignment aims to uplift the quality, safety, and efficiency of medical system (Zewdie et al., 2023).

METHODS

This article was developed using a narrative review approach, structured according to the IMRAD format (Introduction, Methods, Results, and Discussion) as outlined by Ferrari (2015). To ensure comprehensive coverage of relevant literature, the authors employed a triangulation strategy, drawing information from multiple sources (Wilson, 2014). The primary objective was to identify both earlier and more recent publications pertinent to the topic under investigation.

The review process involved four key steps. First, a broad search was conducted to locate relevant studies across several databases, including PubMed, Google Scholar, ScienceDirect, and JSTOR. Additional searches were performed using the Google search engine to capture supplementary materials. Second, keyword identification was undertaken to facilitate both the search process and future discoverability of the article. Keywords such as “evidence AND evidence-based medicine,” “clinical decision making AND evidence-based practice,” and “clinical decision-making strategies AND patient care” were utilized (Demiris et al., 2018). Third, the authors reviewed abstracts and full-text articles to ensure alignment with the study’s focus. Finally, findings were synthesized and organized based on the selected literature, forming the basis of the results and discussion (Ferrari, 2015).

RESULTS

EBP is a dynamic process that involves the critical review, analysis, and translation of current scientific evidence to

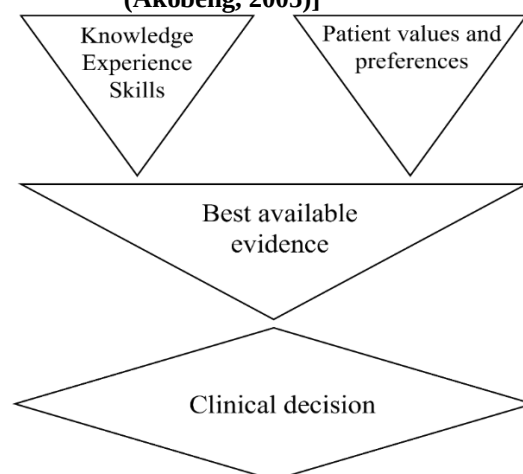
consolidate the most reliable data with clinical interactions and patient preferences in real-world healthcare settings (Dang et al., 2023). At its core, EBP emphasizes the use of up-to-date information to inform clinical decision-making (Barends et al., 2020). This approach not only enhances patient care and treatment outcomes but also contributes to the development of potent therapeutics and cutting-edge healthcare innovations, thereby improving the standard of healthcare services (Atkins et al., 2005).

In the context of health system management, EBP serves as a foundational element for policy formulation and evaluation. It is imperative for health researchers to support policymakers with relevant evidence and recent data to ensure the practical application of health policies and the delivery of high-quality care (Mitchell & Font, 2017). The significance of EBP is multifaceted; from a professional standpoint, it encourages healthcare practitioners to transition from intuition-based and traditional methods to scientifically validated and reliable practices (Ylhä et al., 2017). Furthermore, EBP has been associated with increased professional gratification, improved work competence, and fostering integration of the research, theory, and clinical practice (Nwozichi, 2021). It also plays a vital role in enhancing occupational integrity and promoting lifelong learning among healthcare professionals (Holleman et al., 2006).

Advancing Healthcare Through Evidence-Based Medical Approaches

EBM aims to optimize patient care by integrating the most current and rigorous scientific evidence with individual patient values and preferences. This methodology is further reinforced by clinical expertise in history-taking and physical examination. As depicted in Figure 1, the EBM model synthesizes empirical research, practitioner judgment, and patient-centered factors to support informed and context-sensitive clinical decision-making (Akobeng, 2005).

Figure 1. Flow chart of EBM [Adapted from (Akobeng, 2005)]



The primary rationale for practicing Evidence-Based Medicine (EBM) lies in its potential

- To elevate the quality of patient care by identifying and endorsing effective interventions.
- To systematically eliminating those that are ineffective or potentially harmful (Gray & Pinson, 2003).

EBM fosters critical thinking by requiring rigorous evaluation of clinical interventions, diagnostic accuracy, and the predictive validity of prognostic markers. It encourages clinicians to remain open to adopting scientifically validated approaches and to discontinue practices lacking empirical support. To effectively implement EBM, healthcare professionals must cultivate essential competencies, including the capacity to identify, critically review or analyse the data, and integrate high-quality scientific evidence into clinical practice (Akobeng, 2005).

The Five Step EBM Model

The implementation of EBM follows a structured five-step process (Brownson et al., 2003; Sackett, 1997):

1. Translating information needs into answerable clinical questions
2. Finding the best available data to address these questions
3. Critically evaluating the evidence for validity and clinical relevance
4. Implementing the appraised evidence to clinical practice
5. Assessing performance and outcomes following implementation

Step 1: Formulating answerable clinical questions

The important challenging aspect of implementing EBM is translating a clinical problem into a precise, answerable question (Levi, 2001). When encountering a patient with a specific condition, clinicians often generate multiple inquiries, which may initially be vague, complex, or poorly defined. Effective EBM practice begins with the development of a well-structured clinical question, requiring the ability to translate informational needs into queries that can be addressed through the medical literature. As Carneiro (1998) notes, high-quality clinical questions should be clearly articulated, directly relevant to the clinical issue(s), and capable of being answered through systematic literature searches.

