

The Impact of Workforce Turnover on the Sustainability of Evidence-Based Programs:
A Critical Scoping Literature Review

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Abstract

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Background and Purpose

Evidence-based programs (EBPs) are used throughout disciplines to integrate research into practice with the aim of facilitating positive outcomes at the individual or community level. Despite the widespread development and implementation of EBPs, many programs are not sustained beyond the initial implementation period due to many factors, including workforce turnover. The purpose of this study was to conduct a scoping review to examine and describe the impact of workforce turnover on the sustainability of EBPs and assess whether any recommendations for mitigating the impacts currently exist.

Methods

We searched 10 databases for articles that focused on an EBP and described an association between workforce turnover and the sustainment or sustainability of the program. A data abstraction tool was created to extract relevant information from each of the articles. A team of four graduate students applied the data abstraction tool to all included articles to create the dataset. Data was mapped and analyzed using the Program Sustainability Framework (PSF).

Results and Discussion

A total of 23 articles were included in this scoping review and mapped to the PSF. Twenty-two articles described impacts of workforce turnover and 15 articles proposed recommendations to address the impacts. Common impacts of workforce turnover identified by this review included increased need for training, loss of organizational knowledge, lack of EBP fidelity, and financial stress. Recommendations to address the impact of workforce turnover included affordable and alternative training modalities, the use of champions or volunteers, increasing program alignment with organizational goals, and generating diverse funding portfolios.

Conclusion

The sustainment of EBPs is critical in order to ensure and maintain the short- and long-term benefits of the EBP for all targeted participants or communities. Understanding the impacts of workforce turnover, a determinant of sustainability, can create awareness among EBP-implementing organizations and allow for proactive planning to increase the likelihood of program sustainability.

1. Background

Evidence-based programs (EBPs) are used throughout disciplines to integrate research and expertise into practice, facilitating improved health and other positive outcomes at the individual or community level. However, prior research has shown that there is an estimated 17-year delay that occurs between the original creation of the EBP and its incorporation into general practice, a phenomenon called the “know-do” or “research-to-practice” gap (Bauer, Damschroder, Hagedorn, Smith, & Kilbourne, 2015). The field of dissemination and implementation science has grown tremendously in response, with a primary focus on studying the steps and methods to effectively and efficiently translate research into real-world practice (Eccles & Mittman, 2006). Alongside program adoption (uptake) and implementation (delivery), sustainability (maintenance of the program over time) has been acknowledged as a key goal of evidence-based practices (Proctor et al., 2015; Scheirer & Dearing, 2011). However, despite the acknowledged importance of sustainability, there is a paucity of knowledge pertaining to the determinants of sustainability (Chambers, Glasgow, & Stange, 2013; Proctor et al., 2015; Scheirer & Dearing, 2011; Shelton, Rhoades Cooper, & Stirman, 2018; Stirman et al., 2012).

The term sustainability has multiple definitions and synonyms within the field of dissemination and implementation science. For the purposes of this project, sustainability is defined as the “continued use of program components and activities for the continued achievement of desirable program and population outcomes” (Scheirer & Dearing, 2011). This definition highlights the importance of sustainability as well as of understanding determinants of sustainability. Without an understanding of program sustainability and its facilitators and barriers, programs may cease to exist, leading to a termination of the

beneficial program outcomes for participants. Discontinued programs also have the potential to negatively impact funders, policymakers and the community where the program was implemented through a loss of investments, resources or time (Shelton et al., 2018). This can lead to strained future relationships, negative perceptions and a general lack of support for present and future EBPs.

Several sustainability frameworks and assessment tools have been developed recently to help explain and measure sustainability, including the Program Sustainability Framework and the Dynamic Sustainability Framework (Chambers et al., 2013; Luke, Calhoun, Robichaux, Elliott, & Moreland-Russell, 2014; Shelton et al., 2018). Alongside the frameworks and tools, several determinants of sustainability have been identified, including funding, organizational resources, external policy environments, program adaptability, leadership and workforce turnover (Proctor et al., 2015; Scheirer & Dearing, 2011; Stirman et al., 2012). While many of the determinants of sustainability have been identified, few studies have explored them individually or in conjunction with each other in relationship to EBP sustainability (Stirman et al., 2012).

Workforce turnover is a critical determinant of EBP sustainability, impacting a wide range of programs and organizations. Fundamentally, without adequate staffing, EBPs cannot be implemented or sustained, thus showcasing the importance of maintaining the EBP workforce across the EBP lifespan. Previous research exploring workforce turnover and EBPs has either examined associations between turnover and program implementation (Aarons, Sommerfeld, Hecht, Silovsky, & Chaffin, 2009; Woltmann et al., 2008) or focused within a single discipline like mental health services or early education (Aarons & Sawitzky, 2014; Gill, Nathans, Seidel, & Greenberg, 2017; Woltmann et al., 2008).

Complementary and more contemporary work has begun to incorporate the concept of sustainability, or continued implementation, into the exploration of the impact of workforce turnover on EBP (McKay, Hoffer, Combs, & Dolcini, 2018). Despite growth within the field and the newer focus on sustainability, there is still a lack of information and understanding of the impact of workforce turnover on the sustainability of EBPs.

1.1 Objectives

This scoping literature review, guided by the Program Sustainability Framework (PSF), aims to summarize the evidence regarding the impact of workforce turnover on the sustainability of EBPs, and identify recommendations that have been proposed in the literature for mitigating this impact (Schell et al., 2013). A scoping review, as opposed to a systematic review, is appropriate for this task because this is a relatively new, underdeveloped area of inquiry, and we surveyed a body of literature that included a wide range of study designs across multiple disciplines, such as social work, implementation sciences, education and health services. We anticipate that the results of this scoping literature review will benefit EBP developers, practitioners or facilitators as well as participants by shedding light on a key barrier to EBP sustainability and summarizing proposed recommendations for addressing it.

1.2 Research Questions

Specifically, the following research questions will be addressed:

1. What current research exists exploring the impact of workforce turnover on EBP sustainability?

2. Are there any recommendations proposed in the literature to mitigate the impact of workforce turnover?

2. Methods

2.1 Search Strategy

We searched 10 bibliographic databases: PubMed, Embase, Web of Science, CINAHL Complete, PsychINFO, Scopus, Social Services Abstracts, Sociological Abstracts, PAIS Index and the Global Health Database. Databases were searched for articles with titles, abstracts or keywords containing all of the following key terms: 1) “sustainability” or “sustainment”; 2) “retention” or “turnover”; and 3) “evidence based” or “evidence-based”. The bibliographic database search was conducted between October 2017 and February 2018. A subsequent and identical search was performed in March of 2019 so that all applicable and relevant articles were included given the timeline of the review. A flow chart of the search strategy is shown in Figure 1.

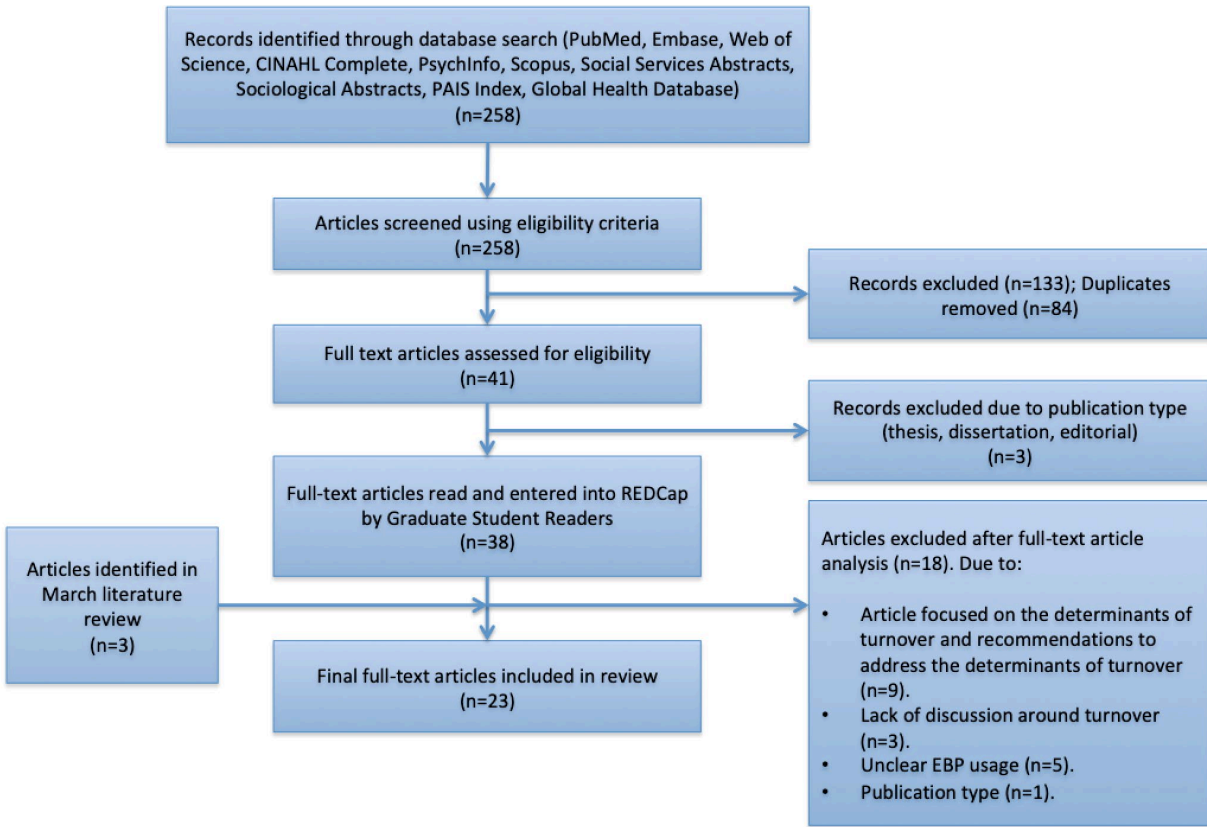


Figure 1. Scoping literature review search strategy flow diagram.

