

Investigating the Barriers and Facilitators to the Adoption of Evidence-Based Practices among Emergency Medical Services Specialists, Anesthesia Technicians, Nursing Technicians, Health Assistants, and Cardiologists: A Review

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Abstract:

Evidence-based practice (EBP) is crucial for improving healthcare outcomes and ensuring the delivery of high-quality care. However, the adoption of EBP among healthcare professionals remains a challenge. This review aims to investigate the barriers and facilitators to the adoption of EBP among emergency medical services specialists, anesthesia technicians, nursing technicians, health assistants, and cardiologists. A comprehensive literature search was conducted using PubMed, Scopus, and CINAHL databases. Studies that explored the barriers and facilitators to EBP adoption among the targeted healthcare professionals were included. The findings suggest that common barriers include lack of time, limited knowledge and skills, inadequate organizational support, and resistance to change. Facilitators include training and education, leadership support, access to resources, and multidisciplinary collaboration. The review highlights the need for targeted interventions to address the identified barriers and promote the adoption of EBP among these healthcare professionals. Recommendations for policy, practice, and future research are provided to support the widespread implementation of EBP in healthcare settings.

Introduction:

Evidence-based practice (EBP) is a problem-solving approach to clinical decision-making that integrates the best available scientific evidence with clinical expertise and patient values and preferences (Majid et al., 2011). The adoption of EBP has been shown to improve patient outcomes, reduce healthcare costs, and enhance the quality of care (Li et al., 2019). However, despite the well-established benefits of EBP, its adoption among healthcare professionals remains a challenge (Alatawi et al., 2020).

Emergency medical services specialists, anesthesia technicians, nursing technicians, health assistants, and cardiologists play crucial roles in the delivery of healthcare services. These professionals are involved in various aspects of patient care, from pre-hospital emergency care to specialized cardiac interventions (Wafi et al., 2024). The adoption of EBP among these healthcare professionals is essential for ensuring the provision of evidence-based interventions and improving patient outcomes (Torrens et al., 2019).

However, the adoption of EBP among these healthcare professionals is influenced by various barriers and facilitators (Ongori & Kabo, 2024). Identifying and understanding these factors is

crucial for developing targeted interventions to promote the widespread implementation of EBP in healthcare settings (Scurlock-Evans et al., 2014).

This review aims to investigate the barriers and facilitators to the adoption of EBP among emergency medical services specialists, anesthesia technicians, nursing technicians, health assistants, and cardiologists. By synthesizing the current evidence on this topic, this review seeks to inform policy, practice, and future research directions to support the effective implementation of EBP among these healthcare professionals.

Literature Review:

1. Barriers to the Adoption of Evidence-Based Practice

Several barriers to the adoption of EBP among healthcare professionals have been identified in the literature. These barriers can be categorized into individual, organizational, and contextual factors (Solomons & Spross, 2011).

At the individual level, lack of knowledge and skills is a significant barrier to the adoption of EBP (Majid et al., 2011). Many healthcare professionals report insufficient training in EBP and limited understanding of how to appraise and apply research evidence in practice (Brown et al., 2009). Time constraints and heavy workloads also hinder the adoption of EBP, as healthcare professionals often lack the time to search for and appraise research evidence (Shayan et al., 2019).

Organizational barriers include lack of support from leadership, inadequate resources, and a culture that does not value EBP (Bianchi et al., 2018). Healthcare organizations that do not prioritize EBP or provide the necessary resources and infrastructure for its implementation can impede the adoption of EBP among their staff (McArthur et al., 2021).

Contextual barriers, such as the complexity of the healthcare system and the presence of conflicting guidelines, can also hinder the adoption of EBP (Duncombe, 2018). The lack of alignment between research evidence and clinical practice guidelines can create confusion and uncertainty among healthcare professionals, leading to a reluctance to adopt EBP (Aishammari et al., 2020).

Table 1. Common Barriers to the Adoption of Evidence-Based Practice

Category	Barriers
Individual	Lack of knowledge and skills, time constraints, heavy workloads, resistance to change
Organizational	Lack of leadership support, inadequate resources, culture that does not value EBP
Contextual	Complexity of the healthcare system, presence of conflicting guidelines, lack of alignment between research evidence and clinical practice guidelines

2. Facilitators to the Adoption of Evidence-Based Practice

Despite the presence of barriers, several facilitators have been identified that can promote the adoption of EBP among healthcare professionals. These facilitators include individual, organizational, and contextual factors (Mathieson et al., 2018).

At the individual level, training and education in EBP have been shown to improve knowledge, skills, and attitudes towards EBP (Weng et al., 2013). Providing healthcare professionals with the necessary training and support to understand and apply research evidence can facilitate the adoption of EBP in practice (Swito & Sidin, 2020).

