



# A Qualitative Force Field Analysis of Facilitators and Barriers to Evidence-Based Practice in Healthcare Using an Implementation Framework

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## Abstract

Research has identified facilitators and barriers to implementation of evidence-based practices (EBPs). Few studies have evaluated which factors persist among healthcare clinicians with extensive education and training on EBP implementation. Therefore, the purpose of this study was to examine facilitators and barriers to EBP implementation across a national sample of specialty-prepared EBP mentors in healthcare settings. Healthcare clinicians participating in an immersive 5-day EBP knowledge and skill building program were invited to complete a follow-up survey 12 months later to report on implementation experiences. The Consolidated Framework for Implementation Research (CFIR) guided content analysis of responses. A force field analysis using Lewin's change theory was used to assign numerical 'weights' to factors. Eighty-four individuals reported facilitators and barriers to implementation. The majority occurred within the inner setting of the CFIR model. Facilitators were strong leadership engagement ( $n=15$ ), positive EBP culture ( $n=9$ ), and resources ( $n=4$ ). Barriers included lack of resources ( $n=21$ ), poor leadership engagement ( $n=19$ ), implementation climate ( $n=17$ ), lack of relative priority ( $n=12$ ), and organizational characteristics ( $n=9$ ). Respondents also identified simultaneous facilitators and barriers within the process domain of the CFIR model. The construct of stakeholder engagement was a barrier when absent from the implementation process ( $n=23$ ), yet was a strong facilitator when present ( $n=23$ ). Implementation in healthcare settings appears most effective when conducted by an interprofessional team with strong leadership, resources, stakeholder engagement, and positive EBP culture. When these same factors are absent, they remain persistent barriers to implementation, even among specialty-trained healthcare clinicians.

**Keywords** Implementation science · Facilitator · Barrier · Implementation · Healthcare

## Abbreviations

|          |  |
|----------|--|
| COVID-19 | Coronavirus-19                                     |
| EBP      | Evidence-based practice                            |
| IS       | Implementation science                             |
| CFIR     | Consolidated Framework for Implementation Research |

## Contributions to Literature

- Few studies have evaluated the degree to which common facilitators and barriers to implementation persist among healthcare clinicians specialty trained in evidence-based practice (EBP).
- We incorporated a force field analytical approach using Lewin's change theory and the Consolidated Framework for Implementation Research (CFIR) to create weighted values of facilitators and barriers experienced by healthcare clinicians implementing selected EBPs into practice settings.
- The majority of facilitators and barriers involved the inner setting for implementation. Engagement of key stakeholders, available resources, leadership support, and culture were the highest weighted facilitators. Con-

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versely, clinicians reported absence of stakeholder and leadership engagement, and implementation climate as persistent barriers to implementation.

## Introduction

Training in evidence-based practice (EBP) processes improves EBP knowledge, attitudes, and competencies (Gorsuch et al., 2020; Melnyk et al., 2017a, b), often resulting in sustainable practice change across healthcare settings (Flodgren et al., 2012). EBP integrates best scientific evidence, clinician expertise, and patient preferences and values to make decisions (Melnyk & Fineout-Overholt, 2019). Within the EBP process, implementing and sustaining practice changes into routine healthcare settings remains the most challenging step (Li et al., 2018; McNett et al., 2021a), even after immersive education and skill building (McNett et al., 2021b). Implementation science (IS) grew out of this challenge to discover knowledge regarding effective models and strategies for increasing the uptake of EBPs into routine practice settings (Eccles & Mittman, 2006). IS theories, models, and frameworks provide a systematic approach to identifying facilitators and barriers to successful EBP implementation (Nilsen, 2015).

A multitude of research within IS and other fields has identified common, persistent facilitators and barriers for implementation of EBP across sites and settings (Albers et al., 2021; Augustino et al., 2020; Bach-Mortensen et al., 2018; Clarke et al., 2021; Garcia et al., 2021; Li et al., 2018). While individuals or organizations may be knowledgeable about EBP and its importance, they may not have knowledge about the science of implementation, the requisite skills to implement, or be in an environment with a robust implementation culture. Immersive programs that sequentially teach practitioners about EBP and approaches to implementation may be highly effective in bridging the research to practice gap and supporting sustainable change. This type of program creates ‘specialty-prepared EBP mentors’ who are then positioned to identify and lead implementation of EBP within their practice settings. Ideally, participation in these immersive EBP programs would prepare the specialty-prepared EBP mentor for leveraging facilitators and navigating barriers associated with implementation. These participants would have unique insights into factors that support or stall EBP efforts after initial education and skill building about implementation. However, few studies have evaluated if this approach is effective using a national, diverse cohort of clinicians who seek to successfully integrate EBP into their practice settings. We have previously reported on implementation strategies used by these specialty-trained EBP mentors or clinicians when implementing EBPs into their practice settings after immersive training (McNett et al., 2021b). The

current paper extends this work and presents findings on the facilitators and barriers to EBP implementation reported by this national sample of specialty-prepared EBP mentors in healthcare settings using a qualitative force field analysis.