Inclusion and Exclusion Criteria

Studies were included if they met the following criteria: (1) had a title, abstract or keyword(s) that mentioned the key terms detailed above; (2) described an association between staff or workforce turnover or retention and sustainment or sustainability; (3) sustainment or sustainability was the primary focus of the article or the authors mentioned that the program was unable to be sustained; (4) focused on an EBP within health or education-related disciplines or that was a community-based intervention (clinical interventions were excluded); (5) retention/turnover was in reference to the EBP organization staff, volunteers, or facilitators, as opposed to program participants.

Additionally, all articles must have been written in English and have been published prior to March 2019.

2.2 Expert Consultation

An expert panel was created at the beginning of this project to provide guidance and expertise to the primary author. The expert panel was comprised of five members --four University of Washington professors and a fifth, University of Washington staff research scientist and PhD student--representing expertise in conducting scoping reviews, dissemination and implementation research (B.W., J.B., B.B., M.P.P, and L.S.) and EBP implementation and sustainability (L.S., B.B., and M.P.P.). The expert panel convened for four in-person meetings at the University of Washington as well as provided consultation electronically over email.

2.3 Screening and Validation

This scoping literature review contained one screening phase (S1) and two validation phases (V1 and V2). Initially, a total of 258 articles were identified from the 10 databases. During the S1 phase, the titles, keywords and abstracts of all 258 articles were reviewed utilizing the above inclusion criteria by the primary author (K.P.). A total of 125 articles met the inclusion criteria. Included articles that were duplicated across databases were removed, resulting in a total of 41 articles for S1.

During the V1 phase, a second graduate student (S.M.) performed a validation screen of the articles by applying the inclusion and exclusion criteria to 5% (n=14) of the original 258 articles, assessing for inter-reliability. This validation screen yielded a 72%

agreement rate between S.M. and K.P.. A 100% agreement rate was achieved after discrepancies were discussed and consensus was reached. During the V2 phase, at the recommendation of the expert panel, S.M. conducted another validation screen, reviewing 5% (n=9) of the excluded articles from the S1 phase. The V2 phase yielded a 93.75% agreement rate. A 100% agreement rate was again achieved after discussing discrepancies until consensus was reached. After screening and validation, the final count for inclusion in this scoping literature review was 41 articles.

2.4 Data Abstraction

A data abstraction tool (DAT) was created by the original graduate student dyad (K.P. and S.M.) to extract information pertaining to the relationship between EBP sustainability and workforce turnover for all included articles. Based on original research questions and aims, as well as on a full text review of 10% (n=5) of included articles, the graduate student dyad created DAT questions. The DAT was then piloted on an additional two articles and presented to the expert panel, resulting in revisions and refinements. The final DAT had 28 questions. The DAT was used to abstract the following: first author's last name; year of publication; study type; purpose; research questions; provided definition of sustainability; source of sustainability definition; informative frameworks used; evidence-based program; description of the EBP; EBP population; whether sustainability was the main focus of the article; the organization implementing the EBP; the workforce implementing the EBP; whether the status of staff employment was linked to turnover; whether turnover was linked to a specific subset of staff; whether turnover was an independent variable; how turnover was measured; turnover causes; strategies to prevent

turnover; recommendations to address causes of turnover; impacts of staff turnover; strategies to prevent the impacts of turnover; recommendations to address the impacts of turnover; limitations of the article; future directions for research; additional graduate reader thoughts; additional graduate reader reflection.

Study data were collected using the DAT and managed using REDCap electronic data capture tools (Harris, Taylor, Thielke, Payne, Gonzalez & Conde, 2009) hosted at the University of Washington Institute of Translational Health Sciences. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies, providing: 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources. The REDCap data abstraction was completed by a team of three graduate student readers (L.H., D.L., and S.M.) and the primary author. All readers attended an hour-long data abstraction and REDCap utilization training with the primary author prior to beginning data abstraction. During the training, all readers used the DAT to abstract data from the same three articles to assess for understanding of the DAT and project aims. Graduate student readers were randomly paired with either S.M. or K.P. as they had the most familiarity with the DAT and included articles (Pair 1: L.H. and S.M.; Pair 2: D.L. and K.P.). Graduate pairs were assigned four articles to abstract, noting areas of disagreement and evaluating interreader reliability. Discrepancies were discussed until consensus was reached. Once interreader reliability was established, each graduate student reader was assigned seven articles to individually abstract. Final interreader reliability was completed by K.P., who randomly spot-checked

nine articles (two from each reader and three double abstracted articles) by reapplying the DAT to all nine articles and assessing for discrepancies. Differences were discussed with the original reader until consensus was reached.

An additional 21 articles were removed from the initial count of 41 after the data abstraction process, when a full-text assessment revealed a poor fit between the articles and the scoping literature review aims. This resulted in a total of 20 included articles for analysis.

2.5 March 2019 Scoping Literature Review Additions

At the recommendation of the expert panel and due to an extended project timeline, an additional and identical database search was conducted in March 2019. An additional 60 articles were identified across 10 databases. Identical inclusion and exclusion criteria from S1 were applied to the titles, keywords and abstracts of the additional articles, resulting in 28 new articles across 10 databases. This process was completed by the primary author, who had already been deemed reliable and valid through the validation process described above. Therefore no validation (V1 and V2) phase was needed. The primary author was not assessed for interrater reliability during the data abstraction phase for the March article additions. Six articles remained after duplicates were removed. An additional three articles were removed after the data abstraction process, when a full-text assessment revealed a poor fit between the articles and the scoping literature review aims. The March 2019 database search resulted in three additional articles and a final article count of 23 for this scoping literature review. REDCap was used for data abstraction, which was completed by the primary author, K.P..

2.6 Data Analysis and Synthesis

The data was exported from REDCap to Microsoft Excel for data analysis. K.P. organized turnover impact and recommendations to address turnover impact data into eight categories corresponding to the eight domains of the Program Sustainability Framework (PSF): *environmental support, funding stability, partnerships, organizational capacity, program evaluation, program adaptation, communications, and strategic planning* (Washington University, n.d.). Each of these domains is defined and operationalized in Table 1 [Appendix]. In addition to performing a deductive analysis using the eight PSF domains, data was also analyzed for any emergent impacts of workforce turnover or emergent recommendations to address workforce turnover that did not correspond with one of the PSF domains.

3. Results

3.1 Description of Included Studies

A total of 23 articles were included in this scoping literature review. Table 2 [Appendix] provides an overview the 23 articles and contains the following: study design; stated study purpose; EBP; type of EBP; informative framework or theories used; and any included definition of sustainability or sustainment. Included studies were all published between 2006 and 2018, and represented a variety of research designs including qualitative (50%, n=11), mixed methods (36%, n=8), observational (9%, n=2), synthesis (5%, n=1), experimental (5%, n=1), and other (32%, n=7). Study designs classified as other included proposed cluster-randomized trials, program evaluations, workshop reports, case

studies, agent-based modeling and longitudinal analyses. Fourteen of the included articles were primarily focused on sustainability. Twelve articles from the included articles provided a definition of sustainability, 69% of which cited outside sources for the provided definition and 31% of which provided their own definition. Cited and author provided definitions can be seen in Table 2 [Appendix]. Included articles represented a variety of evidence-based programs (EBP) spanning fields of behavioral (13%, n=3), physical (29%, n=7) and mental health (17%, n=4), as well as programs addressing chronic condition management (8%, n=2), aging (4%, n=1), substance abuse (4%, n=1), homelessness (4%, n=1), and education (4%, n=1). Three of the 23 articles examined more than one EBP. Twenty-two articles discussed an impact of workforce turnover. Fifteen articles shared recommendations to address the impacts of turnover. Common impacts and recommendations to address the impacts are grouped by PSF domain and presented in Table 3 and 4 [Appendix].