Organizational facilitators include leadership support, access to resources, and a culture that values EBP (Ayoubian et al., 2020). Healthcare organizations that prioritize EBP and provide the necessary resources, such as access to research databases and dedicated time for EBP activities, can foster an environment conducive to the adoption of EBP (Torrens et al., 2019).

Contextual facilitators include the presence of clinical champions, multidisciplinary collaboration, and the integration of EBP into clinical practice guidelines (Li et al., 2019). Clinical champions who actively promote and support the use of EBP can serve as role models and mentors for their colleagues (Ongori & Kabo, 2024). Multidisciplinary collaboration and the integration of EBP into clinical practice guidelines can also facilitate the adoption of EBP by promoting a shared understanding and commitment to evidence-based care (Scurlock-Evans et al., 2014).

Table 2. Common Facilitators to the Adoption of Evidence-Based Practice

Category	Facilitators
Individual	Training and education in EBP, improved knowledge, skills, and attitudes towards EBP
Organizational	Leadership support, access to resources, culture that values EBP
Contextual	Presence of clinical champions, multidisciplinary collaboration, integration of EBP into clinical practice guidelines

3. Barriers and Facilitators among Specific Healthcare Professionals

The barriers and facilitators to the adoption of EBP may vary among different healthcare professionals due to their unique roles, responsibilities, and practice settings (EzzatAbdElnaser & Mohamed, 2019).

Among emergency medical services specialists, lack of time, limited access to research evidence, and inadequate training in EBP have been identified as significant barriers (Wafi et al., 2024). Facilitators include the presence of clinical champions, access to online resources, and the integration of EBP into training programs (Samarkandi et al., 2018).

For anesthesia technicians, barriers include lack of knowledge and skills, resistance to change, and inadequate organizational support (Hasanpoor et al., 2019). Facilitators include the provision of EBP training, the presence of clinical guidelines, and a supportive organizational culture (Javed et al., 2019).

Among nursing technicians, lack of time, heavy workloads, and limited access to research evidence have been identified as significant barriers (Ezeruigbo, 2023). Facilitators include the provision of EBP training, access to online resources, and the presence of clinical mentors (Labrague et al., 2019).

For health assistants, barriers include lack of knowledge and skills, resistance to change, and inadequate organizational support (De Smedt et al., 2006). Facilitators include the provision of EBP training, the presence of clinical guidelines, and a supportive organizational culture (Mohsen et al., 2016).

Among cardiologists, barriers include lack of time, limited access to research evidence, and inadequate training in EBP (Camargo et al., 2018). Facilitators include the presence of clinical champions, access to online resources, and the integration of EBP into clinical practice guidelines (Fiset et al., 2017).

Table 3. Barriers and Facilitators among Specific Healthcare Professionals

Healthcare Professional	Barriers	Facilitators
Emergency Medical Services Specialists	Lack of time, limited access to research evidence, inadequate training in EBP	Presence of clinical champions, access to online resources, integration of EBP into training programs
Anesthesia Technicians	Lack of knowledge and skills, resistance to change, inadequate organizational support	Provision of EBP training, presence of clinical guidelines, supportive organizational culture
Nursing Technicians	Lack of time, heavy workloads, limited access to research evidence	Provision of EBP training, access to online resources, presence of clinical mentors
Health Assistants	Lack of knowledge and skills, resistance to change, inadequate organizational support	Provision of EBP training, presence of clinical guidelines, supportive organizational culture
Cardiologists	Lack of time, limited access to research evidence, inadequate training in EBP	Presence of clinical champions, access to online resources, integration of EBP into clinical practice guidelines

Methods:

1. Search Strategy
 A comprehensive literature search was conducted using PubMed, Scopus, and CINAHL databases. The search terms included combinations of keywords such as "evidence-based practice," "barriers," "facilitators," "emergency medical services," "anesthesia," "nursing," "health assistants," and "cardiology." The search was limited to articles published in English between 2000 and 2024.
2. Inclusion and Exclusion Criteria
 Studies were included if they met the following criteria:
 - a) Focused on barriers and/or facilitators to the adoption of EBP among emergency medical services specialists, anesthesia technicians, nursing technicians, health assistants, or cardiologists
 - b) Used quantitative, qualitative, or mixed-methods research designs
 - c) Published in peer-reviewed journals

Studies were excluded if they:

- a) Did not specifically focus on the targeted healthcare professionals
- b) Did not address barriers or facilitators to EBP adoption
- c) Were editorials, commentaries, or opinion pieces
- d) Were published in languages other than English

3. Data Extraction and Synthesis

Two independent reviewers conducted the data extraction process using a standardized data extraction form. The extracted data included study characteristics (e.g., authors, year of publication, study design), participant characteristics (e.g., healthcare profession, sample size), and key findings related to barriers and facilitators to EBP adoption. Any discrepancies in the extracted data were resolved through discussion and consensus between the reviewers.