## Background

### Facilitators to EBP Implementation

Numerous studies have investigated facilitators to implementing EBP across various healthcare settings. The presence of a robust organizational infrastructure that supports clinical inquiry and integration of EBPs across teams and environments consistently remains one of the most effective facilitators for EBP implementation and sustainability (Li et al., 2018; Melnyk et al., 2017a, b). For example, structural characteristics such as leadership engagement, support, and commitment (Albers et al., 2021; Bach-Mortensen et al., 2018; Bauer et al., 2015; Bergmark et al., 2018; Brown et al., 2014; Ecker et al., 2021; Flodgren et al., 2012; Li et al., 2018; Ogden et al., 2016; Quinn et al., 2019; Shuman et al., 2020; Theys et al., 2020) are frequent facilitators for EBP across settings, as are initial and ongoing education and skill building for clinicians (Albers et al., 2021; Bauer et al., 2015; Bergmark et al., 2018; Bernhardsson et al., 2017; Brown et al., 2014; Eisman et al., 2020; Keurhorst et al., 2015; Li et al., 2018; McNett et al., 2021b; Shuman et al., 2020; Tucker & Gallagher-Ford, 2019; Warren et al., 2016). In addition, unit-based champions or facilitators in local clinical groups can promote routine uptake of an EBP within specific settings, as these individuals often know vital factors to support implementation (Albers et al., 2021; Augustino et al., 2020; Bergmark et al., 2018; Bernhardsson et al., 2017; Brown et al., 2014; Newhouse et al., 2013; Pellecchia et al., 2018; Theys et al., 2020; van Rooijen et al., 2021). Likewise, a team-based approach (Flodgren et al., 2012; Quinn et al., 2019; Shuman et al., 2020) is particularly effective for implementation. Clinical healthcare teams who received immersive education and skill building in EBP reported the use of structured timelines, checklists, auditing and feedback, and organizational support to facilitate the initiation, maintenance, and sustainability of a successful change in practice (McNett et al., 2021b).

### Barriers to EBP Implementation

Barriers to EBP implementation often reflect the absence of one or more of the factors that facilitate routine implementation in clinical settings. For example, lack of knowledge or competencies in EBP (Augustino et al., 2020; Bernhardsson et al., 2017; Clarke et al., 2021; Garcia et al., 2021; Li et al.,

2018; Ogden et al., 2016; Warren et al., 2016; Yoo et al., 2019), absence of leadership support (Augustino et al., 2020; Bergmark et al., 2018; Ecker et al., 2021; Garcia et al., 2021; Li et al., 2018; Quinn et al., 2019; Shuman et al., 2020), and lack of time/resources for EBP (Bernhardsson et al., 2017; Clarke et al., 2021; Flodgren et al., 2012; Garcia et al., 2021; Li et al., 2018; McNett et al., 2021b; Quinn et al., 2019) are barriers to EBP implementation. In addition, individual factors such as resistance to change (Bauer et al., 2015; Brown et al., 2014; Clarke et al., 2021; Ecker et al., 2021; Eisman et al., 2020; Flodgren et al., 2012; Quinn et al., 2019; Theys et al., 2020; Tucker & Gallagher-Ford, 2019) and poor collaboration (Bauer et al., 2015; Bergmark et al., 2018; Bernhardsson et al., 2017; Brown et al., 2014; Clarke et al., 2021; Garcia et al., 2021; Ogden et al., 2016; Theys et al., 2020) hinder implementation efforts. Additional organizational factors have been identified as barriers for EBP implementation such as lack of standardized processes (Augustino et al., 2020; Garcia et al., 2021; Li et al., 2018; Newhouse et al., 2013), lack of financial support (Augustino et al., 2020; Flodgren et al., 2012; Garcia et al., 2021; Quinn et al., 2019), complex environments (Bauer et al., 2015; Brown et al., 2014; Ogden et al., 2016; Theys et al., 2020), absence of EBP mentors (Flodgren et al., 2012; Ogden et al., 2016), and persistent practice variation (Bernhardsson et al., 2017; Garcia et al., 2021; Li et al., 2018; Ogden et al., 2016).

A recent observational cohort study indicated that clinicians specialty prepared in EBP used different strategies during initiation, maintenance, and sustainability of practice change (McNett et al., 2021b). Although clinicians report using specific implementation strategies in their practice settings via fixed response options, free text narrative descriptions about facilitators and barriers during implementation experiences provide important contextual information surrounding implementation efforts. These narrative responses can provide rich descriptions of recurrent factors influencing uptake of EBP in healthcare settings and if some facilitators or barriers exert more considerable influence than others. This line of inquiry is important as it advances beyond identification of contributing factors to evaluation of the degree of influence or ‘weight’ factors have on the implementation process. Therefore, the purpose of this paper is to report results from a qualitative content analysis of facilitators and barriers to EBP implementation across a national sample of specialty-prepared EBP mentors in healthcare settings using a force field analysis.

## Theoretical Framework

The CFIR (Damschroder et al., 2009) and Lewin’s change theory (1951) guided the current study. The CFIR is a determinant framework composed of five domains: innovation characteristics, outer setting, inner setting, characteristics of

individuals, and process (Damschroder et al., 2009). Each CFIR domain defines specific constructs (determinants) that researchers may use to evaluate factors influencing the implementation of an EBP (Damschroder et al., 2009). The CFIR was used as an organizing framework to categorize reported facilitators and barriers based on content analysis of qualitative data. Lewin’s change theory was then used to provide numerical weights for reported facilitators and barriers using CFIR domains to provide a graphical depiction of the degree that these domains influence implementation. Lewin’s theory posits that changes (such as EBP implementation) are due to certain forces categorized into two domains: (1) restraining forces (factors supporting the maintenance of current status, i.e., no change) or (2) driving forces (factors that support or promote movement toward a desired state of change) (Lewin, 1951).