To facilitate this process, Sackett et al. (2000) proposed a structured framework for constructing focused and clinically meaningful questions. According to this model, a well-formulated question typically comprises four key components:

1. the patient population or clinical problem;
2. the intervention, diagnostic test, or exposure under consideration;
3. a comparison intervention, if applicable; and
4. the desired clinical outcomes.

This structure is commonly referred to as the **PICO** (Patient/Problem, Intervention, Comparison, Outcome) or, in some cases, the **PIO** (Patient/Problem, Intervention,

Outcome) format. The **PICO/PIO** framework plays a crucial role in bridging clinical practice with research. Here's how:

- It helps translate real-world clinical problems into structured, researchable questions.
- It guides systematic literature searches, ensuring that the evidence gathered is directly relevant to patient care.
- It supports evidence-informed decision-making, allowing clinicians to apply validated research findings to individual patient scenarios.
- It enhances the design of clinical studies and systematic reviews, aligning research objectives with practical healthcare needs.

Utilizing the PICO/PIO framework enhances the precision and relevance of clinical questions, thereby improving the efficiency and effectiveness of evidence retrieval and its application in practice. Moreover, the ability to formulate well-structured clinical questions is not only fundamental to the practice of EBM but also instrumental in guiding research design and elevating the quality of systematic reviews. Clearly defined questions help establish appropriate inclusion criteria, identify meaningful outcomes, and ensure methodological consistency. This structured approach contributes to the generation of more reliable, valid, and impactful clinical research, ultimately strengthening the bridge between evidence and practice.

Step 2: Finding the relevant or best evidence

Following the formulation of a clinical question, the subsequent step in the EBM process involves identifying relevant evidence to address that question. Although various sources of information are available, traditional references such as textbooks and printed journals may be outdated or lack the necessary organization to support timely clinical decision-making (Rosenberg & Sackett, 1996). Consulting colleagues or self-identified experts is another common approach, though the reliability and consistency of information obtained through such informal channels can vary significantly. To facilitate more efficient and evidence-informed responses, several secondary sources offer synthesized and reliable summaries of clinical evidence. The following resources serve as accessible and reliable platforms for clinicians seeking timely, evidence-based responses to explicit clinical inquiries:

- Archimedes
(<http://adc.bmjournals.com/cgi/collecton/archimedes>)
- Clinical Evidence
(<http://www.clinicalevidence.com/ceweb/conditions/index.jsp>)
- BestBets
(<http://www.bestbets.org/index.html>)

In addition, electronic bibliographic databases such as PubMed, ScienceDirect, and others enable the retrieval of thousands of peer-reviewed articles within a short timeframe, making them indispensable tools in modern clinical research. However, the ability to conduct effective database searches is a critical skill within EBM. Optimal search strategies aim to maximize the retrieval of relevant

literature while minimizing time and effort. Despite the availability of internet access and electronic databases in many healthcare institutions, studies have shown that a significant number of healthcare professionals lack proficiency in search techniques, often resulting in either overly broad or insufficiently narrow results (Jordaan & Jones, 1999; Rosenberg et al., 1998). Therefore, it is essential for clinicians to receive basic skills such as training in literature search via institutional library services or formal educational programs, to enhance their capacity for evidence-based decision-making.

Step 3: Appraising the evidence

Once relevant articles have been chosen, the next critical step in the EBM process is the appraisal of the evidence for its validity, significance, and clinical applicability. Despite the abundance of published research, the quality of evidence varies considerably, and the implementation of unreliable findings may result in patient harm or inefficient use of limited healthcare resources. Evidence should be evaluated across three key dimensions:

- Methodological validity
- Clinical importance
- Relevance to the specific patient population.

Critical appraisal offers a structured yet accessible approach to assessing these dimensions, enabling clinicians to make informed judgments about the utility of research findings. Developing proficiency in critical appraisal involves learning to pose targeted questions regarding the credibility and applicability of evidence to individual patient scenarios. These skills can be cultivated through small-group tutorials, interactive workshops, bedside teaching, and formal lectures (Rosenberg & Donald, 1995). A range of appraisal tools are available currently to support this process. Notably, the Critical Appraisal Skills Programme (CASP), developed in Oxford, UK, provides user-friendly and freely accessible checklists for evaluating different study designs, including randomized controlled studies, systematic reviews or meta-analyses, pilot studies, longitudinal studies and case-control studies (Akobeng, 2005). These tools facilitate consistent and rigorous evaluation of research, thereby strengthening the foundation for evidence-informed clinical practice.

