BMC Nursing

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Leading evidence-based practice: nurse managers' strategies for knowledge utilisation in acute care settings

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Abstract

Background The implementation of evidence-based practice (EBP) in nursing is essential for improving patient care outcomes, yet systemic barriers, leadership challenges, and resource limitations continue to hinder its integration into clinical practice. Nurse managers (NMs) play a crucial role in bridging the gap between policy directives and frontline implementation, yet the dynamic interplay between leadership strategies, knowledge utilisation, and organisational barriers remains underexplored, particularly in resource-constrained settings. This study examines how NMs navigate these challenges to sustain EBP adoption in acute care environments.

Methods This collective case study employed a longitudinal qualitative design across two acute care settings in the UK. Data were collected over eight months through semi-structured interviews with NMs, nonparticipant observations, and document analysis of clinical guidelines and internal reports. A thematic analysis approach was used to synthesise findings and provide a nuanced understanding of leadership strategies and systemic factors influencing EBP adoption.

Findings Six interconnected themes emerged: (1) Adaptive leadership strategies, where NMs employ a hybrid of directive and collaborative leadership approaches to drive EBP; (2) Overcoming organisational and resource barriers, including staff shortages, financial constraints, and competing priorities; (3) Knowledge utilisation and learning networks, highlighting the role of informal mentorship, structured CPD, and peer learning in sustaining EBP; (4) Digital transformation and EBP, examining the benefits and challenges of integrating digital tools and addressing IT literacy gaps; (5) Patient-centred adaptations, exploring how NMs balance evidence-based interventions with patient preferences and cultural considerations; and (6) Emotional and psychological support, underscoring the importance of managing staff resistance and mitigating change fatigue.

Conclusion Findings of this study emphasise the pivotal role of NMs in driving EBP implementation through adaptive leadership, strategic resource management, and fostering learning networks. Addressing organisational barriers requires multi-level interventions that integrate leadership actions with systemic enablers to promote

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sustainable, evidence-informed nursing practice. Findings provide critical insights for healthcare policymakers, hospital administrators, and educators in enhancing EBP uptake within resource-limited settings.

Keywords Evidence-based practice, Nurse managers, Leadership, Knowledge utilisation, Organisational barriers, Resource management, Qualitative research

Background

The integration of evidence-based practice (EBP) into nursing is central to improving patient outcomes and enhancing the quality of healthcare delivery [1, 2]. EBP is described as the systematic use of the best available evidence, combined with clinical expertise and patient values, to guide healthcare decision-making and improve care delivery [3, 4]. EBP further builds on this definition by specifically focusing on the application of research-based knowledge to inform nursing interventions and practices [7]. Organisations such as the National Institute for Health and Care Excellence (NICE) and the Nursing and Midwifery Council (NMC) have consistently advocated for the integration of EBP in clinical settings, highlighting its role in driving improved patient care and enhancing professional accountability [2, 3]. However, the practical adoption of EBP across acute care settings remains inconsistent, with significant gaps in knowledge utilisation, leadership practices, and systemic support structures [5, 6].

Knowledge utilisation (KU) is critical to bridging the gap between research evidence and clinical practice, as it refers to the process of translating and operationalising research-based knowledge into actionable practices [7]. KU is a necessary precursor for EBP implementation, requiring healthcare professionals to engage with evidence critically and apply it effectively in routine care [8]. Existing studies demonstrate that KU is complex and is influenced not only by access to evidence but also by contextual, organisational, and leadership factors [8, 9]. The processes of knowledge translation (disseminating and adapting evidence for practical use) and implementation science (the study of methods to promote evidence integration) [9, 10] are integral to EBP adoption, yet healthcare organisations often struggle to sustain these efforts owing to systemic barriers such as limited resources, workload pressures, and staff resistance [10–12].

While frontline healthcare professionals play a crucial role in EBP implementation, the success of such initiatives is also dependent on broader systemic influences, including administrative leadership, healthcare policies, and educational frameworks [8, 9]. Hospital administrators are responsible for setting institutional priorities, allocating resources, and creating environments conducive to EBP uptake, yet limited financial and workforce investments often hinder sustainable implementation [10, 11]. Policymakers shape national and regional EBP guidelines, yet the translation of these policies into practice remains challenging, particularly in healthcare settings facing structural and workforce constraints [12, 13]. Furthermore, educators are key stakeholders in equipping future healthcare professionals with the necessary skills to engage with EBP; however, variations in curricula and limited exposure to real-world implementation strategies contribute to inconsistencies in EBP competence among nursing professionals [14, 15]. These broader systemic factors must be considered to fully understand the enablers and barriers to EBP adoption.

Leadership is recognised as a critical enabler of EBP adoption, with nurse managers (NMs) playing a pivotal role in influencing staff engagement, knowledge dissemination, and the implementation of evidence-based care. Studies have shown that transformational leadership, which focuses on empowering teams and fostering shared decision-making, is particularly effective in promoting EBP uptake [13, 14]. However, there is limited research examining how NMs adapt their leadership styles in resource-constrained environments to facilitate knowledge utilisation [12]. Existing studies often overlook the dynamic interplay between leadership strategies, organisational barriers, and EBP outcomes, leaving a gap in understanding how these elements interact over time to sustain evidence-based nursing practice [10, 11, 14]. While NMs play a frontline leadership role, hospital administrators and policymakers have significant influence over the availability of resources and the prioritisation of EBP initiatives, which in turn impact implementation outcomes [15, 16].

Furthermore, while previous research highlights barriers such as resource constraints, cultural resistance, and limited professional development opportunities [4, 8], few studies have explored the specific strategies employed by NMs to address these challenges. For example, acute care settings in the UK are often constrained by financial limitations, staff shortages, and competing clinical priorities [5, 6]. In the United Kingdom (UK) context, innovative approaches such as partnership working and mentorship initiatives are critical for building organisational momentum toward EBP adoption [4, 8]. However, the mechanisms through which these strategies are operational remain underexamined, particularly with respect to their scalability and long-term sustainability. Strengthening collaboration between NMs, hospital administrators, policymakers, and academic institutions is essential to creating an infrastructure that supports and sustains EBP in clinical practice [17, 18].

The current literature highlights concern regarding the role of learning networks in sustaining EBP. While informal mentorship and structured peer-learning opportunities have been identified as key enablers of knowledge sharing [14, 15], their effectiveness in addressing knowledge gaps and mitigating staff resistance requires further exploration. Existing studies often fail to capture how learning networks evolve over time, particularly in response to organisational and resource constraints. Similarly, the influence of leadership styles on learning networks and their collective impact on EBP implementation remain underexplored, highlighting a critical area for investigation [12].

This study aims to address these gaps by providing a comprehensive examination of how NMs in acute care settings facilitate knowledge utilisation and promote EBP. Specifically, this study explores how NMs facilitate knowledge utilisation within EBP frameworks, investigates the strategies they employ to overcome systemic constraints, and evaluates the impact of leadership styles and learning networks on sustaining EBPs in acute care settings. The research builds on the extensive experience of the corresponding author (JO) in acute care leadership, education, and knowledge translation initiatives. Previous engagements with NMs through workshops and collaborative projects provided preliminary insights into the challenges of EBP adoption, such as resource limitations, professional development gaps, and cultural resistance. These insights informed the formulation of the study's objectives and methodological approach, ensuring alignment with real-world challenges while addressing critical gaps in the literature.

Methods

Research design

This study employed a collective qualitative case study design to explore EBP implementation in two acute care hospitals in the East Midlands, England. The collective case study approach, as outlined by Stake [17] and Yin [18], is well suited for examining multiple cases with shared characteristics while enabling cross-case comparisons. A qualitative approach was chosen for its ability to capture complex, context-bound phenomena such as EBP adoption through rich, descriptive data, providing insights into participants' lived experiences, leadership practices, and organisational challenges [19, 20].

This design supports an interpretative lens, recognising that EBP adoption is influenced by cultural and contextual factors unique to each organisation [21, 22]. By treating EBP as a context-dependent phenomenon, the approach allowed for a nuanced analysis of how leadership practices and resource availability shaped implementation processes.

The study integrated multiple data sources, including interviews, observations, and document analysis, ensuring triangulation to enhance validity and reliability [23, 24]. This methodological rigour is particularly valuable in healthcare research, where understanding the interplay between leadership, organisational culture, and outcomes requires in-depth contextual analysis [25, 26]. Adhering to the Consolidated Criteria for Reporting Qualitative Research (COREQ) ensures transparency and methodological robustness in reporting results [25].

Study settings

This study was conducted in two acute care hospitals which were purposively selected for their contrasting organisational approaches to leadership and EBP implementation. One hospital had structured leadership training programmes and emphasised shared governance, whereas the other relied on informal mentorship and leadership. These differences provide a valuable framework for exploring how varying leadership styles influence EBP adoption and sustainability [18]. Both hospitals also established communication channels for implementing national EBP guidelines, further supporting their selection.