Despite the wide acceptance of CFIR construct definitions to categorize facilitators and barriers to implementation, a directed approach to extend the force (or weight) of implementation facilitators and barriers conceptually remains understudied. Therefore, our phenomena of interest were facilitators and barriers to EBP implementation conceptualized within the five domains of the CFIR (Waltz et al., 2019). Our qualitative naturalistic inquiry approach reflected the real-world clinical setting. We used CFIR domains as our operational definitions to build upon existing work and expand our understanding of facilitators and barriers to implementation using a force field analysis (Shrivastava et al., 2017).

## Methods

### Design and Aims

This qualitative study utilized a directed content analysis with data from open-ended survey questions within a cohort observational study. The primary study aim was to identify the frequency and effectiveness of implementation strategies among healthcare teams when incorporating a new EBP into their practice setting, and findings from this aim have been previously reported (McNett et al., 2021b). The secondary aim, reported here, was to evaluate facilitators and barriers experienced by these specialty-prepared teams when they began implementing their EBP projects within their clinical practice settings.

### Sample, Setting, and Data Collection

The purposive sample was specialty-prepared EBP mentors from healthcare settings who had participated in extensive EBP education and skill building program offered by The

Helene Fuld Health Trust National Institute for Evidence-based Practice in Nursing and Healthcare (i.e., the “Fuld Institute”). The training was a 5-day immersion course that focused on the first four steps of EBP. After course completion, participants began implementing a specific EBP in their clinical setting, and they received ongoing guidance and mentoring from Fuld experts for 18 months.

We approached potential participants via an email invitation to participate in a one-time, anonymous survey 12 months after the immersion program. The consent form indicated the nature of the research, and the university's institutional review board approved the study. The survey included six demographic questions, as well as three quantitative questions on perceived difficulty of implementation, and three additional quantitative items on degree of success of implementation. Quantitative responses were reported on a 1–10-point Likert scale. The survey also included quantitative items on specific implementation strategies used by clinical teams. A comprehensive description of these quantitative survey items and findings have been previously reported (McNett et al., 2021b). The final two survey items asked respondents to qualitatively report perceived facilitators and barriers to implementation using a free text, open-ended response option in the survey (Qualtrics, Provo, UT). The items stated are as follows: (1) Please indicate any barriers to implementation of your EBP project; and (2) Please indicate any facilitators that contributed to the successful implementation of your EBP project. Data from these final two qualitative questions were analyzed using the methods below and are presented in this paper.

## Data Analysis

We used a directed content analysis with a force field approach to analyze the open-ended survey responses regarding facilitators and barriers to implementation (Hsieh & Shannon, 2005; Shrivastava et al., 2017). The directed content analysis began by identifying and defining facilitators and barriers using the five CFIR domains as initial coding categories. Next, two team members independently read the open-ended survey responses, classifying them as facilitators or barriers and identifying congruence with CFIR construct definitions (Waltz et al., 2019). Then, the two coders verified each other's thematic classifications, and a third team member conducted the final data verification. See Table 1 for the definitions of CFIR constructs and facilitator/barrier themes (Waltz et al., 2019).

Phase two of data analysis involved using Lewin's force field analysis to categorize open-ended responses to the survey questions regarding facilitators and barriers to implementation (Lewin, 1951; Shrivastava et al., 2017). While Lewin's theory has been used extensively in other fields to visually depict facilitators and barriers to various change

initiatives, it has not been used to evaluate the numerous facilitators and barriers reported when implementing EBPs in healthcare settings. Because Lewin's theory can be used to evaluate any change initiative, there are five overarching phases when performing a force field analysis: (1) define the problem, (2) specify the proposed change or desired state, (3) identify driving forces (facilitators), (4) identify restraining forces (barriers) to the desired state, and (5) assign a numerical weight to each force to demonstrate its anticipated effect on the desired state. For this study, the defined problem was absence of EBP utilization within a healthcare setting, and the desired state was successful implementation of an EBP. The driving and restraining forces were the facilitators and barriers, respectively, from survey responses that were categorized using constructs defined in the CFIR (Damschroder et al., 2009). To determine numerical weights for each force, we calculated the frequency of reported components within each CFIR construct. This force field analysis resulted in a pictorial representation of the forces (facilitators and barriers) when implementing an EBP in healthcare settings.

## Results

### Demographic Characteristics

The survey was sent to 1475 individuals, with 152 providing partial responses, and 84 completing the survey in its entirety. Characteristics of respondents have been previously described (McNett et al., 2021b). In brief, most participants were registered nurses who attended the immersion experience as part of a team of individuals from the same organization ( $n = 67$ , 76.1%). Many were masters ( $n = 42$ , 47.7%) or doctorally prepared ( $n = 46$ , 52.4%) nurses and held a variety of front-line care or leadership roles within healthcare organizations (Table 2). Across respondents, many reported organizational resources to support EBP, including access to library and software resources, leadership support, and availability of EBP councils and mentors.