Step 4: Applying the appraised evidence to clinical practice

Once evidence has been critically appraised and deemed both valid and clinically significant, the next essential step is to evaluate its applicability to the individual patient or target population. This requires careful consideration of the patient's personal values, preferences, and unique circumstances. It is imperative that the benefits and potential risks associated with the intervention are thoroughly discussed with the patient, their caregivers, or both, to facilitate informed decision-making. This collaborative approach fosters a therapeutic alliance and aligns with the core themes of EBM: the integration of the best evidence with clinical competency and patient values (Straus & Sackett, 1998). In addition to clinical relevance, practical factors such as the cost and availability of the

intervention within the healthcare setting must also be considered. These contextual elements are crucial in determining whether the evidence can be feasibly implemented in practice.

Step 5. Evaluating performance and outcomes following implementation

As EBM becomes increasingly embedded in routine clinical practice, it is imperative to periodically assess its implementation to ensure sustained quality improvement. Clinicians must engage in reflective evaluation of the four foundational steps of EBM - formulating answerable clinical questions, efficiently locating high-quality evidence, critically appraising its validity and relevance, and integrating findings with medical proficiency and patient treatment preferences - to determine the effectiveness of these processes in practice (Straus & Sackett, 1998). Such reflective practice facilitates the identification of gaps and supports the development of rational, patient-centered management strategies. To objectively measure the impact of EBM, formal auditing and performance metrics may be employed. Examples include:

- Adherence to clinical guidelines derived from current best evidence
- Time efficiency in retrieving relevant evidence during clinical decision-making
- Documentation rates of evidence-informed decisions in patient records
- Patient outcomes, such as reduced complication rates or accelerated recovery
- Patient satisfaction scores, reflecting shared decision-making and effective communication
- Healthcare provider engagement, including participation in EBM training programs or journal clubs
- Use of validated appraisal tools, such as CASP checklists, in clinical audits

These metrics not only provide insight into the effectiveness of EBM in improving patient care but also serve as strategic instruments for cultivating a culture of continuous learning and evidence-informed practice within healthcare institutions.

Bridging Science and Practice Through Informed Decision-Making

Clinical decision-making is shaped by a complex interplay of several factors (Appelt et al., 2011; Hastie & Dawes, 2010), which can be broadly categorized into three domains:

- (1) the framing or context in which information is presented
- (2) situational influences such as the psychosocial environment and healthcare system characteristics
- (3) individual attributes of the decision-maker, including professional experience, cultural framework, and personal values.

These individual characteristics are closely aligned with the third principle of EBM, which states that evidence alone does not dictate decisions, but must be interpreted within

the context of patient preferences and priorities. This principle reflects a broader cultural shift in medicine over the past two decades, characterized by the rise of patient-centered care, where clinical decisions are increasingly shaped by informed consent and the prioritization of individual values and preferences. Even though widely endorsed as a best practice, the implementation of shared decision-making remains challenging. Clinicians often face time constraints, limited access to current evidence, and may lack the necessary skills to engage patients effectively in collaborative discussions (Djulgovic & Guyatt, 2017).

To address these challenges, decision aids have been developed to communicate the benefits, risks, and alternatives of clinical options in a patient-friendly format (Ottawa Hospital Research Institute, 2016). However, many of these tools are based on outdated or incomplete evidence, lack mechanisms for regular updates, and are often designed primarily as informational resources rather than interactive tools that facilitate meaningful clinician–patient dialogue (Hargraves et al., 2016).

Recent advancements in point-of-care decision aids offer promising solutions for bridging the gap between science and practice. These tools are specifically designed to support real-time clinical encounters and are often integrated with electronic platforms that provide access to the most current and relevant evidence (Agoritsas et al., 2015). Through formal user testing, these aids have been refined to address key factors of decision-making, including the framing of information and its contextual relevance. Continued development, evaluation, and dissemination of point-of-care decision aids represent a critical frontier in advancing EBM and strengthening the integration of scientific evidence into everyday clinical practice (Djulgovic & Guyatt, 2017).

DISCUSSION

According to Zewdie et al. (2023), EBP is increasingly recognized as a critical strategy for enhancing the quality of healthcare delivery. It is actively promoted across health systems as a means to ensure that decision-making is informed by the most current and reliable research evidence. This is particularly vital in low-resource settings, where the judicious use of limited healthcare resources is essential for improving patient outcomes. The current review highlights key factors associated with the utilization of EBP among healthcare professionals. Notably, practitioners with strong foundational knowledge of EBP were more than twice as likely to engage in evidence-based practices compared to those with limited understanding. Furthermore, professionals who demonstrated positive attitudes toward EBP were also significantly more inclined to implement it in their clinical routines.

