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Title: Preparing Nursing Contexts for Evidence-Based Practice Implementation: Where Should We Go From Here?

Running head: Preparing Nursing Contexts

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Abstract

Background: Context is important to the adoption and sustainability of evidence-based practices (EBPs). Currently, most published implementation efforts address context in relation to one specific EBP or a bundle of related EBPs. Since EBP and implementation are ongoing and dynamic, more discussion is needed on preparing nursing contexts to be more conducive to implementation generally.

Aim: To discuss the need to create contexts that are more adaptable to ongoing change due to the dynamic nature of EBP and the ever-changing healthcare environment.

Methods: This paper builds on a collection of our previous work, as nursing implementation scientists representing the Canadian and American healthcare contexts, and a literature review of the implementation science, knowledge translation, and sustainability literatures from 2006 to 2019.

Results: We argue for a different way of thinking about the influence of context and implementation of EBPs. We contend that nursing contexts must be prepared to be more flexible and conducive to ongoing EBP implementation more generally. Contexts that embrace, facilitate, and have the capacity for change may be more likely to effectively de-implement ineffective interventions or implement and sustain new EBPs. We provide several recommendations for nursing practice, education, leadership, and research to foster contexts that support implementation and sustainability of EBPs in nursing practice, including build capacity among nurses, support organization to embrace change, co-produce research evidence, and contribute to implementation science.

Linking Evidence to Action: Supporting contexts to adopt and sustain evidence in nursing practice is essential for bridging the evidence to practice gap and improving outcomes for patients, clinicians, and the health system. Moving forward, we need to develop a better

understanding of how to create contexts that embrace change prior to the implementation of EBPs in order sustain improvements to patient and health system outcomes.

Introduction

Implementing evidence into healthcare practice is essential for improving outcomes for patients, clinicians, and health systems (Straus et al., 2009). Since the early 1990s, evidence-based practice (EBP) has gained widespread acceptance in health services internationally. Consequently, increased attention has been applied to developing an evidence base that informs and improves care delivery and patient outcomes. Research findings from clinical trials and effectiveness studies provide evidence that can be summarized, packaged, and scaled for use in clinical care (Institute of Medicine, 2009). Examples of EBP resources developed over the last two decades and made available to clinicians and healthcare organizations include evidence-based clinical practice guidelines and practice recommendations, systematic reviews, evidence-summary reports, and EBP educational programs (e.g., workshops, in-services, and webinars). Clinicians engage in EBP by using these resources, along with their clinical expertise and their patients' values, to guide the delivery of care (Titler, 2014).

Despite the availability of EBP recommendations and resources, we continue to see a gap between what we know from available evidence and what is done in clinical practice around the world (Jylhä, Oikarainen & Perälä, 2017; Leach & Tucker, 2018; Mackey & Bassendowski, 2017). Studies report 30–40% of patients do not benefit from effective interventions, and 20–25% of patients are exposed to interventions that are ineffective or potentially harmful (Grimshaw, Eccles, Lavis, Hill, & Squires, 2012; McGlynn et al., 2003). The 2014 National Healthcare Quality and Disparities Report, released by the Agency for Healthcare Research and Quality (AHRQ), demonstrated that evidence-based care is delivered only 70% of the time, an improvement of only 4% since 2005 (AHRQ, 2015). This problem demonstrates the gap between the availability of EBP recommendations and the use of these practices at the point of care delivery.

Nursing is not immune to the evidence-practice gap (Van Achterberg, Schoonhoven, & Grol, 2008). Nurses report positive attitudes on the use of EBPs, as EBP supports their goal of providing safe, high-quality patient care (Saunders & Vehviläinen-Julkunen, 2016). However, while some nursing settings adapt to new practice changes with ease, many contexts struggle to

implement and sustain the use of evidence in their clinical practice (Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012; Warren et al., 2016). Many barriers are related to the practice context, such as a reported lack of time (Kajermo et al., 2010; Melnyk et al., 2012; Shayan et al., 2019; Warren et al., 2016) and the organizational culture, including policies, procedures, and a philosophy rooted in "this is the way we have always done it here" (Melnyk et al., 2012; Warren et al., 2016). Studies have shown that contextual factors, including leadership, workload, and social influences (Cassidy et al., 2019; Geerligs, Rankin, Shepherd, & Butow, 2018; Shuman, Liu, et al., 2018) play an important role in the adoption of EBPs despite different health systems.