### Facilitators and Barriers

Figure 1 depicts facilitators and barriers to EBP implementation classified according to CFIR constructs. The green boxes reflect facilitators to implementation, while black boxes indicate barriers to implementation. The gray boxes are CFIR constructs that participants did not report.

**Table 1** CFJR construct facilitator and barrier definitions

| CFJR domain and construct  | Definition  | Barrier definition   | Facilitator definition  |
|--|---|--|---|
| Domain: Intervention Characteristics<br>Evidence Strength and Quality          | Stakeholders' perceptions of the quality/validity of evidence supporting the EBP and desired outcomes   | Stakeholders have a negative perception of the quality/validity of evidence  | Stakeholders have a positive perception of the quality/validity of evidence   |
| Cost   | Costs of the EBP and implementation   | The innovation costs and/or the costs to implement are too high  | The innovation costs and/or the costs to implement are feasible and/beneficial  |
| Domain: Outer Setting<br>External Policies and Incentives                      | External strategies to spread interventions, including policy, regulations, public reporting  | External policies, regulations mandates, public/benchmark reporting do not exist or undermine efforts to implement the EBP                               | External policies, regulations, mandates, public/benchmark reporting exist and support efforts to implement the EBP                                 |
| Domain: Inner Setting<br>Structural Characteristics                            | Social architecture, age, maturity, and size of an organization   | The social architecture, age, maturity, and size of an organization hinder implementation  | The social architecture, age, maturity, and size of an organization support implementation  |
| Culture  | Norms, values, and basic assumptions of a given organization  | Cultural norms, values, and basic assumptions of the organization hinder implementation  | Cultural norms, values, and basic assumptions of the organization support implementation  |
| Implementation Climate   | Absorptive capacity for change, shared receptivity of involved individuals, and how the EBP will be rewarded, supported, and expected within organization | There is little capacity for change, low receptivity, and no expectation that the use of the EBP will be rewarded, supported, or expected                | There is extensive capacity for change, high receptivity, and high expectation that the use of the EBP will be rewarded, supported, or expected     |
| Relative Priority  | Individuals' shared perception of importance of the EBP within the organization   | Stakeholders perceive implementation of the EBP takes a backseat to other initiatives or activities  | Stakeholders perceive implementation of the EBP takes a front seat before other initiatives or activities   |
| Leadership Engagement  | Commitment, involvement, and accountability of leaders and managers with the implementation   | Key organizational leaders or managers do not exhibit commitment and are not involved or accountable for implementation                                  | Key organizational leaders or managers exhibit commitment and are involved and accountable for the implementation                                   |
| Available Resources  | Resources for implementation and ongoing operations   | Resources are insufficient to support implementation   | Resources are sufficient to support implementation  |
| Characteristics of Individuals<br>Knowledge and Beliefs about the intervention | Individuals' attitudes and value of the intervention  | Individuals have negative attitudes toward the EBP, and/or place low value on implementation   | Individuals have positive attitudes toward the EBP, and/or place high value on implementation   |
| Individual Stage of Change   | Characterization of the phase an individual is in, as he or she progresses toward skilled and sustained use of the EBP                                    | Stakeholders are not skilled or enthusiastic about using the EBP in a sustained way  | Stakeholders are skilled and enthusiastic about using the EBP in a sustained way  |
| Process<br>Champions   | Individuals who dedicate themselves to supporting, marketing, and driving through implementation of an EBP  | Individuals acting as champions to support, market or drive through implementation to overcome indifference or resistance are not involved or supportive | Individuals acting as champions to support, market or drive through implementation to overcome indifference or resistance are present and effective |
| Engaging Stakeholders  | Multifaceted strategies to attract and involve key stakeholders in implementing the EBP   | Multifaceted strategies to attract and involve stakeholders are ineffective or non-existent  | Multifaceted strategies to attract and involve stakeholders are present and effective   |

**Table 2** Demographic characteristics of respondents

| Characteristic                                 | Study sample n (%) |
|--|--------------------|
| Attendance at Immersion                        |                    |
| Attended alone                                 | 16 (18.2)          |
| Attended with other members of healthcare team | 67 (76.1)          |
| Highest Educational Degree                     |                    |
| Bachelors                                      | 12 (13.6)          |
| Masters  | 42 (47.7)          |
| PhD or Research Doctorate                      | 18 (20.5)          |
| DNP or Practice Doctorate                      | 18 (20.5)          |
| Other Doctorate Degree                         | 10 (11.4)          |
| Organizational Resources for EBP               |                    |
| Librarian                                      | 67 (76.1)          |
| Leadership support                             | 44 (50.0)          |
| Access to quality department                   | 52 (59.1)          |
| EBP council                                    | 31 (35.2)          |
| EBP mentors                                    | 49 (55.7)          |
| EBP software                                   | 52 (59.1)          |
| None   | 2 (2.3)            |
| Role in Healthcare Organization                |                    |
| Advanced practice provider                     | 20 (22.7)          |
| Administrative leader or educator              | 32 (36.4)          |
| Clinical nurse                                 | 11 (12.5)          |
| Academic faculty                               | 6 (6.8)            |
| EBP champion                                   | 5 (5.2)            |
| Quality specialist                             | 3 (3.4)            |
| Other  | 4 (4.5)            |