3.2 Environmental Support

3.21 Environmental Support Impacts of Turnover

Three articles within this scoping review described an impact of turnover that fell within the environmental support domain, impacting the internal support environment. There were not any impacts of workforce turnover that affected the external support environment. Impacts on internal environmental support were felt through changes in organizational climate, and organizational priorities or policies. Changes in organizational climate were found in a study examining the influence of human resources on the implementation of RESPECT, an EBP focused on HIV prevention. While increased

workforce turnover increased all remaining staff responsibilities, the impact was particularly acute for supervisors (McKay, Dolcini, & Catania, 2017). Supervisors were observed to take on more general EBP responsibilities as well as experience an increase in supervisory activities for new employees who were not as familiar with the program. This can “indirectly impact the quality of working conditions for remaining staff” (McKay et al., 2017). In a study examining best home care practices for older adults, supervisor turnover and the resulting new management, impacted the organizational priorities as new management often had new priorities (Ploeg et al., 2014). New priorities were observed alongside a lack of ongoing education for remaining and new staff, which could in turn impact the organizational climate and therefore the internal staff support for EBP sustainment (Ploeg et al., 2014). New management priorities were also observed in a study examining different evidence based incontinence programs where “management tenure sometimes lasted only weeks or months” and new management was hired from outside of the organization (Lyons, 2010). New management often “embraced [...] changing this place for the better” through the use of new programs and consequently new organizational practice priorities (Lyons, 2010). Inconsistent policies made it difficult for staff to learn new practice standards and thereby internally support the EBP (Lyons, 2010).

3.2.2 Environmental Support Recommendations

Four articles shared recommendations to address the broader environment to mitigate the impacts of turnover. Two of the recommendations promoted building both internal and external EBP support. In a study exploring health promotion EBPs for elderly and aging adults, Dattalo et. al (2017) found that external partnerships and agency leadership commitment were two of six essential resources for program sustainment in

rural settings. A network of external partnerships was found to aid agencies by providing resources including workshop sites, recruiting workshop participants, accessing volunteers, and sharing staff to assist (with EBP), allowing more workshops to be implemented and sustained (Dattalo, Wise, Ford li, Abramson, & Mahoney, 2017). In addition to external partnerships, agency leadership support was also found to be essential to program sustainment as it secured key internal resources including allocated staff time, funding and training resources (Dattalo et al., 2017). A combination of external and internal support was also recommended to increase the likelihood of sustainment of Adolescent-Community Reinforcement Approach, a psychosocial EBP (Hunter, Han, Slaughter, Godley, & Garner, 2017).

External environmental support recommendations focused on diversifying the organization funding portfolio by including financial resources from outside the implementing organization (Hunter et al., 2017). This was observed to positively impact program sustainment, especially in preparation for or in the event of the end of implementation funding (Hunter et al., 2017).

Internal environmental support recommendations also included maintaining qualified mental health professionals and supervisors in order to ensure the administration of appropriate psychological treatments (Hunter et al., 2017). Additionally, Hunter et al., observed statistical significance between supervisor turnover and sustainment; however, the same statistical significance was not found in relation to clinician turnover (Hunter et al., 2017). Hunter et al. (2017), hypothesize that the results may have been buffered by the internal supports provided to supervisors to incentivise local trainings. In a school-based EBP, internal environmental support recommendations focused on incorporating the EBP

into larger organizational practices such as including the EBP curriculum into classroom lesson plans so that the EBP would continue year to year (Blaine et al., 2017). Blaine et al., also recommended incorporating the EBP in larger performance evaluations and schoolwide policies, recognizing the importance of the EBP in the larger school environment (Blaine et al., 2017).

In addition to recommended internal environmental supports, one study by Glisson et al. (2008) contained recommendations promoting a positive organizational climate. The primary recommendation suggested building a positive culture that “emphasizes proficiency over resistance and rigidity, and a positive climate that reflects a functional, engaged and less stressful service environment”. In doing so, mental health therapist engagement and participation with the EBP are expected to increase (Glisson et al., 2008). This recommendation is based on the idea that positive organizational climates have been observed to increase functionality, engagement and decreased workplace stress, and were found to be associated with reduced turnover. This was further supported within their study as Glisson et al., found that therapist turnover in mental health settings was twice as high in organizations with the worst organizational climate profiles in comparison to the best climate profiles.

3.3 Funding Stability

3.3.1 Funding Stability Impacts of Turnover

This scoping review contained six articles that directly address a financial impact of workforce turnover. Across several studies, workforce turnover was observed to result in substantial financial impacts that manifested as an increased need for hiring and training to

replace key personnel who had turned over (Blaine et al., 2017; King, Hibbs, Saville, & Swales, 2018; McKay et al., 2017; McKay et al., 2018; Xiang, Robinson-Lane, Rosenberg, & Alvarez, 2018). This was further exacerbated in a school-based EBP, where new personnel training had to take place across multiple campus locations, requiring additional financial resources for training at each site (Blaine et al., 2017). As observed in a study of Indigenous community oral health programs, the financial burden of training new personnel was amplified if the oral health program was not implemented and institutionalized within an existing and well funded organization or program that could help to buffer training costs (Tsai, Blinkhorn, & Irving, 2017). Without financial support for new employee training from an existing and funded organization, oral health programs and respective activities were terminated (Tsai et al., 2017).

3.3.2 Funding Stability Recommendations

Four articles that shared a funding recommendation to address the general impacts of turnover, the majority of which called for consistent program funding. Two studies mentioned funding generally, citing the need for “adequate resources to develop procedures to educate new, incoming staff” as well as the need to secure adequate funding for the sustainment of EBPs (Bender et al., 2015; Bjorklund, Monroe-DeVita, Reed, Toulon, & Morse, 2009). Herschell et al. (2009), observing the close relationship between workforce instability and “fragile financial infrastructures”, recommended open conversations with multiple stakeholders to concretely establish best practices and examine overhead-to-direct care costs within programs. This was similar to the recommendation made to diversify the overall funding portfolio, included within the earlier external environmental support recommendations (Herschell, Kogan, Celedonia,

Gavin, & Stein, 2009). Blaine et al. (2017) was the only article to propose a concrete solution rather than generally recommend stabilizing or diversifying funding. They recommended utilizing online training as a low cost way to address the increased need for training, especially across school campuses, in response to workforce turnover (Blaine et al., 2017). They also recommended using incentives to attract and maintain staff participation, bolstering program implementation and sustainment (Blaine et al., 2017).

3.4 Partnerships

3.4.1 Partnership Impacts of Turnover

Four articles shared impacts of turnover within the partnership domain and five articles shared recommendations to address the impact of turnover. Workforce turnover primarily impacted partnerships within the community where the program was implemented. Turnover of EBP clinical professionals was observed to result in a loss of continuity of care and patient trust, which fostered a larger sense of mistrust in the community as the organization was seen as incapable of retaining staff members (Conway, Tsourtos, & Lawn, 2017). Turnover also resulted in the loss of professional relationships. In a study examining a Housing First model program, the loss of a housing coordinator simultaneously resulted in the loss of information about housing and the professional relationships with landlords, which were essential to program success (Nelson et al., 2017). Similarly, in a study exploring the implementation and sustainment of community-based transitional care programs, staff turnover lead to a weakening or loss of community partnerships that had previously been built and maintained by one or two key individuals (Xiang et al., 2018). For this particular study, turnover at the community-based

organizations weakened the partnership relationship with hospitals, which decreased the number of referrals for community-based transitional services, impacting the sustainability of the program (Xiang et al., 2018). Management turnover specifically was observed to impact partnerships as new management personnel were often unaware of culture and norms within the program or organization and consequently did not always engage informal leaders in decision making or initiatives (Lyons, 2010).

3.4.2 Partnership Recommendations

Partnership recommendations were largely concentrated on the utilization of volunteers or champions to help facilitate and sustain EBPs. Champions and volunteers were seen as capable of maintaining or boosting staff morale in the face of turnover, as well as having the ability to fill in for staffing or time shortages and in doing so, sustain EBPs (Bender et al., 2015; Blaine et al., 2017). Expanding beyond the use of volunteers and champions, Tsai et al. (2017) recommended that programs use a multilevel support and partnership strategy by involving participant families, health providers, health organization settings, local community environments, state and national health policy environments. Multilevel support and partnership strategies can help to more fully address the multifactorial nature of health problems and characteristics that exist currently including sociocultural, political and economic aspects (Tsai et al., 2017). Dattalo et al. (2017) echoed Tsai et al., by emphasizing the need for both external partnership and internal organizational capacity building as the most effective sustainability strategy (Dattalo et al., 2017). Building on multi-level partnerships, Tsai et al., (2017) recommended that programs intentionally focus recruitment, employment and retention of community members that reflect the individuals receiving EBP services. By recruiting and employing

community members, and particularly involving tribal authorities or Indigenous community leaders, EBPs can offer and utilize a “unique source of insight regarding the traditions and values of their culture, while simultaneously adding credibility to the effort [program]” (Tsai et al., 2017). Credibility in partnerships could also be built through effective and culturally appropriate communication and language (Conway et al., 2017).