Purposive sampling ensured that the sites were well positioned to address the study's objectives by capturing variations in leadership dynamics and organisational contexts [27]. Accessibility and willingness to participate enable prolonged engagement, which is critical for qualitative inquiry [25].

Sample size and participants

A total of 23 NMs participated in the study. In the UK, NMs in acute care settings are required to be registered nurses, as mandated by the NMC [3]. The inclusion criteria for this study were as follows: (1) NMs actively employed, (2) individuals with at least two years of experience in managing nursing staff, and (3) those willing to participate and who signed the informed consent form. Participants were excluded if they had to withdraw due to work-related commitments or health issues during the interview period. Tables 1 and 2 present the demographics of the participants. The participants at both study sites were similar, with nurse-patient ratios indicating some staff vacancies, although these were not advertised.

Given the significant years of experience among participants (ranging from 13 to 32 years), variability in formal education and training in EBP is expected. While NMs may be required to possess clinical expertise and leadership skills to oversee nursing teams and implement evidence-based practices, their exposure to EBP training varies due to historical changes in nursing curricula [13]. EBP was formally integrated into nursing education approximately 20–25 years ago, meaning some NMs may

Table 1 Participants' demography (Site 1)

ID	Qualification	Experience (Years)	Ward Speciality
1	PhD	27	Medical
2	MSc	27	Intensive Care
3	BSc	28	Medical
4	BSc	22	Medical
5	MSc	26	Surgical
6	BSc	14	Surgical
7	BSc	17	Medical
8	BSc	27	Medical
9	BSc	28	Intensive Care
10	BSc	26	Intensive Care
11	BSc	26	Surgical
12	MSc	29	Intensive Care

PhD: Doctor of Philosophy; MSc: Master of Science; BSc: Bachelor of Science

Table 2 Participants' demography (Site 2)

ID	Qualification	Experience (Years)	Ward Speciality
1	MSc	22	Intensive Care
2	BSc	32	Surgical
3	BSc	20	Medical
4	BSc	24	Medical
5	BSc	21	Intensive Care
6	BSc	27	Surgical
7	BSc	13	Surgical
8	MSc	25	Medical
9	BSc	18	Medical
10	BSc	24	Surgical
11	BSc	28	Medical

PhD: Doctor of Philosophy; MSc: Master of Science; BSc: Bachelor of Science

Table 3 Interview guide

How do you integrate EBP into the culture and daily operations of your clinical unit?
Prompts
o How do you promote the use of research-based knowledge in your clinical practice?
o What challenges do you face in encouraging EBP in your unit?
o What strategies have you used to overcome barriers to research integration?
o How do you perceive your leadership role in influencing evidence-based practice adoption among your team?
o How do you balance workload pressures with the need for professional development and implementing evidence-based practice initiatives?
o What do you consider to be the key factors that help sustain long-term evidence-based practice in your unit?

not have received structured EBP education during their initial training. However, those with advanced qualifications, such as an MSc or PhD, may have been introduced to EBP principles through postgraduate studies or professional development programmes. Besides, evidence suggests that while some NMs receive structured EBP training, others develop these skills informally through clinical experience, mentorship, or workplace learning, leading to inconsistencies in EBP leadership [12, 14].

Data collection

This study employed a structured, multi-phase data collection process spanning six years (2017–2023), with an eight-month intensive fieldwork phase (January-August 2022). The extended timeline facilitated relationship-building, site engagement, and iterative refinement of data collection tools, while the intensive phase enabled focused data collection [28, 29].

During the intensive fieldwork period, three complementary data collection methods were employed to ensure triangulation and enhance credibility [24, 27]. First, semi-structured interviews ($n = 23$) were conducted with NMs via the interview guide in Table 3. Flexibility in questioning allows for an in-depth exploration of participants' experiences while maintaining alignment with the study's objectives [31]. Interviews lasted 60 to120 minutes, and all were conducted by the lead researcher to maintain consistency and minimise variability in interpretation [24]. The initial version of the interview guide was used during data collection. Subsequently, minor refinements were made to improve clarity and alignment with the study's themes during the reporting phase. These revisions did not alter the substantive focus of the questions but aimed to enhance readability and coherence. This approach ensures transparency while maintaining the clarity of the current version (Table 3), which accurately reflects the core areas explored during the interviews [30].

Second, nonparticipant observations were conducted to examine NMs' leadership practices, interactions with staff, and EBP implementation [27, 30]. Observed activities included staff meetings, ward rounds, mentoring sessions, decision-making processes, and clinical practice reviews. Observing NMs in real time provided valuable insights into their behaviours and leadership strategies, which may not have been fully captured in interviews [30]. Importantly, the observations extended to interactions between NMs and frontline nurses, recognising the latter's integral role in implementing EBP [31].

Third, document analysis was undertaken to examine relevant hospital documents, including clinical guidelines, organisational protocols, EBP policies, and internal audits [32]. These documents provided a critical lens for understanding the formal structures supporting (or limiting) EBP adoption. The analysis contextualised the interview and observational data, allowing for a more comprehensive triangulation of findings [33].

While this study originally focused on an eight-month intensive data collection phase, a follow-up observation was conducted at the 8-month mark to assess the continuity and sustainability of leadership strategies in EBP implementation. This follow-up phase involved a targeted observation of a subset of original participants ($n = 10$), including structured observations of leadership practices

in selected wards. The follow-up observations examined whether initial strategies had been sustained, adapted, or discontinued, while also exploring potential barriers or enablers influencing long-term implementation [33].

In addition, a brief intervention was introduced at this stage, where participants were provided with summarised findings from the initial study and engaged in reflective discussions on their leadership experiences. This iterative feedback mechanism allowed for the identification of emerging challenges and adaptive strategies, offering insights into the evolving nature of EBP leadership over time [27]. These follow-up insights were integrated into the final analysis to provide a more comprehensive understanding of the long-term impact of leadership approaches.

Data analysis

Thematic analysis, as outlined by Braun and Clarke [34], was employed to analyse and organise the findings systematically. This framework is widely recognised for its flexibility, enabling researchers to utilise both inductive and deductive approaches to identify, analyse, and report patterns or themes within the data [34, 35]. The method is particularly suited for addressing complex phenomena such as EBP implementation in healthcare settings, as it allows for the exploration of detailed qualitative data while ensuring rigor and transparency [36].

The analysis followed Braun and Clarke's six-phase thematic analysis framework [34], which ensured a systematic and iterative approach:

Familiarisation with the data Analysis began with reading transcripts from interviews and observations and documenting reviews multiple times to immerse themselves in the data. This phase facilitated a deep understanding of the content, and notes were taken to capture initial impressions and ideas for further exploration [29]. Early observations were recorded to ensure that no significant insights were overlooked.

Generating initial codes During this phase, meaningful data segments were systematically coded via NVivo software. Codes were generated inductively to reflect participant experiences related to EBP promotion, leadership, resource management, and organisational challenges. This process was iterative to ensure that all relevant aspects of the data were captured and categorised appropriately [27].

Searching for themes Coded data were then collated into broader patterns or themes. This involved organising related codes into thematic groups that captured key elements of the data. For example, themes such as *'leadership for EBP promotion'* and *'strategies for overcoming barriers'* emerged during this phase. Subthemes, such as *'shared decision-making'* and *'mentorship'*, were developed to reflect specific components of each broader theme [34].

Reviewing themes Themes were evaluated and refined to ensure coherence, distinctiveness, and alignment with the dataset. This involved reviewing the thematic map to verify that each theme represented significant insights while remaining distinct from others [35]. The researchers ensured that the themes captured the essence of the dataset and reflected the study's objectives. Themes were validated for accuracy through cross-referencing within and across datasets [24].

Defining and naming themes At this stage, themes and subthemes were clearly defined and contextualised to align with the study objectives. For instance, the theme *'leadership for EBP promotion'* was explicitly linked to the strategies nurse managers employed to facilitate research utilisation. Concise definitions provide a clear explanation of how each theme is related to EBP promotion and knowledge utilisation in acute care settings [34].

Producing the report The final phase involved presenting the findings in a structured and compelling manner. Themes were supported by verbatim quotes from participants to enhance credibility and authenticity [24]. These quotes illustrate key findings within the themes and highlight differences between the two study sites. Cross-site comparisons were conducted iteratively, with themes from Site 1 serving as a reference for analysing Site 2. This approach enables the identification of significant commonalities and differences while preserving site-specific nuances [18].