### Inner Setting

The majority of responses reflected either facilitators or barriers within the domain of the inner setting for implementation within the CFIR model. Facilitators within this domain were strong leadership engagement (15 responses), a positive culture for EBP (9 responses), and available resources (4 responses). Barriers within this domain included lack of available resources to support EBP implementation (21 responses), lack of leadership engagement (19 responses), implementation climate (17 responses), lack of relative priority of the EBP (12 responses), and structural characteristics of the organization (9 responses). We provide examples of verbatim responses within each construct based on frequency of responses in descending order (Fig. 1), listed below:

**Available Resources** Most responses in this category (15/21) referred to inadequate time as a barrier to pursue and complete implementation. Statements included single words such as “time” and phrases such as:

“No dedicated time for engaged team members”  
 “Need paid time to implement”  
 “Not permitted time to telework to access resources”  
 “Need non-productive time support for meetings”

Responses also included lack of resources in general, reflected in statements such as “resource allocation,” “not enough support as far as work,” and “administrative support.” Additional comments that identified resources specifically lacking included: “no library access for faculty,” “not able to use library resources from computers at work,” and “limited resources for time, training, and manpower affected the speed of implementation.”

The construct of available resources also facilitated EBP implementation when reported as being present (4 responses). For example, statements such as “administrative and budget support” and “auditing hands-on assistance at the bedside” demonstrated the availability of resources to support implementation efforts.

**Leadership Engagement** The construct of leadership engagement was another factor cited by respondents as a barrier to implementation when absent, yet as a facilitator to successful implementation when present. When cited as a barrier, respondents included statements such as:

“The head of the department I needed buy-in from to implement my project was not agreeable”  
 “[Need] Buy-in from leadership to implement”  
 “Low priority for leadership”  
 “Leadership buy-in for support of an EBP changes vs. leaving things to provider/clinic preference crippled our EBP journey”  
 “Unengaged management team (unsupportive)”  
 “Leadership didn't understand the work involved. No sense of the gravitas”

However, when participants described leadership engagement as present, it served as a powerful facilitator to support initiation and sustainability of implementation:

“Leadership support made it possible to implement the project”  
 “Success occurred if there was highest leadership buy-in and support for the change”  
 “Champions in leadership”  
 “Immediate buy-in of front line leadership”  
 “Leadership support-executive and front line management support”

**Relative Priority** Participants reported the perceived priority of the EBP initiative as a barrier to implementation within the CFIR inner setting domain. Twelve responses illustrated the relative priority difficulty of a specific EBP in light of

Facilitators and Barriers Mapped to CFIR Model



Fig. 1 Facilitators and barriers mapped to CFIR model

many other simultaneous issues such as direct patient care. Some examples include:

*“I always try to involve staff members and other colleagues. It is difficult to keep working with them on a project when they also have to staff a unit or clinic and have conflicting priorities”*

*“Prioritization often bumps projects lower on the list”*

*“Too busy with patient care and other administrative responsibilities”*

*“Synchronization with competing priorities was an issue”*

These statements align closely with the need for dedicated time to pursue EBP implementation, as many individuals seem to be responsible for implementation and patient care or other administrative responsibilities.

**Implementation Climate** Participants also reported implementation climate as a barrier within the inner setting domain. Seventeen responses demonstrated a variety of factors present within the setting that participants perceived as barriers to successful implementation. For example, several respondents indicated poor accountability, lack of follow-up on the initiative, and difficulty sustaining the change: *“Accountability,” “sustainability is always hard,” “keeping staff engaged in doing new practice-no one is held accountable.”* Four additional comments specifically included statements reflecting the difficulty of implementing during the Coronavirus-19 (COVID-19) pandemic: *“Covid has placed almost everything on hold,” “Implementation has stalled due to the pandemic,” “Too many changes in current practice with COVID-19, so staff are burned out with changes.”* Additional responses highlighted challenges within the implementation climate due to high staff turnover, which required continual education about the initiative to new staff and presented challenges with the initiative's sustainability.

**Structural Characteristics of the Organization** Nine participants reported various structural characteristics of the organization as barriers to implementation. Many responses included several layers of required approvals: *“Too many people to go through”; “bureaucracy of getting all approvals for non-clinical inquiry.”* Other responses highlighted system-level barriers: *“system barriers with implementation across units”; “no systemic supports in place”; “no standard policy database and lack of agreement to include in policy documents.”* Additional comments indicated barriers related to management transition and lack of structural processes for long-term support and sustainability of implementation efforts.

**Culture for EBP** The culture for EBP within an organization was not a reported barrier to implementation. Instead, respondents indicated a positive culture that was supportive of EBP served as a facilitator for implementation. Specifically, having mentors and role models embedded in that culture was an essential driver for implementation:

*“Our hospital has many EBP mentors who have helped spread the culture of EBP at our hospital, so it is expected that evidence-based practice supports changes”*

*“Dedicated EBP mentors were imperative to initial successes”*

*“Excellent support, ...wanting to be a good role model”*

Additionally, several responses specifically cite the importance of culture for supporting EBP implementation: *“[Need] a culture that supports change and encourages seeking better ways to practice”; “enthusiastic staff, EBP-educated staff, desire for professional development and mentoring.”* Thus, a solid culture to support EBP included the importance of mentors and role models and a willingness to change.