3.5 Organizational Capacity

3.5.1 Organizational Capacity Impacts of Turnover

The domain of organizational capacity contained the majority of turnover impacts (35%) and recommendations to address the impact of turnover (36%). Eleven articles addressed the impact of workforce turnover within the organizational capacity domain. A loss of or decrease in organizational knowledge was a common impact of turnover, shared across five articles. A loss of organizational knowledge was related to both turnover within leadership or supervisory positions as well as with respect to the EBP staff. Inconsistent organizational policies were a key impact of leadership turnover, preventing staff from learning practice standards and thereby decreasing overall organizational knowledge (Lyons, 2010). Loss of organizational knowledge was also mentioned in reference to staff generally. A reduction in organizational knowledge was felt through the loss of professional relationships and understanding of collaborating systems necessary to continue EBP services as usual (Nelson et al., 2017; Xiang et al., 2018). Additionally, the turnover of direct care staff was seen to result in a change in workload for the remaining employees, resulting in the remaining staff covering additional responsibilities or EBP participants that they

were not familiar with, decreasing the quality and quantity of care as well as EBP delivery broadly (Lyons, 2010; McKay et al., 2017; McKay et al., 2018; Nelson et al., 2017).

Another common impact of turnover was the loss in organizational capacity, noted by six articles. Two of the six articles only mentioned the loss of organizational capacity generally, without citing specific examples of impact. The remaining four articles discussed the need for staff to cover additional work shifts and responsibilities, resulting in unfinished jobs or a lack of task completion (Lyons, 2010; Nelson et al., 2017), and unsustainable long-term workloads (King et al., 2018), which can impact the quality of EBP delivery and service (McKay et al., 2018). Due to staffing gaps resulting from turnover, and the subsequent loss of organizational knowledge and capacity, the third most prevalent impact of turnover was an organizational need for increased training, mentioned by four articles. Increased training needs are often a barrier to sustainability as the processes of both hiring and training individuals are expensive, requiring stable financial resources within the organization (August, Bloomquist, Lee, Realmuto, & Hektner, 2006; Blaine et al., 2017). Additionally, staffing shortages caused by turnover increase the difficulty of delivering workshops and training to newly hired or assigned staff due to the decreased numbers of staff to facilitate the trainings (Dattalo et al., 2017). Other impacts of turnover that fell within the organizational capacity domain included delayed program implementation, organizational reorganization and a decrease in available technical assistance.

3.5.2 Organizational Capacity Recommendations

Six articles shared recommendations addressing the impact of workforce turnover within the organizational capacity domain. The majority of impacts pertained to a loss of

knowledge or ability individually and organizationally. Six articles mentioned an increase in training generally, with several drawing attention to the importance of continuous training to keep current staff skills sharp as well as to maintain a willing and trained workforce in the event of turnover (Dattalo et al., 2017; Forman, Olin, Hoagwood, Crowe, & Saka, 2009; McKay et al., 2017; Nelson et al., 2017). A study exploring community health administrator perspectives of the implementation of Dialectical Behavior Therapy, recommended a “learning period”. The learning period allowed clinicians and EBP facilitators to understand that evidence-based treatments are “easy and compatible” with current practices thereby increasing EBP adoption and maintenance (Herschell et al., 2009). In low-income school settings, online staff EBP training was seen as a low-cost way to keep staff trained (Blaine et al., 2017). Aligned with increasing trainings and the number of individuals trained, two articles recommended increasing internal organizational capacity in response to the impact of turnover (Dattalo et al., 2017; McKay et al., 2017). McKay et al. (2017) found that downsizing an organization, potentially reducing organizational capacity, may be associated with a poor work environment, a predecessor to burnout and turnover. Resulting recommendations shared that organizations should focus on maintaining and strengthening internal organizational capacity through additional interventions focused on the cultivation of positive work environments and employee retention (McKay et al., 2017). Authors also recommended increased technical assistance, diversifying or sharing work responsibilities, and, as mentioned previously, using interventions to increase workforce retention and reduce workforce turnover.

3.6 Program Evaluation

3.6.1 Program Evaluation Impacts of Turnover

Program evaluation was the most underrepresented PSF domain. There were not any included articles that shared an impact of turnover in the program evaluation domain.

3.6.2 Program Evaluation Recommendations

Two articles provided a recommendation within the domain of program evaluation, each pertaining to organizational readiness. For the purposes of this review, organizational readiness assessments were seen as a short-term outcome within the domain of program evaluation. In a study exploring community mental health administrators' perspectives on Dialectical Behavior Therapy, Herschell et al. (2009) recommended using brief administrator surveys designed to assess organizational readiness. In doing so, EBPs and implementing organizations could identify system-level challenges such as the need for employee training prior to EBP implementation. Additionally, this would allow for a more accurate assessment of EBP compatibility with the larger organization (Herschell et al., 2009). A similar recommendation focused on organizational readiness assessments was made in a study examining childhood obesity EBPs in low-income school districts. Two organizational readiness surveys were utilized within the study to assess readiness for change and were administered both to leadership and to employees (Blaine et al., 2017). Through survey administration, Blaine et al., found that lower perceived readiness was observed in tandem with low EBP training engagement as well as higher rates of administrative and staff turnover (Blaine et al., 2017). Blaine et al. (2017) also made the singular recommendation pertaining to program evaluation for long-term outcomes, recommending the incorporation of yearly performance evaluations of the EBP within annual school evaluations (Blaine et al., 2017). This recommendation was part of a larger

sustainability suggestion geared towards a larger incorporation of the EBP into the permanent daily activities of the organization to increase sustainability (Blaine et al., 2017).

3.7 Program Adaptation

3.7.1 Program Adaptation Impacts of Turnover

Nine articles discussed impacts of turnover, recommendations to address the impact, or both, as related to this domain. None of the articles explicitly referenced effects on adaptation of the EBP(s) as a consequence of staff turnover. Three articles shared a decrease in program fidelity as a direct impact of turnover. Turnover, and especially repetitive or chronic turnover, was observed to hinder the organization's ability to adhere to the original EBP model and thereby hindering the organization's ability to maintain fidelity of the EBP due to inconsistencies in staffing (Bjorklund et al., 2009; McKay et al., 2017; Nelson et al., 2017). In a study exploring a model Housing First EBP in Canada, Nelson et al. (2017) found that program fidelity was largely impacted by turnover and especially leadership turnover. Leadership was observed as a key factor in maintaining fidelity as organizational leaders were often responsible for the organizational direction and focus, both of which determined the EBP fidelity (Nelson et al., 2017). This was further supported and illustrated by a single site within the study that experienced close to 100% EBP staff attrition but attributed their sustained programming and fidelity to the maintenance of the leadership team (Nelson et al., 2017). In a study exploring the impact of human resource changes on the sustainability of an HIV prevention EBP, McKay et al. (2017) observed that the impact of staff turnover was dependent on the staff that left the

organization. If staff turnover led to a concurrent loss in skills or knowledge necessary for the EBP, then the EBP was also likely to experience a loss or decrease in fidelity (McKay et al., 2017). Conversely, if staff turnover was primarily experienced through the loss of staff who did not hold essential skills or program knowledge, a loss in EBP fidelity was less likely (McKay et al., 2017). In a study exploring Washington State's first comprehensive statewide implementation of high-fidelity Program of Assertive Community Treatment (ACT), Bjorklund et al. (2009) found that fidelity varied by region. Each regional support network individually managed provider contracts and experienced differing levels of adherence to program standards. This was further exacerbated by staff turnover, which could lead to changes in existing organizational practices and cultures, further hindering the ability of some regional teams to operate in alignment with the program (Bjorklund et al., 2009).

3.7.2 Program Adaptation Recommendations

Program adaptation recommendations largely called for increasing program alignment, with one article recommending the incorporation and utilization of telehealth. Recommendations for program alignment appeared in two articles. Exploring a school-based EBP, Blaine et al. (2017), recommended better alignment between EBPs and school curricula to increase the likelihood of EBP continuation from year to year. Additionally, increased program alignment and incorporation could be facilitated by integrating the EBP into performance evaluations of the larger organization as well as within organizational policies (Blaine et al., 2017). Glisson et al. (2008) also called for better program alignment between the "social context of organizations and the demand characteristics of evidence-based practices needed to support effective services" acknowledging that positive

organizational climates are associated with a reduction in turnover while positive organizational culture is associated with program sustainment. A clinical EBP focused on polycystic ovary syndrome, recommended telehealth as an alternative staffing technique and form of program delivery in the advent of turnover, especially in rural or remote locations; however, similar recommendations were not found elsewhere in the literature review (Boyle et al., 2017). None of the articles made recommendations pertaining to EBP fidelity to address the impacts of staff turnover.