To enhance rigour, cross-site comparisons were integrated throughout the thematic analysis process. By systematically comparing themes across the two study sites, the analysis revealed both shared and unique elements of EBP implementation strategies. This multilevel approach ensured that the findings were comprehensive and contextually grounded, allowing for a unified discussion while retaining the unique contributions of each site [18].

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki, which outlines ethical principles for medical research involving human subjects [54]. Informed consent was obtained from all participants before data collection. The participants received detailed information sheets and consent forms explaining the study's purpose, confidentiality measures, data handling practices, and their right to withdraw without consequences [37]. Consent was verbally reconfirmed at the start of each observation and interview session in compliance with the General Data Protection Regulation (GDPR) [38].

To protect participants' anonymity, all the data were securely stored and set for destruction following publication. Identifiable information was removed during transcription and reported to maintain confidentiality [24]. The researcher's professional background was shared to build trust and rapport, ensuring participants' confidence in the research process [39]. Throughout the study, participants were treated respectfully to uphold ethical principles and maintain professional standards [20, 37].

Rigour

Rigour was achieved through a systematic and transparent approach to data collection, analysis, and reflexivity. Repeated observations during critical activities, including ward rounds, staff meetings, and mentoring sessions, allowed the researchers to capture variations over time and across different settings. The observation of nurse managers' leadership behaviours in their natural contexts provided insights into practices that participants may not have explicitly articulated during interviews. This complemented the self-reported data and enhanced overall credibility [18, 32].

To strengthen credibility further, member checking was performed following the thematic analysis. Preliminary findings and summarised transcripts were shared with selected participants to validate interpretations and invite clarifications. This process confirmed the accuracy of the findings, ensuring that they reflected participants' lived experiences while providing opportunities for additional insights [24, 37].

Triangulation was achieved by integrating data from semi structured interviews, nonparticipant observations, and document analysis. For example, leadership challenges described in interviews were corroborated through observational data, including discussions at team meetings or mentoring sessions. Document analysis, including clinical guidelines, protocols, and hospital policies, provides additional context by identifying structural enablers and barriers to EBP adoption [23, 33]. This methodological integration ensured a robust, comprehensive, and trustworthy representation of the phenomenon under study.

Data saturation was achieved iteratively throughout data collection and analysis. The research team continuously analysed the data during the initial eight-month fieldwork phase, identifying thematic redundancy across interviews, observations, and document reviews. This approach ensured that the data were sufficiently rich to address the study objectives [34, 40].

Reflexivity

Reflexivity was embedded throughout the study to minimise bias and enhance transparency. The lead researcher, a registered nurse with extensive experience in EBP implementation and nursing leadership, maintained a reflexive journal. This journal documented preconceptions, emerging insights, and potential biases during data collection and analysis, allowing for ongoing critical reflection [41, 42]. This practice ensured a balanced and nuanced interpretation of the findings, while acknowledging the researcher's dual role as both an observer and interpreter of the data [43].

The study was grounded in a constructivist philosophical framework, which recognises that knowledge is co-constructed by researchers and participants within specific social and cultural contexts [24]. This framework was particularly relevant for exploring the complex, context-dependent nature of EBP implementation in acute care settings. Reflexive practices and iterative analysis helped root the findings deeply in the participants' perspectives and within the realities of the organisational environment.

Findings

This section presents the key themes that emerged from the analysis of interviews, observations, and document reviews, highlighting how NMs navigated challenges to implement and sustain EBP. The findings are organised into six interconnected themes: leadership challenges, organisational and resource barriers, learning strategies, technological integration, patient-centred care, and emotional support for staff.

To provide clarity and structure, the themes are broken down into categories and subcategories, which are summarised succinctly in Table 4. This table highlights the core components of the findings, including specific challenges, strategies, and insights (free codes) that emerged from the data.

To illustrate the dynamic interplay between leadership strategies, resource constraints, and EBP adoption, a conceptual framework is presented in Fig. 1. This framework summarises key leadership strategies employed by NMs, the challenges they navigate, and their impact on EBP implementation. The relationships between directive and collaborative leadership, knowledge-sharing mechanisms, and system-wide interventions are depicted, reinforcing the thematic findings that follow.

This framework visualises the leadership approaches employed by NMs to facilitate EBP adoption in acute care settings. It highlights the evolution of directive and collaborative leadership styles, key organisational barriers, and the mechanisms supporting EBP sustainability. The model demonstrates how leadership influences knowledge translation, staff engagement, and system-wide change, ultimately leading to improved patient outcomes and sustained EBP implementation.

Table 4 Themes, sub-categories, free codes, and examples of quotes

Theme	Sub-category	Free codes	Examples of quotes
Navigating Leadership Challenges	Balancing directive and collaborative leadership	Directive leadership (Site 1): authoritative instructions, non-negotiable EBP implementation. Collaborative leadership (Site 2): participatory decision-making, fostering ownership. Evolution of leadership styles: directive to collaborative (Site 1); collaborative to structured accountability (Site 2).	*'I make it very clear that we cannot deliver high-quality care without following the latest evidence… it's non-negotiable.'* *'What adjustments would make this protocol work best for our ward? Your feedback is critical to its success.'*
	EBP champions vs. resistance	EBP mentors (Site 1): senior staff mentoring juniors. Resistance (Site 1): disruption of routines. Accountability mechanisms: linking EBP to performance evaluations.	*'This method is backed by evidence to reduce infections… let's make it a standard part of our practice today.'* *'Some senior staff feel that new protocols disrupt established routines. It takes time to show them the benefits.'*
	Navigating resource constraints	Time constraints (Site 1): internal knowledge sharing, workshop summaries. Financial limitations (Site 2): external partnerships, free workshops. - Practical solutions: embedding EBP into existing workflows.	*'I attended a training session on this protocol and will walk you through the key points so we can start implementing it right away.'* *'We don't have the budget for subscriptions to the latest research, so we rely heavily on what's freely available or what we can access through partnerships.'*
	Accountability mechanisms	Performance reviews (Site 1): staff recognition to reinforce EBP compliance. Goal setting (Site 2): staff ownership through personal EBP goals and follow-ups.	*'I want to recognise […] for their commitment to the wound care project. This is exactly the kind of leadership we need to drive change.'* *'Let's review the goals we set last month…how are you progressing, and what support do you need?'*
Sustaining EBP Through Learning	Informal mentorship and knowledge sharing	Site 1: senior nurses mentoring juniors during ward rounds. Site 2: informal sharing supplemented with peer discussions to address resistance.	*'When we have new evidence, I take the juniors aside and explain how to apply it during our rounds.'* *'Resistance eased when we encouraged open peer discussions about applying the new protocol.'*
	Peer learning as a structured approach	Site 2: regular group discussions on training outcomes. Site 1: ad hoc peer learning during team huddles and handovers.	*'We schedule weekly peer discussions to share takeaways from recent training sessions.'* *'Sometimes we use team huddles to discuss evidence-based practices informally.'*
	Formal Continuous Professional Development and external partnerships	Site 1: internal Information Technology leveraging senior staff expertise. Site 2: university partnerships enabling workshops, training, and resource access.	*'We tapped into the expertise of our senior staff to organise internal Continuous Professional Development sessions.'* *'The university partnership provided free workshops, which made a big difference for our staff training.'*
Technological Integration for EBP	Digital tools and resources for EBP	Site 1: real-time access to guidelines via hospital intranet. Site 2: e-learning modules for flexible professional development.	*'The hospital intranet gives us instant access to EBP guidelines.'* *'The e-learning modules allow staff to fit professional development around their shifts.'*
	Barriers to technological adoption	Information Technology literacy gaps (Site 1): reluctance among senior staff. Need for hands-on Information Technology training and peer support to address generational gaps.	*'Some senior staff struggle with the technology and prefer sticking to old methods.'* *'We set up peer Information Technology support groups to help with using the new tools.'*
Tailoring EBP to Patient-Centred Care	Integrating patient preferences	Site 2: protocols adapted based on patient feedback. Balancing evidence with patient voices to foster trust and improved outcomes.	*'We adjusted the protocol based on feedback from patients to ensure it meets their preferences.'* *'By listening to patients, we're able to balance evidence with what they value most.'*
	Addressing diverse patient populations	Site 1: integrating cultural preferences alongside evidence-based protocols safely and inclusively.	*'We respect cultural preferences, like traditional methods, but ensure they're used safely within evidence-based guidelines.'*
Emotional and Psychological Support	Managing change fatigue	Site 1: change fatigue due to workload pressures. Incremental steps and NM reassurance to address staff exhaustion and resistance.	*'We're taking small, manageable steps to avoid overwhelming the team.'* *'I regularly reassure staff that their efforts are making a real difference.'*
	Building resilience and morale	Site 2: recognition of small wins to motivate staff. Public praise and acknowledgment of efforts to improve morale and sustain engagement.	*'Recognising small successes has helped the team stay motivated.'* *'Publicly acknowledging their efforts boosts morale and keeps the team engaged.'*