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Building on the importance of understanding context during the implementation of evidence into nursing practices globally, the purpose of this paper is to discuss directions for a program of research exploring innovative approaches to prepare contexts to be more conducive to ongoing EBP implementation. We begin by outlining the literature on the interplay between context and implementation. Next, we discuss the need to create contexts that are more adaptable to ongoing change due to the dynamic nature of EBP and the ever-changing healthcare environment. Lastly, we propose several directions for a program of research that aims to explore and test the role of context as an intervention for supporting ongoing implementation and sustainability of EBPs in nursing practice. As implementation science is an emerging field with terms that vary across disciplines and countries (McKibbon et al., 2010), the key terms used in this paper are referenced in Table 1.

Context in Implementation Science

The contexts in which research evidence is implemented into health care are nonlinear, diverse, dynamic, complex, and adaptive (Lipsitz, 2012). Healthcare contexts are comprised of multi-level and multi-site interacting networks (Plsek & Greenhalgh, 2001) and are influenced by multiple stakeholder values and behaviors, organizational boundaries, external pressures, and environmental factors. Insufficient understanding of context for the implementation of EBPs contributes to the critical evidence to practice gap. It is now widely recognized globally that organizational context is an important factor for the implementation and adoption of EBPs (Li, Jeffs, Barwick, & Stevens, 2018; May, Johnson, & Finch, 2016; McNett et al., 2019). Successful outcomes of implementation depend on the interactions between key stakeholders, implementation processes, and the contexts in which implementation occurs (May et al., 2016; Rycroft-Malone et al., 2002). Contextual factors (e.g., leadership, workload, social influences,

and workplace culture) may serve as a barrier to implementation in one healthcare setting, yet a facilitator in another.

Assessing Context

Implementation frameworks and conceptual models provide a common language and structure to guide systematic approaches to understanding implementation and developing implementation strategies (Damschroder, 2020). Several categories of implementation frameworks support EBP implementation processes, including determinant, process, and evaluation frameworks (Damschroder, 2020; Nilsen, 2015). More specifically, in recognition of the importance of contextual influences, determinant frameworks, such as the integrated-Promoting Action on Research Implementation in Health Services (Harvey & Kitson, 2016), Theoretical Domains Framework (Cane, O'Connor, & Michie, 2012), and Consolidated Framework for Implementation Research (Damschroder et al., 2009) have been developed to identify constructs that influence implementation processes or predict outcomes (Nilsen, 2015). Notably, these implementation frameworks originate from different countries, but all refer to context as one of several determinants of implementation. A recent scoping review identified 17 unique determinant frameworks in implementation science from 22 relevant publications (Nilsen & Bernhardsson, 2019). Another important issue found in this scoping review was that six of 17 frameworks explicitly referred to the term context as a determinant; the other 11 frameworks used a range of terms to denote contextual determinants, such as inner and outer setting and environmental factors (Nilsen & Bernhardsson, 2019). The review identified 12 common dimensions of context, such as organizational support, financial resources, social relations and support, leadership, and organizational culture and climate (Nilsen & Bernhardsson, 2019). As noted in the review, despite recognition about the importance of context for successful implementation, there is considerable variation to how context is defined and what factors are considered to measure context. Most recently, in an effort to identify contextual attributes and their features relevant to implementation by healthcare professionals, Squires and colleagues (2019) identified 62 unique features of context categorized under 14 broader attributes of context.