This correlation underscores the importance of fostering favourable perceptions of EBP among healthcare providers. A positive disposition toward the benefits of EBP enhances readiness to critically appraise, integrate, and apply research findings in clinical decision-making. Therefore, future interventions aimed at strengthening EBP adoption should focus not only on improving knowledge

and skills but also on cultivating an appreciation for its role in advancing clinical care and patient outcomes. Bridging the gap between scientific evidence and practical application requires a concerted effort to empower healthcare professionals with both the competence and the motivation to engage in evidence-informed practice.

Factors Affecting the Utilization of EBP

The execution of EBP is influenced by a range of individual and organizational factors. Among individual determinants, educational attainment and professional experience have shown statistically significant associations with EBP utilization. Health professionals holding a master's degree or higher, as well as those with five or more years of clinical experience, are more likely to engage in EBP compared to their counterparts with only a bachelor's degree or less than five years of experience. This may be attributed to greater exposure to EBP principles during advanced academic training and increased familiarity with digital tools and research integration over time. These findings suggest that targeted interventions such as structured onboarding programs, mentorship, and continuous professional development should be directed toward early-career professionals to enhance their capacity for evidence-informed decision-making.

Organizational and environmental factors also play a critical role in shaping EBP adoption. Work environments equipped with standard clinical guidelines, reliable internet access, and adequate time for literature retrieval are significantly conducive to EBP implementation. This observation is supported by global evidence indicating that healthcare settings with supportive infrastructure and manageable workloads are better positioned to foster evidence-based clinical practices (O'Donnell, 2004; Williams et al., 2015). Therefore, future strategies aimed at strengthening EBM should prioritize the removal of institutional barriers by ensuring the availability of up-to-date clinical guidelines, improving digital access within healthcare facilities, and addressing workload constraints to allow clinicians adequate time for evidence appraisal and integration. In addition, enhancing the adoption of EBP requires a dual focus on individual capacity-building and organizational support. By addressing both personal and systemic barriers such as education, experience, access to resources, and workload, healthcare systems can create an enabling environment where evidence-informed decision-making becomes a routine part of clinical care.

EBP Education for Healthcare Professions

Internationally, EBP is known as a basic component of contemporary medical education. However, achieving proficiency in EBP remains a complex task, as there is a huge gap between ideal EBP standards and authentic clinical implementations (Lehane et al., 2018). The development and integration of effective educational strategies to support EBP remains an urgent challenge for healthcare systems and academic institutions.

To ensure that future healthcare users receive high-quality, evidence-informed care, it is essential that education programs equip healthcare professionals with the necessary

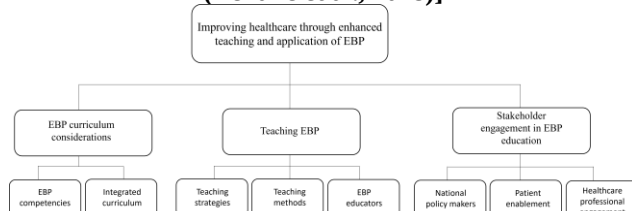
knowledge, skills, and attitudes to practice EBP. This requires a supportive healthcare infrastructure and an education system capable of fostering EBP competencies (Dawes et al., 2005). Curricula must be designed to explicitly target these competencies, as outlined in the Sicily Statement on EBP, which offers a framework for the essential knowledge and skills required for evidence-based clinical practice (Dawes et al., 2005).

Several initiatives have emerged to advance EBP education, including the European Union Evidence-Based Medicine Project and teaching programs facilitated by institutions such as the Centre for EBM at Oxford and McMaster University. In the past 20 years, more than 300 scholarly articles have been issued on teaching EBM, with over 30 experimental studies evaluating its educational impact (Barends et al., 2014). Despite this growing body of literature, recent reviews (Thomas et al., 2011; Hitch & Nicola-Richmond, 2017) indicate limited uptake of available resources and inconsistent application of EBP at the point of care (Dawes et al., 2005; Zeleníková et al., 2014).

The persistent challenge of embedding EBP into professional education calls for renewed momentum and strategic investigation to guide future developments in this field (Hitch & Nicola-Richmond, 2017). According to Lehane et al. (2018), experts in EBP have identified three key areas under the broader theme of “Enhancing healthcare through improved EBP education and implementation,” as illustrated in Figure 2. These areas include:

1. **EBP Curriculum Considerations** – ensuring that curricula are aligned with core competencies and learning outcomes.
2. **Teaching EBP** – employing effective pedagogical strategies and tools to support skill acquisition.
3. **Stakeholder Engagement in EBP Education** – involving educators, clinicians, and institutional leaders in promoting and sustaining EBP culture.