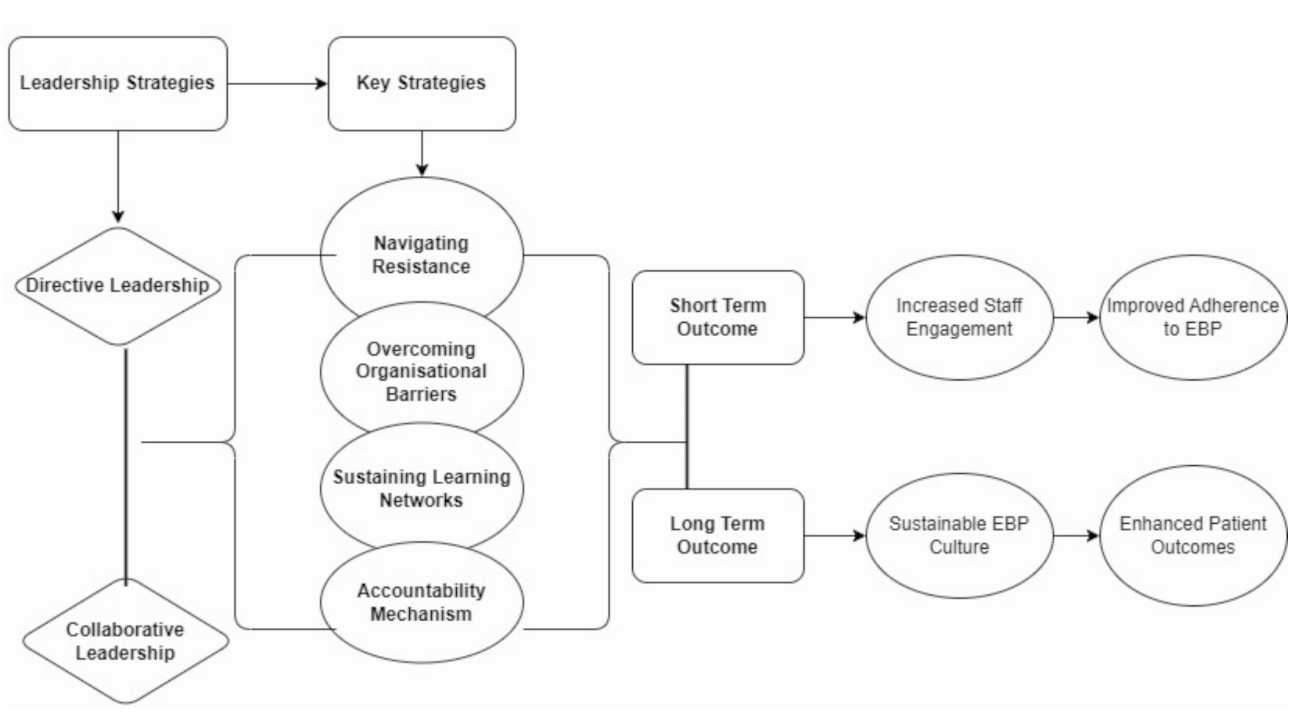

Fig. 1 Conceptual framework of leadership strategies and EBP adoption

Theme 1: navigating leadership challenges

This theme explores how NMs navigated their dual clinical and managerial roles to implement EBP in the face of significant organisational constraints. By employing adaptive leadership strategies, NMs at both sites address challenges such as staff shortages, financial limitations, and resistance to change. They utilised a combination of directive and collaborative leadership approaches, mentorship, accountability mechanisms, and creative resource management to foster a culture of EBP. These findings highlight how leadership styles evolve over time as NMs adapt to overcome barriers and achieve measurable outcomes.

Balancing directive and collaborative leadership

Nurse managers at Site 1 adopted a directive leadership style to address the immediate challenges of acute staffing shortages and resource limitations. The observational notes captured that Participant 2 delivered clear and authoritative instructions during team meetings to ensure that staff understood expectations for EBP implementation.

> *"I make it very clear that we cannot deliver high-quality care without following the latest evidence… it's non-negotiable" (Participant 2, S1).*

This directive approach proved essential in launching small-scale EBP projects such as a pilot wound care protocol. During one team discussion, Participant 2 clarified the changes to staff workflows by saying:

> *"We've integrated this protocol into your current workflow. It is designed to minimise disruption while improving outcomes" (Participant 2, S1).*

This clear communication fostered staff engagement, and document analysis revealed that infection rates decreased by 15% over six months following the protocol's implementation.

In contrast, some NMs at Site 2 demonstrated a collaborative leadership style. For example, during team meetings, Participant 1 encouraged staff to contribute to decision-making processes. In one session, Participant 1 asked nurses for feedback on adapting a pain management protocol, facilitating dialogue by saying:

> *"What adjustments would make this protocol work best for our ward? Your feedback is critical to its success." (Participant 1, S2).*

This participatory approach empowered nurses, giving them a sense of ownership and accountability in implementing EBP. A registered nurse remarked:

> *"…we feel more involved here… it's not just about following orders; we actually get a say in how EBP is integrated" ((Participant 4, S2).*

Over time, leadership styles at both sites evolved. In Site 1, directive leadership gradually incorporated collaborative elements as staff gained confidence in EBP, transitioning from instruction-driven methods to teamwork and dialogue. Conversely, at Site 2, the initially collaborative leadership approach matured into a more structured framework that included goal setting and accountability mechanisms, ensuring sustained engagement with EBP practices.

Overcoming the paradox of EBP champions versus resistance

Nurse managers at both sites faced the challenge of cultivating EBP champions among staff while simultaneously addressing resistance, particularly from experienced nurses. In Site 1, NMs such as Participant 9, who had been trained in EBP, were tasked with mentoring junior colleagues. During ward rounds, they demonstrated a new infection control protocol, reinforcing its benefits.

> *"This method is backed by evidence to reduce infections… let's make it a standard part of our practice today" (Participant 9, S1).*

This mentoring was instrumental in building confidence among less experienced staff. However, resistance persisted among some senior staff.

> *"Some senior staff feel that new protocols disrupt established routines. It takes time to show them the benefits" (Participant 5, S1).*

To address this challenge, NMs at Site 1 implemented accountability mechanisms, linking EBP compliance to performance evaluations. During a performance review, senior staff were encouraged to embody best practices in their own work.

> *"You've been a great mentor, but I'd like to see you apply the same evidence in your own practice… it's about leading by example" (Participant 2, S1).*

This strategy reinforced the role of senior staff as advocates for EBP while creating a sense of shared responsibility.

At Site 2, resistance was mitigated through dialogue and collaborative problem-solving. Hesitant nurses were encouraged to identify barriers to EBP and propose solutions, leading to a shift in perspectives. Some initially sceptical staff became strong advocates after witnessing the impact of EBP firsthand.

> *"…I was sceptical, but after seeing the results, I now understand why it's worth the effort" (Participant 10, S2).*

This transformation highlights the importance of involving staff in decision-making to foster ownership and reduce resistance to EBP initiatives.

Navigating resource constraints through leadership

Nurse managers at both sites faced the challenge of cultivating EBP champions among staff while simultaneously addressing resistance, particularly from experienced nurses. In Site 1, NMs such as Participant 9, who had been trained in EBP, were tasked with mentoring junior colleagues. During ward rounds, Participant 9 demonstrated a new infection control protocol, explaining:

> *"This method is backed by evidence to reduce infections…let's make it a standard part of our practice today" (Participant 9, S1).*

This mentoring was instrumental in building confidence among less experienced staff; however, resistance from some NMs persisted. Participant 5 acknowledged this challenge, stating:

> *"Some senior staff feel that new protocols disrupt established routines. It takes time to show them the benefits." (Participant 5, S1).*

To address resistance, NMs at Site 1 implemented accountability mechanisms, linking EBP compliance to performance evaluations. During a performance review, Participant 2 reinforced the importance of leading by example, saying:

> *"You've been a great mentor, but I'd like to see you apply the same evidence in your own practice…it's about leading by example." (Participant 2, S1).*

This strategy appears to have created a sense of responsibility while reinforcing the role of senior staff as advocates for EBP.

In Site 2, resistance was mitigated through dialogue and collaborative problem solving. Hesitant nurses were encouraged to identify barriers to EBP and propose solutions, leading some initially sceptical staff to become advocates. For example, a NM who had initially resisted a new wound care protocol later led a peer learning session after witnessing its success. During the session, the nurse admitted:

> *"… I was sceptical, but after seeing the results, I now understand why it's worth the effort." (NM, S2).*

This transformation highlights the value of involving staff in decision-making processes to address resistance and foster ownership of EBP initiatives.