### Process

Respondents also identified simultaneous facilitators and barriers within the process domain of the CFIR model. The construct of engagement of stakeholders, while a CFIR construct of its own, as detailed in the following paragraph, was also identified multiple times by respondents as a barrier when absent from the implementation process (23 responses). Notably, others also reported it to be a strong facilitator when present (23 responses) to support the implementation process within their clinical settings. The presence of unit or site-based champions was another important facilitator reported within this domain of the implementation process (5 responses).

**Engagement of Stakeholders** Stakeholder engagement was an important construct that equally prevented or supported implementation among participants. When reported as a barrier to implementation, the phrase ‘buy-in’ was used multiple times, often about front-line staff or clinicians affected by the project:

*“Buy-in by all interdisciplinary team members”*

*“Getting front line staff buy-in”*

*“Getting buy-in has been difficult”*

*“If bedside nurses did not have buy-in, this became a barrier”*

Additional responses indicated the difficulty of getting front-line staff involved in the development and planning for



implementation and addressing resistance from staff early in the project.

Participants reported stakeholder engagement as a solid facilitator to support EBP implementation efforts. Many respondents indicated implementation success with a team approach to engage stakeholders:

*“Teamwork helped our project be successful”*

*“Teamwork-at the time I started implementation, I was working with a team who appreciated the work, and together we did implementation”*

*“Passionate team members”*

*“Support of the medical team”*

The concept of buy-in was also cited several times as a facilitator for implementation, both about teamwork, and also for garnering support from front-line staff: *“staff did buy-in”*; *“buy-in from the bedside level”*; *“support of the medical team.”* In addition, engagement and involvement of key stakeholders affected by the practice change was necessary to facilitate and sustain implementation.

**Champions or Facilitators** In addition to stakeholder engagement to support implementation, using champions or facilitators as part of the implementation process was also important. Five respondents indicated champions as critical drivers for implementation:

*“Having staff champions support the project”*

*“Having front line staff on the team who understand how to make new processes fit into current workflow”*

*“My colleague and I have been leading the effort. We have continued to push other clinicians to do the work”*

Participants identified the following champions as implementation team members: front-line staff, educators/specialists that promoted and supported the project among staff, and small workgroups to oversee and support project implementation.

## Characteristics of Individuals

**Individual Stage of Change** Within the domain of the characteristics of individuals, the construct of an individual stage of change was a barrier to implementation (7 responses). Responses reflected the difficulty in getting healthcare team members to change their behavior to adopt and sustain the proposed practice change. Responses included statements such as:

*“Provider and staff are set in their ways”*; and *“Despite the evidence, the primary barrier was individuals who didn’t want to change their workflow.”*

**Knowledge and Beliefs** Conversely, positive statements regarding the knowledge and beliefs of those leading implementation served as characteristics that were facilitators for implementation (9 responses). Responses were from individuals who were likely leading the implementation efforts. Because these individuals had participated in the immersive EBP program, responses suggest strong motivation and beliefs regarding the importance of EBP implementation. Multiple statements referenced the concept of perseverance on behalf of the respondent leading the change: *“Persistence,” “determination,”* and *“passion for need [for the change].”* Other statements demonstrating the sound knowledge and beliefs required to support implementation included: *“willing and positive attitude in the planning phase”* and *“persistence and passion for the topic and perseverance.”* Most statements reflected the knowledge and attitude of the individual(s) leading the implementation efforts as a facilitator for implementation, rather than the knowledge and beliefs of people impacted by the practice change.

## Intervention Characteristics

Within the CFIR intervention characteristics domain, respondents reported only two constructs: evidence strength/quality and cost. Respondents referenced evidence strength and quality as a barrier to implementation. Conversely, the cost was a facilitator to implementation.

**Evidence Strength and Quality** Two participants noted evidence strength/quality was a barrier. They wrote, *“many just don’t believe in the evidence”* and *“need[ed] more research to help answer these great questions with evidence.”*

**Cost** Similarly, few participants ( $n=8$ ) reported on cost. Most conveyed costs linked to benchmarked outcomes with the ability to calculate return on investment (ROI) as a facilitator for implementation: *“We are getting ROI, which will be a huge contributory factor”*; *“the cost outcomes could not be ignored.”*

## Outer Setting

**External Policies** The only construct within the outer setting that participants referenced was the presence of external policies. Only one respondent mentioned this factor, who reported on the emergence of a regulatory requirement around the implementation time, which garnered timely support. *“Requirement came out at the time that sped up the process of implementation.”* No other respondents referenced external policies or other outer setting CFIR constructs.