3.8 Communication

3.8.1 Communication Impacts of Turnover

In the communication domain, two articles shared an impact of turnover on EBP participants. Exploring an early-age behavioral intervention program implemented in community settings, August et al. (2006) found that high levels of staff turnover impacted program sustainability at the participant level. The program struggled to effectively communicate or “hand-off” families between previous and new family advocates in the event of turnover (August et al., 2006). Furthermore, sequential or numerous turnover and hand-off impacts were seen to be cumulative and had negative effects on family engagement with the EBP (August et al., 2006). A similar barrier in communication between participants and transitioning providers was observed in a chronic care management program for Indigenous Australians (Conway et al., 2017). In-depth interviews with Indigenous Health Care Workers (IHWs) revealed that staff turnover largely impacts the community and especially the patient community when newly hired staff struggle to pick up where previous staff left off (Conway et al., 2017). Interviews

shared patient frustrations with having to communicate their story again with new providers, often receiving inconsistent messages from providers in response (Conway et al., 2017). Ultimately, inconsistent communication negatively impacted patient follow-up and review, which was observed impacting patient goals and progression within the program (Conway et al., 2017).

3.8.2 Communication Recommendations

Three articles shared recommendations or strategies to address the impacts of turnover within the communication domain. Communication recommendations varied in specificity, ranging from recommending general appropriate communication to more specific meeting strategies. In their study exploring chronic care management among Indigenous Australians, Conway et al., called for “effective, culturally appropriate communication” as a tool to facilitate trust and further communication among Indigenous populations, citing that miscommunication and poor health education could often feed into a cycle of suspicion, blame and distrust (Conway et al., 2017). A study exploring the implementation of Dialectical Behavior Therapy in the mental health field, shared a desire and recommendation for an open dialogue with multiple stakeholders and surrounding financial practices to continue to implement and sustain new treatments or programs generally and in the event of staff turnover (Herschell et al., 2009). Finally, communication was also viewed as a tool in recommendations, operationalized through “booster” meetings with current and new staff to create a cohesive and comprehensive team (Bender et al., 2015).

3.9 Strategic Planning

3.9.1 Strategic Planning Impacts of Turnover

One article shared turnover impacts that fell within the domain of strategic planning. In a study examining different evidence-based incontinence programs, high and consistent levels of management turnover led to nursing home administrators and directors of nursing to take on temporary roles as interim directors (Lyons, 2010). Strategic planning and long-term program planning were impacted as interim directors were found to focus on day-to-day management rather than long-term program development (Lyons, 2010).

3.9.2 Strategic Planning Recommendations

Three articles included recommendations within the strategic planning domain to address the impact of workforce turnover. Strategic planning recommendations included a call for a sustainability plan in addition to increased proactive short and long-term planning from program developers and providers (August et al., 2006). Specifically, recommendations for short term activities should focus on key and influential factors of sustainability, while long-term activities would focus on sustainability surveillance (August et al., 2006). Influential sustainability factors included stakeholder collaboration, the inclusion and participation of qualified staff with the EBP, organizational stability and fiscal oversight of the EBP (August et al., 2006). Similar to the creation of a sustainability plan, in a study exploring educational EBPs from a developer point of view, recommendations included the creation and provision of a framework to guide program implementation and sustainability (Forman et al., 2009). A developer-created framework would assist implementation and sustainability by helping the organization to assess program fit, foster stakeholder relationships, provide training and consultation, identify funding sources and

mechanisms, as well as develop a monitoring and evaluation system for the program (Forman et al., 2009). Finally, in an 8-year longitudinal analysis exploring the predictability of long-term sustainability in Mental Health practices, Peterson et al. (2014), recommended planning for and utilizing a clear advancement track and succession strategy within EBP organizations to mitigate the impacts of leadership turnover.

3.10 Emergent Crosscutting Themes

This scoping literature review also found two emergent, crosscutting themes: 1) *Leadership versus Staff Turnover*, which explores the differences in turnover impact associated with position in the organizational hierarchy, and 2) *EBP Participant Stakeholder*, which explores the role of the targeted EBP participant as an active stakeholder within the EBP as well as the organization delivering it. These two crosscutting themes did not fit within one a priori PSF domain, and instead emerged across domains during the analysis of both impacts and recommendations.

3.10.1 Leadership versus Staff Turnover

The turnover of organizational leadership was observed to impact the PSF domains of *environmental support*, *program adaptation* and *organizational capacity* while general staff turnover largely impacted the PSF domain of *partnerships*. Organizational leaders were seen as responsible for maintaining organizational direction and focus. Consequently, leadership turnover was observed to result in changing organizational priorities and policies (Ploeg et al., 2014; Lyons et al., 2010), decreased EBP fidelity (Nelson et al., 2017), and altered EBP oversight and quality assurance (McKay et al., 2017). Conversely, general staff turnover was seen to impact partnerships or relationships, both within the

surrounding community and with EBP participants (August et al., 2016; Boyle et al., 2017; Conway et al., 2017; Lyons et al., 2010; Nelson et al., 2017; Xiang et al., 2018).

Recommendations to address the impacts of turnover specified by staff classification (leadership vs. general) were less common, appearing in five of the included articles and representing five domains: environmental support, organizational capacity, partnerships, program evaluation, and strategic planning. Recommendations addressing impacts of leadership turnover focused on investing and supporting current leaders through the use of advancement tracks or buffering the loss of a leader through preemptive succession strategies (Dattalo et al., 2017; Peterson et al., 2014). Recommendations addressing general staff turnover focused on assessing staff readiness prior to EBP implementation (Blaine et al., 2017), training a large workforce and spreading EBP responsibilities to a wider range of staff and community members (Forman et al., 2009). Finally, recommendations emphasized employing staff from the community to build on foundations of trust and pre-existing partnerships (Tsai et al., 2017).

3.10.2 Participant Stakeholders

Several articles within this review shared impacts of turnover or recommendations to address impacts of turnover that were centered on the EBP participant, rather than the program itself, which is the focus of the PSF. Staff turnover was observed to erode participant trust (August et al., 2006), erode the quality of care (McKay et al., 2018) and if cumulative was found to decrease both participant and participant family engagement (August et al., 2006).

Recommendations to address the impact of workforce turnover that were focused on the EBP participant were minimal, found in only two articles. Recommendations

suggested the use of effective and culturally appropriate communication, language and honest disclosures to foster participant trust (Conway et al., 2017) and proposed that implementing organizations should hire community members, building on an existing foundation of trust (Tsai et al., 2017).

4. Discussion

This study reviewed literature that explores the impact of workforce turnover on the sustainability of evidence-based programs (EBPs) across disciplines. We highlighted different types of turnover impact related to the eight domains of the Program Sustainability Framework (Washington University, n.d.) and identified recommendations to address the impacts of workforce turnover. The results from this review may inform organizations planning to implement or currently implementing EBPs on how to best mitigate the impacts of workforce turnover to promote the sustainability of the EBP, thus maximizing EBP benefits for the target population (Shediak-Rizkallah & Bone, 1998).

4.1 Mapping Impacts and Recommendations to the PSF

4.1.1 Mapping Impacts of Workforce Turnover to the PSF

Evidence on the impact of workforce turnover varied across the eight PSF domains. The majority of turnover impact findings were related to the *organizational capacity* and *program adaptation* domains followed by *communication* and *funding stability*. There are two possible explanations for the observed differences across domains. First, the differences may reflect the fact that certain PSF domains are directly linked to staffing. Domains such as *organizational capacity*, which encompasses internal resources such as

adequate numbers of staff, or *program adaptation*, which focuses on ongoing program effectiveness (Washington University, n.d.) potentially rely heavily on consistent EBP staff. Conversely, domains such as *program evaluation*, which focus on the documentation and evaluation of EBP results, could outsource responsibilities to non-EBP related staff, and therefore workforce turnover impacts may not be as readily apparent. The second possible explanation explores the potential chronological relationship between PSF domains, or the order in which they can feasibly occur. It is arguable that an organization would need to have the capacity (i.e. staff, technical assistance, etc.) and relatively stable funding in order to implement and sustain an EBP prior to donating staff, resources and time to establish a more robust network of partnerships or evaluate the EBP. Therefore, as illustrated in the results of this literature review, higher levels of reported turnover impacts should be observable within those early chronological domains. The domain of *strategic planning* is the anomaly in this chronologically-based reasoning. Ideally, strategic planning would occur prior to implementation and therefore also before the sustainment phase, locating it first in the chronological order of domains and potentially with the highest number of observable workforce turnover impacts. This may, however, be explained through understanding strategic planning as continuous “processes that guide the program’s directions, goals, and strategies” (Washington University, n.d.) that may not be affected by staff turnover immediately but rather in the long-term. In the short-term, turnover impacts on strategic planning may be overshadowed by factors such as lack of organizational capacity to ensure EBP delivery.