Accountability mechanisms in leadership

Accountability mechanisms emerged as a central strategy for sustaining EBP initiatives at both sites. In Site 1, Participant 3 integrated performance reviews and recognition programs to reinforce EBP compliance and motivate staff. During a team huddle, Participant 3 recognised a staff member's contribution, stating:

> *"I want to recognise [...] for their commitment to the wound care project. This is exactly the kind of leadership we need to drive change." (Participant 3, S1).*

This public recognition reinforced positive behaviours and encouraged others to engage with EBP initiatives.

In Site 2, accountability was embedded into the collaborative process. Staff were encouraged to set personal EBP goals during team meetings, which were revisited during follow-up sessions. The observational notes captured that Participant 1 facilitated a review session, stating:

> *"Let's review the goals we set last month...how are you progressing, and what support do you need?" (Participant 1, S2).*

By creating a shared sense of responsibility, NMs fostered a culture of accountability where staff actively engaged with EBP as part of their professional growth.

The use of accountability mechanisms at both sites highlights the critical role of leadership in sustaining EBP initiatives. Through performance reviews, recognition programmes, or collaborative goal setting, these strategies ensured that EBP became embedded in the organisational culture, fostering long-term engagement and measurable outcomes.

Theme 2: overcoming organisational and resource barriers

This theme examines how NMs address organisational and resource barriers such as staffing shortages, financial constraints, and cultural resistance to EBP. These findings highlight the adaptability of NMs, as they have implemented creative strategies to embed EBP into daily routines, leveraged external partnerships, and fostered participatory decision-making. The differences between the two sites underscore the varied nature of the challenges and the tailored approaches needed to overcome these barriers.

Interplay between staffing and financial constraints

Both sites faced significant resource challenges, but the nature of these constraints varied. In Site 1, staffing shortages left nurses overwhelmed, limiting their capacity to engage in EBP activities such as attending external training or reviewing research. Participant 7 described the ongoing difficulties:

> *"We're constantly short-staffed, and it's difficult for nurses to find the time to read research or attend EBP training sessions." (Participant 7, S1).*

To address this, Participant 9 implemented a strategy of embedding EBP into routine practices. For example, during the pilot of a wound care protocol, nurses trialled the new guidelines during their regular patient assessments. Participant 9 explained this pragmatic approach:

> *"We had to fit it into what they were already doing. Instead of creating new tasks, we integrated them into their normal wound assessments." (Participant 9, S1).*

In Site 2, financial constraints were the primary challenge, limiting access to journals, databases, and professional development opportunities. Participant 11 reflected on the impact of these limitations:

> *"We don't have the budget for subscriptions to the latest research, so we rely heavily on what's freely available or what we can access through partnerships." (Participant 11, S2).*

To address these challenges, Participant 1 established external partnerships with universities and healthcare organisations, which provided free access to research resources and workshops. The observational notes recorded Participant 1 negotiating with leadership to allocate time for staff attendance, emphasising:

> *"These workshops are essential for our staff to stay updated on best practices. We need to allocate time for at least two nurses per session." (Participant 1, S2).*

These findings highlight how NMs employ strategic and creative approaches to address staffing and financial constraints, ensuring that EBP activities are practical, accessible, and sustainable within the limitations of each site.

Organisational cultural barriers

Organisational cultural barriers to EBP were significant, but their manifestations differed between the two sites. In Site 1, the absence of formalised EBP protocols created uncertainty about how to integrate research into practice. Document analysis revealed that clinical guidelines encouraged staff to consult evidence but lacked clear processes for EBP implementation. Participant acknowledged this ambiguity:

"The guidelines are vague, so I work with my team to break them down into steps they can follow during their shifts." (Participant 4, S1).

By operationalising EBP in a step-by-step manner, Participant 4 addressed the gap in formal processes and provided practical guidance for staff to follow.

At Site 2, cultural resistance to change was a more prominent challenge. Experienced nurses were hesitant to abandon established practices in favour of new EBP protocols. Participant 10 (S2) reflected on this resistance:

"Some of the older staff see no reason to change what's been working for years. It takes time and many discussions to get them on board." (Participant 10, S2).

The observational notes captured a team meeting where Participant 1 (S2) addressed this resistance by involving the team in adapting a new pain management protocol. Initially, one experienced nurse voiced their doubts:

"I don't see how this is better than what we've been doing" (Participant 1, S2).

However, through open discussions, staff were able to identify practical benefits, and the same nurse eventually acknowledged:

"If it makes documentation easier and improves patient pain control, I guess it is worth trying." (Participant, S2).

This collaborative approach successfully reduced resistance by empowering staff to contribute to decision-making processes.

By addressing these organisational cultural barriers through practical guidance, open dialogue, and participatory leadership, NMs at both sites demonstrated adaptability and resilience in fostering EBP implementation.

Creative resource management

In the face of limited resources, NMs at both sites employed innovative strategies to maximise their impact. At Site 1, small-scale pilot projects were instrumental in demonstrating the value of EBP. Participant 9 initiated a wound care protocol on a single ward to minimise disruption while showcasing measurable outcomes. Reflecting on this approach, Participant 9 stated,

"We started small so we could show results quickly. Once we had data to prove it worked, it was easier to get the rest of the team and leadership on board" (Participant 9, S1).

Observations revealed that Participant 9 tracked metrics such as wound healing rates and patient satisfaction during ward rounds, using this evidence to advocate for broader adoption of the protocol. Document analysis confirmed that the hospital implemented the protocol across multiple wards six months after the initial pilot.

The longitudinal nature of the findings revealed how small-scale successes built momentum for broader organisational change. As seen above, the initial wound care project expanded to multiple wards, demonstrating the scalability of small, focused initiatives. Participant 9 reflected on this progress, stating,

"We started as an experiment on one ward, but now it's standard practice across the hospital." (Participant 9, S1).

At Site 2, external partnerships emerged as a key strategy for accessing resources. Formal agreements with universities provided free access to research journals, training workshops, and expertise. Participant 10 described this mutually beneficial arrangement, stating,

"Finding mutual benefits was key…the universities get real-world data, and we get access to resources we wouldn't otherwise have." (Participant 10, S2).

Observational notes recorded a university-led workshop where nurses discussed strategies for integrating research into practice. Following the session, Participant 1 encouraged attendees to share their learning, saying,

"If you've learned something useful, make sure you share it in tomorrow's huddle." (Participant 1, S2).

These creative approaches demonstrate the resourcefulness of NMs at both sites. Whether through small-scale pilot projects or external partnerships, NMs overcome significant constraints to ensure the successful implementation and sustainability of EBP.

Theme 3: sustaining EBP through informal and formal learning

This theme explores how NMs fostered informal and formal learning networks to sustain EBP initiatives despite organisational challenges. By leveraging mentorship, peer learning, and professional development, NMs address knowledge gaps and build staff confidence over time.

Informal mentorship and knowledge sharing

Informal mentorship emerged as a key strategy for addressing EBP knowledge gaps, particularly in the context of staffing shortages. Senior nurses trained in EBP were tasked with mentoring junior colleagues, creating

opportunities for practical, on-the-job learning. Participant 5 explained this approach, stating,

> *"I specifically ask my senior staff to guide others. If they have attended a workshop or gained new knowledge, they are expected to cascade it to their teams. It's a practical way to get everyone on board" (Participant 5, S1).*

Observational notes captured a ward huddle where a senior nurse demonstrated an evidence-based wound care technique to junior staff, with Participant 5 providing oversight and encouragement.

In Site 2, informal mentorship was similarly valued but was supplemented with structured peer learning sessions to address staff resistance. Participant 3 acknowledged ongoing challenges, noting,

> *"We still have staff who prefer the old ways of doing things. It's a slow process to change their mindset, but peer-to-peer sharing helps" (Participant 3, S2).*

Over time, persistent mentorship efforts at both sites proved effective in mitigating resistance and building confidence among staff.

Peer learning as a structured approach

While informal mentorship dominated at Site 1, Site 2 employed a more structured approach to peer learning. Regularly scheduled group discussions provided platforms for nurses to share knowledge gained from external training and explore its practical implications. During an observed session, a senior nurse who had attended a university-led workshop on pain management facilitated an interactive discussion, sharing handouts and answering questions. Participant 1 ensured that the session was inclusive and focused on practical application, creating an environment where nurses felt supported in translating evidence into practice.