Figure 2. Summary of expert recommendations on teaching and application of EBP [Adapted from (Lehane et al., 2018)]



Integrating EBP into Healthcare Curricula

The systematic integration of EBP into healthcare curricula is essential for preparing future healthcare professionals to critically evaluate and apply research within clinical settings. For the successful integration of EBP into healthcare system, curriculum design must be guided by clear and authoritative frameworks that support the consistent embedding of EBP principles across didactic instruction, experiential learning, and evaluative

components. Educators, regardless of discipline or teaching context, should be equipped to identify and incorporate evidence-informed content throughout all stages of the educational process, including assessments and examinations. Particular emphasis has been placed on the inclusion of EBP within clinical training, where its application directly influences learning outcomes and professional competence.

Experts in medical and healthcare sectors further advocate for the early introduction of EBP fundamentals, noting that core principles can be taught in similar ways across both undergraduate and postgraduate programmes. This approach promotes continuity and coherence in learning, while accommodating varying levels of prior knowledge and experience. The concept of ‘developmental milestones’ was proposed to structure the progressive acquisition of EBP competencies, with expectations calibrated to the learner’s stage within the programme. A scaffolded, incremental model of instruction was recommended, enabling students to build confidence and proficiency in applying evidence-based approaches as they advance through their academic and clinical training.

Strategies for Teaching and Embedding EBP

The implementation of effective pedagogical strategies and practical methodologies is essential for fostering meaningful student engagement and comprehension in EBP. Central to this approach is the integration of clinically relevant teaching frameworks, wherein students are actively exposed to EBP through dynamic and engaging instructional methods. The consistent use of patient cases and clinical scenarios emerges as a particularly impactful technique, enhancing the relevance and applicability of EBP concepts.

The presence of EBP role models within clinical settings serves as a critical factor in demonstrating the practical application of evidence-based decision-making. These professionals act not only as exemplars of EBP integration but also act as catalysts for contextualising its principles within specific organisational environments. Their ability to seamlessly synthesize the core components of EBP including clinical expertise, patient values, and the best available evidence, which is often described as possessing a distinctive quality, referred to as the “X-factor.” Cultivating such proficiency remains a key objective for all medical practitioners. Additionally, the delivery of educator-specific training programs is strongly recommended to enhance their capacity to deliver EBP instruction effectively to the future healthcare professionals. This includes the development of pedagogical skills and the utilisation of appropriate resources. Achieving a critical mass of trained individuals is vital for ensuring the sustainability and long-term impact of EBP education initiatives.

Integrating Stakeholder Perspectives in EBP Educational Frameworks

The active involvement of key stakeholders including national policymakers, healthcare professionals, and patients is recognised as having significant potential to

enhance both the teaching and clinical application of EBP. However, the absence of a cohesive governmental and national policy framework for EBP education remains a significant barrier in implementing EBP in healthcare sectors. This absence of strategic direction results in fragmented and inconsistent implementation, frequently dependent on the isolated efforts of individual academic or research institutions. As a consequence, the application of EBP remains uneven across healthcare settings, lacking universal integration into clinical practice.

To embed EBP more deeply within routine clinical practice, processes related to the development, dissemination, and implementation of evidence needs to be systematically integrated into everyday healthcare activities. Such structural incorporation will foster sustained and meaningful engagement with EBP among healthcare professionals.

Moreover, empowering patients to interact with and understand relevant evidence is advocated as a means to enrich clinician–patient dialogues and support shared decision-making. This participatory approach not only strengthens the application of EBP but also aligns healthcare delivery with patient values and preferences.

Challenges to Implementing EBP: Structural Barriers and Strategic Solutions

Clinical research serves as a foundational element in advancing the quality of patient care. Landmark discoveries in antibiotics, oncology, stroke management, and cardiac rehabilitation have all emerged from sustained and diverse clinical research efforts. These breakthroughs underscore the transformative potential of research in shaping evidence-based medical practice.

Contemporary literature identifies several critical success factors for the effective implementation of EBP, including strong leadership, a skilled workforce, institutional infrastructure, and resilient funding frameworks (Correa-de-Araujo, 2016). However, despite these enablers, the most frequently cited barriers to EBP adoption remain workforce training deficiencies and financial constraints (Dopp et al., 2020). As Correa-de-Araujo (2016) emphasizes, successful EBP employment hinges on the active involvement, commitment, and competency of healthcare professionals.

Yet, many healthcare institutions lack structured programs or policies designed to foster staff engagement with EBP. Public health practitioners often do not possess the necessary competencies to identify, interpret, and apply the latest research findings in practice. Similarly, newly graduated healthcare providers frequently enter the workforce without adequate practical training in EBP application. Tzenios (2022) report that only a limited number of public health departments currently offer continuing education opportunities focused on EBP implementation.

To address these gaps, the development of targeted, discipline-specific EBP training programs is mandatory.

Solberg et al. (2018) note that EBP principles are not uniformly taught across all public health disciplines, making workforce training a critical priority. Effective training modalities may include computer-based labs, structured instructional sessions, and simulated learning exercises (Steglitz et al., 2015). Additionally, online self-study modules, remote learning networks, and tailored technical assistance have been recommended to enhance accessibility and flexibility (Solberg et al., 2018). Particularly, EBP training programs should be designed for flexibility and remote accessibility, enabling professionals to engage with standardized curricula through intuitive, user-friendly formats that can be completed within a few months.