4.1.2 Mapping Recommendations to Address the Impact of Workforce Turnover to the PSF

Generally, recommendations to address the impact of turnover were also unequally distributed among PSF domains, indicating areas where authors felt as though there were realistic and actionable opportunities to address turnover impacts. The majority of recommendations to address the impact of turnover were found in the *organizational capacity* domain, mirroring the larger number of studies that reported turnover impact within the same domain. The *partnership* domain contained the second largest number of recommendations, which may be explained by the ability of partnerships to compensate for other impacts of turnover.

4.2 Overarching Impact and Recommendations Themes

This scoping review identified six main themes related to the impact of workforce turnover and recommendations to address this impact. Four of those themes aligned with existing PSF framework domains and two were emergent. The four overarching impact and recommendation themes included training, partnership, fidelity and funding, aligning with the PSF domains of *organizational capacity*, *partnership*, *program adaptation* and *funding stability*. These thematic areas are indicative of points within EBPs or EBP-implementing organizations that are potentially more susceptible to the effects of workforce turnover. Drawing attention to these areas can help to focus an organization's awareness, energy and efforts in the likely event of workforce turnover. The presence of these themes across both impacts and recommendations is indicative of some awareness of the impacts of workforce turnover on EBPs and attempts to mitigate those impacts.

Alongside the four well aligned PSF themes, this scoping literature review also found two emergent themes: 1) leadership versus staff turnover; and 2) participant

stakeholders. These two themes did not align with a single existing PSF domain, instead emerging within the analysis. Each of these six themes—aligned and emergent—will be discussed below for both impacts and recommendations.

4.2.1 Training

Impacts and recommendations pertaining to the theme of training aligned with the PSF domain of *organizational capacity*. The increased need for training was mentioned across articles and disciplines, pointing to the overwhelming organizational need to train replacement staff in the event of turnover. The need for training was also indicative of the lack of trained backup staff available to serve in interim roles. Training recommendations emphasized the need for continuous trainings across organizational staff to address the diminished organizational capacity and knowledge lost in the event of turnover. In doing so, organizations would have alternative staffing options to sustain EBP delivery and maintain community or stakeholder partnerships without losing additional time to staff trainings. Recommendations also included the use of online training to mitigate both financial and time burdens associated with trainings. Instead, online training would offer a relatively cheap, potentially recordable and therefore reusable, as well as remote option for staff training. Additional or alternative forms of training could also be utilized to minimize the loss of organizational knowledge due to staff turnover. These findings suggest that alternative and cost-effective options to training, such as online or continuous all-staff trainings, may help to reduce both financial and time burdens associated with training replacement staff. This is in agreement with previous work which found online trainings to be more economically effective in comparison to in-person trainings for teachers and for corporate training programs (Jung, 2005; Strother, 2002).

4.2.2 Partnerships

While the impact of lost organizational knowledge can also be somewhat alleviated by increased or alternative trainings, the loss of partnerships in the event of staff turnover cannot easily be mitigated by hiring new staff. Partnerships take considerable time commitments on behalf of all involved parties to build a foundation of trust and support. The benefits of partnership and collaboration occur on the individual and organizational levels as a network of resources and knowledge is created. The results of this review are in agreement with previous work which suggested that through the network of resources and support, partnerships can alleviate administrative burden, provide employees that can serve as “staff extenders”, and provide funding or workspaces to help cover gaps due to turnover, all of which can help an organization to meet its goals (*Improving Health Care Quality and Equity: Considerations for Building Partnerships Between Provider Practices and Community Organizations PRIMER/BRIEF*, 2013). While a few partnership recommendations touched on community partnerships to build the resource network, a large majority of the articles referenced or recommended the use of volunteers or champions. Volunteers and champions were seen as a critical resource capable of increasing staff morale and covering staffing shortages. Additionally, volunteers or champions who are members of the community served through the EBP are invaluable due to their ability to act as a liaison with pre-established community trust. A foundational level of trust fosters and reinforces the partnership, lending credibility to the relationship between the EBP organization and EBP participant. These findings suggest that partnerships can be comprised of a diversity of individuals or organizations and are essential to the success of a program as they often fill-in organizational, resource or staffing

gaps, as well as add partnership credibility through culturally appropriate and community reflective practices and interactions, building a foundation of trust.

4.2.3 Fidelity

A decrease in EBP fidelity in response to staff turnover was another prominent theme, aligning well with the *program adaptation* PSF domain. Reduced EBP fidelity was unique in that it resulted from both leadership and general staff turnover, although for different reasons. Leadership turnover was seen to result in new organizational priorities potentially hindering the EBP staff from delivering the program as intended, whereas EBP staff turnover resulted in a loss of skills or knowledge necessary to deliver the program to fidelity. Recommendations called for increased program alignment through the integration of the EBP into the daily tasks of the larger organization. The inability to separate the EBP from the organization as a whole would reduce an organization's ability to prioritize between EBP delivery and other organizational tasks or goals. Furthermore, the need to integrate an existing EBP into the parent organization to encourage alignment may also represent the original misalignment of the EBP within the social context and mission of the organization. This suggests that EBP and program alignment should be assessed prior to implementation.

4.2.4 Funding

The majority of articles included in this review made reference to financial burdens associated with staff turnover, primarily linked to the hiring of replacement staff, but also linked to the funding of the EBP itself. Recommendations were lackluster, consisting largely of general calls to diversify funding portfolios without actionable or specific steps.

Increasing in recommendation specificity, online training was suggested as an appropriate

and low-cost method to reduce the financial burden of trainings. Despite the overwhelmingly apparent financial burden of staff turnover and the resulting training, the results from this review draw attention to the need for EBP implementing organizations to focus on the diversity and quantity of funding sources that they can obtain and rely on throughout sustained EBP delivery. Future work surrounding funding portfolios for EBP organizations could lead to the development and improvement of financial partnerships, stakeholder dialogues and long-term funding which will promote the sustained delivery of EBPs despite workforce turnover and resulting training needs.

4.2.5 Leadership versus Staff Turnover

Several articles drew distinctions between staff turnover and supervisor, management or leadership turnover. Turnover in leadership roles was often observed to impact the larger workplace environment as replacement leadership was likely to enact different managerial priorities or policies. This emergent theme reinforces previous research showing that altered workplace environment, culture, and climate in response to leadership turnover can influence work attitudes of the remaining staff and predict one-year staff turnover rates (Aarons et al., 2009), potentially leading to increased turnover rates among subsequent staff. Differential impacts related to the role of staff that have left the organization could provide insight into the prioritization of buffer activities or planning when implementing a program.

4.2.5 Participant Stakeholder

The second emergent theme, the role of an EBP participant as a stakeholder, was not aligned with any of the existing PSF domains. This may be due to the nature of the framework and its organizational-level focus; however, it also represents a missed and

critical demographic to consider when examining the implementation and sustainment of EBPs. This scoping review found that EBP staff turnover resulted in participant frustration, the stagnation of participant progress, and participant drop-out. Prior to participant attrition, participant frustration and stagnation of participant progress can lead to disengagement. Previous work shows that participant disengagement can further weaken the provider-participant relationship, leading to reduced implementation outcomes (Aarons & Sawitzky, 2014; Woltmann et al., 2008), which can be extended to sustained program outcomes. Additionally, participant attrition can eliminate the success or continuation of the EBP itself as the primary EBP population and audience diminishes. This can be further exacerbated if participant distrust spreads to the participant community, which may contain other EBP participants as well as serve as a potential source for new EBP participants. Conversely, active EBP participant engagement has been observed to expand the applicability of research for hard-to-reach populations, increase the translation, dissemination and uptake of results, and increase the accountability and transparency of research within a community (Esmail, Moore, & Rein, 2015). These findings emphasize the importance of the EBP participant as a stakeholder as their progress and continued program engagement can impact the long-term sustainability of the EBP.

5. Limitations

This scoping literature review had several limitations. The keyword search terms used within the database search may have been under-inclusive, missing relevant articles due to the lack of truncated or wildcard searches. The use of truncated search terms such as “sustain*” may have broadened the search in comparison to the search terms used,

“sustainability OR sustainment”. Additionally, the database search could have been expanded by increasing the use of antonym and synonym searches such as searching “attrition” in addition to “turnover OR retention”, capturing a larger subset of articles for data abstraction. Missing relevant articles may also be attributable to the lack of a grey literature search as well as the exclusion of published literature that was not written in English. Finally, unlike in a systematic review, this scoping literature review did not assess the quality of included studies, making it difficult to judge the rigor or results of included studies. While this limitation makes the comparison of study rigor difficult, it also allows for a broader incorporation of study designs and methodologies, allowing for a more comprehensive understanding of the topic to inform further research.