> *"I encouraged them to think about how this applies to their daily tasks. It's not just about theory but making it work in real scenarios." (Participant 1, S2).*

Participant 6 also highlighted the benefits of these discussions, stating,

> *"Sometimes we don't realise how much we can learn from each other. These sessions give us the space to reflect and improve." (Participant 6, S2).*

In contrast, Site 1 relied on less formal peer learning opportunities during team huddles and shift handovers. While effective, these ad hoc sessions were dependent on the initiative of individual NMs and senior staff. Participant 8 reflected on this approach, noting,

> *"We discuss things on the go. It's more spontaneous, but it keeps us engaged and helps us implement changes quickly" (Participant 8, S1).*

Formal information technology and external partnerships

Formal information technology initiatives varied between the two sites. In Site 1, internal Information Technology relied on in-house expertise, with senior nurses delivering targeted training sessions. Participant 7 explained,

> *"...we had to be creative with our resources. Our senior staff have enough experience to lead training sessions, so we use them to address immediate knowledge gaps." (Participant 7, S1).*

In Site 2, external partnerships played a critical role in enabling formal Continuous Professional Development opportunities. Agreements with universities provided access to workshops, online training modules, and journal subscriptions. Participant 11 reflected on the logistical challenges of participation, stating,

> *"We have great opportunities for training, but not everyone can attend. That's why we rely on those who do to share their learning with the rest of the team." (Participant 11, S2).*

To address this, Participant 1 implemented structured peer-sharing sessions, ensuring that knowledge from external training reached all staff.

These findings highlight the importance of both informal and formal learning strategies in sustaining EBP. By fostering mentorship, peer learning, and professional development, NMs equipped staff with the knowledge and confidence needed to integrate EBP into daily practice.

Theme 4: technological integration for EBP implementation

Nurse managers at both sites emphasised the critical role of technology in enabling EBP by facilitating real-time access to evidence, supporting decision-making, and enhancing training initiatives. While technology has proven to be valuable in addressing resource constraints, its adoption has been hindered by IT literacy gaps, particularly among older staff members. Despite these challenges, digital tools have contributed significantly to streamlining workflows and improving staff engagement with EBP.

Digital tools and resources for EBP

Electronic clinical guidelines played a central role in enabling real-time EBP integration at Site 1. Digital platforms, such as the hospital intranet, provide immediate access to evidence-based protocols, ensuring that NMs and their teams can make informed decisions during patient care. This was demonstrated during a ward round when Participant 4 accessed the NICE-recommended wound care protocol, stating,

> *"This guideline recommends applying the new dressing every three days…it's evidence-backed, so let's implement it from today" (Participant 4, S1).*

By utilising this tool, Participant 4 was able to provide clear guidance, reinforcing confidence and clarity among staff. In a subsequent interview, Participant 4 highlighted the efficiency of digital tools:

> *"I rely on our intranet for quick access to guidelines. It's faster and ensures that we're following current evidence" (Participant 4, S1).*

The immediate availability of evidence aligns with the directive leadership approach seen in theme 1, where NMs at Site 1 employed structured methods to overcome resource constraints and standardise EBP.

In Site 2, a structured approach to digital learning integration was evident through the hospital's investment in e-learning modules and competency-based digital training. The e-learning system emerged as a practical solution to overcome time and resource limitations, allowing nurses to complete training during quieter shifts while balancing clinical responsibilities with professional development. Document analysis revealed that infection control modules achieved a 40% completion rate within three months of launch, reflecting strong uptake. Participant 8 praised the system, stating,

> *"The e-learning system has been truly effective. It allows staff to complete modules at their own pace without taking them off the ward" (Participant 8, S2).*

This tailored approach to training fostered ownership and engagement, echoing findings in theme 2, where flexibility and incremental progress supported long-term change.

To further enhance the effectiveness of digital training, nurse managers at Site 2 collaborated with IT personnel and educational institutions to develop structured competency-based IT training workshops. These sessions focused on practical, hands-on use of digital tools, such as patient record systems, research databases, and online EBP modules. This blended approach - combining online learning with interactive face-to-face sessions - proved beneficial, allowing staff to seek real-time clarification on digital challenges while engaging in self-paced learning.

Barriers to technological adoption

Despite its successes, the adoption of technology faced resistance, particularly at Site 1, where IT literacy gaps among senior staff presented challenges. The observational notes documented a senior nurse struggling to navigate the electronic documentation system and expressing reluctance, saying,

> *"I just don't trust myself with these systems; I don't want to mess it up" (Participant, S1).*

This generational divide in digital skills was further reflected during an interview with Participant 6, who noted,

> *"It's hard for some of us who trained before digital systems. We need more hands-on support to use these tools confidently" (Participant 6, S1).*

Addressing these barriers requires structured digital competency training that is embedded within leadership strategies. NMs at Site 1 recognized the need for targeted IT training and collaborated with IT professionals to introduce structured hands-on workshops for senior staff. These workshops focused on incremental skill development, starting with basic navigation of electronic records, and progressing toward advanced analytics and digital decision-support tools.

In addition, leadership strategies such as role modelling and digital 'champions' - where technology-savvy nurses mentor colleagues - were introduced to bridge generational IT competency gaps. Nurse managers at Site 1 implemented a 'peer coaching' initiative, where each unit had a designated digital lead nurse responsible for troubleshooting technology issues and providing one-on-one guidance to staff who struggled with IT integration.

While digital resistance was more pronounced at Site 1, Site 2 faced a different challenge: limited adaptability of off-the-shelf e-learning programs to local clinical workflows. Some nurses expressed frustration that certain modules were not tailored to site-specific practices, leading to inconsistencies in their applicability to real-world clinical scenarios. This highlights the need for co-designing digital learning content with frontline nurses to ensure contextual relevance.

Theme 5: tailoring EBP to patient-centred care

Nurse managers at both sites emphasised the importance of adapting evidence-based protocols to align

with patient preferences and diverse cultural needs. This patient-centred approach highlights the flexibility required to ensure that EBP remains meaningful, inclusive, and responsive to individual care contexts. By balancing the rigour of evidence with the voices of patients, NMs fostered trust and improved care outcomes.

Integrating patient preferences into EBP

Nurse managers at Site 2 demonstrated how patient preferences were thoughtfully incorporated into EBP. Participant 2 highlighted the importance of listening to patients while maintaining a foundation of evidence, stating,

> *"Evidence provides the foundation, but patients' voices guide us…I'll adjust the protocol if a patient says, 'This works better for me.' It's about improving outcomes without ignoring the individual" (Participant 2, S2).*

This commitment to personalised care was observed during a patient review, where Participant 2 engaged a patient in a discussion about pain management alternatives. Recognising the patient's preference, Participant 2 adapted the protocol while ensuring transparency:

> *"If you're more comfortable with this approach, we'll adjust it – but I'll explain what the evidence says too" (Participant 2, S2).*

This approach exemplified the collaborative leadership style identified in theme 1.1, where shared decision-making was used to foster ownership and trust among stakeholders. By valuing patient input alongside clinical evidence, NMs ensure that an EBP is not only effective but also respectful of individual needs.

Addressing diverse patient populations

Nurse managers at Site 2 acknowledged the gaps in existing protocols when addressing the needs of culturally diverse patient populations. Participant 5 reflected on this challenge, stating,

> *"We realised we were missing out on adapting protocols for different cultural needs. For example, some patients prefer traditional wound healing methods alongside our protocols, so we found ways to integrate both safely" (Participant 5, S2).*

This sentiment was illustrated during a dressing change, where Participant 5 guided a nurse in incorporating a patient's cultural preferences while ensuring clinical safety. Participant 5 explained,

> *"We'll use the evidence-backed dressing, but we can add the herbal treatment they're familiar with as long as it doesn't interfere" (Participant 5, S2).*

By integrating cultural practices sensitively and safely, NMs ensured that EBP remained relevant and meaningful for diverse populations.

Theme 6: emotional and psychological support for EBP adoption

The implementation of EBP in resource-constrained environments often places a significant emotional burden on staff, leading to increased fatigue and resistance. NMs recognised this challenge and prioritised strategies to provide emotional support, foster resilience, and sustain staff morale. By acknowledging staff efforts and celebrating incremental successes, NMs created a supportive environment that facilitated long-term EBP adoption.

Managing change fatigue

Nurse managers at Site 2 acknowledged that resistance to new protocols often stemmed from staff exhaustion rather than an unwillingness to engage with EBP. Participant 3 reflected on this challenge during an interview, stating,

> *"There's a lot of change happening all the time. Staff get tired, and the first thing they resist is new protocols…not because they're against it, but because they're overwhelmed" (Participant 3, S2).*

This sentiment was observed during a shift handover, where Participant 3 reassured the team about a newly introduced infection control protocol. Breaking the change into manageable steps, they encouraged staff by saying,

> *"I know this feels like 'another change,' but let's start small. I'll be here to support you step by step." (Participant 3, S2).*

This incremental approach mirrored findings in theme 2, where small-scale projects and gradual progress helped staff adapt to change without feeling overwhelmed. By providing reassurance and ongoing support, NMs mitigated resistance and fostered a sense of confidence among staff.