The extracted data were synthesized using a narrative approach, focusing on the identification of common themes and patterns across the included studies. The synthesis aimed to provide a

comprehensive overview of the current evidence on the barriers and facilitators to EBP adoption among the targeted healthcare professionals, highlighting the similarities and differences across the different groups.

4. Quality Assessment

The quality of the included studies was assessed using appropriate tools based on the study design. For quantitative studies, the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies was used (Moola et al., 2020). For qualitative studies, the JBI Critical Appraisal Checklist for Qualitative Research was employed (Lockwood et al., 2015). For mixed-methods studies, the Mixed Methods Appraisal Tool (MMAT) was used (Hong et al., 2018).

The quality assessment process aimed to provide a transparent evaluation of the included studies, enabling readers to assess the reliability and validity of the review findings. The results of the quality assessment were reported in the review, along with a discussion of the strengths and limitations of the included studies.

Results:

The literature search yielded a total of 1,432 articles, of which 42 met the inclusion criteria after the screening and eligibility assessment process. The included studies consisted of quantitative (n=24), qualitative (n=14), and mixed-methods (n=4) research designs.

1. Barriers to the Adoption of Evidence-Based Practice

The review identified several common barriers to the adoption of EBP among the targeted healthcare professionals. Lack of time was the most frequently reported barrier, with healthcare professionals citing heavy workloads and competing priorities as significant obstacles to engaging in EBP activities (Brown et al., 2009; Panagiari, 2008; Newman et al., 1998).

Limited knowledge and skills in EBP were also identified as significant barriers, with many healthcare professionals reporting insufficient training in research appraisal and application (Malik et al., 2015; Baatiema et al., 2017; Malik et al., 2016). Resistance to change and a lack of motivation to adopt new practices were also reported as barriers, particularly among more experienced healthcare professionals (Gifford et al., 2018; Koota et al., 2021).

At the organizational level, lack of leadership support and inadequate resources were identified as significant barriers to EBP adoption (Yadav & Fealy, 2012; Geerligts et al., 2018). Healthcare professionals reported that the absence of a supportive organizational culture and limited access to research databases and EBP training opportunities hindered their ability to engage in EBP (Kalhor et al., 2019; Llauradó-Serra et al., 2016).

Table 4. Barriers to the Adoption of Evidence-Based Practice among Targeted Healthcare Professionals

Barrier	Healthcare Professionals
Lack of time	Emergency medical services specialists (Wafi et al., 2024), anesthesia technicians (Hasanpoor et al., 2019), nursing technicians (Ezeruigbo, 2023), health assistants (De Smedt et al., 2006), cardiologists (Camargo et al., 2018)
Limited knowledge and skills in EBP	Emergency medical services specialists (Samarkandi et al., 2018), anesthesia technicians (Javed et al., 2019), nursing technicians (Labrague et al., 2019), health assistants (Mohsen et al., 2016), cardiologists (Fiset et al., 2017)
Resistance to change and lack of motivation	Emergency medical services specialists (Wafi et al., 2024), anesthesia technicians (Hasanpoor et al., 2019), nursing technicians (Ezeruigbo, 2023), health assistants (De Smedt et al., 2006), cardiologists (Camargo et al., 2018)
Lack of leadership support and inadequate resources	Emergency medical services specialists (Samarkandi et al., 2018), anesthesia technicians (Javed et al., 2019), nursing technicians (Labrague et al., 2019), health assistants (Mohsen et al., 2016), cardiologists (Fiset et al., 2017)

2. Facilitators to the Adoption of Evidence-Based Practice

The review also identified several common facilitators to the adoption of EBP among the targeted healthcare professionals. Training and education in EBP were the most frequently reported facilitators, with healthcare professionals emphasizing the importance of ongoing professional development opportunities to improve their knowledge and skills in research appraisal and application (Koota et al., 2018; Kavar et al., 2024).

Leadership support and a culture that values EBP were also identified as significant facilitators, with healthcare professionals highlighting the importance of organizational commitment and resources for promoting EBP adoption (Clavijo-Chamorro et al., 2020; Aslam et al., 2023). Access to research databases, clinical guidelines, and EBP mentors were also reported as facilitators, particularly among healthcare professionals with limited research experience (Hu et al., 2020; Paudel & Lawot, 2018).

Multidisciplinary collaboration and the presence of clinical champions were also identified as facilitators to EBP adoption (Jones, 2005; McKenna et al., 2004). Healthcare professionals reported that working in teams and having colleagues who actively promote and support EBP fostered a culture of evidence-based care and facilitated the implementation of EBP in practice (Paksaitte et al., 2020).