6. Future Directions

Future research should move further upstream of the current review to explore the determinants of turnover and recommendations to address those determinants. This will allow for a better understanding of how turnover can be prevented rather than just mitigating its effects. Considerations for future research should also include a literature review exploring the determinants and impacts of workforce turnover on initial implementation. Sustainability is in essence continued implementation, in which a program is continually carried out over time and potentially with new participant cohorts. It would therefore be beneficial to explore and understand the determinants of turnover, the impacts of turnover and recommendations for both with respect to implementation in addition to long-term sustainability, as sustainability could be differently defined for various programs and organizations. Additionally, further research is needed on other

determinants of sustainability like the larger policy environment or organizational resources. In doing so, future work could highlight more influential determinants, informing EBP organizations of the best place to spend their limited time and resources while still sustaining the EBP. Finally, future research should examine when EBP sustainment is appropriate and beneficial. While sustainment is considered a critical goal of EBPs, programs that are harmful or ineffective should not be continued, necessitating a clear understanding of the appropriateness of sustainability for each respective program.

7. Conclusion

EBPs are research-tested effective programs designed to deliver positive outcomes to targeted populations across disciplines. The sustainment of EBPs is critical in order to ensure and maintain the short- and long-term benefits of the EBP for all targeted participants or communities. Further, understanding the impacts of sustainability determinants like workforce turnover can create awareness for EBP organizations, staff and leadership and allow those implementing organizations and staff to buffer sustainability barriers created in the wake of turnover.

Common impacts of workforce turnover identified by this review included increased need for training, loss of organizational knowledge, lack of EBP fidelity, and financial stress. Recommendations to address the impact of workforce turnover included affordable and alternative training modalities, the use of champions or volunteers, increasing program alignment with organizational goals, and generating diverse funding portfolios. Both the impacts and recommendations listed above are general and can be applied or altered to cater to diverse set of EBPs and communities. EBP implementing

organizations should be aware of these impacts and the recommendations to address each of the impacts in order to ensure program sustainability.

This review also draws attention to differences between leadership and general staff turnover both within an implementing organization and within a larger understanding of EBP sustainability. Implementing organizations should consider the differential impacts of turnover, paying particularly close attention to the potential organizational level impacts of leadership turnover. Finally, this review found EBP participants to be active EBP stakeholders, often left out of conceptual frameworks and discussions surrounding EBP sustainability. Moving forward, it will be critical to include participants in planning and analysis of EBP sustainability as their engagement within the program is essential to EBP success.

Understanding and achieving sustainability is critical to obtaining research-tested and positive EBP outcomes. Workforce turnover is a single determinant of EBP sustainability; however, as this review illustrates it is an essential determinant to monitor and mitigate to ensure the continued success of EBPs across disciplines.

Appendix

Table 1. Program Sustainability Framework Definitions and Operationalization		
PSF Domain	Definition	Operationalized Definition
Environmental Support	Having a supportive internal and external climate for your program	Shared impacts or recommendations that pertained to the organization or larger environment outside of the EBP
Funding Stability	Establishing a consistent financial base for your program	Shared impacts or recommendations pertained to the financial state of the EBP or organization
Partnerships	Cultivating connections between your program and its stakeholders	Shared impacts or recommendations that pertained to EBP relationships with stakeholders or the community
Organizational Capacity	Having the internal support and resources needed to effectively manage your program	Shared impacts or recommendations that pertain to existing or lacking organizational resources
Program Evaluation	Assessing your program to inform planning and document results	Shared impacts or recommendations that pertained to assessment or evaluation of the EBP or larger implementing organization
Program Adaptation	Taking actions that adapt your program to ensure its ongoing effectiveness	Shared impacts or recommendations that pertained to either EBP adaptation or fidelity
Communication	Strategic communication with stakeholders and the public about your program	Shared impacts or recommendations that pertained to communication between the organization and any involved collaborators or stakeholders, including EBP participants
Strategic Planning	Using processes that guide your program's directions, goals and strategies	Shared impacts or recommendations that pertained to long-term planning for the EBP or organization

Table 2. Overview of Studies Included in Scoping Review

Authors and Year	Study Design	Stated Study Purpose	EBP	Type of EBP	Informative Frameworks or Theories Used	Definition of Sustainability/Sustainment
August, G. J., et al. (2006)	Experimental	The present advanced-stage effectiveness trial sought to determine whether this same family service agency could sustain practice infrastructure and reproduce program effects with a new cohort of participants allowing supervision, implementation, and levels of participation to vary on the basis of 'real- world' conditions.	Early Risers 'Skills for Success'	Early-age behavioral	Model of community-based program sustainability	1) At the individual level, sustainability has been defined as the long-term effects of a program as assessed after 6 or more months following the most recent intervention contact (Glasgow et al., 1999). 2) At the setting or organizational level, sustainability refers to the extent to which an intervention becomes institutionalized or part of routine organizational policies and practices of an agency (Shediak-Rizkallah & Bone, 1998).
Bender, B. G., et al. (2015)	Other	To define the key concepts in IR [Implementation Research] as discussed during the workshop, provide examples of IR from experienced investigators, and describe the challenges, recommendations, and priorities for IR in respiratory, critical care, and sleep medicine that emerged from the meeting.'	Multiple EBPs	N/A	None	None provided.
Bjorklund, R. W., et al. (2009)	Other	This column describes Washington State's historic statewide initiative to implement ten high-fidelity	High-fidelity Program of Assertive Community	N/A	None	None provided.

		assertive community treatment teams.	Treatment (WA-PACT)			
Blaine, R. E., et al. (2017)	Mixed Methods	Using a mixed methods design, we assessed facilitators and barriers to achieving implementation outcomes adapted from the taxonomy of Proctor et al.	MA-CORD which contained the EBIs 'Eat Well and Keep Moving' and 'Planet Health'	Health (childhood obesity)	Outcomes for Implementation Research (Proctor et al.)	Not directly, however they do provide an example: 'sustainability (eg, plans to continue offering the lessons in the following year).'
Bonham, C. A., et al. (2014)	Mixed Methods	Our mixed-method study clarifies how [leadership, resources, and access to knowledge and information] influence delivery of EBPs for integrated treatment in community agencies and identifies agency profiles that can facilitate or hinder these changes'.	Multiple EBPs related to mental health treatment	Mental health	CFIR	None provided.
Boyle, J. et al. (2017)	Mixed Methods	The aim of this study was to conduct a process evaluation of the development and operation of the PCOS clinic after the first 12 months to assess (i) the consistency in applying the guidelines, (ii) barriers and enablers to using the service and (iii) its ability to meet the health needs of women and the community.	Evidence-based Polycystic Ovary Syndrome clinic	Health	None	None provided.
Buller, D. B., et al. (2015)	Observational; Qualitative	This paper reports the results of a long-term follow-up examining the sustainability of GSS 5 to 7 years after a trial in which it was disseminated throughout North America.	Under the Go Sun Smart brand (GSS)	Health Intervention (skin cancer)	None	Sustainability refers to the continuation of a program, its activities, and structures, when financial, organizational, and technical support from external organizations has ended.

Conway, J., et al. (2017)	Qualitative	The aim of this study is therefore to describe the barriers and facilitators that indigenous healthcare worker's experience in providing SMS to Indigenous Australians, as well as their perception of the appropriateness and effectiveness of the FCTGP in aiding self management support (SMS), in order to inform and support chronic care management strategies in this population from these crucial stakeholders.	The Flinders Closing the Gap Program (FCTGP)	Chronic Conditions and Self-management	None	None provided.
Dattalo, M. et al. (2017)	Mixed Methods	The objective of this mixed methods study was to compare organizational readiness and implementation strategies used by rural communities that achieved varying levels of success in sustaining evidence-based health promotion programs over a 3 year time period.	1) Stepping On (SO) 2) Chronic Disease Self-Management Program (CDSMP)	Falls Prevention and Chronic Condition Self Management	None	We defined successful sustainability as delivering ≥ 1 target workshop in both of the post-intervention years (years 2 and 3).
Forman, S. G., et al. (2009)	Qualitative	The purpose of this study was to determine the factors that are important to successful implementation and sustainability of evidence-based interventions in school settings and to identify directions for strengthening the connection between research and practice in the delivery of interventions in schools' by interviewing those	29 different EBPs	Educational	None	Continuing to carry out the intervention after initial implementation'.

		who have developed such interventions.				
Glisson, C., et al. (2008)	Qualitative	The goal of this paper is to better understand organizational-based phenomena associated with the implementation of services in community-based mental health systems.	Multiple EBPs	N/A	Organizational Theory, Human Relations Theory, Structural and Socio-technical Theory, Open Systems Theory and Organizational Power and Conflict Theory	None provided.
Herschell, A. D., et al. (2009)	Qualitative	To enhance our understanding of mental health administrators' perspectives on opportunities and challenges in implementing an evidence-based treatment, we conducted semi-structured interviews with administrators of community mental health agencies.	Dialectical behavior therapy (DBT)	Mental health, Behavioral	None	None provided.
Hunter, S. B., et al. (2017)	Mixed Methods	In sum, the purpose of this study was to examine the extent of A-CRA sustainment following loss of federal funding among community-based organizations and identify what hypothesized implementation factors were empirically related to sustainment.	Adolescent-Community Reinforcement Approach (A-CRA)	Substance Abuse	EPIS and CFIR	We operationalized sustainment by assessing the extent to which core treatment elements were maintained following the end of the implementation support period and adequate organizational capacity to continue maintenance of these core elements was demonstrated.