Building resilience and morale

Nurse Managers prioritised morale building by recognising staff contributions and celebrating successes, regardless of their size. During an observed team huddle, Participant 1 praised a nurse for piloting a new pain management protocol, stating,

"A enormous thank you to [Name] for testing this new approach. Your hard work has improved patient comfort and care" (Participant 1, S2).

This public recognition created a sense of pride and validation among staff, encouraging further engagement with EBP.

During an interview, Participant 1 elaborated on the importance of recognition, sharing,

"Recognising small wins lifts morale. When staff see the impact of their work, it motivates them to keep going" (Participant 1, S2).

This focus on emotional resilience reflects the findings in theme 1.4, where accountability mechanisms such as recognition programmes were used to reinforce staff commitment to EBP.

By addressing change fatigue through incremental progress and building morale through positive reinforcement, NMs created an environment where staff felt supported and motivated to adopt EBP. This approach fostered resilience and ensured that evidence-based initiatives were sustained over time, even in the face of organisational challenges.

Discussion

The findings of this study provide critical insights into leadership approaches, organisational barriers, learning networks, and resource management, with the longitudinal design offering a unique perspective on the evolution of these strategies over time. This research contributes both theoretically and practically, offering actionable solutions for overcoming systemic challenges in implementing EBP in acute care nursing.

Leadership strategies for overcoming organisational barriers

The results demonstrate that NMs adopted a combination of directive and collaborative leadership styles to address organisational challenges. At Site 1, directive leadership was pivotal in navigating acute staffing shortages, with NMs setting clear expectations and launching small-scale pilot projects to ensure engagement. This finding aligns with Aarons et al., [44], who emphasise the necessity of directive leadership in the initial phases of EBP implementation. However, this study extends Aarons et al., [44] by demonstrating the effectiveness of directive leadership in resource-constrained environments, where swift decision-making is essential for overcoming systemic limitations.

In contrast, Site 2 showcased collaborative leadership through participatory decision-making, supporting the findings of Greenhalgh et al., [13], who highlight the importance of staff engagement in fostering innovation. The participatory leadership approach at Site 2 fostered intrinsic motivation among staff, ensuring greater buy-in for EBP adoption. These findings resonate with Ominyi and Ezeruigbo [47], who reported that hierarchical leadership positions influence EBP uptake, particularly when a clear direction is needed. However, resistance among experienced staff at Site 2 challenges the assumption that collaboration alone suffices. This highlights the need for a hybrid leadership approach that integrates directive strategies with collaborative mechanisms to manage resistance effectively, as also suggested by Tistad et al., [45].

Experienced staff: barriers and enablers in EBP implementation

The paradoxical role of experienced staff as both enablers and resistors of EBP emerged as a key finding. While senior nurses were instrumental in mentoring junior staff, their reluctance to adopt new protocols posed significant barriers. This duality challenges the optimism of Kitson et al., [46], who view experienced staff as EBP champions. Similarly, Ominyi et al., [10] highlighted that bureaucratic managerialism often amplifies this dual role, where entrenched practices lead to reluctance in embracing new guidelines. Findings of this study adds nuance by showing that visible clinical outcomes and structured accountability mechanisms, such as linking EBP compliance to performance evaluations, are effective in transforming resistance into advocacy.

In addition, structured mentorship initiatives and peer-learning networks helped bridge generational gaps in EBP competence. The study highlights that while younger nurses may have received formal training in EBP during their education, more experienced staff often relied on informal learning. The introduction of mentorship models, where senior staff were actively engaged in peer support, helped to bridge this gap, and facilitated knowledge exchange, reinforcing findings by Weng et al., [15] on the effectiveness of peer-led learning in mitigating resistance to change.

Enhancing staff engagement through leadership strategies

Frontline nurse engagement is a key determinant of successful EBP implementation, particularly in high-pressure acute care environments where workload demands, staff burnout, and competing clinical priorities can hinder motivation [15, 44]. This study highlights the necessity of tailored leadership strategies to enhance engagement, with key approaches outlined in the conceptual framework (Fig. 1).

Directive leadership strategies at Site 1 ensured that EBP initiatives were prioritised amid workforce shortages by integrating them into routine workflows. By setting clear expectations and embedding EBP activities within

standard procedures, NMs reduced the cognitive and logistical burden on staff, leading to increased adherence. Accountability mechanisms, such as linking performance reviews to EBP engagement, further reinforced these efforts, aligning with research by McCormack et al., [51], which emphasises the role of performance-driven motivation in sustaining EBP uptake.

Conversely, the collaborative leadership model at Site 2 fostered higher levels of intrinsic motivation by incorporating staff into decision-making processes. Nurses were actively involved in adapting protocols to their specific wards, ensuring that EBP was both practical and relevant. This participatory approach empowered staff, leading to a stronger sense of ownership and professional autonomy, both critical factors in sustaining engagement, as identified by Greenhalgh et al., [13].

Furthermore, sustaining learning networks played a vital role in engagement at both sites. Informal mentorship at Site 1 helped junior nurses develop EBP competencies without adding to their workload, while structured peer learning sessions at Site 2 provided a platform for staff to share experiences and best practices. These findings align with Weng et al., [15], who highlighted the importance of peer-led learning in fostering engagement and mitigating resistance to change.

Technology as a systemic enabler of EBP

Technology plays an increasingly critical role in facilitating EBP implementation, yet its effectiveness depends on systemic investment in digital infrastructure, IT training, and hospital-wide digital adoption policies. Small-scale pilot projects, such as the wound care protocol at Site 1, proved effective in building organisational momentum for EBP. This aligns with the findings of May et al. [49], who advocate for piloting interventions to generate initial evidence of success. However, this study extends their work by illustrating how sustained leadership support and visible clinical outcomes facilitate the transition from pilot initiatives to hospital-wide practices [52]. Similar findings are reported by Ominyi and Nwedu [48], who stress the importance of piloting interventions as a precursor to widespread adoption. The scalability of these successes highlights the need for integrating pilot projects into broader strategies to achieve sustainable, long-term change.

Contextual adaptation: applying findings across healthcare settings

While this study focused on EBP implementation in two acute care hospitals in the UK, the findings have relevance for healthcare settings globally, particularly in resource-limited environments where leadership structures, workforce constraints, and policy challenges may differ. In low-resource settings, where staffing shortages and financial constraints are more pronounced, the directive leadership style observed at Site 1 may be more applicable, as clear decision-making structures help mitigate the impact of limited resources [40, 53]. Conversely, in well-resourced settings, the collaborative leadership model seen at Site 2, which prioritised participatory decision-making and mentorship, may be more effective.

Additionally, the study's insights into digital adoption for EBP may vary across settings. While Site 2 successfully implemented e-learning modules for Continuous Professional Development, healthcare facilities in resource-limited environments may lack the necessary Information Technology infrastructure, internet access, or digital literacy training. In such cases, policymakers should prioritise lower-cost alternatives, such as mobile-based EBP learning tools or partnerships with non-governmental organisations and academic institutions to provide offline training resources.

Sustaining EBP: long-term impact and follow-up

This study's primary data collection period lasted eight months; however, it is part of a broader longitudinal engagement spanning six years, during which the researcher team maintained ongoing interactions with participating hospitals. This extended engagement provides valuable contextual insights but also introduces potential limitations related to evolving hospital policies and workforce changes over time, which may have influenced the findings. These factors should be considered when interpreting the results and are acknowledged as part of the study's limitations. This extended period provided insights into the sustained impact of leadership strategies beyond the initial data collection phase [29, 32].

Specifically, follow-up observations and informal discussions with stakeholders indicated that hospitals implementing structured accountability mechanisms and learning networks were more successful in embedding a sustainable EBP culture. For example, at Site 1, the small-scale pilot wound care protocol, initially introduced during the study, was later expanded hospital-wide, reinforcing the role of pilot initiatives in driving long-term change [50].

In Site 2, structured mentorship programmes and external university partnerships continued to evolve, with a steady increase in participation in continuous Professional Development workshops over subsequent years. This aligns with Damschroder et al., [50], who emphasised that sustained organisational change requires ongoing reinforcement and adaptation. This study also highlights challenges in ensuring continuous financial investment in EBP training, with intermittent funding constraints reported in follow-up discussions with stakeholders. These financial barriers may limit the long-term

sustainability of training programmes and should be considered as a key limitation of the study.

This study highlights the need for further research to build upon these preliminary long-term observations. Future investigations should include structured follow-up studies, such as longitudinal surveys and repeated case-study evaluations, to assess the enduring impact of leadership strategies on EBP sustainability. These areas should be explored under the 'Implications for Research' section, providing a roadmap for addressing the ongoing challenges and ensuring sustainable EBP implementation.

Limitations

While this study offers valuable insights into the implementation of EBP in nursing, several limitations must be acknowledged and clarified.