To measure the contextual determinants identified above, numerous instruments have been developed to assess organizational context (Lewis et al., 2016). For example, the Alberta Context Tool (Estabrooks, Squires, Cummings, Birdsell, & Norton, 2009), Implementation

Climate Scale (Ehrhart, Aarons, & Farahnak, 2014), Organization Readiness for Implementing Change (Shea, Jacobs, Esserman, Bruce, & Weiner, 2014), and the Implementation Leadership Scale (Shuman, Ehrhart, et al., 2019), to name a few, are valid and reliable instruments used to identify contextual factors that facilitate or impede EBP implementation in a healthcare context. It is clear from the above frameworks, tools, and empirical testing work that understanding and measuring context is critical for the successful implementation of EBPs.

Selecting Implementation Strategies to Address Context

Successful implementation of EBPs relies on a comprehensive understanding of the barriers and enablers to change and tailoring implementation strategies to the local context (Baker et al., 2010; Wensing, Bosch, & Grol, 2010). Numerous implementation strategies (e.g., audit and feedback, monitoring, and opinion leaders) have been developed and used to address important contextual factors related to implementation of a specific EBP or group of related EBPs (Powell et al., 2015). For example, incorporating opinion leaders as an implementation strategy addresses factors related to the context (e.g., clinician attitudes towards the EBP) but not the EBP itself (Shuman, Liu, et al., 2018). Tistad and colleagues (2016) evaluated a strategy aimed at developing senior and frontline managers' leadership for implementation of stroke clinical practice guidelines in an outpatient stroke rehabilitation center. Implementation strategies also contribute to the sustainability of EBPs. Shuman, Liu, and colleagues (2018) found that a multifaceted implementation strategy targeting context (clinician training and education, opinion leaders, change champions, policy modification, provision of standardized tools and quick reference guides, and audit and feedback) contributed to the sustainability of evidence-based acute pain management practices for hospitalized older adults. Although selecting and tailoring implementation strategies to address contextual factors is a critical step in the implementation process, it is often omitted (Graham et al., 2006; Proctor, Powell, & McMillen, 2013). When considered, researchers external to the practice context are often the ones that select implementation strategies to address contextual factors specific to one EBP.

Adapting Evidence-Based Practices to Context

Implementation efforts may also adapt to the EBP itself to better fit the context (Escoffery et al., 2018; Wiltsey Stirman, Baumann, & Miller, 2019). EBPs developed in efficacy and effectiveness trials are rarely transferable to local practice settings without specific adaptations to address context (Newhouse, Bobay, Dykes, Stevens, & Titler, 2013). EBPs may

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undergo a priori and unplanned adaptation of the intervention content to better fit the context in which they are implemented. For example, Stirman, Miller, Toder, and Calloway (2013) described numerous content modifications made by clinicians during implementation and delivery of an evidence-based cognitive therapy intervention in a community mental health system. Examples of reported content modifications included tailoring the intervention to client needs (e.g., changing language and terminology) and integrating other interventions in cognitive therapy (e.g., motivational interviewing and spiritual counseling). EBP adaptations may contribute to more successful implementation but may also threaten fidelity to the intervention's core components and result in diminished EBP effectiveness.

Extensive empirical research on the role of context on EBP implementation exists; however, challenges remain in implementing and sustaining EBPs in different nursing contexts globally. Health care is a complex adaptive system with many interconnected behaviors and actions that change over time (Sturmberg, O'Halloran, & Martin, 2012). Paired with the ever-changing dynamic of EBP, it is impossible to control EBP implementation within the complexity of the healthcare system (Braithwaite, 2018). To address these challenges, implementation efforts may require more than tailored implementation strategies and EBP adaptations to fit the local context. However, selecting and tailoring implementation strategies for each specific EBP is time-consuming, costly, and counterproductive to creating an environment that supports on-going EBP implementation. We suggest a new approach to how context is conceptualized for nursing and implementation science. As outlined in the section to follow, we propose a set of hypotheses based on our conceptualization of context. We discuss research efforts that are needed to test these hypotheses and explore how contexts can better support ongoing EBP implementation and sustainability.