Kenny, D. J., and Goodman, P. (2010)	Quasi-experimental	The primary purpose of this project was (a) to conceptualize the evidence base for management of enteral tube feedings in adult patients, (b) to develop an EBP protocol based on review of the literature,(c) to implement the new protocol, and (d) to evaluate its impact.	The researchers developed and implemented their own EBP using the Iowa model (S23).	N/A	The Iowa model for EBPs	None provided.
King et al. (2018)	Mixed Method	The aims of the present study are threefold: 1) to investigate whether early and late adopters of DBT have differential sustainability, 2) to investigate whether change in training method delivery impacts the sustainability of DBT programs, and 3) to examine factors that act as a barrier or facilitator to implementation by using a theoretical implementation framework to guide assessment.	Dialectical Behavior Therapy (DBT)	Mental health and behavioral health	Two. The first relates to factors considered to be relevant to practice sustainability and is adapted from Swain and colleagues' study on the sustainability of EBPs in routine mental health agencies. The second is based on the Consolidated Framework for Implementation Research (CFIR)	None provided.
Lyons, S. S. (2010)	Qualitative	This study explored the impact of human relations dimensions of organizational culture on continence care practices of interdisciplinary teams in two nursing homes.	Multiple EBPs	Health (Continence Care)	Theory of Organizational Culture	None provided.

McKay et al. (2018)	Other (Agent Based Modeling)	We use agent-based modeling, a computational systems science approach, in conjunction with existing EBI implementation frameworks and empirical data, to examine the relationships between staffing, sustainability, and population health. Explore the relationship among human resources, EBI sustainability, and population outcomes to inform theoretical models of organizational capacity and demonstrate the use of ABM to address pressing EBI sustainability research questions.	Hypothetical EBP for HIV - data based on RESPECT	Health (HIV/STI risk behavior and prevention)	The organizational capacity model developed by Meyer, Davis, & Mays and Scheirer and Dearing's conceptual framework of EBI sustainability.	None provided.
McKay, V. R. et al. (2017)	Qualitative	The current qualitative study draws on the concepts of individual and organizational capacity, as described in the Interactive Systems Framework, to examine the influence of human resources fluctuations on the implementation of RESPECT, an EBI widely disseminated and implemented through the Diffusion of Evidence-Based Intervention program (DEBI)'	RESPECT	Health (HIV/STI risk behavior and prevention)	Interactive Systems Framework	EBI maintenance/sustainability, or the extent which EBIs are provided consistently over time'

Nelson, G., et al. (2017)	Mixed Methods	The purpose of this paper is to examine the sustainment of the Housing First (HF) programs of Canada's At Home/Chez Soi research demonstration project for homeless persons with mental illness.	At Home/Chez Soi Housing First	Homelessness and Mental Health	Wandersman et al.'s (2008) ecological model of factors that influence program implementation, Interactive systems framework for dissemination and implementation, sustainability outcomes framework, Implementation program Life Cycle	1) By sustainability, or sustainment, we mean program continuation, fidelity, integration into existing systems, and program expansion. 2) The most widespread definition of sustainability is that it is '...the continued use of program components and activities for the continued achievement of desirable program and population outcomes' (Scheirer et al.)
Peterson, A. E., et al. (2014)	Mixed Methods; Observational	The current study tests the hypothesis that the long-term sustainability of EBPs can be predicted by site characteristics, implementation characteristics, program reinforcement activities, and sustainability factors.	Multiple EBPs	N/A	None	We defined a practice as sustained if it was continuously staffed and providing services to clients beyond the end of the implementation period, as confirmed by the site program leader. A program was discontinued when a practice was no longer provided. We excluded sites that restarted during the follow-up period of interest, as they did not fit into either category (sustained or discontinued).

Ploeg, J., et al. (2014)	Qualitative	To develop a research-based model of the process of spread of best practices related to older adults within home care settings. In this paper, the literature on spread will be briefly summarized, the rationale for focusing on the context of home care will be described, and the results of a grounded theory study of the process of spread of best practices in home care will be explained.	None specifically; 'best practices related to caring for older adults' (3).	Aging and Elderly	Two frameworks for spread (grounded theory for spread)	Authors use the term 'spread' to describe sustainability. Spread: 'the process through which new working methods developed in one setting are adopted, perhaps with appropriate modifications, in other organizational contexts' (2) 'We considered spread to have occurred if the tools that were implemented on a small scale in a few sites or branches of an organization were then moved to and adopted (perhaps with revisions) in additional organizational sites. This was assessed through constant comparative analysis of all interviews conducted in each organization.'
Tsai, C. et al. (2017)	Qualitative; Synthesis	Our aim was to better understand how to design effective oral health programs to improve the oral health of Indigenous populations worldwide.	Multiple EBPs	Health (Dental)	None	None provided.
Xiang et al. (2018)	Qualitative	The purpose of this study is to identify the facilitators and barriers associated with implementing and sustaining the Bridge Model at Community Based Organizations.	The Bridge Model	Psychosocial	Promoting Action on Research Implementation in Health Services (PARIHS) framework	None provided.

Table 3. Impact of Workforce Turnover by Sustainability Framework Domain	
Sustainability Framework Domain	Impact of Workforce Turnover
Environmental Support	An EBP may become a lower organizational priority under new leadership
Funding Stability	Training replacement staff drains organizational funding resources
Partnerships	Participants and respective communities may lose trust in the EBP staff if organizational changes are not communicated well.
	Critical professional relationships are lost
Organizational Capacity	Daily operations may suffer if there is a loss in organizational knowledge
	Program delivery is delayed due to continuing staff priorities shifting to training new staff
	Remaining employee workload fluctuates to compensate for turnover gap
Program Evaluation	None identified in this review
Program Adaptation	Organizational direction and focus can change, which can hinder EBP fidelity
Communication	Patients or participants become vulnerable again as they form relationships with newly hired staff
	Patient/participant progress, reviews and goals can be lost in staff transition, which can hinder individual progress in the EBP
Strategic Planning	Interim leadership focuses on daily rather than long-term tasks

Table 4. Recommendations to Address Impacts of Workforce Turnover by Sustainability Framework Domain	
Sustainability Framework Domain	Recommendation to Address Workforce Turnover impact
Environmental Support	Diversify external support network as a broad safety net for unexpected funding, staffing or location conflicts
	Incorporate EBP into daily tasks and routine to minimize gap in EBP responsibility and coverage in the event of turnover
	Focus on retaining and supporting organizational leadership to maintain a steady organizational policies and a positive organizational climate
	Foster a positive organizational climate to retain remaining employees
Funding Stability	Increase and diversify funding portfolio
	Examine both current and potential financial practices in order to best utilize resources available
	Utilize lower cost employee training alternatives such as online training
Partnerships	Begin or increase the use of champions and volunteers to fill in gaps in EBP coverage and boost remaining staff morale
	Create a community support network of stakeholders such as families, health providers, and health organizations to ensure program continuity
	Hire staff and use practices that reflect the communities served
Organizational Capacity	Increase training modalities utilized to maintain a willing and trained workforce
	Increase the internal organizational capacity through additional interventions and shared work responsibilities
Program Evaluation	Assess organizational readiness among leadership and staff prior to program implementation to ensure adequate staffing and training for EBP sustainment
	Incorporate the EBP evaluation into established organizational evaluations
Program Adaptation	Align EBPs with the internal and external context of the organization
	Supplement in-person EBP delivery using alternative technology formats
Communication	Increase culturally appropriate communication
	Hold continuous conversations about the EBP throughout the organization to create cohesive teams of new and existing staff
Strategic Planning	Utilize a sustainability plan prior to EBP implementation and continue to monitor sustainability throughout implementation
	Seek EBP developer support for implementation and sustainability
	Utilize a career advancement track and succession strategy to increase staff retention

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