An important strategy involves the inclusion of change agents - experienced professionals who share common goals and characteristics with trainees - to serve as mentors and role models (Steglitz et al., 2015). The positive outcome of such training initiatives mainly depends on factors like the learners' motivation, clarity of personal goals, and understanding of the social value of EBP. Tzenios (2022) suggests that identifying individual learning objectives at the outset can significantly improve training outcomes and foster long-term engagement.

Financial limitations represent another major challenge to EBP implementation. Dopp et al. (2020) argue that beyond institutional commitment and staff involvement, substantial financial investment is required to support EBP infrastructure. Effective budget management and strategic financial planning are essential to identify and allocate resources for EBP initiatives. Solutions may include revising internal budgeting practices and seeking external funding through partnerships with facilitating bodies, nonprofit organizations, or financial protection entities. In summary, overcoming the structural barriers to EBP requires a multifaceted approach that combines workforce development, strategic financial investment, and institutional commitment. By addressing these challenges, healthcare systems can move toward a more consistent and impactful integration of evidence into clinical decision-making.

CONCLUSION

EBM represents a deliberate, rational, and patient-centered care in the process of clinical decision-making, grounded in the incorporation of the highest quality empirical data. Far from being a rigid set of protocols, EBM offers clinicians a structured yet flexible framework for delivering high-quality, cost-effective care. The core objective of EBM is to enable physicians to make informed choices that optimize patient outcomes, minimize errors, and enhance the overall quality of healthcare delivery. By systematically applying validated evidence, clinicians can avoid major treatment pitfalls and ensure that care decisions are both scientifically sound and contextually relevant.

In a broader sense, EBM has the potential to save lives by aligning clinical practice with the most current and reliable research findings. However, its effective implementation demands a new skill set from healthcare professionals

including proficiency in English, digital literacy, and the ability to navigate medical databases, critically appraise literature, and interpret epidemiological and statistical data. Once these competencies are acquired, EBM becomes a powerful ally in clinical practice. Physicians gain access to a vast repository of knowledge that not only enhances their decision-making but also improves the efficiency and quality of care. Moreover, the proper use of EBM contributes to professional growth, time efficiency, and increased satisfaction among healthcare providers and patients. Ultimately, EBM bridges the gap between scientific research and clinical application, ensuring that every patient receives care that is not only evidence-informed but also personalized and ethically sound.

LIMITATION AND FUTURE INVESTIGATION

As the topic of the study has a wider scope, this review aimed to synthesise and summarise the important results and conclusions from selected literature, offering concise evaluations of the relevant research landscape. However, several limitations are noted:

Selection Bias: Despite using predefined keywords and multiple databases (Google, Google Scholar, JSTOR, ScienceDirect, PubMed), relevant studies may have been missed due to indexing or keyword limitations.

Scope Restriction: Findings are specific to medical decision-making and may not generalize to other healthcare sectors.

Time Constraints: New publications may have emerged after the search period, limiting the review's currency.

Recommendations for Future Research

To build on the results of this review, further investigations should:

- Conduct longitudinal analyses to track evolving trends in clinical decision-making across diverse healthcare disciplines.
- Explore interdisciplinary comparisons, examining how decision-making frameworks differ between physicians, nurses, and other healthcare professionals.
- Integrate real-time data analytics and AI-driven decision support tools to assess their impact on clinical judgment and patient outcomes.
- Expand the geographic scope of literature reviews to include underrepresented regions and healthcare systems, thereby enhancing global relevance.
- Address methodological gaps by incorporating mixed-methods approaches that combine quantitative metrics with qualitative insights from frontline practitioners.

By addressing these limitations and pursuing targeted future inquiries, researchers can contribute to a more nuanced and actionable understanding of clinical decision-making in contemporary healthcare settings.