Preparing the Context for Implementation

Strategies are needed to develop nursing practice contexts to be more conducive to EBP implementation more broadly. The recurrent discovery and dissemination of new evidence requires de-implementation of practices unsupported by new evidence, development of new EBPs, or modifications to existing EBPs. The ever-evolving nature of EBP necessitates that care delivery contexts be adaptive and supportive of EBP implementation. We hypothesize that contexts that embrace, facilitate, and have the capacity for change may be more likely to effectively de-implement ineffective interventions and/or implement and sustain new EBPs. In

this case, implementation and practice change are normative rather than episodic and disruptive, with nurses and care settings anticipating and preparing for change. Future research is warranted to test our proposed approach and evaluate its impact on implementation and sustainability outcomes.

We conceptualize our proposed program of research on "preparing the context for implementation" using a gardening analogy of "preparing the soil." Preparing nursing contexts to be more conducive to implementation of EBPs is similar to the activity of preparing the soil for a successful garden. Avid gardeners understand that numerous factors affect germination and viability of a new plant. New seeds must be of high quality, provided by a reputable source, and match the growing environment (i.e., sunny, shaded, or mixed). Once the seed is planted, growing requires strategic and tedious maintenance (e.g., watering and fertilizing). In addition to these factors, the soil in which the seed is planted must be conducive to growth. To prepare the soil, gardeners will remove weeds and rocks, till the soil, and amend it as needed. Planting a new seed has many similarities to the implementation of evidence-based interventions in nursing. Nurses select EBPs with demonstrated effectiveness (the seed) in their specific setting or with their patient population (growing environment). They identify implementation strategies to embed and sustain the practice (growth and maintenance) and continuously evaluate their effectiveness. However, little attention is placed on preparing the context (soil) for implementation. When attention to context is given, it tends to be considered only in relation to one specific EBP. In the following section, we draw on our clinical experience, previous implementation research, and the implementation science and sustainability literature to outline a program of research that aims to test our hypotheses and explore how nursing contexts can contribute to better success for implementation and sustainability of ongoing multiple EBPs (Figure 1).

Future Research Directions for Preparing the Context for Implementation

To build a program of research on preparing the soil for implementation of EBPs, we suggest studying the following components related to nursing practice, education, leadership, and research.

Build Implementation Capacity Among Nurses

First, nurses are well-positioned throughout organizations to significantly contribute to and lead efforts towards creating contexts that support the implementation of EBPs. Nurses

comprise the largest proportion of healthcare service providers in the world and practice in virtually every healthcare sector in roles ranging from bedside nurse to CEO. Their collective breadth of experience and understanding of the practice context are unparalleled and provide invaluable knowledge and insight important to implementation science. As such, nurses have the philosophical, theoretical, ethical, and political positioning to lead change and improvement efforts in the health system (Flynn, Scott, Rotter, & Hartfield, 2017). While there is some published literature on knowledge translation-based curriculum for graduate nurses (Astle et al., 2020), most often, nurses are not well-versed in implementation science practices and research (Segrott, McIvor, & Green, 2006). Enhanced capacity in implementation science and EBP is needed to better equip nurses to be change agents in the contexts in which they work. Further research is warranted to study implementation capacity in healthcare settings and how this can support nurses to be implementation leaders. Similar to Flynn et al.'s (2017) recommendations for building capacity in improvement science, efforts are needed to include implementation science education in nursing programs and leveraging advanced practice nurses in implementation leadership roles. Moving forward, we are working to better understand implementation capacity within healthcare settings as a way to "prepare the soil" for implementation of EBPs.

Support Organizations to Embrace Change

Second, efforts are needed to foster organizations that embrace change and improvement as a normal component of daily practice. We propose that implementation and delivery of EBPs needs to be an integrated, normative component of EBP rather than isolated interventions with specific patient and health system outcomes. If the "soil is prepped," or the daily culture is supportive of engaging in ongoing implementation efforts that are relevant to their practice, then individual EBP projects may be more likely to encounter a more adaptive context and fewer barriers to change. Øvretveit (2011) recommends a similar approach in the improvement science literature, suggesting a focus on understanding the conditions that influence implementation and viewing improvement as an interdependent set of actions that create many different types of changes, instead of one specific outcome. Additional research is warranted to more comprehensively describe and test the effects of unit- and organization-level determinants (e.g., culture, climate, and leadership) on ongoing EBP implementation and sustainability (Shuman,

Ehrhart, et al., 2019; Shuman, Liu, et al., 2018; Shuman, Powers, Banaszak-Holl, & Titler, 2019).