First, although social desirability bias is a recognised limitation of interview-based data, this concern was tempered by the triangulation of methods, including observations and document analysis. Triangulation strengthened the validity of the findings by cross-referencing reported behaviours with observed actions and documented evidence. However, there were instances where logistical challenges, such as staffing pressures and time constraints, limited the breadth and duration of observational components, preventing further verification of the interview findings.

Second, while the study examined organisational policies and staff roles through internal document analysis and interviews with nurses, these factors were sometimes overshadowed by the dominant themes of leadership and resource constraints. This may have resulted from the prioritisation of leadership strategies within the data analysis process. Nonetheless, the inclusion of documents and interviews captured broader systemic factors influencing EBP implementation, such as ambiguous guidelines and the absence of formalised protocols at Site 1.

In addition, while the study spanned six years, the primary data collection period was limited to eight months. This timeframe was influenced by organisational constraints and research feasibility. Although observations were conducted periodically rather than continuously, interviews and document analysis provided complementary data that allowed for the tracking of changes in leadership strategies, resource management, and staff engagement over time. However, sustained leadership interventions and long-term impacts on EBP adoption could not be fully assessed within the study's timeframe. Future research employing extended longitudinal designs could offer deeper insights into the persistence and evolution of leadership approaches to EBP implementation.

Furthermore, the study primarily focused on NMs and frontline nurses, which may have constrained insights into higher-level organisational factors. While internal policies were examined, the perspectives of senior hospital administrators and external stakeholders, such as policymakers, were not included. This omission may have limited a broader understanding of systemic barriers and facilitators influencing EBP adoption. Future studies incorporating these perspectives could provide a more comprehensive view of organisational and policy-level influences on EBP implementation.

Future research addressing these limitations, particularly with continuous observation, extended longitudinal analysis, and broader stakeholder engagement, will provide a deeper understanding of the evolving and multilevel dynamics influencing EBP implementation.

Implications for practice

The findings reveal that the interplay between organisational constraints, NM leadership styles, and resulting outcomes in EBP requires targeted, concrete recommendations.

First, hybrid leadership approaches are necessary for addressing EBP implementation challenges within resource-limited environments. NMs should adopt directive leadership when an immediate structure is needed, such as during staffing shortages or crises, while gradually transitioning to collaborative methods to foster staff ownership and engagement. This dual approach helps align staff resistance with organisational goals. Furthermore, leadership development programmes should be formalised to equip NMs with the skills to adapt their leadership style based on the evolving needs of their teams and resource constraints. Without structured leadership training, NMs may struggle to implement EBP effectively, particularly in environments where systemic barriers and competing priorities limit engagement.

Second, addressing organisational constraints requires a deeper integration of EBP into existing workflows to ensure sustainability. The study findings suggest that small-scale pilot projects, as demonstrated at Site 1, were effective in aligning EBP with daily clinical tasks while minimising disruption. However, these interventions should not remain isolated; rather, they should be systematically scaled across organisations with structured leadership support to secure resources and staff buy-in. Furthermore, partnerships with academic institutions, as seen at Site 2, should be formalised to provide continuous access to continuing professional development opportunities, research resources, and mentorship.

Finally, cultural interventions are essential for managing change fatigue and resistance to EBP. The study findings indicate that while staff often recognised the benefits of EBP, competing demands and workload pressures exacerbated resistance. To mitigate this, NMs should implement structured mentorship programmes

and peer learning models to facilitate knowledge transfer and ensure the consistent dissemination of EBP principles. A cascading learning system, where trained staff share insights with colleagues during team huddles or departmental meetings, could be an effective strategy to normalise EBP within routine practice.

These recommendations highlight the need for a multilevel strategy that addresses leadership development, organisational barriers, and cultural resistance while linking these actions to measurable improvements in evidence-based nursing practice. Healthcare organisations must acknowledge that successful EBP implementation hinges on aligning leadership actions with systemic constraints to create sustainable, evidence-informed care environments.

Implications for research

The findings highlight key areas for future research to better understand the interplay between leadership, organisational constraints, and EBP outcomes in nursing.

First, longitudinal studies are needed to assess the sustained impact of hybrid leadership approaches that balance directive and collaborative strategies in EBP implementation. Comparative research across diverse healthcare settings, including resource-limited environments, would provide further insights into the adaptability and scalability of these leadership styles.

Second, future research should explore the mechanisms that facilitate the scaling of small- pilot projects scale into hospital-wide practices. While pilot initiatives at Site 1 demonstrated success, factors such as leadership endorsement, resource allocation, and staff engagement played critical roles in their outcomes. However, the exact processes that drive these expansions remain underexplored. Research focusing on these enabling conditions could help organisations develop structured scale-up models for EBP integration across various healthcare settings.

Third, studies are needed to examine cultural resistance to EBP, particularly among experienced nurses. The research findings suggest that while knowledge of EBP is widespread, implementation challenges persist due to perceived threats to clinical autonomy and a lack of perceived benefits in daily practice. Future studies should investigate evidence-informed interventions, such as mentorship programmes, structured peer learning, and recognition incentives, to identify effective strategies for transforming resistance into sustained advocacy and leadership in EBP.

Additionally, technology adoption within EBP warrants further exploration. While digital tools such as clinical decision support systems, electronic health records, and mobile applications have been shown to improve EBP uptake, research should focus on IT training for senior staff, particularly those who may struggle with digital adaptation. Future studies could examine how tailored digital training programmes influence EBP adoption, workflow efficiency, and patient outcomes.

Finally, research on the long-term impact of academic clinical partnerships could provide valuable insights into sustainable professional development and resource accessibility, particularly in resource-constrained settings. While existing collaborations, such as the one at Site 2, demonstrated short-term benefits, further research is needed to explore how these partnerships evolve over time, how they affect clinical practice, and how they influence workforce retention and skill development.

Addressing these research gaps can inform more effective, context-specific strategies for enhancing EBP implementation and ensuring that nursing leadership, organisational systems, and cultural factors align to support evidence-based care in diverse healthcare environments.

Conclusions

This study provides a comprehensive understanding of the interplay between leadership approaches, organisational constraints, and EBP implementation in nursing, offering critical insights into the strategies NMs employ to address these challenges. The findings demonstrate that a hybrid leadership approach that combines directive strategies to provide structure and collaborative methods to foster ownership plays a pivotal role in overcoming resistance and engaging staff. However, leadership alone is insufficient without addressing systemic barriers, such as staffing shortages, financial constraints, and cultural resistance, which impede EBP integration.

The study further highlights the value of context-specific interventions, such as embedding EBP into existing workflows, leveraging external partnerships for resource access, and implementing small-scale pilot projects to build momentum for broader organisational change. Formal and informal learning networks, including mentorship and peer learning, emerged as essential enablers for bridging knowledge gaps and sustaining EBP initiatives over time.

While technological tools have been shown to enhance EBP access and decision-making, addressing IT literacy challenges, particularly among senior staff, is critical for ensuring consistent adoption. Finally, the findings emphasise the importance of fostering emotional resilience and morale through structured support, recognition, and incremental implementation to manage change fatigue.

This research highlights the need for tailored, multilevel strategies that align leadership actions with organisational priorities to ensure that EBP becomes embedded in practice. By addressing these complexities, healthcare

organisations can create sustainable, evidence-informed care environments that improve clinical outcomes and staff engagement.

Acknowledgements
We wish to thank all nurses who participated in this study.

Author contributions
NA and JO contributed to the conceptualisation and methodology of this study. JO and NA were involved in the investigation and validation of the results. JO, UE and NA were responsible for data curation and formal analysis. JO contributed to the drafting of the manuscript, whereas NA, DA and UE participated in its review and editing. JO supervised the study and provided the necessary resources. All the authors have read and approved the final version of the manuscript.

Funding
None received.

Data availability
The datasets utilised and/or analysed in this study are accessible from the corresponding author upon reasonable request. The interview data included in this document have not been previously published.

Declarations

Ethics approval and consent to participate
The study was conducted in accordance with the guidelines of the Declaration of Helsinki and was approved by the University of Northampton's Research Ethical Approval System (reference ID: 00184). Ethical approval from the Health Research Authority (HRA) was waived, as the study did not involve patients, minors, or clinical trials or pose any risks to participants, in alignment with UK national regulations. However, approval was granted by the Research & Development Unit of the hospitals involved in the study.

Consent to publish
Not applicable.

Competing interests
The authors declare no competing interests.

Consent to participate
Informed consent to participate was obtained from all participants prior to their enrolment in this study. Participant information sheets and consent forms were provided in advance via email. These documents were then reviewed and verbally confirmed at the start of each observation episode and interview recording.

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Received: 23 October 2024 / Accepted: 1 March 2025
Published online: 06 March 2025

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