REFERENCES

1. Aglen, B. (2016). Pedagogical strategies to teach bachelor students evidence-based practice: A systematic review. *Nurse education today*, 36, 255-263.
2. Agoritsas, T., Heen, A. F., Brandt, L., Alonso-Coello, P., Kristiansen, A., Akl, E. A., ... & Vandvik, P. O. (2015). Decision aids that really promote shared decision making: the pace quickens. *Bmj*, 350.
3. Ahmad, T., Khan, M., Dhama, K., Jin, H., & Baig, M. (2021). Characteristic Features of 100 Most Influential Studies in Evidence-Based Medicine: A Worldwide Bibliometric Analysis. *Electronic Journal of General Medicine*, 18(6).
4. Akobeng, A. K. (2005). Principles of evidence based medicine. *Archives of disease in childhood*, 90(8), 837-840.
5. Appelt, K. C., Milch, K. F., Handgraaf, M. J., & Weber, E. U. (2011). The decision making individual differences inventory and guidelines for the study of individual differences in judgment and decision-making research. *Judgment and Decision making*, 6(3), 252-262.
6. Atkins, D., Fink, K., & Slutsky, J. (2005). Better information for better health care: the Evidence-based Practice Center program and the Agency for Healthcare Research and Quality. *Annals of internal medicine*, 142(12_Part_2), 1035-1041.
7. Barends E., Rousseau D.M., and Briner R.B., Evidence-based management: The basic principles. Centre for Evidence Based Management 2014 Available online: <https://www.cebma.org/wp-content/uploads/Evidence-Based-Practice-The-Basic-Principles.pdf> (accessed on 20 February 2020), 2014.
8. Barends, E. G., & Briner, R. B. (2014). Teaching evidence-based practice: lessons from the pioneers: an interview with amanda burls and gordon guyatt. *Academy of Management Learning & Education*, 13(3), 476-483.
9. Brownson, R. C., Baker, E. A., & Leet, T. L., & others. (2003). *Evidence-Based Public Health*. New York: Oxford University Press.
10. Carneiro, A. V. (1998). The correct formulation of clinical questions for the practice of evidence based medicine. *Acta Médica Portuguesa*, 11(8-9), 745-748.
11. Chen, J., Tian, X., Guo, D., Gu, H., Duan, Y., & Li, D. (2025). Global trends and burdens of neglected tropical diseases and malaria from 1990 to 2021: A systematic analysis of the Global Burden of Disease Study 2021. *BMC Public Health*, 25, Article 1307.
12. Correa-de-Araujo, R. (2016). Evidence-based practice in the United States: Challenges, progress, and future directions. *Health care for women international*, 37(1), 2-22.
13. Dang, D., Dearholt, S. L., Bissett, K., Ascenzi, J., & Whalen, M. (2021). *Johns Hopkins evidence-based practice for nurses and healthcare professionals: Model and guidelines*. Sigma Theta Tau.
14. Dawes, M., Summerskill, W., Glasziou, P., Cartabellotta, A., Martin, J., Hopayian, K., ... & Osborne, J. (2005). Sicily statement on evidence-based