Co-Produce Research Evidence

Third, a collaborative, co-production approach to research—whereby researchers, clinicians, administrators, and patients work together throughout the research process—enhances the relevance and applicability of research findings to the nursing context (Hickey, Brearley, & Coldham, 2018; Wolfenden et al., 2017). Rycroft-Malone et al. (2016) state that co-production relies on "authentic collaboration, partnership and engagement as the context for action" (p. 221). We extend this argument and suggest that a collaborative research context can also facilitate the success of ongoing implementation action in nursing settings. Isolated research projects, whereby the researcher presents to the practice setting, addresses specific contextual factors, and then leaves after the study is completed, can be seen as disruptive to care and leads to a waste of time and resources by identifying and addressing the same contextual factors in individual projects. A collaborative approach whereby health system partners and researchers work together throughout the research process would facilitate contexts to be more engaged in the decision-making process and conducive to implementation efforts. An example in the field of implementation science is Grimshaw and colleagues' (2019) work on advancing the science of audit and feedback as an implementation strategy. They are using implementation laboratories involving close collaboration between researchers and the health system delivering the implementation strategy to address both scientific and health system goals related to implementation of EBPs (Ivers & Grimshaw, 2016). Similarly, in the nursing field, Bartos and Kris (2020) described a partnership between nurse research facilitators and hospitals to support and mentor direct care clinicians through the EBP and research process. Building on the success of these strategies, our proposed program of research needs to foster a collaborative, co-production approach to research to support the ongoing implementation and tailoring of EBPs to local context.

Contribute to Implementation Science

Lastly, in order to understand the concept of preparing the soil in the field of nursing implementation science, we need to build a better understanding of the relationships among contextual factors, implementation processes, and outcomes. To support ongoing implementation efforts rather than focus on one EBP, research is needed to identify which contextual factors are

most critical to implementation and sustainability of EBPs, determine their modifiability, and develop interventions targeting these factors. Leadership, organizational climate and culture, and clinician competency in EBP are examples of contextual factors that may be modifiable outside of a planned implementation effort (Shuman, Liu, et al., 2018; Shuman, Ploutz-Snyder, & Titler, 2018; Shuman, Powers, et al., 2019; Shuman, Ehrhart, et al., 2019). We propose a series of research studies to test the modifiability and effect of these contextual factors on implementation quality (e.g., time to full adoption and fidelity to core EBP components) and intensity of implementation strategies and resources required.

Linking Evidence to Action

- Leverage advanced practice nurses in implementation roles.
- Build implementation capacity among nurses globally.
- Foster organizations to embrace change and improvement as a normal component of daily practice.
- Use a collaborative, co-production approach to research whereby researchers, clinicians, administrators, and patients work together throughout the research process to enhance the relevance and applicability of research findings to the nursing context.
- Build a better understanding of the relationships among contextual factors, implementation, and outcomes.
- Develop and test strategies targeted to contextual factors with the goal of supporting contexts to be conducive to change and promote successful implementation of EBIs to improve patient care and outcomes.

Conclusion

To bridge the evidence-practice gap in nursing, implementation science can learn from a different type of "implementation" practice: gardening. Gardeners use a variety of tools and techniques to prepare soil, plant seed, and support optimal and sustainable growth. Efforts are needed to optimize a similar set of implementation tools and techniques for nurses and implementation scientists to prepare nursing contexts to be supportive of ongoing EBP implementation. Our proposed program of research builds on foundational literature addressing context in implementation and hypothesizes that preparing nursing contexts to be more

conducive to ongoing change and improvement may contribute to better success when implementing EBPs. Our gardening analogy encourages a new way of thinking about context and implementation. Moving forward, our hypotheses need to be tested, and additional research is needed to understand how to create contexts that embrace change prior to the implementation of EBPs in order to sustain improvements to health system and patient outcomes.