Force Field Analysis of Facilitators and Barriers to Implementation

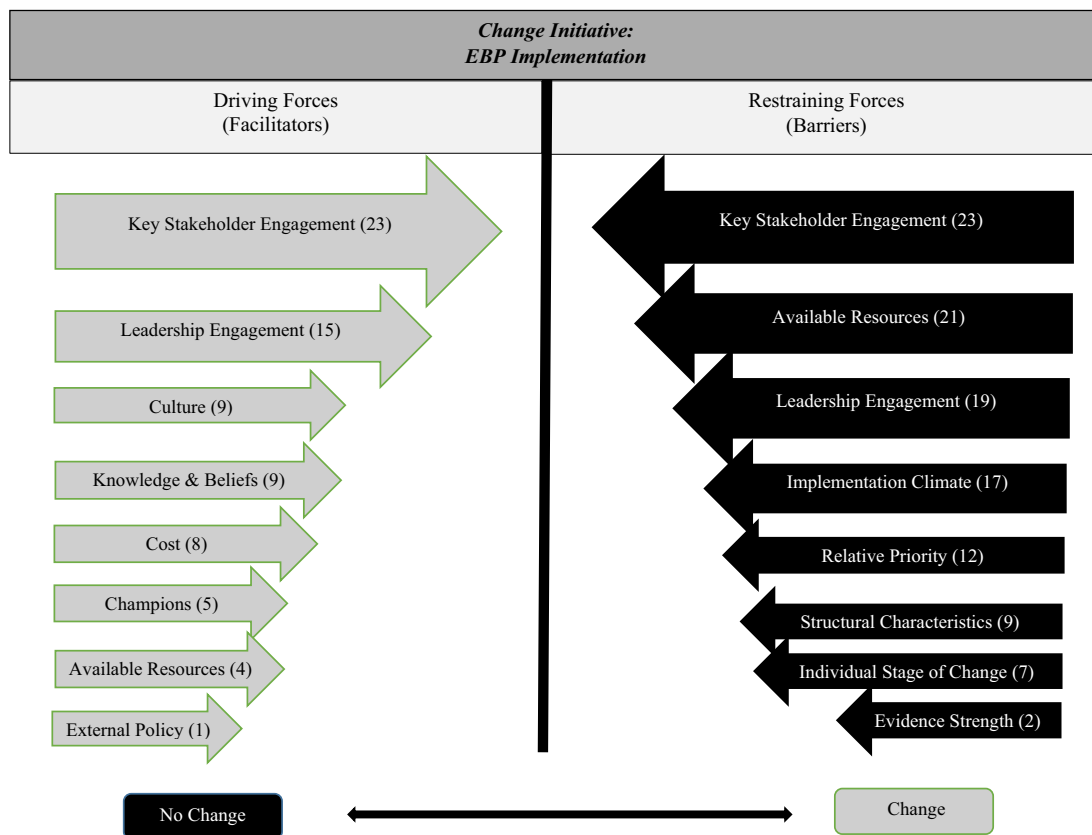


Fig. 2 Force field analysis of facilitators and barriers to implementation

**Force Field Analysis**

Consistent with a force field analysis, we assigned numerical weights to each construct within every domain, based on the number of times respondents reported on a facilitator or barrier aligned with the definition. We placed numerical weights on each barrier construct as a restraining force opposing the change (in this case, implementation of an EBP). Similarly, each facilitator construct served as a driving force for the change (Fig. 2). To illustrate, the size and direction of each arrow listed in Fig. 2 reflect these numerical weights, indicating the significance of each construct as either a driving force or a restraining force for implementation. As shown in Fig. 2, the most potent restraining forces or barriers for EBP implementation were lack of stakeholder engagement, lack of available resources, and lack of leadership engagement to support implementation. In contrast, the most potent driving forces or facilitators for implementation were key stakeholder engagement, leadership engagement, and a positive culture to support EBP and implementation.

**Discussion**

This study adds to the IS literature by building on an existing framework (CFIR) using published terminologies, combined with a force field analysis to quantify facilitators and barriers to implementing a practice change within healthcare settings by clinical staff specially prepared in EBP. The value of the force field analysis is to provide some quantification of qualitative data and a visual depiction of the weight of specific facilitators or barriers. These data suggest various degrees of importance of common facilitators and barriers to move forward with the implementation stage. As noted in Fig. 2, our findings demonstrate the potency of leadership, resources, culture, and climate in bringing about the desired practice change, specifically within complex healthcare settings. Facilitators and barriers of the inner setting domain of the CFIR exert the most significant influence on EBP implementation, similar to results from a 2020 systematic review (Miake-Lye et al., 2020).

Our study addresses a fundamental gap by evaluating implementation experiences among a target population of healthcare clinicians that have been specialty trained in EBP. The intensive and experiential learning for EBP among

clinicians in our study included hands-on application and guidance for the participant's specific EBP initiative that they sought to implement within their practice setting. The intent was to make attendees knowledgeable and skilled on EBP and implementing a practice change and make them aware of typical facilitators and barriers to implementation armed with strategies to implement their project. Despite this, it was apparent from clinician responses that factors within the inner setting for implementation were the strongest facilitators when present or significant barriers when absent. Stakeholder and leadership engagement was critical to align resources needed to support implementation, along with a culture and climate that supported EBP and implementation of practice changes.

It is not surprising that participants highlighted the importance of stakeholders and leaders to succeed in the implementation process. Stakeholders are often considered senior leaders and cited in the literature as essential for implementation success (Li et al., 2018). However, we found front-line clinical stakeholders are critical in healthcare settings, and engagement of formal leaders was a different construct entirely. Both were persistent barriers to implementation when not present, even among our target population of well-educated and well-prepared teams coached on EBP and implementation. These findings extend reports of the value of facilitators (Gallagher-Ford et al., 2020; Li et al., 2018; Melnyk, 2007; Melnyk et al., 2021; Shuman et al., 2020) by showing that front-line clinicians and senior leaders can serve as powerful facilitators if present early and throughout implementation. Current and future programs to educate and prepare implementation teams should focus on the importance of stakeholder engagement (front-line clinicians) in conjunction with leadership engagement and support. For example, EBP immersion course participants may consider engaging with leaders and affected front-line staff to garner support before exploring a proposed practice change. Additionally, providing education and training to leaders on EBP and implementation can be an effective mechanism for building commitment, engagement, and a solid EBP culture within organizations.