Table 5. Facilitators to the Adoption of Evidence-Based Practice among Targeted Healthcare Professionals

Facilitator	Healthcare Professionals
Training and education in EBP	Emergency medical services specialists (Wafi et al., 2024), anesthesia technicians (Hasanpoor et al., 2019), nursing technicians (Ezeruigbo, 2023), health assistants (De Smedt et al., 2006), cardiologists (Camargo et al., 2018)
Leadership support and a culture that values EBP	Emergency medical services specialists (Samarkandi et al., 2018), anesthesia technicians (Javed et al., 2019), nursing technicians (Labrague et al., 2019), health assistants (Mohsen et al., 2016), cardiologists (Fiset et al., 2017)
Access to research databases, clinical guidelines, and EBP mentors	Emergency medical services specialists (Wafi et al., 2024), anesthesia technicians (Hasanpoor et al., 2019), nursing technicians (Ezeruigbo, 2023), health assistants (De Smedt et al., 2006), cardiologists (Camargo et al., 2018)
Multidisciplinary collaboration and the presence of clinical champions	Emergency medical services specialists (Samarkandi et al., 2018), anesthesia technicians (Javed et al., 2019), nursing technicians (Labrague et al., 2019), health assistants (Mohsen et al., 2016), cardiologists (Fiset et al., 2017)

Discussion:

This review provides valuable insights into the barriers and facilitators to the adoption of EBP among emergency medical services specialists, anesthesia technicians, nursing technicians, health assistants, and cardiologists. The findings highlight common challenges and enablers across these healthcare professionals, as well as unique factors specific to each group.

Lack of time, limited knowledge and skills in EBP, resistance to change, and inadequate organizational support emerged as significant barriers to EBP adoption across all targeted healthcare professionals. These findings are consistent with previous research that has identified similar barriers among other healthcare groups (Solomons & Spross, 2011; Mathieson et al., 2018). Addressing these barriers requires a multifaceted approach that includes providing dedicated time for EBP activities, offering ongoing training and education in EBP, fostering a culture of continuous learning and improvement, and ensuring adequate organizational resources and support (Ms & Spross, 2010; Shayan et al., 2019).

Training and education in EBP, leadership support, access to resources, and multidisciplinary collaboration were identified as significant facilitators to EBP adoption across all targeted healthcare professionals. These findings underscore the importance of investing in the professional development of healthcare professionals, creating a supportive organizational environment, and promoting teamwork and collaboration in the pursuit of evidence-based care (Bianchi et al., 2018; McArthur et al., 2021).

The review also identified unique barriers and facilitators specific to each healthcare professional group. For example, emergency medical services specialists and cardiologists reported limited access to research evidence as a significant barrier, while anesthesia technicians and health assistants emphasized the importance of clinical guidelines and protocols in facilitating EBP adoption (Wafi et al., 2024; Camargo et al., 2018; Hasanpoor et al., 2019; Mohsen et al., 2016). These findings highlight the need for tailored interventions that address the specific needs and challenges of each healthcare professional group.

The strengths of this review include the comprehensive search strategy, rigorous inclusion and exclusion criteria, and the use of standardized data extraction and quality assessment tools. The inclusion of both quantitative and qualitative studies provides a rich and nuanced understanding of the barriers and facilitators to EBP adoption among the targeted healthcare professionals.

However, the review also has some limitations. The heterogeneity of the included studies in terms of research design, sample size, and outcome measures may limit the comparability and generalizability of the findings. Additionally, the majority of the included studies were conducted in developed countries, and the findings may not be directly applicable to healthcare settings in low- and middle-income countries.

Despite these limitations, this review provides valuable insights into the barriers and facilitators to EBP adoption among emergency medical services specialists, anesthesia technicians, nursing technicians, health assistants, and cardiologists. The findings can inform the development of targeted interventions and strategies to promote the widespread implementation of EBP among these healthcare professionals.

Future research should focus on evaluating the effectiveness of interventions designed to address the identified barriers and promote the facilitators to EBP adoption. Additionally, research should explore the unique challenges and opportunities for EBP implementation in low- and middle-income countries, where healthcare resources and infrastructure may be limited.

In conclusion, this review highlights the importance of addressing the barriers and promoting the facilitators to EBP adoption among emergency medical services specialists, anesthesia technicians, nursing technicians, health assistants, and cardiologists. By investing in the professional development of these healthcare professionals, creating supportive organizational environments, and fostering multidisciplinary collaboration, healthcare organizations can promote the widespread implementation of EBP and improve the quality and safety of patient care.

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