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Table 1. Key Terms

Evidence-based practice (EBP)	The conscientious and judicious use of current best evidence in conjunction with clinical expertise and patient values to guide health care decisions (Titler, 2014, p. 269).
Evidence-based interventions (EBIs)	Treatments, practices, programs, policies, or guidelines with proven efficacy and effectiveness (Brownson, Colditz, & Proctor, 2017; Rabin & Brownson in Brownson, Colditz, & Proctor, 2018, p. 20).
Implementation science	The scientific study of methods to promote the integration of research findings and evidence-based interventions into health care policy and practice. It seeks to understand the behavior of health care professionals and support staff, health care organizations, health care consumers, and policymakers in context as key variables in the sustainable uptake, adoption, and implementation of evidence-based interventions (National Institutes of Health Fogarty International Center, n.d., para. 1).
Context	Context reflects a set of characteristics and circumstances that consist of active and unique factors, within which the implementation is embedded. As such, context is not a backdrop for implementation, but interacts, influences, modifies and facilitates or constrains the intervention and

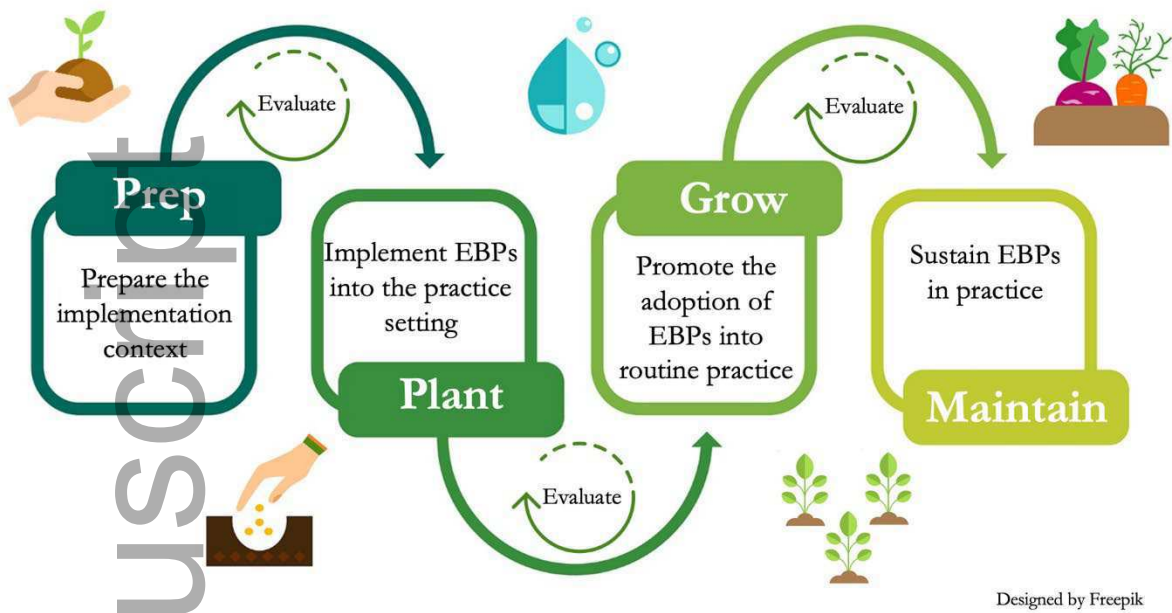|	its implementation. Context is usually considered in relation to an intervention, with which it actively interacts. It is an overarching concept, comprising not only a physical location but also roles, interactions and relationships at multiple levels (Pfadenhauer et al., 2017, p. 6).

Figure 1. Preparing the soil for successful implementation and sustainable use of EBPs in nursing practice.