Our findings indicate that the immersive experience among our target population of healthcare clinicians addressed the barriers of knowledge and skills frequently reported in the literature and appears to influence the CFIR inner setting and process domains. However, the immersive experience is not enough to assure implementation as participants often cited a lack of resources to support implementation, most notably the lack of time. Key leaders must commit to the time necessary to implement EBP work before investing in education and skill building in order to achieve a return on their investment in developing EBP mentors. They must also then follow in providing the necessary time

and resources for project implementation, evaluation, and sustainability. It is unrealistic to add EBP implementation to existing workloads and expect clinicians to implement well without essential support and resources. Required resources include administrative support, quality monitoring, and access to tools such as libraries and software to support implementation efforts in the clinical setting and at home with remote access.

Implementation climate and culture are two other important themes reported by this target population of specialty-trained clinicians that can hinder or facilitate implementation efforts. Implementation climate includes how receptive end users and key stakeholders are for the proposed change, and the extent to which their use will be supported and expected (Damschroder et al., 2009). Implementation climate can vary across units and settings, and is often considered a function or collective perception of the overall implementation culture within an organization. As such, the importance of both leadership and stakeholder support for EBP implementation is critical for creating a positive implementation climate. Similarly, education and training for organizational leaders on EBP and implementation can generate additional support to train more healthcare clinicians as EBP mentors, align needed resources, and establish a positive culture for EBP initiation and sustainability (Flodgren et al., 2012; Gallagher-Ford et al., 2020; McNett et al., 2021a; Melnyk, 2007; Melnyk et al., 2017a, b, 2021; Schuler et al., 2020). Our findings are consistent with the literature that reports this type of mentorship for healthcare clinicians as a key component of a strong EBP culture (Melnyk, 2007; Melnyk et al., 2017a, b, 2021). There are a number of tools to measure both implementation climate and culture, as well as organizational readiness, and these measures should be incorporated into current and future programs on EBP implementation, particularly for healthcare teams (Jacobs et al., 2014; Weiner et al., 2011).

Limitations to our study include using cross-sectional data, via a 2-item open-ended free text response survey method. Responses may have been limited by the number of participants and the nature of the questions, which were not able to be fully explored or explained verbally in real time. In addition, survey administration 12 months after the EBP immersion experience may be subject to recall bias. Additionally, the directed approach to content analysis using an existing framework may lead to more supportive than non-supportive findings of the theory (Hsieh & Shannon, 2005). Finally, it is noted that not all CFIR domains were identified by participants as influencing implementation. While this may be an incidental finding or limitation, it is consistent with a recent systematic review of published organizational readiness instruments using the CFIR constructs, which found that 4% of survey items did not map

to CFIR constructs (Miake-Lye et al., 2020). Of note, the structure of the open-ended questions posed to respondents in our study did not prompt them to comment about specific constructs of the CFIR.

Findings from this study highlight considerations to guide implementation efforts by clinicians, and also areas for future IS research. Healthcare clinicians and organizations seeking to implement EBPs can use information on weighted factors to target funding and priority areas to better support creation of a positive climate and culture for implementation. Findings can also be integrated into current and future educational programs to include content on strategies to address heavily weighted factors that will likely influence implementation in practice settings. To advance implementation research on facilitators and barriers to implementation, it is noted that a plethora of research has previously reported on facilitators and barriers to implementation. Our findings build upon this work, as they are the first, to our knowledge, to: (1) investigate the extent to which these common facilitators and barriers persist among specialty-trained healthcare teams; and (2) assign numerical weights to facilitators and barriers. Establishing these weighted factors allows for future implementation research to evaluate if these weights are consistent across implementation settings, and to examine in future hybrid or randomized controlled designs if modifying heavily weighted factors can positively influence implementation outcomes in relation to lesser weighted factors.

## Conclusion

This study highlights factors influencing EBP implementation among a target population of healthcare clinicians specialty trained in EBP and implementation methods. Despite extensive education and training, clinical teams must navigate facilitators and barriers to implementation that frequently center on leadership and stakeholder engagement, as well as the organizational culture and climate for implementation. Implementation must have leadership and stakeholder support to mobilize needed resources and create a climate and culture supportive of EBP. With a strong organizational infrastructure, these specialty-trained healthcare teams can partner with engaged stakeholders to successfully leverage facilitators and mitigate barriers to implement and sustain EBP across healthcare settings.

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**Author Contributions** MM, ST, LGF, and PG designed the study and survey instruments. MM, ST, BT, and IZ performed data collection, analysis, and interpretation. MM, DT, ST, and IZ were major

contributors in writing the manuscript. LGF and PG provided critical revisions to manuscript. All authors read and approved the final manuscript.

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**Data Availability** The dataset used for the current study is available from the corresponding author on reasonable request. Consent for Publication Not applicable.

## Declarations

**Conflict of interest** The authors declare that they have no competing interests related to the submitted work.

**Ethical Approval** This study was reviewed and approved by the Institutional Review Board (IRB) at The Ohio State University, Columbus, Ohio.

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