- practice. *BMC medical education*, 5(1), 1.
15. Demirir, G., Oliver, D. P., & Washington, K. T. (2018). Behavioral intervention research in hospice and palliative care: Building an evidence base. *Academic press*.
16. Disler, R. T., White, H., Franklin, N., Armari, E., & Jackson, D. (2019). Reframing evidence-based practice curricula to facilitate engagement in nursing students. *Nurse education in practice*, 41, 102650.
17. Djulbegovic, B., & Guyatt, G. H. (2017). Progress in evidence-based medicine: a quarter century on. *The lancet*, 390(10092), 415-423.
18. Dopp, A. R., Narcisse, M. R., Munday, P., Silovsky, J. F., Smith, A. B., Mandell, D., ... & Mendel, P. (2020). A scoping review of strategies for financing the implementation of evidence-based practices in behavioral health systems: state of the literature and future directions. *Implementation Research and Practice*, 1, 2633489520939980.
19. Ferrari, R. (2015). Writing narrative style literature reviews. *Medical writing*, 24(4), 230-235.
20. Gray, G. E., & Pinson, L. A. (2003). Evidence-based medicine and psychiatric practice. *Psychiatric Quarterly*, 74(4), 387-399.
21. Hargraves, I., LeBlanc, A., Shah, N. D., & Montori, V. M. (2016). Shared decision making: the need for patient-clinician conversation, not just information. *Health affairs*, 35(4), 627-629.
22. Hastie, R., & Dawes, R. M. (2010). *Rational choice in an uncertain world* (2nd ed.). Sage Publications.
23. Hitch, D., & Nicola-Richmond, K. (2017). Instructional practices for evidence-based practice with pre-registration allied health students: a review of recent research and developments. *Advances in health sciences education*, 22(4), 1031-1045.
24. Hoffman, T., Bennett, S., & Del Mar, C. (2017). Evidence-based Practice across the Health Professions (3rd ed). Australia: Elsevier Inc.
25. Holleman, G., Eliens, A., Van Vliet, M., & Van Achterberg, T. (2006). Promotion of evidence-based practice by professional nursing associations: literature review. *Journal of advanced nursing*, 53(6), 702-709.
26. Karlsson, O., Chang, A. Y., Norheim, O. F., Mao, W., Bolongaita, S., & Jamison, D. T. (2025). Priority health conditions and global life expectancy disparities. *JAMA Network Open*, 8(5), e2512198.
27. Jordaan, M., & Jones, R. (1999). Adoption of Internet technology by UK postgraduate centres: a questionnaire survey. *Health Libraries Review*, 16(3), 166-173.
28. Jylhä, V., Oikarainen, A., Perälä, M. L., & Holopainen, A. (2017). Facilitating evidence-based practice in nursing and midwifery in the WHO European Region. *World Health Organization*, 1-34.
29. Lehan, E., Leahy-Warren, P., O'Riordan, C., Savage, E., Drennan, J., O'Tuathaigh, C., ... & Hegarty, J. (2018). Evidence-based practice education for healthcare professions: an expert view. *BMJ evidence-based medicine*.
30. Levi, M. (2001). Formulating clinical questions. In D. P. B. McGovern, R. M. Valori, W. S. M. Summerskill, & M. Levi (Eds.), *Key topics in evidence-based medicine* (pp. [insert page numbers]). Oxford: BIOS Scientific Publishers.
31. Manickam, K., McClain, M. R., Demmer, L. A., Biswas, S., Kearney, H. M., Malinowski, J., ... & Hisama, F. M. (2021). Exome and genome sequencing for pediatric patients with congenital anomalies or intellectual disability: an evidence-based clinical guideline of the American College of Medical Genetics and Genomics (ACMG). *Genetics in Medicine*, 23(11), 2029-2037.
32. Mitchell, J., & Font, X. (2017). Evidence-based policy in Ethiopia: A diagnosis of failure. *Development Southern Africa*, 34(1), 121-136.
33. Nwozichi, C. U., Olorunfemi, O., & Madu, A. M. (2021). Exploring issues in theory development in nursing: Insights from literature. *Indian Journal of Continuing Nursing Education*, 22(1), 3-9.
34. O'Donnell, C. A. (2004). Attitudes and knowledge of primary care professionals towards evidence-based practice: a postal survey. *Journal of evaluation in clinical practice*, 10(2), 197-205.
35. Ottawa Hospital Research Institute. (2016). *A to Z inventory of decision aids*. <https://decisionaid.ohri.ca/azinvent.php>
36. Ottawa Hospital Research Institute. (2016). *A to Z inventory of decision aids*. <https://decisionaid.ohri.ca/azinvent.php>
37. Rosenberg, W. M., & Sackett, D. L. (1996). On the need for evidence-based medicine. *Therapie*, 51(3), 212-217.
38. Rosenberg, W. M., Deeks, J., Lusher, A., Snowball, R., Dooley, G., & Sackett, D. (1998). Improving searching skills and evidence retrieval. *Journal of the Royal College of Physicians of London*, 32(6), 557.
39. Rosenberg, W., & Donald, A. (1995). Evidence based medicine: an approach to clinical problem-solving. *Bmj*, 310(6987), 1122-1126.
40. Sackett, D. L. (1997). Evidence-based medicine. *Seminars in Perinatology*, 21(1), 3-5.
41. Sackett, D. L., Rosenberg, W. M., Gray, J. M., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: what it is and what it isn't. *bmj*, 312(7023), 71-72.
42. Sackett, D. L., Strauss, S. E., Richardson, W. S., Rosenberg, W., & Haynes, R. B. (2000). *Evidence-based medicine: How to practice and teach EBM* (2nd ed.). London: Churchill Livingstone.
43. Solberg, L. B., Kolb, H. R., Prikhidko, A., & Behar-Horenstein, L. S. (2018). Ensuring representativeness in competencies for research coordinators. *Clinical researcher (Alexandria, Va.)*, 32(5).
44. Steglitz, J., Warnick, J. L., Hoffman, S. A., Johnston, W., & Spring, B. (2015). Evidence-based practice. *International Encyclopedia of the social & behavioral sciences*, 8, 332-338.
45. Straus, S. E., & Sackett, D. L. (1998). Using research findings in clinical practice. *Bmj*, 317(7154), 339-342.
46. Thomas, A., Saroyan, A., & Dauphinee, W. D. (2011). Evidence-based practice: a review of theoretical assumptions and effectiveness of teaching and assessment interventions in health

- professions. *Advances in health sciences education*, 16(2), 253-276.
47. Tzenios, N. (2022). Evidence-based practice. *International Research Journal of Modernization in Engineering Technology and Science*, 4(12), 922.
48. Williams, B., Perillo, S., & Brown, T. (2015). What are the factors of organisational culture in health care settings that act as barriers to the implementation of evidence-based practice? A scoping review. *Nurse education today*, 35(2), e34-e41.
49. Wilson, V. (2014). Research methods: triangulation.
50. Zeleníková, R., Beach, M., Ren, D., Wolff, E., & Sherwood, P. (2014). Faculty perception of the effectiveness of EBP courses for graduate nursing students. *Worldviews on Evidence-Based Nursing*, 11(6), 401-413.
51. Zewdie, A., Ayele, M., Melis, T., & Kasahun, A. W. (2023). Determinants of evidence-based practice among health care professionals in Ethiopia: a systematic review and meta-analysis. *Plos one*, 18(11), e0293902.